sisNET Suite

User Guide

Bentley
Sustaining Infrastructure

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Part I: Introduction

1 Introduction to the *sisNET* Suite

This chapter describes the operations and workflows on which ***sisNET*** is based.

Overview

The following points are described:

- Programs in the ***sisNET*** Suite
- Installation
- Further documentation
- Starting programs in the ***sisNET*** Suite
- The ***sisNET*** message output
- The ***sisNET*** mouse control

Programs in the *sisNET* Suite

The program package of the sisNET Suite contains the following programs:

- ***sisNET***: A complete GIS workplace for displaying and editing geographic data. The descriptions in this guide refer (unless stated otherwise) to the ***sisNET*** interface.
- ***sisFLOW***: GIS information workplace which enables geographic data to be displayed and alphanumeric GIS data to be edited. In contrast to ***sisNET***, GIS objects cannot be created and graphically modified. The menu structure is largely the same as the sisNET interface (some menu items are not available).
- ***sisVIEW***: GIS information workplace optimised for mobile information solutions and user-friendliness, enables geographic data to be displayed and redlining (adding notes) to be done. sisVIEW has a standalone interface, optimised for ease of use.
- ***sisCONF***: Program for editing the data structure (application module) and aligning database structures. For more documentation about sisCONF, please refer to the ***sisNET*** application module configuration guide.

All the programs in the ***sisNET*** Suite can access the same project data - there is no need to transform data. Scripts are provided to copy and align data so that mobile information solutions can be implemented without having constant access to a central data inventory.

Installation

A standard installation program is provided to install all the programs in the *sisNET* Suite. During the installation, you can create links to start each of the programs. If more than one program from the *sisNET* Suite is to be installed on a workstation, the installation only has to be done once. To install the *sisNET* Suite, start the installation program on the installation medium (setup.exe). An installation wizard opens to guide you through the rest of the installation. For further information on the installation, please refer to the supplementary guide on the installation medium and to the installation wizard.

Other documentation

The *sisNET* administration guide provides information which is mainly of interest for administrators. It covers areas such as the following:

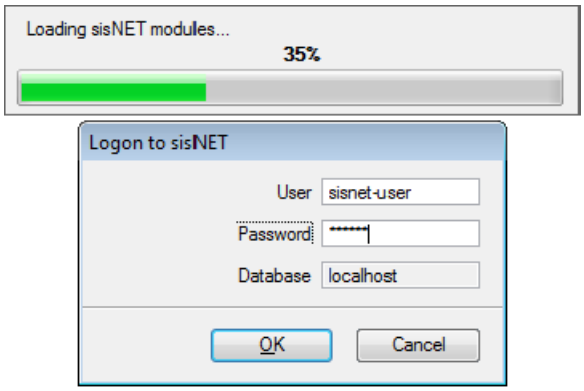
- Describes the concepts underlying the programs in the *sisNET* Suite
- Instructions for configuring the *sisNET* data structures (application module)
- Describes the *sisNET* macro language

Starting programs in the *sisNET* Suite

All the programs in the *sisNET* Suite can be launched by double-clicking the relevant link on the desktop. A welcome screen appears, along with a progress bar which indicates how the launch is proceeding.

Login and attaching the database

1. When the program has started successfully, the screen will show the dialog box for logging into the system while, at the same time, the connection to the database is established (if Single Sign-On is activated, this step is skipped).



2. First of all you need to enter your user name in the dialog box. The default entry in this line is the name of the workstation user. The workstation user is the user whose name is entered in the environment variable `ustation_username`. This name is used to define the rights and options available to the user. This name is not hidden.

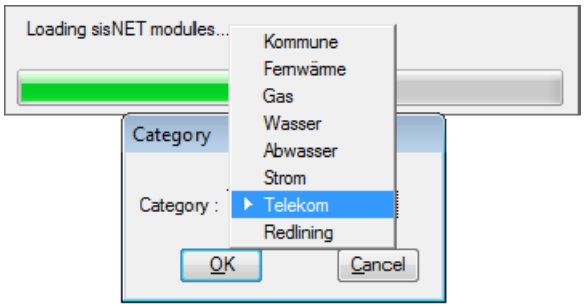
3. A password then needs to be entered. This password is hidden. The user name and password are not case-sensitive.
4. The third line displays the alias name of the non-local database being used.
5. When the user name and password have been entered, the entry is confirmed with the “OK” button.

Selecting a category

Depending on the application modules installed, different categories can be opened and worked on.

Select a category

1. You use the mouse’s data button to select a category from the popup list in the dialog box. The category selected appears with its font inversed.

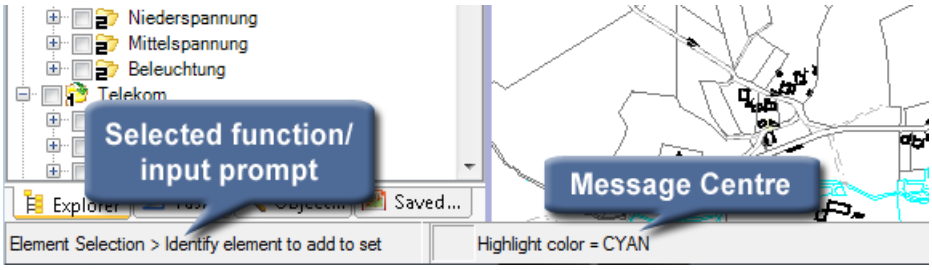


2. Select the “OK” button to confirm, and the relevant files for that category are loaded.

sisNET message outputs

The messages output by ***sisNET*** appear on the lower edge of the main window, in the status line. There is a detailed description of the complete status line in the MicroStation help.

2 parts of the status line are of particular interest to the ***sisNET*** user:



- Selected function / input prompt
- Message Centre

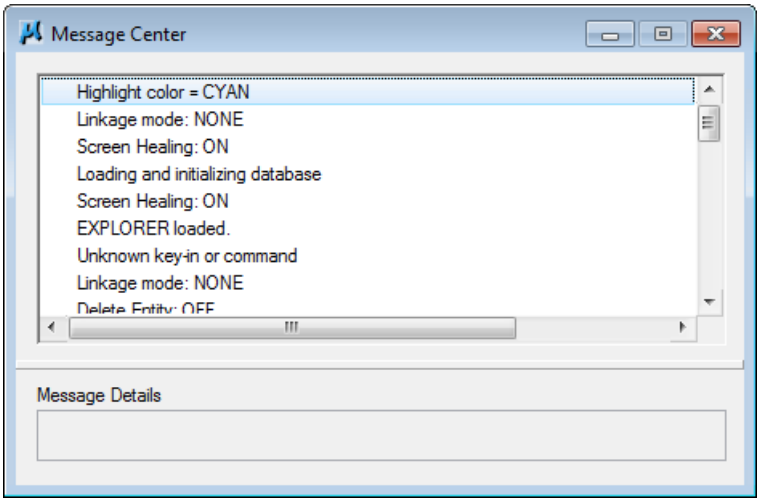
Selected function / input prompt

This line in the command window displays current information for the user which should prompt them to take particular actions.

Message Centre

This line in the command window displays system messages. These may be, e.g., error messages if entries are incorrect, or indicators about, e.g., missing files. Clicking this area opens the ***sisNET*** Message Centre which lists the messages recently output. This can be useful if several messages have been output very quickly and have overwritten one another.

sisNET Message Centre



Using the mouse with *sisNET*

sisNET's graphical user interface is largely mouse-controlled.

2 or 3 button mice may be used.

Each user can specify for themselves which functions to assign to the mouse buttons in the MicroStation menu work area > button assignments.

With a 3 button mouse, by default the left-hand button is the so-called data button. It is used to select drawing objects, confirm buttons and set points in the drawing file.

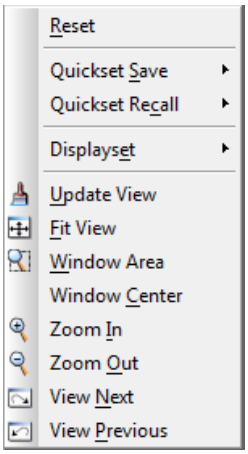
The right-hand mouse button is the so-called Reset button and is used to decline the actions the system proposes.

The middle mouse button (or simultaneously pressing the left and right buttons) is the so-called Tentative button. The Tentative button is used to click very precisely on inflection points or construction points, including if the cursor is not precisely positioned over the object being clicked.

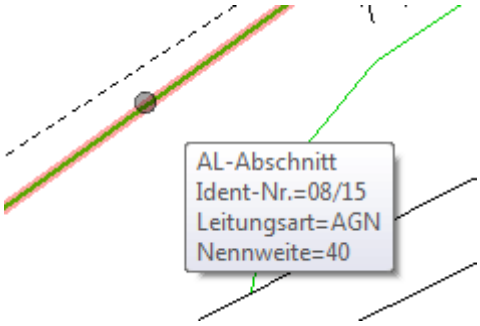
By combining the Switch key with the right mouse button you can also access frequently needed menu functions.

Switch key + right mouse button

A menu appears from which you can select various functions for controlling the view. When the relevant menu item has been selected, the prompt for the next action to take appears in the user guidance field in the ***sisNET*** command window.

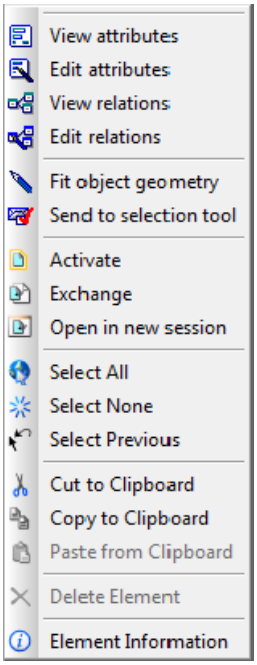


Place the cursor over a *sisNET* object



A window appears with information about that ***sisNET*** object. The ***sisNET*** object attributes that display is specified for each project in the application module.

(hold down) the right mouse button



A menu with context-sensitive content appears. The displayed menu was opened after the cursor was positioned over a ***sisNET*** object. You can use this menu to access the ***sisNET*** attributes mask and make certain edits to objects (providing there is a job open). Not all of the operations in this menu can be carried out on ***sisNET*** objects, however.

Double-click

Double-clicking a ***sisNET*** object opens the associated object editor or forms mask. By default, the mask opens in Read mode. If you are working on a job, the mask can also be opened in Edit mode by default. To do this, the environment variable `SISNET_ENABLEUPDATEONDOUBLECLICK` must have the value 1.

Dockable window

The ***sisNET*** Explorer dialogs, the object search and the named areas are dockable, i.e. they can be anchored to different edges of the screen. To dock a dialog, move it by clicking and hold it on its header row. Different symbols are dynamically displayed which offer you the relevant anchoring positions.

Part II: Menus

2 The File menu

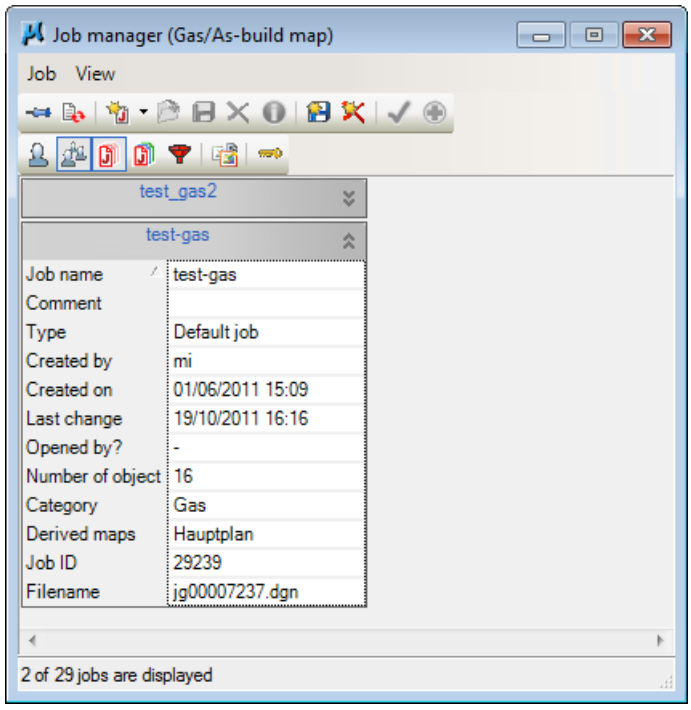
The File menu contains entries for opening, saving and manipulating files.

Task:	Select from the “File” menu:
This menu option opens the dialog box of the Job Manager	Job Manager (Page 22)
Stores the current job	Current job... > Save (Page 31)
Stores the current job and opens a new job	Current job... > Save and continue to work (Page 33)
Discards the current job	Current job... > Discard (Page 33)
Discards the current job and opens a new job	Current job... > Discard and continue to work (Page 35)
Closes the current job	Current job... > Close (Page 35)
Supplies information about the current job	Current job... > Inf. (Page 35)
Checks the current job	Current job... > Test (Page 37)
Repairs the current job	Current job... > Repair (Page 37)
With this function you can change between the different categories	Change Category > Change (Page 37)
Modified object resources can again be read in with this function	Category > Read in category (objects) again (Page 37)
Using this submenu you can change to the main plan or to the municipality overview	Category > Derived maps (Page 37)
An information map can be created with this function	Information map... > New (Page 37)
An information map can be opened with this function	Information map... > Open (Page 38)
User-specific settings are saved with this function	Save setting (Page 39)
Drawing files can be compressed with this function	Compress file (Page 39)
Activation and processing of *sisNET* batch files	Batch file > Execute batch file (Page 39)

Task:	Select from the “File” menu:
Cancellation of *sisNET* batch files	Batch file > Cancel batch file (Page 40)
Continuation of *sisNET* batch files	Batch file > Resume batch file (Page 40)
Execution of batch files via a dialog box	Batch file > Batch file dialog (Page 40)
Running a VBA macro	VBA > Macros... (Page 42)
Opening the VBA development environment	VBA > Visual Basic editor (Page 42)
Opening the VBA Project Manager	VBA > Project manager (Page 42)
Canceling a long-running VBA macro	VBA > Cancel macro (Page 42)
Exports data into the *sisNET* format	Data Exchange > Export in sisNET format (Page 43)
Imports data into the *sisNET* format	Data Exchange > Import in sisNET format (Page 45)
Imports data into the ASCII format	Data Exchange > Import (ASCII format) (Page 48)
Printing the current view	Print (Page 50)
Selecting the most recently opened files/job	
Closing *sisNET*	Close (Page 52)

Job Manager

This menu option opens the “Job Manager” dialog box. The Job Manager presents all jobs of all application modules clearly arranged by application modules and users and makes it possible to create, open, save or discard a job, and to have a log file for a job displayed. It is additionally possible to check and repair individual jobs.



A popup entry is displayed in Job Manager for each job. The entries can be opened or closed using the lateral buttons. An opened job entry contains the following information:

- Job name: Here the displayed jobs can be sorted in ascending or descending order in order by names
- Comment: Contains any comment which can be entered by the user
- Type: Indicates whether this job entry relates to an acquisition, planning, import or non-graphic job
- Created by: Name of the user (*sisNET* user) who created the job
- Created on: Date on which the job was created
- Last changed: Date on which the job was last changed
- Currently opened by: Name of the user who has opened the job at present or "-" if the job is currently not opened
- Number of objects: Number of objects currently in the job
- Category: indicates the category to which the job belongs
- Map type: indicates whether this is a main plan or a layout plan
- Job ID: Displays the ID of the job assigned by the system
- File name: Contains the file name of the job. The job file is created with this file name in the system

The comment can be edited by a click in an opened job entry. No other entries can be edited.

The job is opened by double-clicking on a job entry. The conditions for this are that:

- the job is not opened at present by another user
- the job is not alphanumeric
- The user has the authorization to open the job
- the job file is available in the correct directory

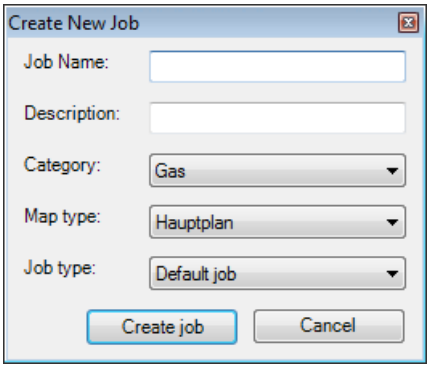
By a click on the designation text (Created by or Created on) in an opened job entry it is possible to sort the jobs in ascending or descending order according to this information. In Advanced mode you can sort by any information. When the Job Manager starts, the job entries are always alphabetically sorted in ascending order by job name.

The display order of the job information can be changed by dragging and dropping a designation text (e.g. Number of objects). That can be done only in Advanced mode, however (See "View > Advanced mode" Page 30). The job information is again displayed in the order above the next time the job manager is started.

Job > Create new job…

In general, a new job is created with this function. Deviating from the earlier approach (until *sisNET* 2002), a dialog box now opens first to select the job name, the comment and the job type and only then does the entrance into the supply area begin by selecting a certain method.

Job name



The name of the new job is to be entered here. This name may contain any characters (except the following special characters ',,/, \?,<:>, *) and is limited in length to 50 characters. This name does not have anything to do with the name of the dgn file to be newly produced by the creation of the job. It is only used to describe the job. A job name may be used only once within a volume of data. That is to say, there cannot be several jobs with the same name in two different categories of a data volume.

✍ In addition to the job, a comment up to 2000 characters long can also be used.

Category

Here you can select the category to which this job belongs

Map type

Here you can determine the map type (e.g. As-build map, overview), to which the new job is allocated.

Job type

All ***sisNET*** objects can be processed only in job files. The selected job type decides whether the job objects can be edited only in one job or possibly simultaneously by several editors in different jobs. The following job types can be selected

- Default jobs
- Planning jobs and
- Import jobs

Default jobs are used for acquiring and editing ***sisNET*** objects. All objects in a default job can be changed only in the job in which they are located.

Objects in planning jobs, on the other hand, can be edited at the same time in different planning jobs.

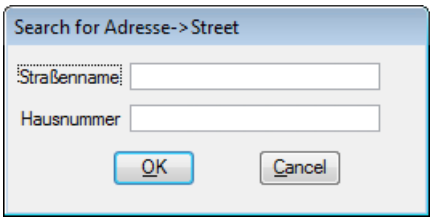
⚠ Planning jobs are meant for creation of variants or scenarios - their contents can be transferred into stock.

It makes sense to decide which of the alternatives is used based on the planned processing. For data acquisition and continuation, the default job will be the meaningful alternative, while the creation of planning variants and the performance of simulations require planning jobs because a range of the data stock is generally modified in different ways in this case. The designations of the two types of job were selected for this reason, but the use of the jobs designated in this way is not prescribed.

Import jobs are used to import ***sisNET*** objects that were created and exported by third parties into the ***sisNET*** format. No UNDO function is possible in these jobs. Import jobs can be only stored or discarded completely.

Job > Create new job… > By address

The function “Create new job… > By address” is used to open a new job. The entrance into the supply area takes place here via the address (practical if a new service connection for a known address is to be created, for example). First the Dialog box “Search by street, address”, in which the appropriate street name must be indicated, is opened.



Street name

Here you enter the street name that is to be selected. Which specific attribute in the data base is selected depends on the respective system configuration. The annotation texts for the input rows and for the box title row are dynamic and can be changed using the configuration files.

Entering a percentage sign (“%”) results in a wildcard search, i.e. “%2%” searches for buildings whose key attribute includes a 2.

House number

Here you enter the value of a key attribute (usually the house number) for selecting buildings on streets. You can configure the attribute that is to be used.

Entering a percentage sign (“%”) results in a wildcard search, i.e. “%2%” searches for buildings whose key attribute (e.g. house number) includes a “2”.

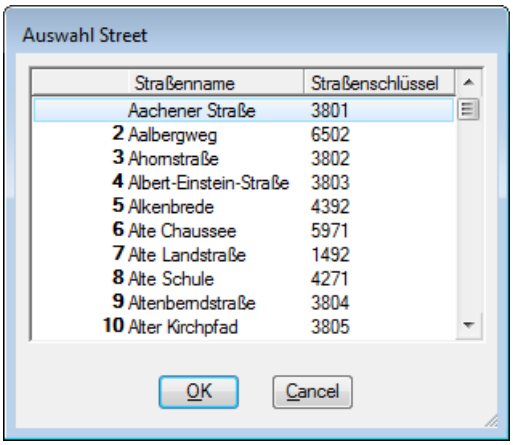
OK

Starts the search for objects which meet the search criteria entered. The graphic will then be fitted into the view in such a way that the objects found are fully displayed.

Cancel

Closes the dialog box without running a search.

If a correct inquiry was formulated, either an error message appears (if the defined address does not exist) or it opens a selection box, in which a list of all found data records appears. If several objects fulfill the search criteria, then all data records found appear in the selection box. In order to be able to make a unique selection from this box, additional attributes that are displayed in this box, with which user can further narrow the search, can be defined in the configuration files for the application modules.



Example: Street name, street key

All data records found that fulfill the criteria of the previous selection box appear in the list. The attribute “street keys” is now offered as an additional selective criterion for uniquely selecting a data record. One of the data records can be selected with the mouse or with the “OK” button.

OK

Acknowledges the selection made (street name + additional criterion). The function “Create new job… > by street” is continued and the selection is displayed.

Cancel

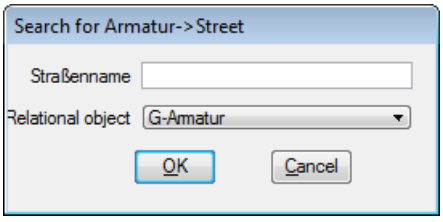
The Dialog box closes and terminates the relevant function.

Create new job… > By object

The function “Create new job… > By object” is used to create a new job. The “Data record selection” dialog box, which can be used to formulate the required search query, is opened (See “Search... > via object” Page 55). After the Select button is clicked, the “Data records” dialog window, from which the relevant object is to be selected, opens if there are several hits. If the selected object is a graphic object, the graphic of this object is fit into the job map. If a non-graphic object is selected, the new job extends over the realm that was represented in the current view when this menu item was activated. The object defined by the query is then offered to the user immediately for editing via the data input mask. For this to be possible, the defined object of course must not be locked for editing, for example because it is in another job for editing.

Create new job… > By object with address

The function “Create new job… > By object with address” is used to open a new job. The supply area is entered in this case via a user-selectable object type that has a relation to a certain street. First the Dialog box “Search by <Object type name> -> Street”, in which the desired object type and the appropriate street name must be indicated, is opened.



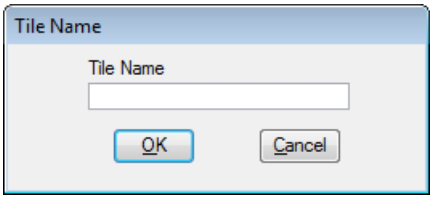
Among the relation objects, all those objects come up for which a relational possibility has been defined in the schema.

Create new job… > By rectangle

The function “Create new job… > By rectangle” can be used to select a range of the supply area in which one would like to edit data. After job name, comment and job type have been defined in the “Create new job” dialog window, a window is to be defined by the user. This is done by clicking on the left mouse button. Thus two points are defined, which determine the window. The window then appears as a view.

Create new job… > By pool name

You can use the function “Create new job… > By pool name” to select a certain sheet line in which you would like to input or change data. When the function is activated, the dialog box “Sheet name”, into which the name of the desired sheet line must be entered, appears.



The name of a network file (generic type TYP_NETZ) must be entered as the page name. Inputting the name with a %-character as a wildcard is possible.

Create new job… > By update view

With the function “Create new job… > By update view”, a new job in the range of the current view can be produced. When the function is activated, the dialog box “Create new job” appears, into which the desired Job name, comments and job type must be entered.

Job > Open job

The selected job in ***sisNET*** is opened by this menu option/button or by double-clicking on a job entry. The conditions for this are that:

- the job is not opened at present by another user
- the job is not alphanumeric
- authorization to open the job
- the drawing file of the job is available in the correct directory

After the job has been opened, the job manager closes. Exception: The menu option/ button “View > Always keep job manager open” has been activated.

Job > Save job(s)

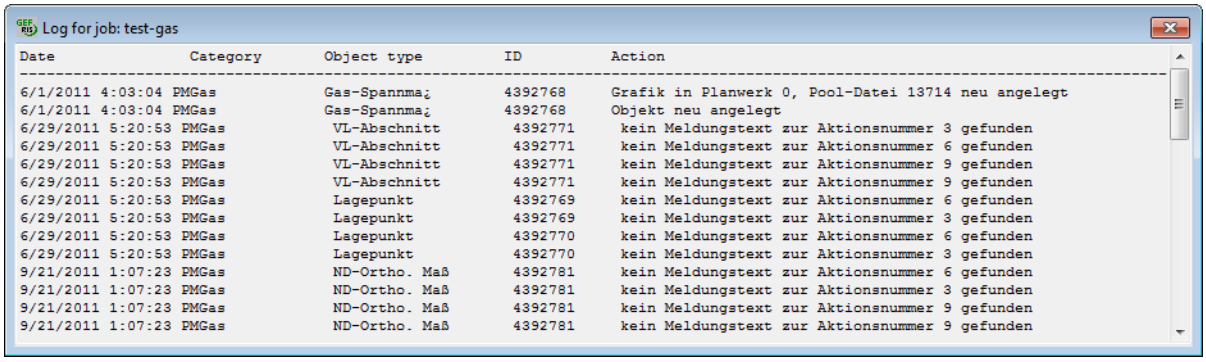
The selected jobs are saved. Requirement is the authorization to save jobs. Several jobs can be selected by pressing the SHIFT or CTRL key.

Job > Discard job(s)

The selected jobs are discarded. Requirement is the authorization for top discard jobs. Several jobs can be selected by pressing the SHIFT or CTRL key.

Job > Display job info

Information on the current job can be displayed this function. Information about the objects created or changed in the job appears in various columns in the opened view window:



- Date: Contains the date on which the modification was made
- Application module: Contains the name of the application module to which the modified object belongs
- Object type name: Name of the Object type that was modified
- MSLINK: MSLINK of the object that was modified
- Action: Indicates the action that was applied to the object

Job > Save current job and continue working on the job

The current job is saved and a new job of the same name is produced in which you can continue to work directly

The following information is carried over from the saved job:

- Category
- Map type
- Range of the update view
- Explorer settings

Job > Discard current job and continue working on the job

The current job is discarded and a new job with the same name is produced, in which you can continue to work directly

The following information is carried over from the discarded job:

- Category
- Map type
- Range of the update view
- Explorer settings

Job > Verify

Checks a job for consistency.

Job > Repair

Repairs errors in inconsistent jobs.

View > Display only my jobs

Only the jobs that were created by the currently logged on ***sisNET*** user are displayed.

View > Display all jobs

All jobs of all users and all categories in the loaded application module are displayed.

View > Display only jobs from active category/derived map

Only the jobs of the currently active category are displayed.

View > Display jobs from all categories/derived maps

All jobs of all categories are displayed.

View > Filter job list

All those jobs that contain a certain character string in their job name can be displayed

View > Always keep job manager open

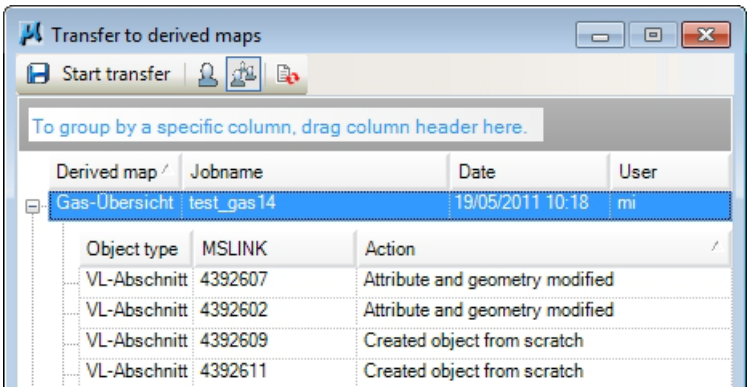
Keeps the job manager permanently loaded, even if a selected job has been opened.

View > Update job list

The job list is updated.

View > Transfer to derived maps

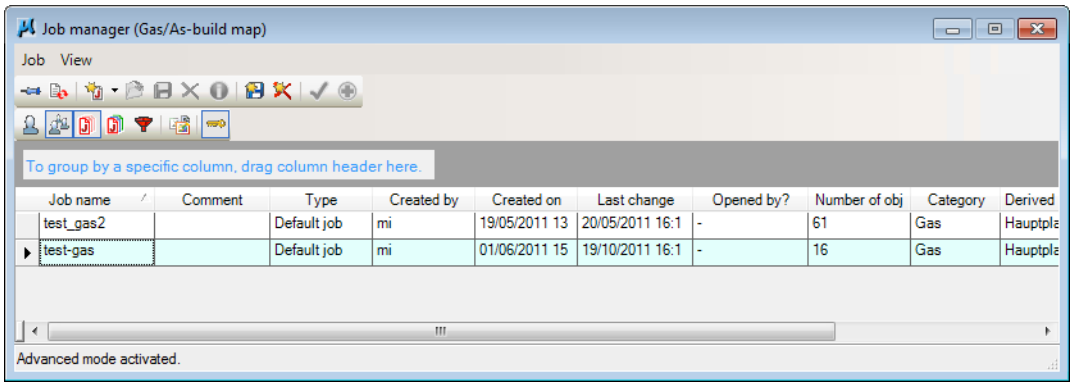
The interface for transferring the changes to the derived maps is called up.



Each line of the upper level can be folded out with "+", in order to find out what changes are hidden behind this line. The lines of the upper level can be selected. If at least one line is selected, the "Start transfer" button becomes active. If only one line is selected for transfer, there is a question as to whether the developed job is to remain open. The option of leaving the job opened is recommended if there are still manual changes to be made to the derived maps object. The list of changes can be limited to "My changes" or be extended to "All changes" with the two buttons and . If a job has already been generated for a line on the upper level or if the current ***sisNET*** user does not have an authorization to create a job in this category, the line is grayed out and therefore can no longer be selected. The grayed-out lines have a tooltip that is displayed when the mouse pointer hovers over such a line. This tool tip describes the reason why this line is not selectable.

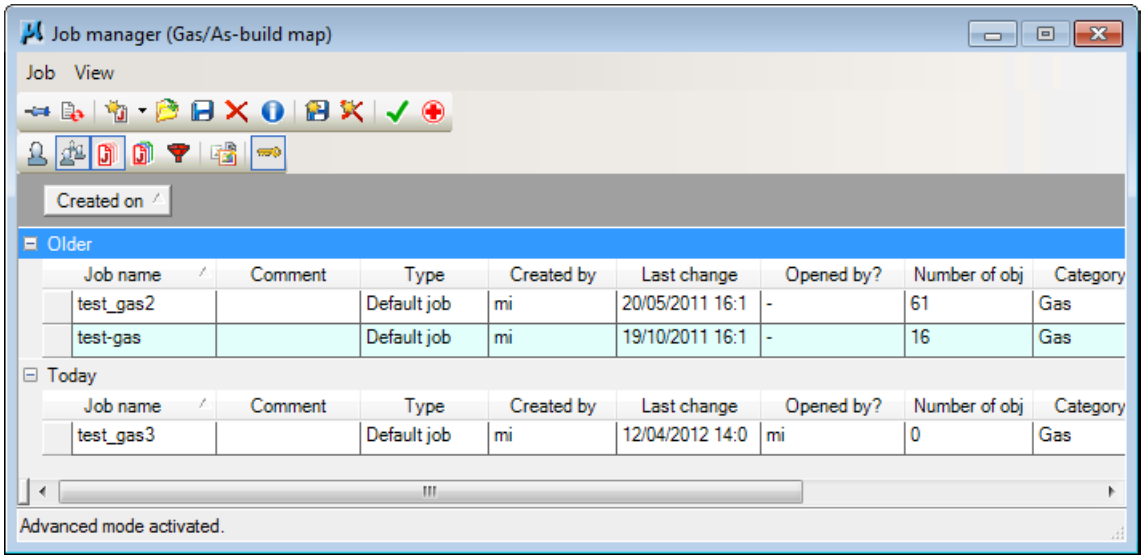
View > Advanced mode

Advanced mode is switched on or off with this menu option/button. In the advanced mode the jobs are represented not as individual entries to be opened and closed, but are listed in a table among themselves.



This table can be sorted by a click on a column heading in ascending or descending order based on that column. The column order can be changed by dragging and dropping column headings. A column heading can be dragged and dropped into the marked area above the table for grouping according to a column.

In order to remove the grouping, the column heading can be pulled out of the marked area and dropped at another place. If several column headings are dragged successively into the marked range, then it is also possible to group according to several columns.



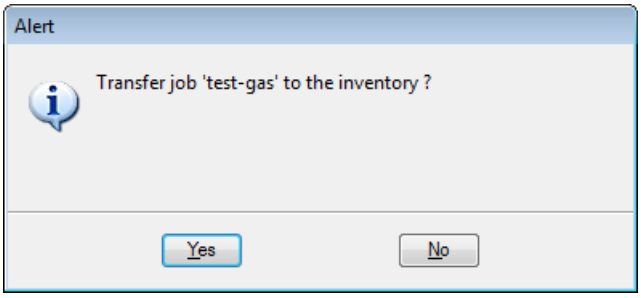
Current job...

When a job is opened, the submenu “Current job...” appears in the File menu. The following menu options are also available to the user here: Save, Discard, Close, Info, Test, Repair. These functions can be applied in the current job.

Current job... > Save

The current job, i.e. the job that is currently being edited, can be saved with this function. All changes made in the job will be transferred into the current volume of data by the save. The job will then be deleted and the job name can be used for new jobs.

“Undoing” this action is no longer possible.

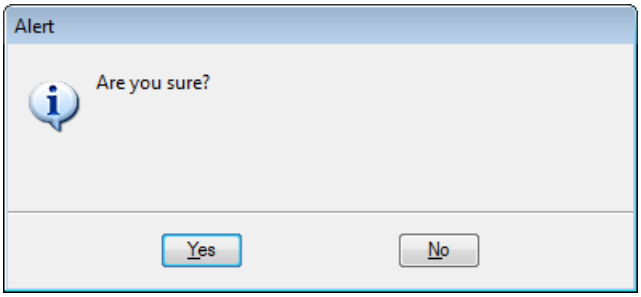


Yes

Selecting the “Yes” button checks whether a consistent transfer of work and changes executed in the job is possible. If “Yes” is selected, there are further questions.

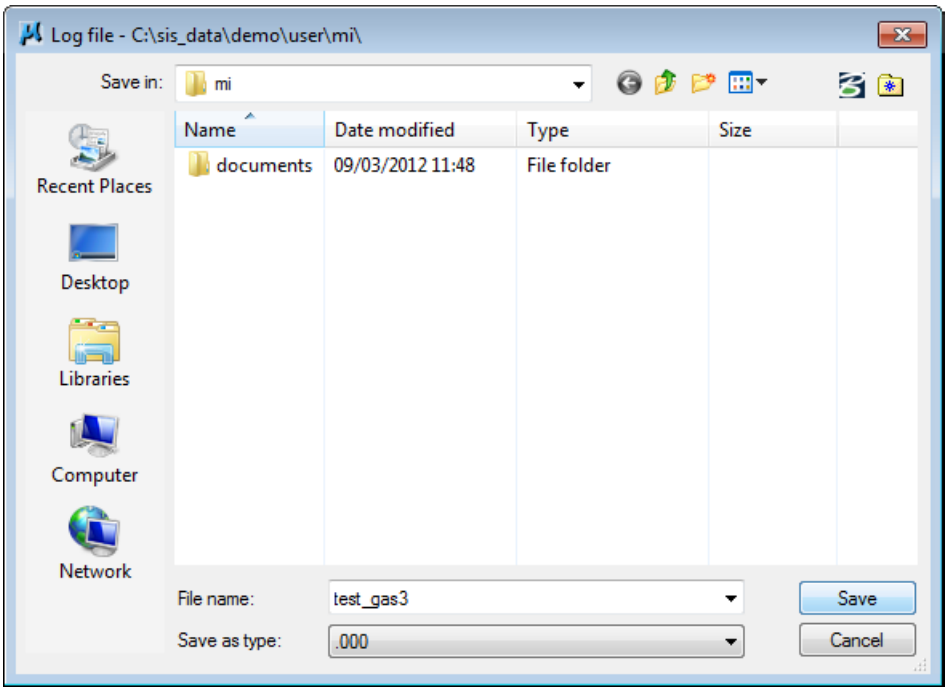
No

Selecting the “No” button cancels the the “Save current job” function.

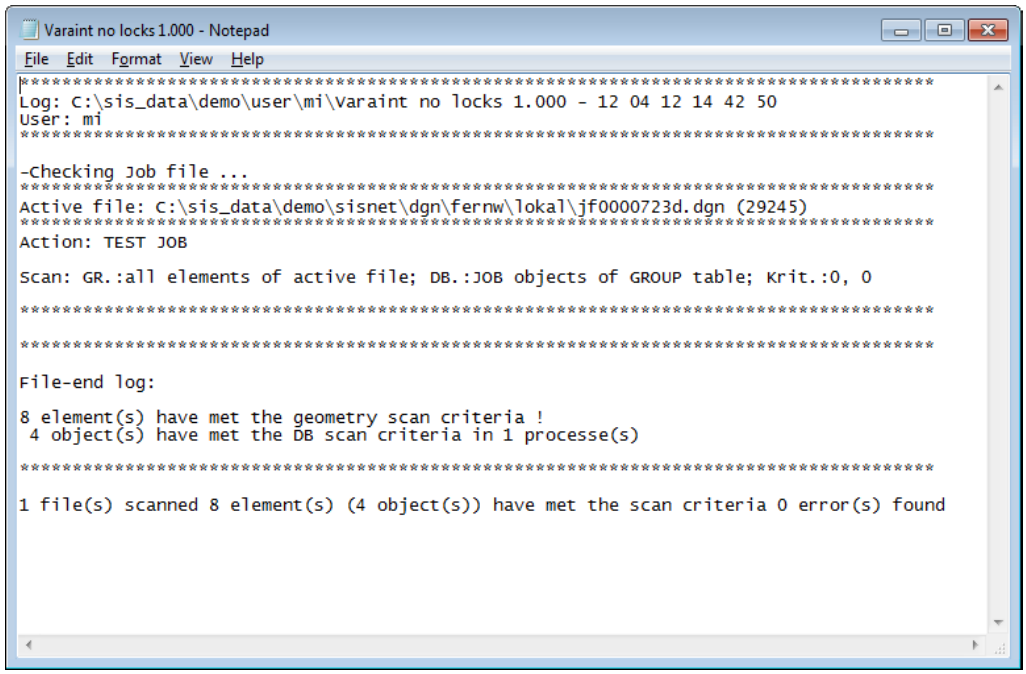


Yes

After the “Yes” button is pressed, another window appears, which must again be confirmed with “Yes”. This selection transfers work and changes executed in the job to the current volume of data. “Undoing” this action is not possible; the data would have to be fixed manually in a new job. Selecting the “No” button cancels the the “Save current job” function. The confirmation with “Yes” opens the file selection box “Log file”, in which a path and a file name for a job log to be created and saved can be entered.



By default the path preset in the box points to the working directory of MicroStation or the directory defined by the Environment variable SIS_LOKAL. The preset file name for the log file is composed of the name of the job file to be saved and an extension consisting of three numbers. This extension is assigned automatically by the system and is incremented by 1 each time based on the largest existing number of files, starting from 000. But only log files that contain error messages are saved. For an an action concluded without errors, the generated log file is automatically deleted and not saved in the specified directory. “OK” confirms the path and file name for the log file, “Cancel” suppresses the creation of a log file. If one decides to create a log file, the log file produced is displayed in a list box of its own in case of an error message, after performing all system checks.



The displayed log file provides information about the checks that were executed and the errors with which they finished. If errors occurred in the checks (such as inconsistencies between graphical and object data records), then the job cannot be saved and a corresponding message appears in the log.

Current job... > Save and continue to work

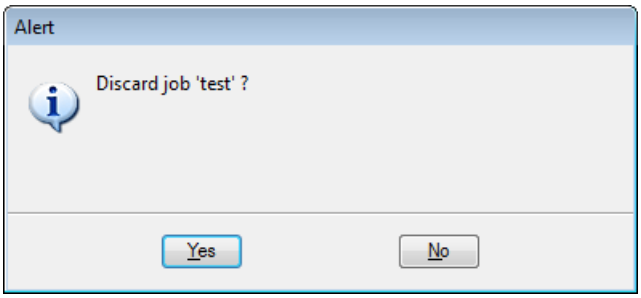
The current job is saved and a new job of the same name is produced in which you can continue to work directly

The following information is carried over from the saved job:

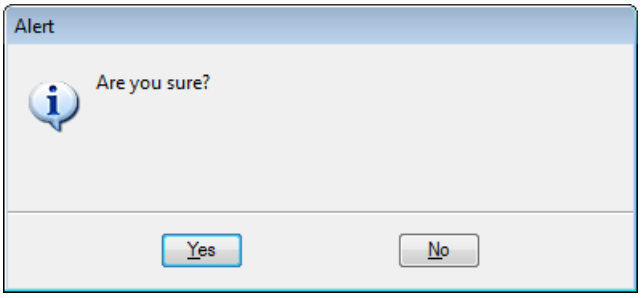
- Category
- Map type
- Range of the update view
- Explorer settings

Current job... > Discard

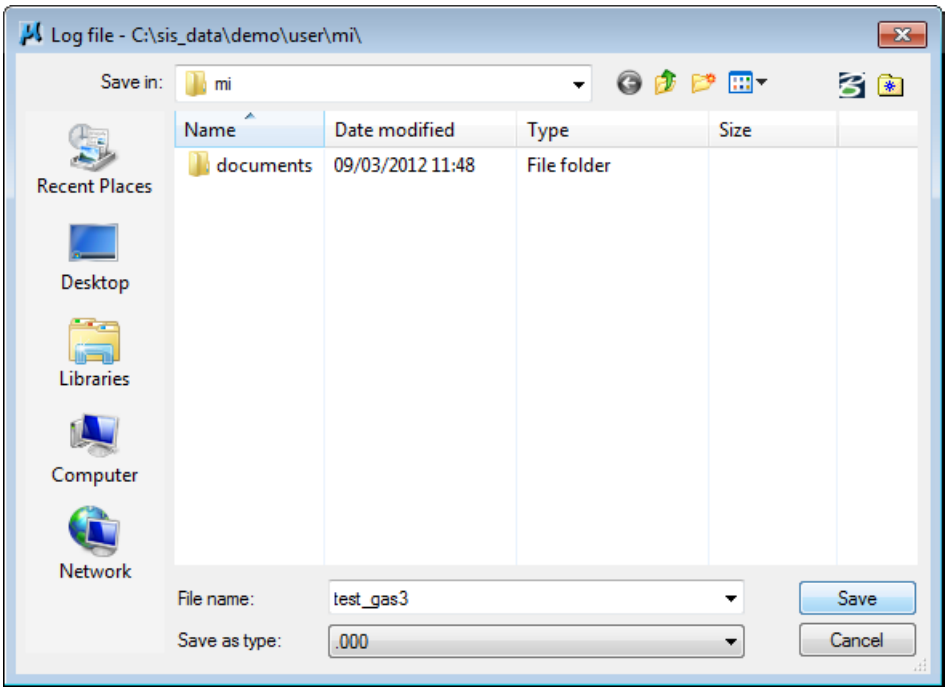
This function can delete the job currently being edited. Work and changes executed within the job are lost. A dialog box appears with a warning asking whether the job should actually be discarded.



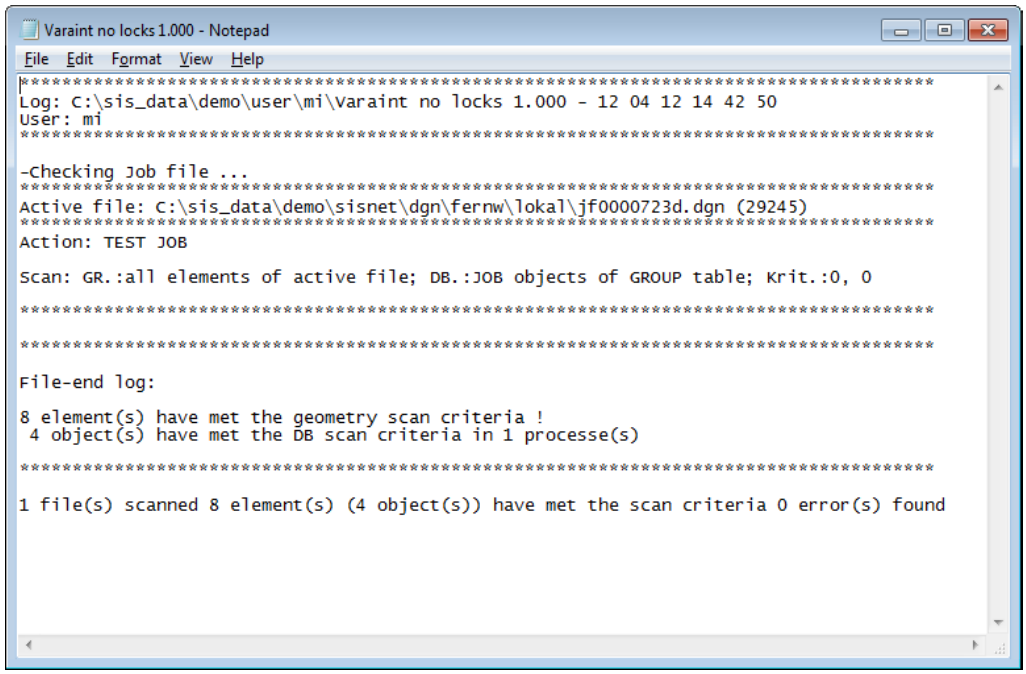
Selecting the “Yes” button conforms the intention, and “No” cancels the action without discarding the job. Confirmation with “Yes” opens a second warning box, which is the last chance to cancel the action, or to finally confirm it with “Yes”.



The confirmation with “Yes” opens the file selection box “Log file”, in which a path and a file name can be created for a log file for the job to be discarded.



By default the path preset in the box points to the working directory of MicroStation or the directory defined by the Environment variable SIS_LOKAL. The preset file name for the log file is composed of the name of the job file to be saved and an extension consisting of three numbers. This extension is assigned automatically by the system and is incremented by 1 each time based on the largest existing number of files, starting from 000. But only log files that contain error messages are saved. For an an action concluded without errors, the generated log file is automatically deleted and not saved in the specified directory. “OK” confirms the path and file name for the log file, “Cancel” suppresses the creation of a log file. If one decides to create a log file, the log file produced is displayed in a list box of its own in case of an error message, after performing all system checks.



The displayed log file provides information about the checks that were executed and the errors with which they finished. If errors occurred in the checks (such as inconsistencies between graphic and object data record), then the job cannot be discarded and a corresponding message appears in the log.

Current job... > Discard and continue to work

The current job is discarded and a new job with the same name is produced, in which you can continue to work directly

The following information is carried over from the discarded job:

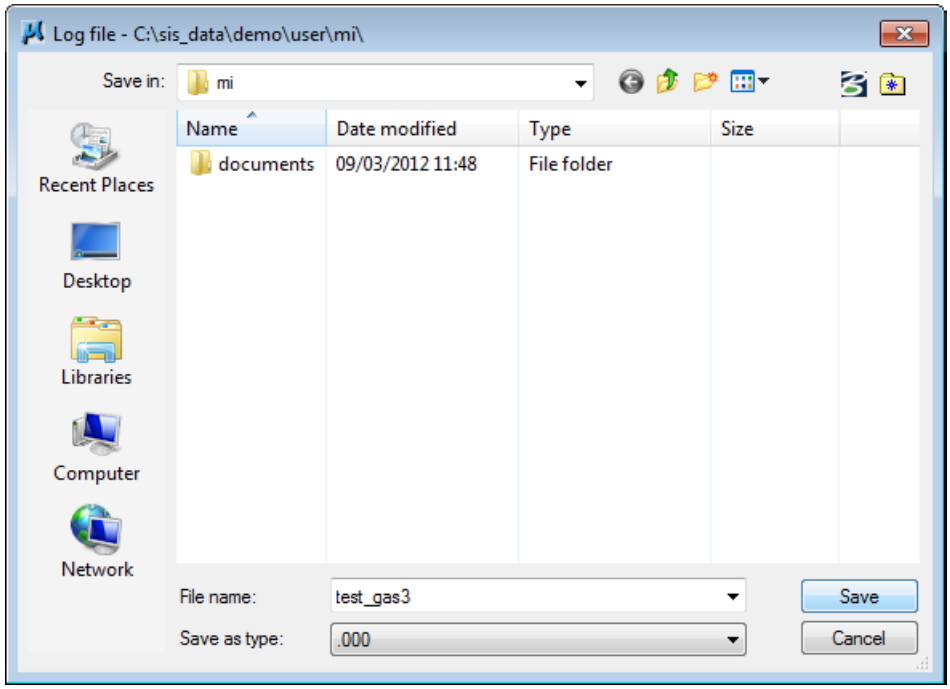
- Category
- Map type
- Range of the update view
- Explorer settings

Current job... > Close

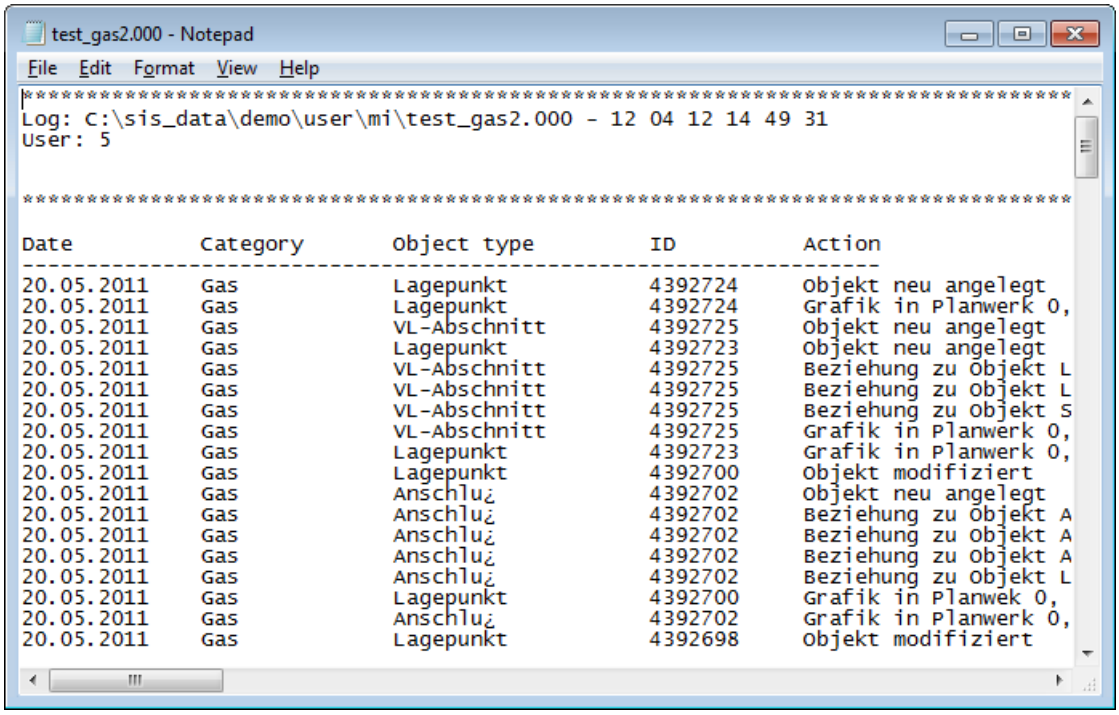
The current job is closed.

Current job... > Inf.

After this menu option is selected, the “Log file” file selection box appears, into which a path and a file name for a log file to be created about the information of the current job can be entered.



By default the path preset in the box points to the working directory of MicroStation or the directory defined by the Environment variable SIS_LOKAL. The preset file name for the log file is composed of the name of the job file to be saved and an extension consisting of three numbers. This extension is assigned automatically by the system and is incremented by 1 each time based on the largest existing number of files, starting from 000. “Save” confirms the path and file name for the log file, “Cancel” suppresses the the creation of a log file.



Information about the objects created or changed in the job appears in various columns in the opened view window. The following information about the current job can be obtained: Date/time at which the job was created, the application module in which the job is located, the object type, the ID, the executed action and the pool.

Object type: Contains the long names of the objects created or modified in the job.

ID: Contains the mslink of the specified object.

Action: Indicates the action that was applied to the object.

Pool: Indicates the pool index of the pool file in which this object is stored when the job is saved.

Current job… > Test

Checks a current job for consistency.

Current job… > Repair

Repairs errors in the current, inconsistent job.

Category > Change

With the “Change” function, it is possible to “switch” between the individual categories, i.e., a category other than the current category can become the active category. A new or already available job in this category can then be opened and edited. The following are additionally available as additional submenu options: Municipality, District heating, Gas, Water, Wastewater, Power, Telecom, Redlining.

Category > Read in category (objects) again

This menu option permits reading in a modified application module resource during a current ***sisNET*** session. To activate this function, it is necessary that all “Create boxes” are closed. The modified resources are available immediately after activation of the function and can be used. If the changes in the resource file also concern data base tables, then a data base alignment with **sisCONF** is necessary.

Category > Derived maps

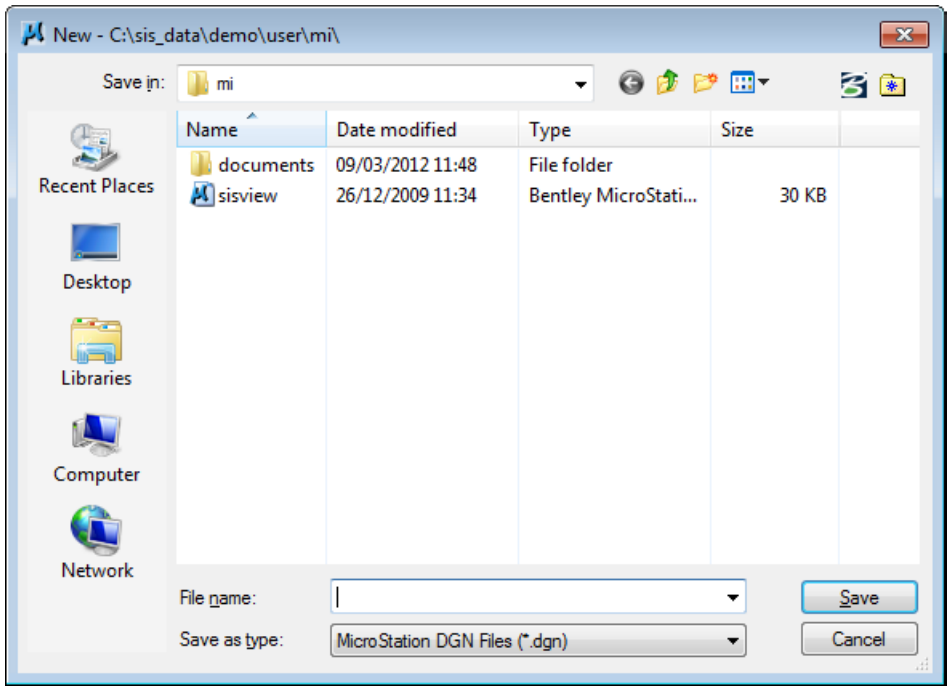
With this menu option it is possible to switch from the display of the main plan to that of the municipal overview. This submenu is not available for the “Wastewater” and “Redlining” categories.

Information map… > New

A private drawing file can be created via this function It is only possible to work with CAD graphics (create, reference, etc.) inside this information map.

The information in this Information map is not stored in pool files by ***sisNET***.

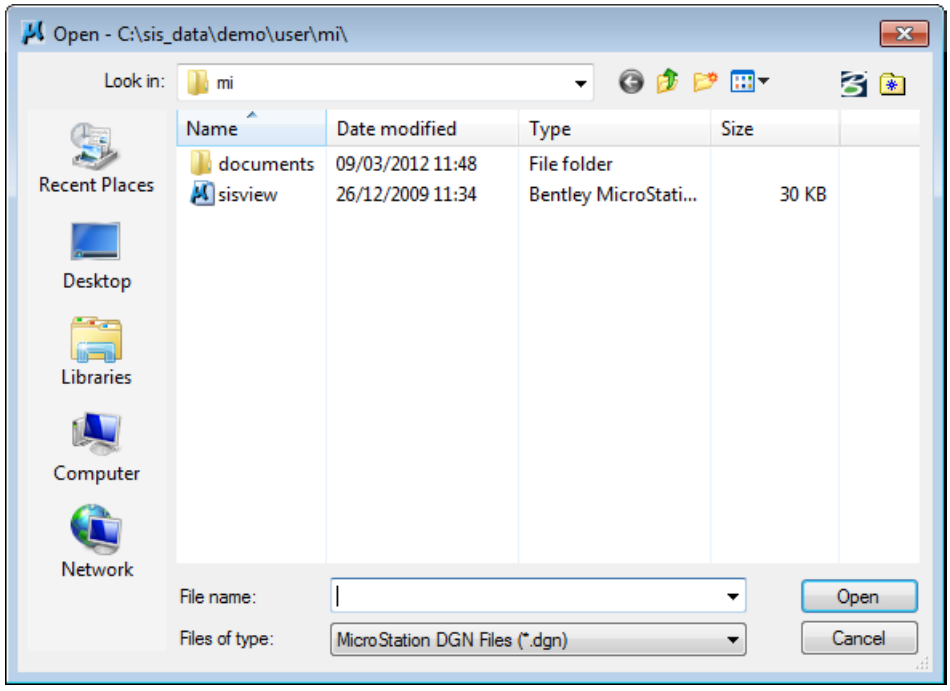
After the activation of the function a window opens, in which the path and name of the drawing file to be created is defined.



The Information map is created and opened with “Save”. “Cancel” terminates the dialog.

Information map... > Open

An already existing information map can be opened via this dialog.

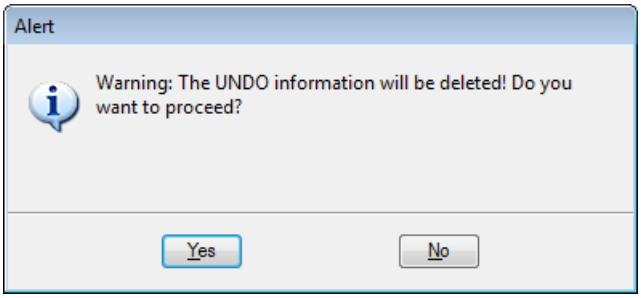


Save setting

User-specific settings of the current drawing file (e.g. number and position of the opened views) are stored by selecting this function, and are once again at the disposal of the user the next time ***sisNET*** is activated. If it is determined that the saving of such settings is not noticed by the system, then one should check the setting in the <username>.upf file in the ***sisNET*** configuration directory.

Compress file

The job files can be compressed with the function “Compress file” by deleting the UNDO buffer. The consequence of this is that the actions executed to that point can no longer be canceled. The memory spce savings depends on the number of stored UNDO steps.



Yes

The UNDO buffer is deleted by selecting the “OK” button. Undoing previous work procedures is no longer possible thereafter.

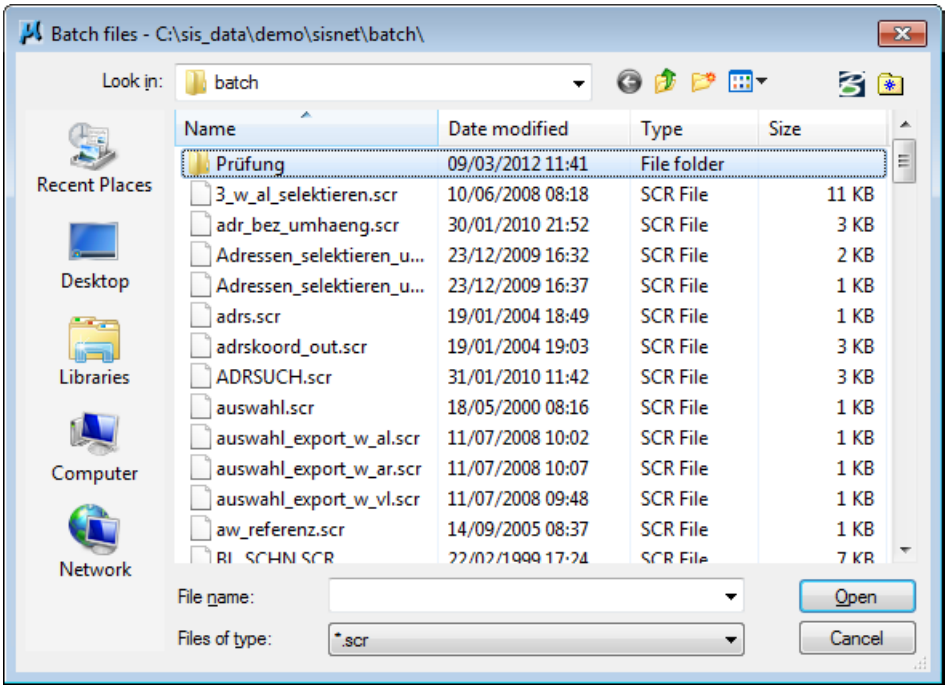
No

The “Question” dialog box is closed by selecting the “No” button, without the UNDO buffer being deleted or the file compressed.

Batch file > Execute batch file

This menu option opens the “Batch files” file selection box for selecting a ***sisNET*** batch file to be processed.

sisNET batch files are batch files that consist of a sequence of ***sisNET*** and ***MicroStation*** commands and are executed cell by cell.



When the function is first activated, the file selection automatically branches to the directory path pointed to by the environment variable SISNET_DIR_BATCH. If the user selects another directory, then the modified setting for this file selection box is preserved and the preset path branches out automatically to the most recently selected setting when this function is next activated. ***sisNET*** batch files have the extension *.scr by default.

Batch file > Cancel batch file

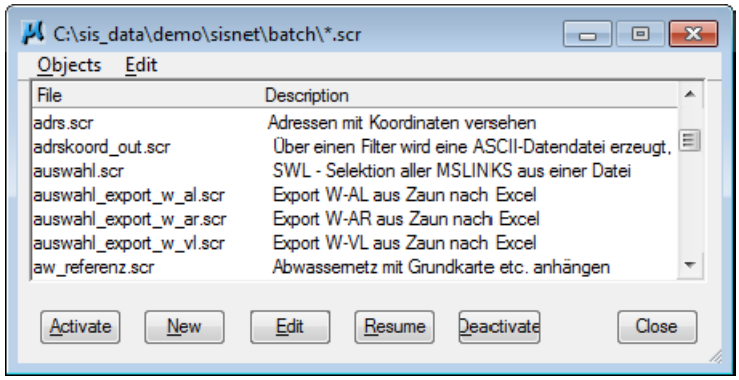
If an active batch file contains so-called non-batchable MicroStation commands or is in a continuous loop, further execution can be canceled with this menu option.

Batch file > Resume batch file

Batch files that contain non-batchable MicroStation commands can be resumed after processing such commands via this menu option.

Batch file > Batch file dialog

The “Batch file dialog” menu opens a dialog box that shows all batch files with the extension *.scr (for script file) in a list box. Batch files are searched by default in the directory pointed to by the environment variable SISNET_DIR_BATCH.



Edit

The following functions can be executed in the “Edit” menu option

- Refresh list: Updates the displayed list of batch files, if for example further files were copied into the selected directory.
- Delete file: Deletes the file selected with the scrollbar.
- Copy file: Opens the file manager to specify the target file into which the batch file marked with the scrollbar is to be copied.
- Change directory: Opens the file manager to select a directory in which additional batch files can be looked up.

Run

Runs the batch file selected with the scrollbar and processes the commands listed in it. This menu option corresponds to the function > Batch file > Execute batch file” in the ***sisNET*** main menu(See “Batch file > Execute batch file” Page 39).

New

Opens the MicroStation Basic Editor, with which a new batch file can be created.

Edit

Opens the MicroStation Basic editor, with which the batch file selected with the scrollbar can be edited.

Resume

Batch files whose execution was stopped via the “Stop” button can be resumed with this menu option. This menu option corresponds to the function “File > Resume batch file” in the ***sisNET*** main menu (See “Batch file > Resume batch file” Page 40).

Stop

Batch files in which the user is requested to make an input or click on a certain place can be stopped by means of this button at this point.

Close

“Close” is used to close the dialog box.

VBA > Macros...

You can use this to execute VBA macros. You can summarize and automate complex control workflows in ***sisNET*** with VBA macros. You can find more detailed information about the possibilities of ***sisNET*** VBA programming in the separate documentation for ***sisNET*** VBA.

VBA > Visual Basic editor

You can open the VBA development environment, in which you can edit, start and debug VBA macros, with this option. You can find more detailed information about the possibilities of ***sisNET*** VBA programming in the separate documentation for ***sisNET*** VBA.

VBA > Project manager

This opens the VBA Project manager. With the Project manager you can create, load and unload new projects, start macros, etc. You will find more information about the VBA Project manager in the relevant section of the MicroStation help.

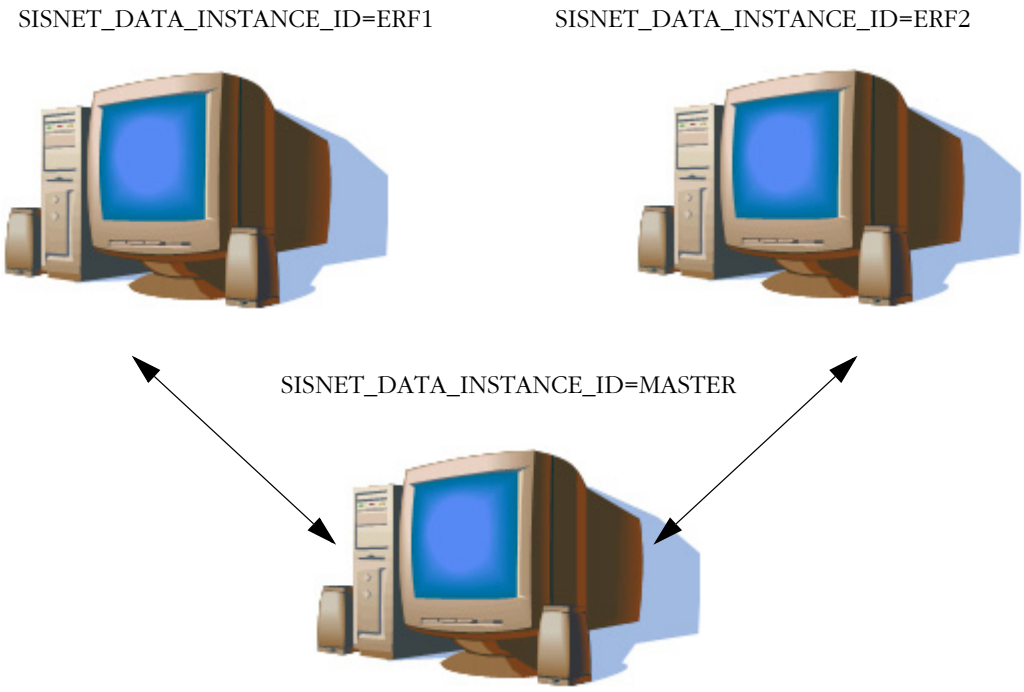
VBA > Cancel macro

You can use this to cancel a current VBA macro that may have been running for too long.

Data Exchange

It is possible to exchange data from one overall system system between different non-networked computer locations via an export/import mechanism. An update is possible in all directions. An uncomplicated external acquisition can be executed in this way.

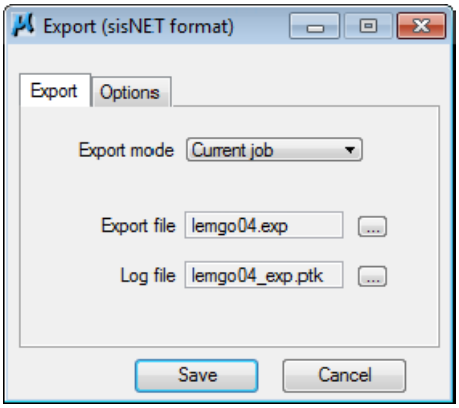
Every spatially separated workstation that does not possess direct access to the central data base can now be supplied with data by an export. It imports the data, can modify it and now can even create an export, which is then imported by the master. Each peripheral system and also the central station receives an INSTANCE_ID (defined via the Environment variable SISNET_DATA_INSTANCE_ID) to manage the distributed objects. The source of each object is registered in the import. For export, the destination of the export is indicated. Only the correct recipient can import the data.



Data Exchange > Export in *sisNET* format

Selecting the menu option “Data exchange > Export in *sisNET* format” opens opens a dialog box “Settings”, by means of which certain settings can be made for the export.

Export tab

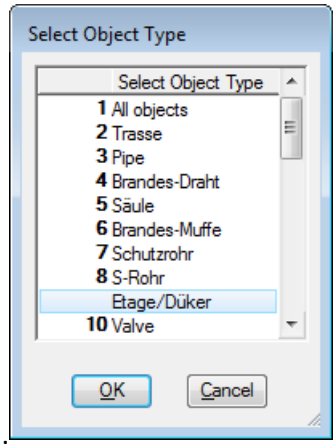


Export mode popup menu

Various export modes can be selected via a popup menu. The following modes are possible

1. Export mode Current job: In this mode the currently loaded job is exported.
2. Export mode Fence contents: In this mode only the objects selected via a fence are exported.

3. Export mode By object type: If this mode is selected, then the “Select” dialog box, by means of which the objects or CAD elements to be exported can be selected, initially opens after the start of the export function.



4. Export mode Selection: In this mode the objects previously stored in the Selection table by means of a selection are exported.

Input field Export file

The name of the export file is in this line. The name is pre-allocated by default with a file name consisting of the name of the current job file, to which the letter x is prefixed and which has the Extension *.exp. The Export file is written by default into the directory which the Environment variable SISNET_DIR_EXPORT indicates. If this environment variable is not set, then the file is written into the directory which the environment variable SIS_LOCAL indicates. If the user wants to indicate another directory for the export file than the pre-defined standard directories, then he can do this by clicking on the button to the right beside the input line. Thus the File selection box opens (See “Using the mouse with sisNET” Page 16), by means of which any directory can be indicated for the storage of the Export file.

Export files are text files, whose contents and structure are described in detail in the Application module configuration manual.

Log file input field

The name of the Log file for export is located in this line. In the log file all export actions are logged and noted whether the export procedure was terminated successfully or with errors. The name of the Log file is pre-assigned by default as aexp.xxx and the extension *ptk, where xxx is a sequential number, incremented in each case by 1, in the directory in which the log files are stored. The log files are written by default into the directory to which the Environment variable SISNET_DIR_EXPORT points. If this environment variable is not set, then the file is written into the directory which the environment variable SIS_LOCAL indicates. If the user wants to indicate another directory for the export file than the pre-defined standard directories, then he can do this by clicking on the button to the right beside the input line. This opens the file selection box (See “Using the mouse with sisNET” Page 16), by means of which any directory can be specified for the storage of the log file.

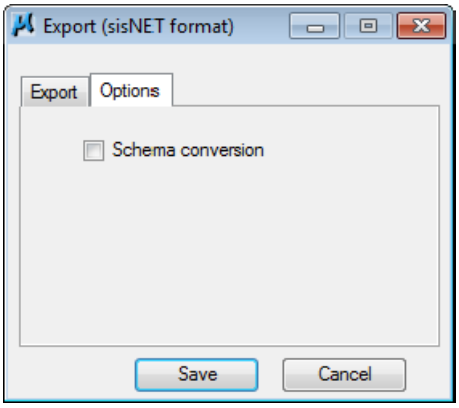
Log files are text files, which have following contents and structure:

```
Active file: r:\sis_data_2002\sindelfingen\sisnet\dgn\wasser\lokal\jwuk.dgn (14872)
**************************************************************************
Object scale line, creator: SWSI, 569283 exports (modifies)
Object scale line, creator: SWSI, 569284 exports (modifies)
Object situation point, creator: SWSI, 569299 exports (modifies)
Object situation point, creator: SWSI, 569300 exports (modifies)
Object situation point, creator: SWSI, 569301 exports (modifies)
Object situation point, creator: SWSI, 569302 exports (modifies)
Object W-CAD-element, creator: SWSI, 606648 exports (modifies)
Object W-CAD-element, creator: SWSI, 606649 exports (modifies)
Object W-CAD-element, creator: SWSI, 606650 exports (modifies)
Object W-CAD-element, creator: SWSI, 607010 exports (modifies)
**************************************************************************
Export successfully completed!
**************************************************************************
```

The path and name of the exported file are in the heading, followed by the ID of the exported job.

For each exported object exactly one line follows, in which the long name of the exported object, the entity of the creator of the object (defined by the environment variable SISNET_DATA_INSTANCE_ID) as well as the mslink of the object on the source system are located. The action last carried out to the object then follows (created, deleted or modified).

Options tab



The only option available at present is the possibility of making a schema conversion at the same time as the export. The application modules of the exporting and the importing system do not have to be identical in this case. However, a special resource fileconvert.rsc, which describes the conversion between source and target object, must be available in order to use this option. If the option is selected and the conversion resource is missing, the error message “File convert.rsc not found” appears in the ***sisNET*** message window.

After clicking the “Start” button, the export is executed.

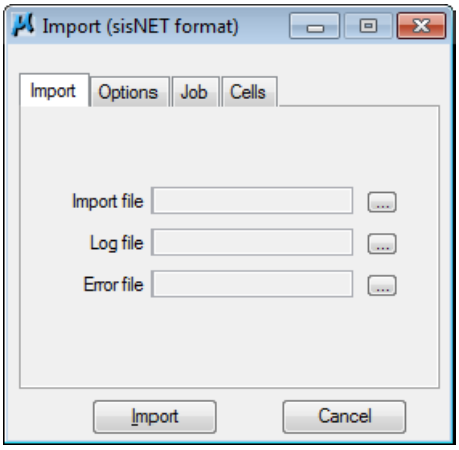
Data Exchange > Import in *sisNET* format

This menu option is the counterpart of the export menu and can be used to import from files exported by another user. The import takes place into an empty job in each case. The process of the import is logged. Objects that cause an error are segregated into a new ASCII file. This file has the same format as the source file. Thus it can be used for another import after clarification of the cause of the error.

If the import is to be canceled, then the job can be discarded.

A dialog box “Settings” having several tabs, by means of which various settings for the export file to be imported can be selected, opens after selection of the menu option.

Import tab



The “Import” tab has several input fields, which can be filled out automatically via the system variable or by the user.

Import file input field

The name of the export file to be imported must be entered into this field. By clicking the button alongside the input field, the “Export files” file selection box opens and branches out automatically to the directory pointed to by the environment variable SISNET_DIR_EXPORT. If the export file *.exp to be imported is located in this directory, it can be selected by means of the file selection box and is then automatically entered into the input field. In place of a single *.exp file to be imported, a list of several files to be imported can also be specified. The list file must likewise have the Extension *.exp and contain the file names of the individual files to be imported. File lists usually arise during the execution of the EDBS import program.

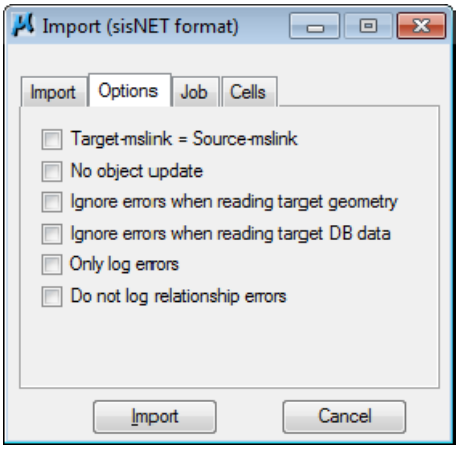
Log file input field

The name of the log file to be created for the import process is entered into this field. The directory to which the Environment variable SIS_LOCAL points is in this file selection box by default. “xxyy_imp” is suggested by default as the filename for the log file, where xx is adopted as the name from the selected export file and yy stands for the sequential number of the log files available in the selected directory. The Extension reads *.ptk. When this button next to the input field is clicked, the “Log file” file selection box opens, with which the user can specify a path and file name for the output file to be created that differ from the default settings. The Log file is an ASCII file, in which all errors that may have occurred in the import procedure are logged.

Error file input field

The name of the error file to be created for the import procedure is entered Into this field. The directory path to which the environment variable SISNET_DIR_EXPORT points is preset in this file selection box by default. By default, <exportjobname>_e1.exp is suggested as the file name for the log file. A selection box “Log file”, by means of which the user can indicate a path or a file name for the error file to be created deviating from the default settings, is opened by clicking the button alongside the input field. The error file is an ASCII file and contains the original information about the objects that could not be imported from the export file that was to have been imported.

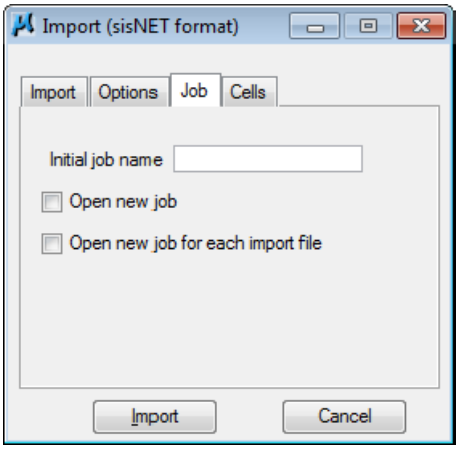
Options



The following options are available in this tab:

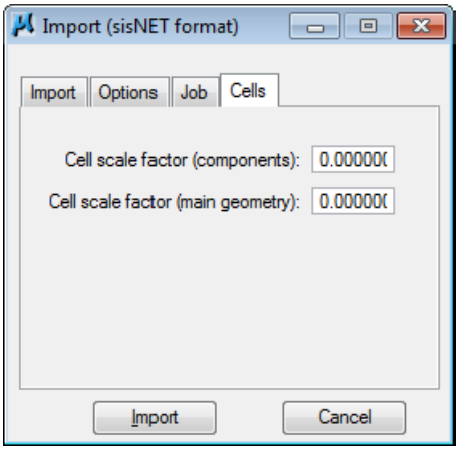
1. Option Target-mslink=Source-mslink: If this option is chosen, the target and source mslinks of the objects are identical. This option is practical if fixed mslink ranges were designated and assigned in all source and target environments for acquisition.
2. Option No object update: Objects that are already available in the data base to be imported are not updated with the import if this option is selected. This option is practical, for example, if an export job is to be imported only for test purposes and the imported job is to be discarded afterwards. An update of the object type table is not necessary in that case.
3. Option of ignoring errors during the reading of the target graphic: If an object to be imported is available already in the target stock, then the program checks whether the graphic and data record for this object can be read error-free. If this is not the case, then these objects cannot normally be imported. An import is possible even in such cases only if this option is chosen.
4. Option of ignoring errors during the reading of the target DB data: If an object to be imported is available already in the target stock, then the program checks whether the graphic and data record for this object can be read error-free. If this is not the case, then these objects cannot normally be imported. An import is possible even in such cases only if this option is chosen.
5. Option Only log errors: By default the entire import procedure is logged. One can activate this option if one wants to log only the non-imported, faulty objects.
6. Option Do not log relationship errors: The logging of relationship errors can be suppressed with this option. This is meaningful only if one knows for sure that relationship objects for the objects to be imported are not present and that this option will not have undesired impacts on the data stock.

Job tab



The settings of this tab can be used to import several export jobs at once. To do this, the file name of the export job to be imported first is specified in the Initial job name input field. With the selection fields “Open new job” or “Open new job for each import file”, you can determine whether all export jobs are to imported into only a single new job or each export job is to be imported into a separate new job

Cells tab



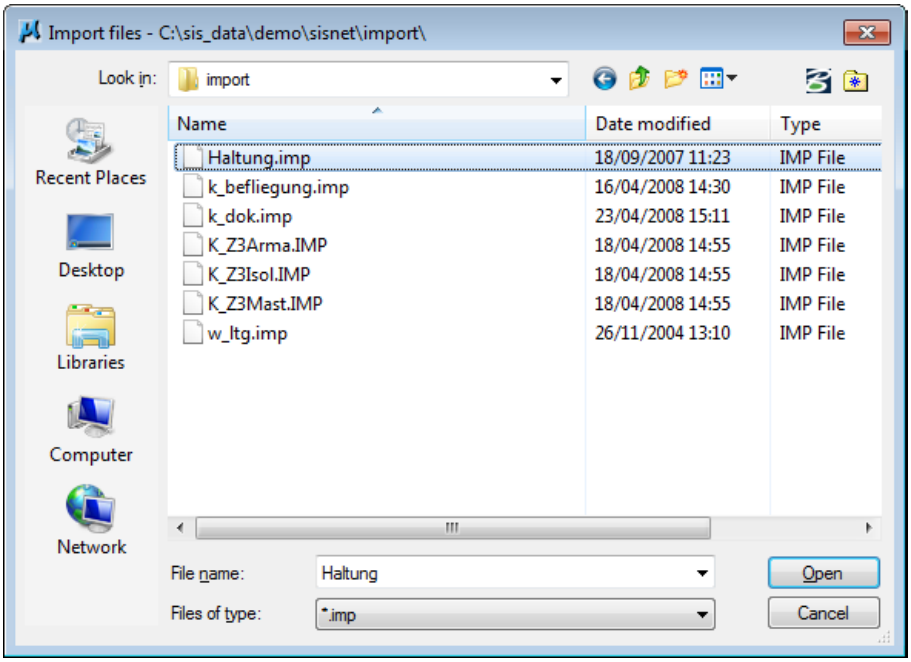
This register page can be used to determine whether objects or object components represented in the graphic by cells are to be scaled with the import or not. If a scale factor is indicated, all cells are scaled in accordance with this factor. This option is mainly intended to be able to scale objects originating from EDBS data to an appropriate size for the import.

The import is started after the “Start” button is pressed.

Data Exchange > Import (ASCII format)

Third-party data can be imported as ***sisNET*** objects with this function. The program can both create new objects, and update existing. In addition when creating the objects relations between objects can be developed. The program can be used thereby also for processing tachymeter data.

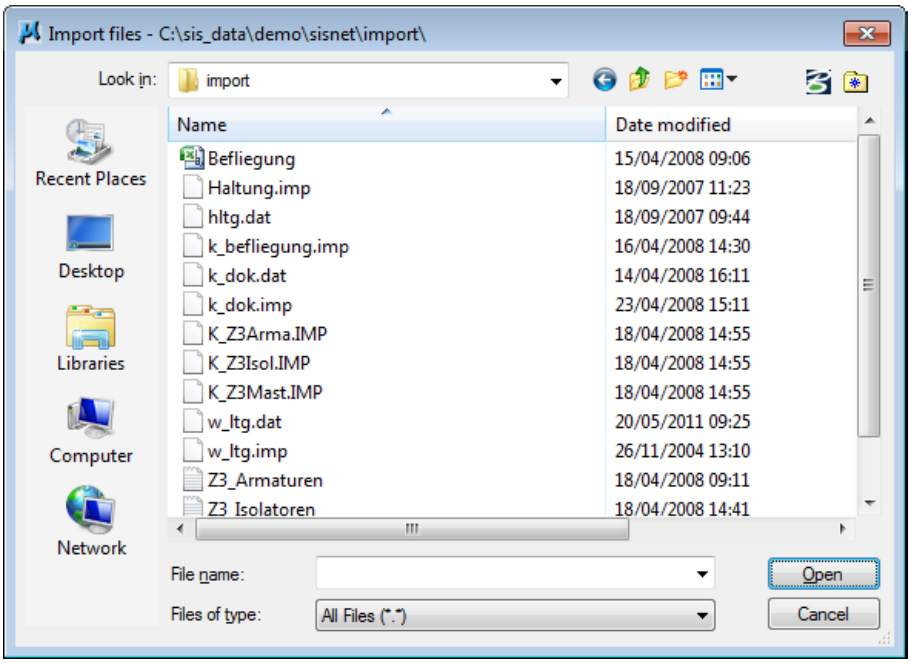
The “Import files” file selection box, from which the user is to select the name of the import control file, opens after activation of this function



An import control file is a file for describing the data structure of the object data to be imported in an ASCII file. This structure is described with a notation especially developed for this purpose (see Category configuration manual, description of the import interface)

The import control file is likewise an ASCII file and can be written with any editor that can produce pure ASCII text (i.e. without control characters).

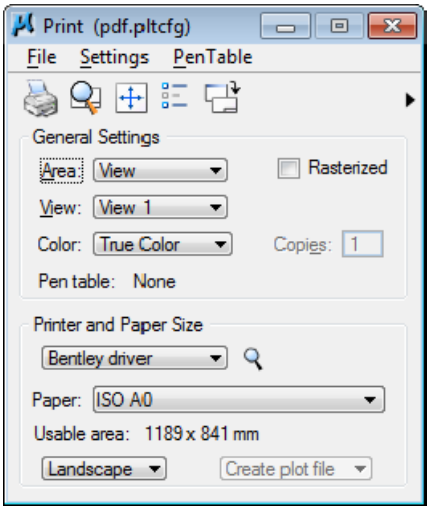
The “Import data files” file selection box, from which the user is to select the name of the data file to be imported, is opened after the desired import control file has been selected.



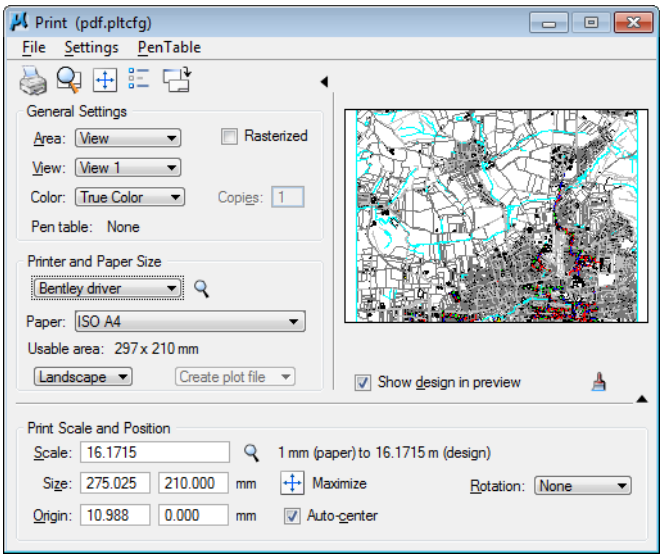
The import program IMPRT starts after the desired import data has been selected, and imports the data in the manner described in the control file.

Print

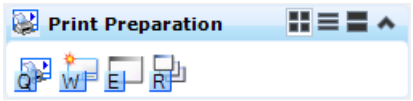
This function is used to print/plot the loaded file. The printing dialog, in which further settings can be made, appears after this menu option is clicked.



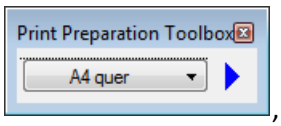
A preview of the printout is presented in the dialog if you click on the small right arrow:



In order to print with pre-defined plot borders, you use the functions of the “Print Preparation” taskbar:



Here you can select from 4 tasks:

With this task you can open the Print Preparation tool bar 

, with which you can very quickly select templates (with the listbox) and the further procedure (with the right arrow).

With this task your administrator produces a new model in a plot template file. You can find details for creating plot template files in the Administration guide.

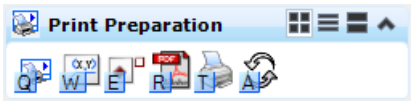
With this task you start the Print Preparation process with the most recently selected template.

With this task you start a multi-plot procedure with the most recently used template. In a multi-plot you can create a PDF file that contains the same map window for different categories on separate pages.

After selecting a template and starting (via the blue right arrow) the printing/plot field is next selected using the mouse cursor. Various settings, such as the specification of the scale or the angle of rotation, can also be made via a window. It can additionally be determined whether the next border point is to be used under the item “Origin” as the origin of the placement. The options “Fine adjustment” and “Show preview” are also available. Another input window appears once the printing area has been determined by double confirmation of the left mouse button. It offers the possibility of filling the legend with text. In the lower area of the window, several free texts can be entered, the function value of the scale and the date can be edited and the name of the reviewer can be indicated. The upper, larger area of the box displays a preview of the text in the drawing. There is either the possibility of confirming the entire legend by clicking the button “All OK” or of confirming the individual inputs by pressing the “OK” button. Also an input can be removed. The text can be edited subsequently by double-clicking with the left mouse button.

The print preparation process stores its results as another model (with the names PrintPrepOutput, PrintPrepOutput-01 etc.) in the current dgn file. By switching to the standard model you are again in your sisNET work area.

If you placed the borders of the template, you receive additional post-processing functions in the now context-dependent extended Print Preparation taskbar:



This concludes the print preparation process and you can return to the preceding sisNET work area.

Dynamic legends with printing templates

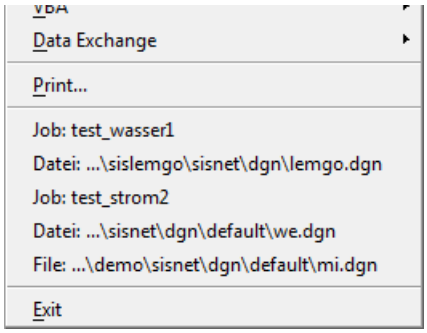
To be able to plot a dynamic legend with Print preparation, the plot template must contain a special area for the legend:

The legend area must be rectangular and not rotated. The function “Create rectangular frame” is used to insert a legend area into the plot template. In the function setting dialog, the mode must be set to “Function”, the function to “Dynamic legend” and the area to which the legend refers must be adjusted.

An Explorer topic must be active for the legend to appear while plotting. If no topic is active, the legend area is not filled.

Most recent files/jobs

sisNET remembers the 5 most recent files/jobs



Jobs are easily recognized by the preceding “Job:”. This allows the most recently used jobs to be reopened particularly easily, even without using the Job Manager.

Close

Thus function terminates the ***sisNET*** session. The current process status is automatically backed up; it is not necessary to save it separately The work can be continued when ***sisNET*** is next started and the most recent job is opened if desired.

3 The Edit menu

The “Edit” menu contains functions for editing and modifying elements and objects and for displaying information about those objects.

Task:	Select from the “Edit” menu:
Undo, or reverse, activities and commands that have been executed	Undo (Page 54)
Undo, or reverse, activities and commands that have been executed up until a mark that was set previously	Undo to mark (Page 54)
Set an UNDO mark	Set UNDO mark (Page 54)
Go to a supply area by searching for objects via an address	Search... > via address (Page 55)
Go to a supply area by searching for objects via any linking of search criteria	Search... > via object (Page 55)
Go to a supply area by searching for an object type with a relationship to a particular street	Search... > via object with address (Page 57)
Go to a supply area by defining a window	Search... > By rectangle (Page 58)
Go to the supply area via the name of a sheet extract	Search... > By pool name (Page 58)
Go to the supply area via a predefined area	Search... > By coordinate table (Page 58)
Go to the supply area via predefined database queries	Search... > By saved selection queries (Page 59)
The Create submenu is only available if a job is active/open. It is used to create all sorts of elements.	Create > ... (Page 59)
Query, change or delete information about the individual object types in terms of their attributes and relationships. Display database of internal information, e.g. pool tables, ID´s etc.	Object info (Page 81)

Task:	Select from the “Edit” menu:
Different functions for editing objects and text	Tools (sisNET Tools) (Page 85)
Generate derived views on default plans and displays	Thematic Analysis > Activate (Page 101)
Exit an active filter and restore the default view	Thematic Analysis > Close (Page 117)
Display element information relating to the drawing level, drawing colour, line type, strength, etc.	(MS)Information (Page 117)
Used to specify the MS locking function modes	(MS)Locks (Page 118)
Used to specify the MS snap function modes	(MS)Snap function mode (Page 118)

Undo

This function enables you to easily undo individual activities. E.g. Pipes that have been created in error can be deleted from the drawing using the “Undo” command. In doing this, any database entries relating to this pipe are reset to their initial status, of course. A status message appears in the ***sisNET*** command window which states that a function has been undone. The number of steps that can be undone is specified via the size of the “undo buffer” (in the MicroStation application).

Undo to mark

This function offers the same options as the “Undo” function, but here it is not individual activities which are undone but all the activities up until a mark which has previously been set. Such a mark is set using the menu item “Edit > Set undo mark”.

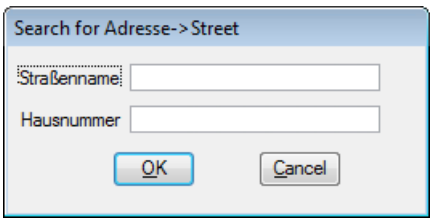
Set UNDO mark

This function enables you to set an undo mark so that the “Undo to mark” function can be used to undo all the actions up until the undo mark set.

Search...

Search... > via address

Opens the “Search for street, address” dialog box which you can use to search for objects by entering addresses.



Street name

Here you enter the value of a key attribute for selecting streets. You can configure the attribute that is to be used. So the annotation texts for the input rows and for the box title row are dynamic and can be changed using the configuration files.

Entering a percentage sign (“%”) results in a wildcard search, i.e. “%abc%” searches for streets whose key attribute includes the string “abc”.

House number

Here you enter the value of a key attribute (usually the house number) for selecting buildings on streets. You can configure the attribute that is to be used.

Entering a percentage sign (“%”) results in a wildcard search, i.e. “%2%” searches for buildings whose key attribute includes a “2”.

OK

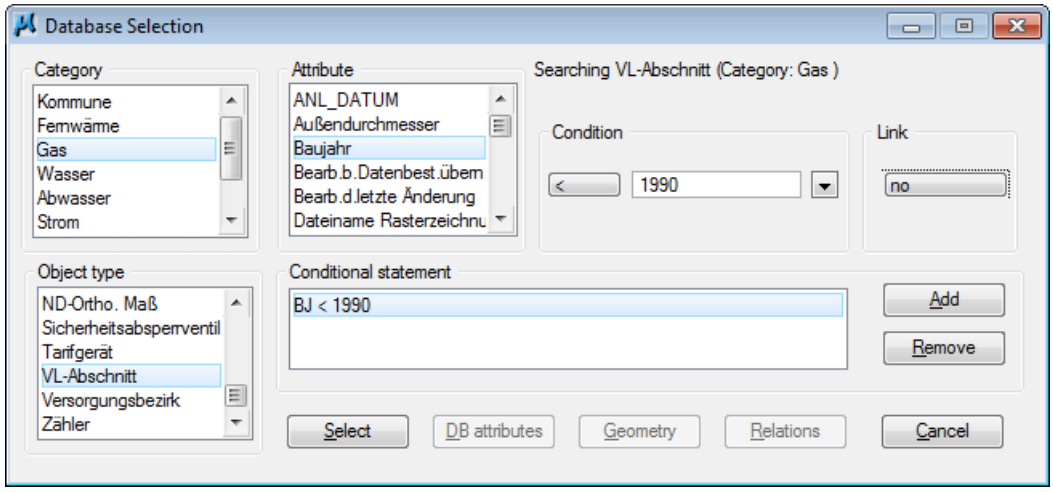
Starts the search for objects which meet the search criteria entered. The graphic will then be fitted into the view in such a way that the objects found are fully displayed.

Cancel

Closes the dialog box without running a search.

Search... > via object

Opens the “Data record selection” dialog box which can be used to formulate the required search condition. Elements can be selected based on particular conditions (criteria). The elements found when the function is executed can then, firstly, be displayed in the graphic or the attributes of the object found can be displayed. When the function is selected, the following window opens:



The box has the display fields and buttons which will be explained below.

Categories

In this list box you can select from the categories defined in the current configuration. Depending on the category selected, the objects belonging to it are displayed in the "Objects in category" list box.

Objects in category

In this list box, you select an object type for which you wish to make a data record selection.

Attributes

The available database attributes (columns) in the selected object type are listed here. For each row in the search expression, one of these attributes must be linked to a comparative value by a condition.

Condition

Here you can select from predefined condition types. The following relational operators are available:

<	smaller than
<=	smaller than or equal to
=	equals
>=	greater than or equal to
>	greater than
!=	does not equal
like	equals for strings (with % to be used as a placeholder)
not like	does not equal for strings
is(NULL)	Has the attribute not been given a value?
is not(NULL)	Has the attribute been given a value?

Comparison value

Here you enter a comparison value (numeric or text) that matches the attribute type.

Link

If more than one search condition is to be linked together, the type of link can be specified here (*and* and *or*).

SQL expression

From the search conditions you have entered, an SQL expression which is valid for the database will be generated and displayed here. Each search condition equates to one row in this window. Search conditions can be added and deleted.

Insert

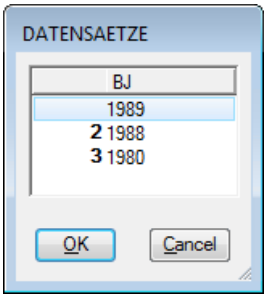
When you select this button, a new search condition is added to the SQL expression.

Delete

When you select this button, the search condition that is currently selected is removed from the SQL expression.

Select

When you select this button, the search process is triggered, providing a valid SQL expression has been formed. If more than one data record has met the search conditions, the data records that were found are displayed in a new dialog box.



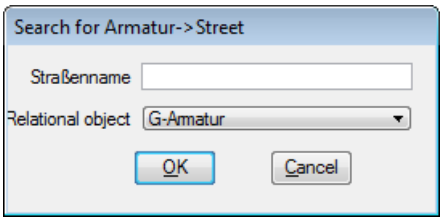
After one of these data records has been selected, the view is adjusted to suit the relevant object, which is selected.

Cancel

Select this button to exit the dialog. The SQL expression that is currently entered is discarded.

Search... > via object with address

The function “Search... > via object with address” is used to search for an object type with a relationship to a particular street. First, the “Search for <Object type name> -> Street” dialog box opens, where the object type you want and the relevant street name must be entered.



With the relation objects, all those objects come up for which a relational possibility has been defined in the schema.

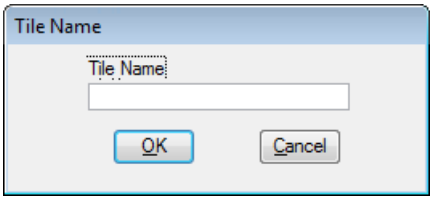
When the street name is entered and the required object type is selected, all the objects of that type display which have a relation to the specified street; now you can select one of these. The view window skips to the relevant object which is shown selected.

Search... > By rectangle

You can use the “Search... > By rectangle” function to select an area in the supply area where you want to view data or query information. When the function is selected, the supply area displays in overview (similar to the monitor function). The user is then prompted to define a section for which, then, the relevant ground and network maps are loaded.

Search... > By pool name

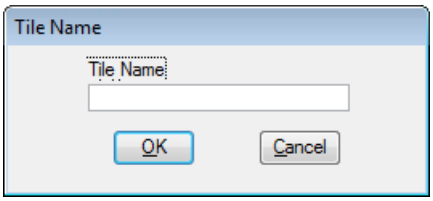
You can use the “Search... > By pool name” function to select a particular section of the sheet where you want to view data or query information. When the function is selected, the “Page name” dialog box appears in which the file name of the required sheet section must be entered.



The name of a network file (generic type TYP_NETZ) must be entered as the page name. You may optionally enter the name with a % sign as a wildcard.

Search... > By coordinate table

You can use the “Search... > By coordinate table” function to select an area in the supply area where you want to view data or query information. When the function is selected, the “Page name” dialog box appears in which the name of the required area (sheet section) must be entered with predefined corner coordinates.



This sheet section name and the assigned corner coordinates must be saved in a separate table (default name: COORD_LOOKUPTAB). These sheet sections do not need to be exactly the same as the sheet sections of the available map types that were entered in the pool table. If this table does not exist, this function works in the same way as the menu item “Create new job... > By pool name” in the job manager.

Search... > By saved selection queries

A dialog opens which enables one or more predefined database queries to be listed. The results of the queries can be used to go into the supply area. For further explanations, go to Object Search (Page 144).

Create > ...

The “Create” submenu contains functions that can be used to create different objects in the graphic or in the database and link them to one another. For example, the functions can be used to set construction points and nodes, create pipes, place built-in parts in pipes, etc.

The “Create” submenu is only available if a job is open.

The functions found in the “Create” submenu depend on the object class model created in ***sisNET***, so they are specific to each company. This chapter, therefore, only describes the menu items which are identical in every installation (set CPs and nodes, and create dimensionings). The main procedure and the menus which are involved in creating objects are also described.

Basically, when you are creating and editing sisNET objects, you are supported by AccuSnap. This means that snapping geometries has become context-sensitive. This means that the user can only snap geometries which are permitted for the specific operation.

In each case, the “Create” popup menu displays the names of the object classes which have been defined in the underlying data mode.

Task:	Select from the “Create” menu:
This function is used to place construction points in the drawing	Construction point (Page 60)
This function is used to create nodes	Node (Page 60)
This function is used to dimension existing points or generate construction points with dimensioning	Dimensioning (Page 60)
A special module for creating stretches of cabling and create the relations to bus bars	Create stretches of cabling using the KSTR user module (Page 66)
A module for creating route cross sections in the ELECTRICITY category	Creating route cross sections (Page 67)
A function for creating any objects in an object class	Create an object in a class (Page 73)
Special methods are available for creating line-shaped objects	Special methods for creating line-shaped objects (Page 77)

Construction point

The “Construction point” function is used to set construction points in the drawing file which are then required later on to design pipes or other objects.

When the function is selected, the ***sisNET*** command window displays the prompt “Enter point”, and construction can be entered anywhere in the drawing file with the mouse’s Data button. Construction points only have a graphical appearance, but no actual data record in the database.

Node

The “Node” function is used to create nodes (and construction points) which are required later on to design other objects. In line with the object class model created in ***sisNET***, the nodes may have an actual data record and relations to other objects which are to be defined in the function workflow.

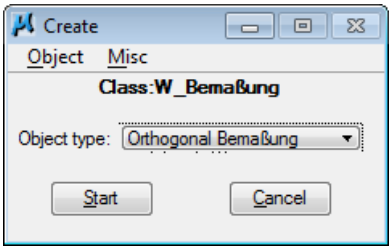
Dimensioning

The dimensioning function holds several dimensioning objects

- Orthogonal dimensioning (Orthogonal dimensioning (Page 60))
- CP with dimensioning (CP with dimensioning (Page 63)) and
- Dimension line (Dimension line (Page 63))
- Tie distance (Dialog Dimension Value für a tie distance (Page 66))

which are, in turn, partly made up of different parts.

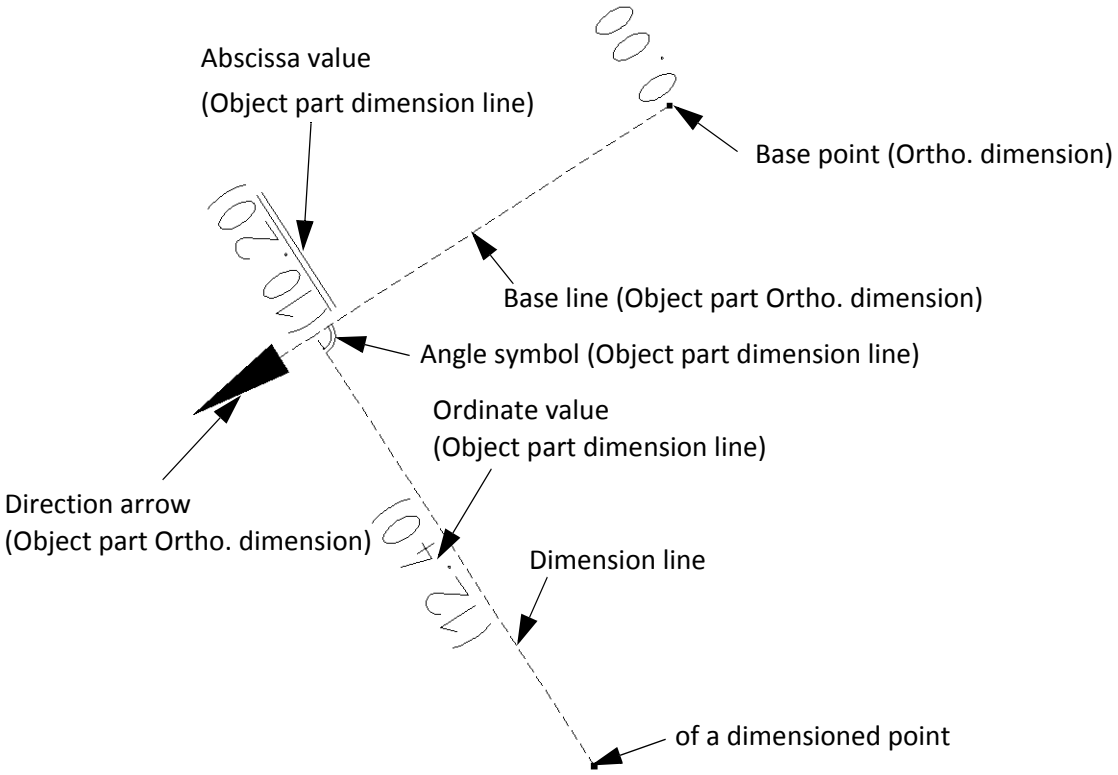
When the function is selected, the “Create” dialog box opens, in which the user can select the dimensioning object they want and which they can create with the “Start” button.



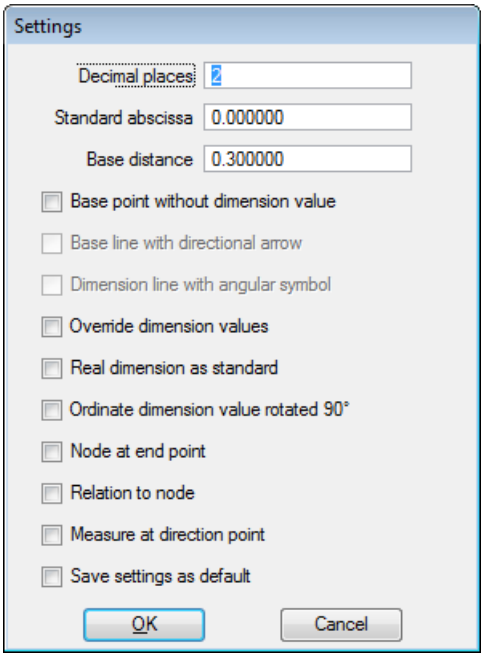
The procedure for the three dimensioning types is explained below.

Orthogonal dimensioning

The “Orthogonal dimensioning” function is used to orthogonally dimension any points in relation to a base point (the dimensioning source). When the function starts, the user is prompted to click the base point. Once the base point has been selected, the base line direction must be selected. This is done by clicking any other point. The base line is then the connection between the base point and the last point selected. When the base line has been specified, the user is prompted to click the point to be dimensioned. When the point to be dimensioned has been selected, other points can be clicked which are also to be dimensioned. If no other points are to be dimensioned, the Reset button cancels the action and the dimensioning of the selected points is finished.



So a dimensioning always consists of the base point, a base line and one or more dimension lines. The relevant terms are explained in the drawing above. The terms in brackets are the relevant object names in the ***sisNET*** category. The dimension values in brackets are parts of the dimension line. The brackets indicate that the system has calculated these dimension values and the user has not subsequently edited them. Dimension values in brackets are associative, i.e. if the base point is moved, the dimension values are automatically corrected. The user can specify the choice between associative and non-associative dimensioning, details about placing the dimension values, the number of decimal places, the distance the dimension values are from the dimensioning lines, etc., in a settings box. This is activated via Misc > Settings box > On.



The fields in the settings box mean the following:

- Decimal places: specifies the number of decimal places required for the dimension values.
- Standard abscissa the value entered specifies whether the abscissa value for the base point (source) has a value that is different to 0. If it does, the value specified is added to all the ordinate values as an offset.
- Base distance: the value entered specifies the distance the dimension value is from the dimension line in main units (usually m).
- Override dimension values: If this field is activated, once the dimensioning has been created the “Dimension Values” dialog box appears, which the user can use to specify whether, for the dimension values, he would prefer the CAD dimensions calculated by the system or his own dimensions (Dialog Dimension Value (Page 64)). This dialog opens for every new dimension line if the “Override dimension values” option is selected.
- Node at end point: If this field is activate, after the dimensioning has been created the “Warning” dialog box appears in which the user is asked whether a node is to be created or not in the point to be dimensioned. Selecting OK to confirm creates a node, while the “Cancel” button aborts the creating of a node. The “Warning” dialog box appears as many times as the dimensioning created has dimension lines. So, for every point dimensioned within a dimensioning, the user needs to decide separately whether a node is to be created in the dimensioned point or not.
- Relation to node: If, in generating the dimension line, a node, a node has been generated at the dimensioned point and this field is selected, a relation from the dimension line to this node is created.
- Measure at direction point: a dimension line is created for the direction point with the abscissa value of the direction point.

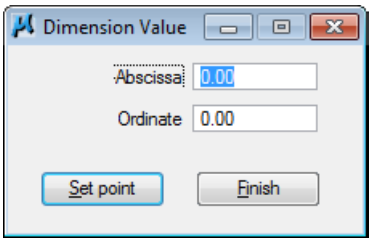
CP with dimensioning

The “CP with dimensioning” function is used to create construction points with dimensioning. When the function starts, the user is first of all prompted to click the base point of the dimensioning (source). Once the base point has been selected, the base line direction must be selected. This is done by clicking any other point. The base line is then the connection between the base point and the last point selected. When the base line has been specified, the “Dimension Value” dialog box appears in which the abscissa and ordinate distance of the construction point to be dimensioned are queried (Dialog Dimension Value (Page 63)).

When the coordinate values entered are confirmed by OK the user is prompted to click the page (relating to the base line) on which the construction point to be generated is to be set. After the page has been selected, the user can enter more coordinates for other construction points and select the related page for each one. If no more construction points are to be generated, the function is ended using the X button in the “Dimension Value” dialog box and the construction points that have been selected are generated with the relevant dimensioning.

Dialog Dimension Value

The abscissa and ordinate distance of the construction point to be generated from the base point of the orthogonal dimensioning can be entered in this dialog:



The abscissa value is the distance of the construction point from the base point in the direction of the base line in main units (usually m), while the ordinate value is the distance of the construction point to be generated from the base line in the selected abscissa value.

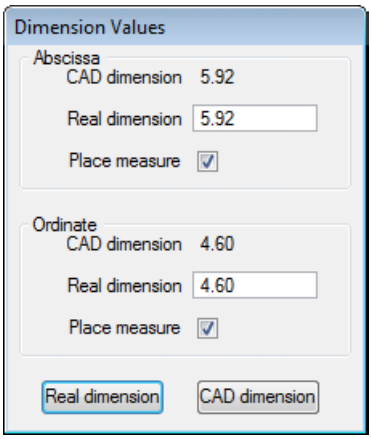
⚠ The dimensions for the construction points are created as real dimensions, so they are not adjusted when the base point is moved or the orthogonal dimension is rotated.

Dimension line

The “Dimension line” function is used to generate other dimension lines within an existing dimensioning. When the function is selected, the user is, first of all, prompted to click the point that is to be dimensioned anew and then click the base line of an existing dimensioning. The point selected is then dimensioned with the new dimension line.

Dialog Dimension Value

The user can use this dialog to specify whether, for the dimension values, he would prefer the CAD dimensions calculated by the system or his own dimensions.



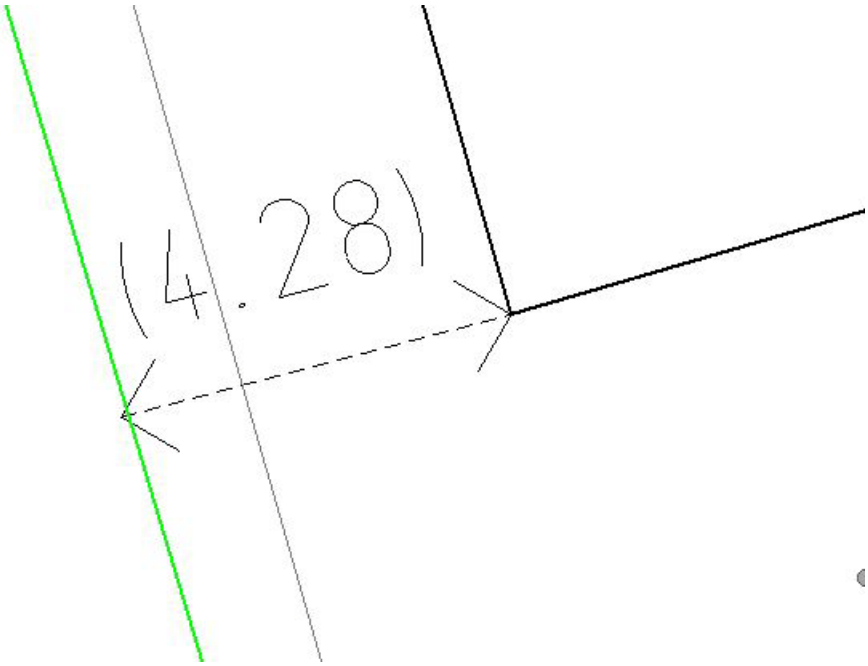
The user can enter their own values in the “Real dimension” input fields. If the user selects the “Real dimension” button, the values entered in the “Real dimension” input fields are taken, while if they select the “CAD dimension” button the CAD dimensions calculated from the design are adopted.

For each dimension line generated, users can decide seperately whether they wish to use the CAD dimension or their own dimension.

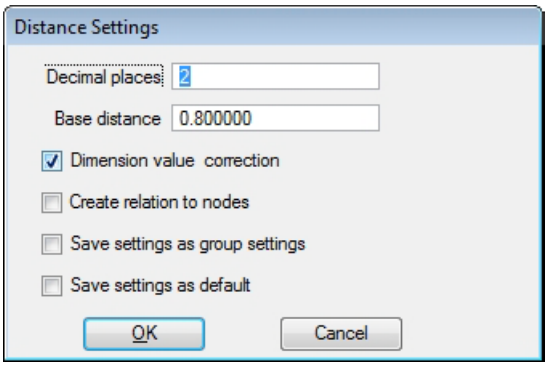
⚠ As was stated in the description of the orthogonal dimensioning, real dimensions are not associative, so they are not adjusted if the base point is moved or if the orthogonal dimensioning is rotated.

Tie distance

The “Tie distance” function is used to dimension the distance between any two points. When the function starts, the user is prompted to click the starting point of the tie distance and then the end point. After confirming the end point selected, the “Define Dimension Value” dialog opens if the “Real dimension” option is selected. Here the user can correct the dimension value and have it output as a real dimension or as an associative CAD dimension. If the “Dimension value correction” option is not selected, the dimension value is generated as an associative CAD dimension. If the “Relation to node at the end points” option is selected, relations are also generated to nodes at the start and end point of the tie distance (if there) when the new tie distance is generated.



The drawing above shows a tie distance between a pipe and the corner of a building. The dimension value in brackets is part of the dimension line. The brackets indicate that the system has calculated this dimension value and the user has not subsequently edited it. Dimension values in brackets are associative, i.e. if one of the two end points of the tie distance is moved, this dimension value is automatically corrected. The user can specify the choice between associative and non-associative dimensioning, the number of decimal places and the distance the dimension value is from the dimensioning line in the settings box for the tie distance.



The fields in the settings box mean the following:

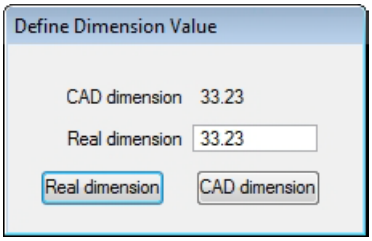
- Decimal places: specifies the number of decimal places required for the dimension values.
- Base distance: the value entered specifies the distance the dimension value is from the dimension line in main units (usually m).
- Override dimension values if this field is activated, once the dimensioning has been created the “Define Dimension Value” dialog box appears, which the user can use to specify whether, for the dimension value, he would prefer to have the CAD dimension calculated by the system entered, or his own dimension (e.g. from an existing plan) (See “Dialog Dimension Value für a tie distance” Page 66).

- Generate relations to nodes at the end points: if there is a node at the end points of the tie distance, the tie distance creates a relation to this node (if this relation is permitted in the category).
- Save settings as group settings: if this option is activated, the settings for the current object type are saved for the user's user group.

Save settings as default: if this option is activated, the settings for the current object type are saved as general default settings.

Dialog Dimension Value für a tie distance

In this dialog, the user can correct the dimension value for the tie distance that is currently being created:



The user can enter their own value in the "Real dimension" input field. If the user selects the "Real dimension" button, the value entered in the "Real dimension" input field is taken, while if they select the "CAD dimension" button the CAD dimension calculated from the design is adopted.

⚠ As was stated in the description of the tie distance, real dimensions are not associative, so they are not adjusted if the end points are moved.

Structurally engineered dimensioning

Document

Create stretches of cabling using the KSTR user module

In electricity categories, stretches of cabling can be generated using the KSTR user module. The cabling can be created using a guide created beforehand with the CABLE program, or placed flexibly. The user module can only be activated for the action ACTION_NEW_ELEM and the action times 11 (ACTION_TIME_CREATE_GRAFIC) and 12 (ACTION_TIME_CREATE_REL) (see also the guide to category configuration: The Hook user module).

The user module has 5 parameters, the meaning of which is determined by their order.

Parameter	Meaning
Object short name 1	Short name of the connection point object
Attribute name 1	Attribute name of the connection point number (connection point attribute)
Attribute name 2	Attribute name of the ID: Connection is allocated Y/N (connection point attribute)
Object short name 2	Short name of the bus bar object which this cable can be connected to
Attribute name 3	Attribute name for the number of connections on the bus bar (bus bar attribute)

The following example shows the selecting of the module in an application module resource file for two different action times.

```
{{0, OBJ_ACT_USER_MODUL, ACTION_NEW_ELEM},
"11, 0, 0, 0,kstr,ST_ASP APNR BELEGT NS_SAS AZA,"},
{{0, OBJ_ACT_USER_MODUL, ACTION_NEW_ELEM},
"12, 0, 0, 0,kstr,ST_ASP APNR BELEGT NS_SAS AZA,"},
```

Action time 11 is activated before the first point in the stretch of cable is clicked. The user is prompted to click a guide. If clicking a guide with the Reset button is rejected, the user has to click the first point in the cabling to be generated and action time 12 becomes active.

The user module is mainly used to generate the topologically correct connection of the cable to the bus bars if there are such bus bars at the beginning or end of a stretch of cable. If the stretches of cable are being generated using special guides (CABLE), these guides must intersect the bus bars so that connection points can be generated on the bus bars. If the cables are generated directly, without using guides, the bus bars that are to be connected need to be clicked with the Tentative button (snap mode: next point) so that connection points can be generated on the bus bar.

Creating route cross sections

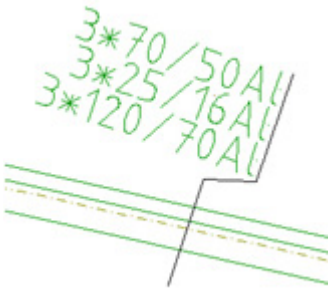
The route cross section object is a module used to display attribute values for the pipe objects in a route. This module is particularly useful on routes where a lot of pipes have been laid closely together (e.g. in the electricity segment), because the distance between these pipes is usually not enough to be able to label each individual pipe with the annotation function. Using the route cross section, the annotations for all the pipes can then be placed together anywhere outside the spaces between the pipes.

After starting the module, first of all a line is drawn at right angles to the route of which a cross section is to be generated. To do this, the user first clicks the “first point in the cross section line”, then the “second point in the cross section line” and then the cross section can still be moved sideways.

The way the route cross section looks depends on the mode defined in the schema (mode = SWB, LEONIS, LEONIS2 or interactive).

Mode=SWB

With this, the cable annotations are created in the sequence they occur in the route. The fact that you can only see a line beneath the text but not a symbol frame is due to the modifying of the TRW cell.

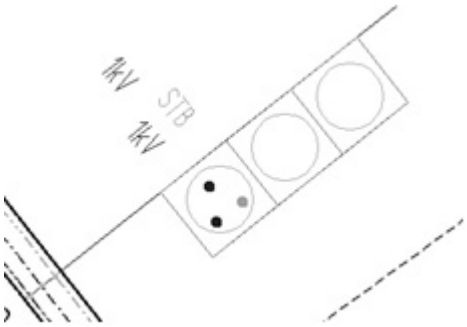


Mode=LEONIS

Besides the annotations, this also displays rectangles for the route positions and larger representations of each cable. The display is chosen so that it suffices for an SQD export for a LEONIS electricity application module in SICAD.

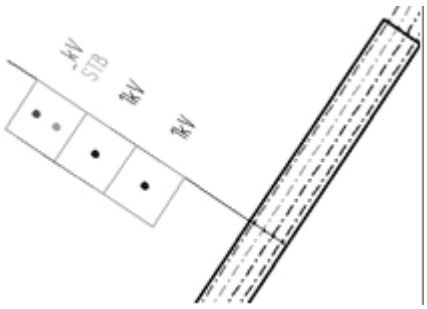
The entering of the cables in the route does not usually equate to their real positions. However, the display in the route cross section should be the same as the position, which is why the user needs to define the position of the cable cross section symbols using attributes for the cable object. With this, up to 3 cables can go in the same position.

The size of the route cross section must be queried via the application module when it is being created.



Mode=LEONIS2

The appearance is similar to that of the route cross section in LEONIS mode, but SICAD-specific elements are left out. The cables are not given inflexion points at their intersection with the cross section line, and neither are any nodes created there.

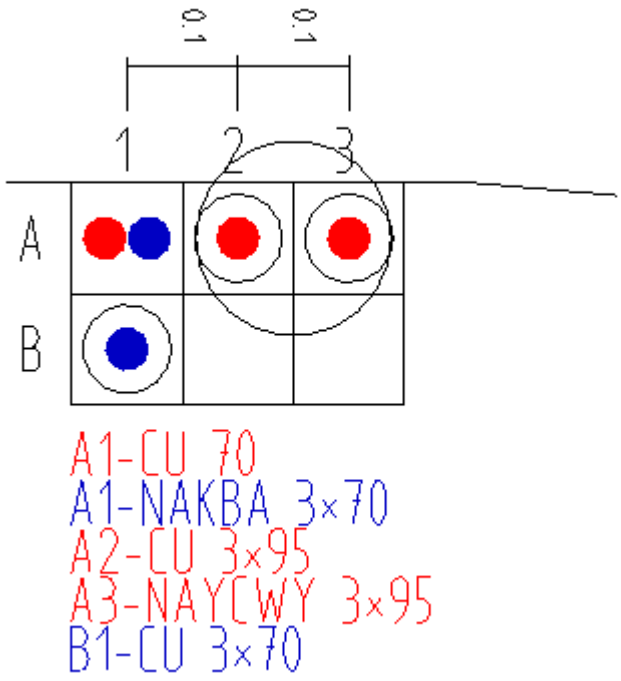


Mode=interactive

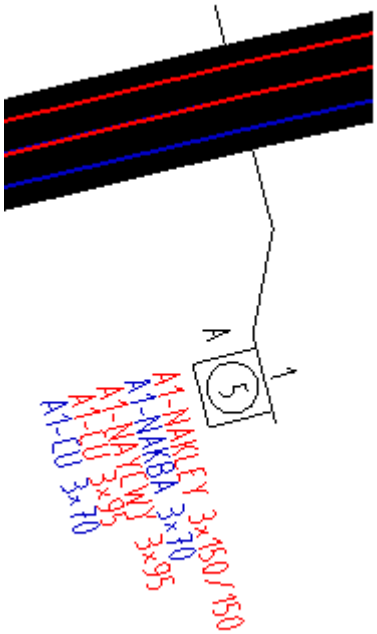
Like LEONIS2, but the position of the cross section objects is interactively queried.

In “interactive” mode there are, depending on the configuration in the application module, a large number of variants of the route cross section which are listed here by way of example.

E.g. conduits can be displayed within conduits:

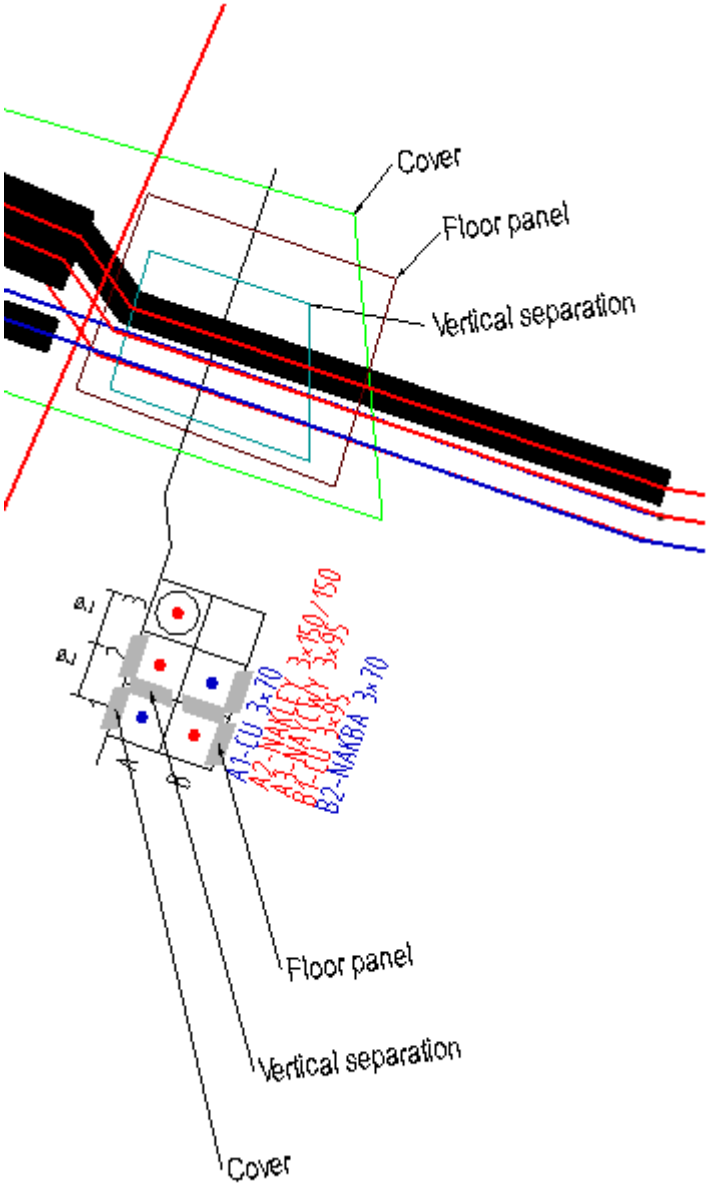


Another feature is that the cable cross sections whose cables are inside a conduit are now only displayed as a number in the conduit cross section if the number exceeds a particular limit.



Other object types can be included when generating the route cross section:

- “Cover panel”
- “Cover panel cross-section”
- “Vertical separation”
- “Separation cross-section”
- “Floor panels”
- “Floor panel cross-section”

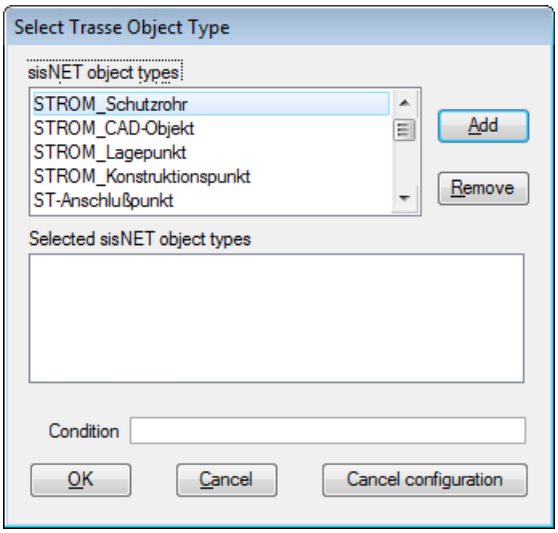


The graphic representations of the real world objects are spaces, while cells are used for the display in the route cross section.

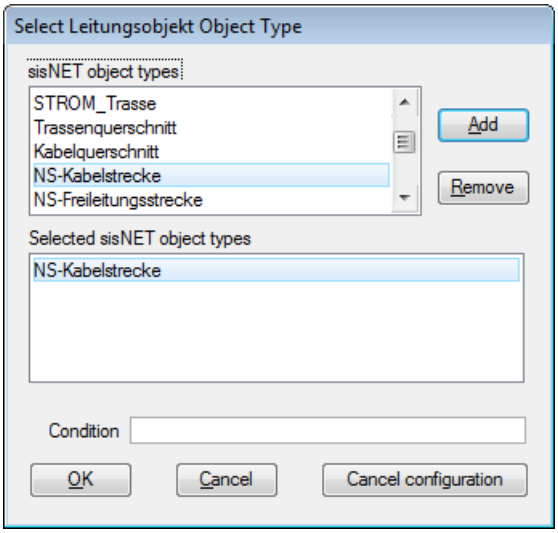
Configuring the modules

For the route cross section to work properly, the module has to be configured. When the module is selected for the first time in an application module, the configuration program begins automatically. In this, the user has to specify which objects in the application module are the route, the pipe objects and the cable cross-section object. The application module objects are assigned to these object types using a selection box in which the user selects the relevant application module objects and uses the “Add” button to add them to the current object type in the configuration.

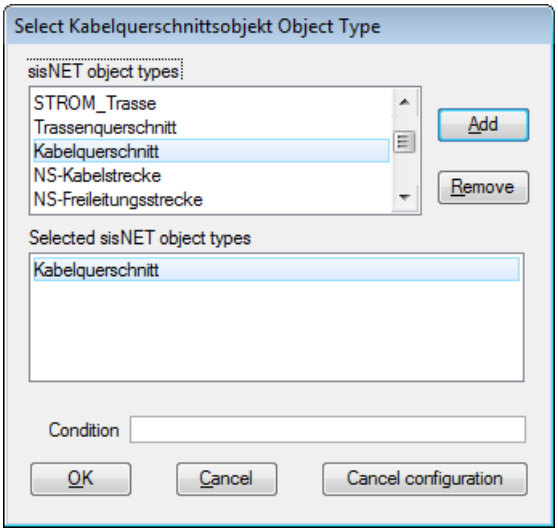
Definition of the route object:



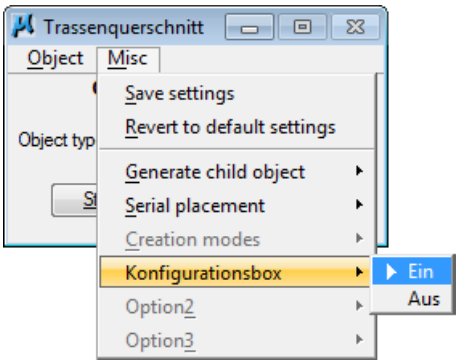
Definition of the pipe objects:



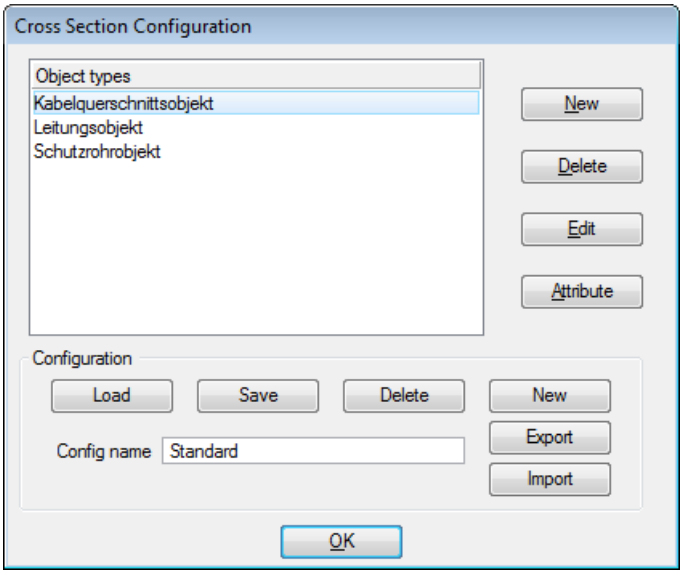
Definition of the cable cross section object:



If a configuration is subsequently changed, the configuration box for the route cross section has to be switched on in the Create box.



Then, when the Start button is selected, the configuration box opens and can be used to add to, change or delete the settings made previously.

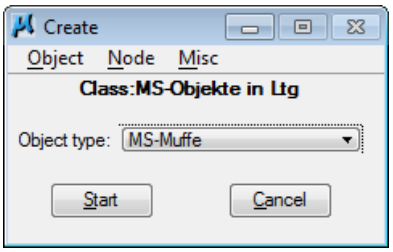


Create an object in a class

The “Create” menu enables you to create all the objects defined in the selected category. Because the objects that are to be created in this way depend on the company-specific application module, the menu items which appear under the “Create” menu also differ accordingly. However, the flow of the program’s individual functions and the systematic structuring of the menu is the same for all the application modules.

The individual menu entries in the “Create” menu are derived from the object classes defined in the category selected. I.e. there is an entry in the menu for every object class. When a menu item is selected, a dialog box opens in which the user has to select an object that is to be created.

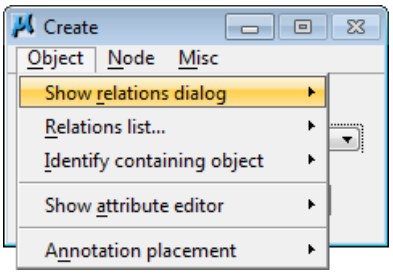
“Create” dialog box



The “Create” dialog box contains several pulldown menus which can be used to make different settings.

The pulldown menu “Obj. Settings”

This menu contains various settings which can be taken into account when creating an object.



Obj. Settings > Relation box > On

When an object is being created, the relevant relation box for the selected object class opens (See “Dialog box Show relations dialog” Page 84). After selecting an object, the Data button on the mouse can then be used to select a relevant element (e.g. street name, address, etc.) to which the object is to have a relation.

Obj. Settings > Relation box > Off

The relation box described above does not open when an object is being created.

Obj. Settings > Relationship list > On

When an object is being created, the relationship list for the relevant object opens (See “Dialog box Relations <Object name>” Page 83). It lists all the relationships created from the object.

Obj. Settings > Relationship list > On

The relation box described above does not open when an object is being created.

Obj. Settings > Identify containing object > auto

When an object is being created, an automatic search is run for objects to which a relationship is to be created. E.g. the relationship to a manhole can be created if there is a stop point in it.

Obj. Settings > Identify containing object > man

When an object is being created, the relationships to sensitive objects (see above) are not created automatically, but rather, the user defines them manually.

Obj. Settings > Form > On

After an object has been created in the graphic, the data input mask in which the relevant fields (attributes) are to be populated with real values for the object, opens immediately (See “Data input mask” Page 78).

Obj. Settings > Form > Off

The form for entering the real attribute values for the object does not open. The values for the object created beforehand are automatically applied, or the current values for e.g. the coordinates are applied.

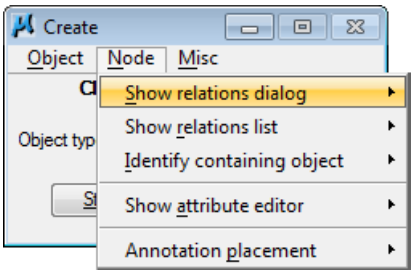
Obj. Settings > Annotations > On

When you are creating an object, you have the option of generating an annotation for the object in the same work step. If the “Annotations > On” option is selected, the selection box for annotations appears at the relevant moment.

Obj. Settings > Annotations > Off

If the “Annotations > Off” option is selected, no annotations are generated while the object is being created. However, you can create an annotation afterwards using ***sisNET***’s “Place text” tool.

The “Node settings” pulldown menu



When many objects are being created, a node is also generated in the job at the same time. You can use this pulldown menu to select the following settings for the nodes generated in the job.

Node settings > Show relations dialog > On

When a node is being created, the relation box for nodes opens. After selecting a node type, the Data button on the mouse can then be used to select a relevant element (e.g. street name, address, etc.) to which the node is to have a relation.

Node settings > Show relations dialog > Off

The relation box described above does not open when a node is being created.

Node settings > Relationship list for node > On

When a node is being created, the relations list for nodes opens. The attributes shown in the relations list depend on the application module defined.

Node settings > Relationship list for node > Off

The relations list described above does not open when a node is being created.

Node settings > Identify containing object > auto

When a node is being created, an automatic search is run for objects to which a relationship is to be created. E.g. the relationship to a manhole can be created if there is a node in it.

Node settings > Identify containing object > man

When a node is being created, the relationships to sensitive objects (see above) are not created automatically, but rather, the user defines them manually.

Node settings > Show attribute editor > On

After a node has been created in the graphic, the form in which the relevant fields (attributes) are to be populated with real values for the node opens immediately.

Node settings > Show attribute editor > Off

The form for entering the real attribute values for the node does not open. The values for the node created beforehand are automatically applied, or the current values for e.g. the coordinates are applied.

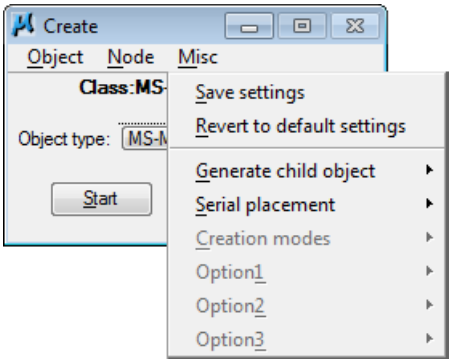
Node settings > Annotation placement > On

When you are creating a node, you have the option of generating an annotation for the node in the same work step. If the “Annotations > On” option is selected, the selection box for annotations appears at the relevant moment.

Node settings > Annotation placement > Off

If the “Annotations > Off” option is selected, no annotations are generated while the node is being created. However, you can create an annotation afterwards using the toolbox’s “Place text” function (See “sisNET Tools > Annotation” Page 94).

The “Misc” pulldown menu



The “Misc” pulldown menu provides the following possible settings in the Create box:

Misc > Save settings

When this menu item is selected, all the settings made in the pulldown menu are saved in a user-specific file objxxx.yy and they remain in effect until the user deletes them again.

Misc > Revert to default settings

When this menu item is selected, the settings a particular user has saved for this Create box are deleted again and the default settings defined in the application module are applied.

Misc > Generate child object > None

If the intention for a particular object is, in the application module, that a particular other child object is generated when this object is being generated, the user can switch this option off by selecting this menu item.

Misc > Generate child object > <Child object name>

If the intention for a particular object is, in the application module, that a particular other child object is generated when this object is being generated, the long name of the planned child object appears here.

If there are non-graphic objects in the application module which might have a relation to the object which is being created, the long names of these objects also appear here and they can be created at the same time as the main object by selecting this menu item.

Misc > Linking... > On

If the “Linking > On” option is selected, as soon as the first object has been created the Create function for this object automatically restarts and more objects of this type can be generated, until the function is cancelled with the mouse’s Reset button.

Misc > Linking... > Off

If the “Linking > Off” option is selected, the Create function is cancelled once the creating of the first object is complete. If additional objects of this type are then to be created, the Create function will need to be restarted.

The default setting for whether linking is switched on or off when an object is being created is specified in the application module.

Misc > Creation modes

If different creation modes are intended (OBJ_ACTION_ERZGMODUS) for the object to be created in the application module, the intended creation modes (Normal, Import geometry, etc.) appear here and the user can select them.

Misc > Option 1, 2 OR 3

If other options for generating objects are intended (for example, when creating objects via user modules), these options can be selected here.

Object

If the class selected in the “Create” menu contains more than one object type, the user can select the object type they want from the object types offered in the pulldown list.

If there are no selection options, i.e. the pulldown list only holds one element, the function to create this object type starts immediately. Depending on the type of object to be created (graphic or non-graphic) and the relations defined in the application module, the ***sisNET*** message line now prompts the user to do the other actions required.

Start

If there was more than one object type in the class selected in the “Create” menu, after selecting the object type they want from the pulldown menu the user must click the “Start” button to begin the function for creating the required object.

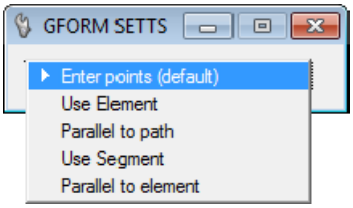
Cancel

If the user selects the “Cancel” button, the function is aborted and no new elements/ objects are created.

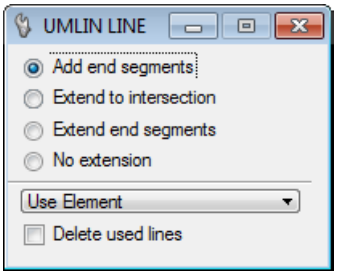
Special methods for creating line-shaped objects

Special methods are available for creating line-shaped objects which can greatly simplify the designing of such objects in certain cases. For example, in practice it is often the case that pipes are laid at a particular distance parallel to the kerb. ***sisNET*** now provides a suitable method which enables such pipes to be created with a single mouse click without having to laboriously and individually design each of the pipe’s inflexion points.

To be able to select the required methods for creating such line-shaped objects, another box for selecting the methods appears in addition to the usual Create box.



Now, using the selection button provided in this box, the user can select different methods for creating the line-shaped object. Some of the possible methods can also be combined with different variants. Another dialog box opens which the user can use to select the required variants.



The following methods are available

1. Start points (default method)
   This method is the default method, in which mouse clicks specify the startpoint, endpoint and all the intermediary points of the line object.

2. Parallel to path
   Selecting this method generates the line-shaped object in parallel to an existing polyline. It makes no difference here whether the polyline is a ***sisNET*** object or a pure CAD graphic. First of all, the user is prompted to click on the startpoint of the required polyline, and then on the required endpoint. After selecting the endpoint, the path selected appears in the specified highlight colour and the user has to confirm this path with the Data button or use the Reset button to have the system search for other possible paths between the startpoint and the endpoint. When the displayed path

has been confirmed, the object that is to be created appears at the cursor and can be generated at a required distance in parallel to the selected path. The required distance can either be fixed by checking the “Distance” selection field and entering a value in the input field, or specified flexibly using the mouse. There are various variants of this method which can be selected by checking the relevant selection field. The following variants are possible

- Add end segments: After the object has been generated, the endpoints remain hanging on the cursor and can be extended as the user wishes. If no extension is required, the Reset button can be used to cancel the process.
- Extend to intersection This option enables, in the case of an object generated in parallel to an existing line, the last segment of this object to be extended, with a freely selectable other line, up to an imaginary intersection.
- Extend end segments: This option enables an object generated in parallel to an existing line to be extended as far as the user wishes beyond the endpoints in the direction of the end segments.
- No extension: This option generates the object in parallel to the selected line with the same length as the source line, and no extension is planned while it is being created.

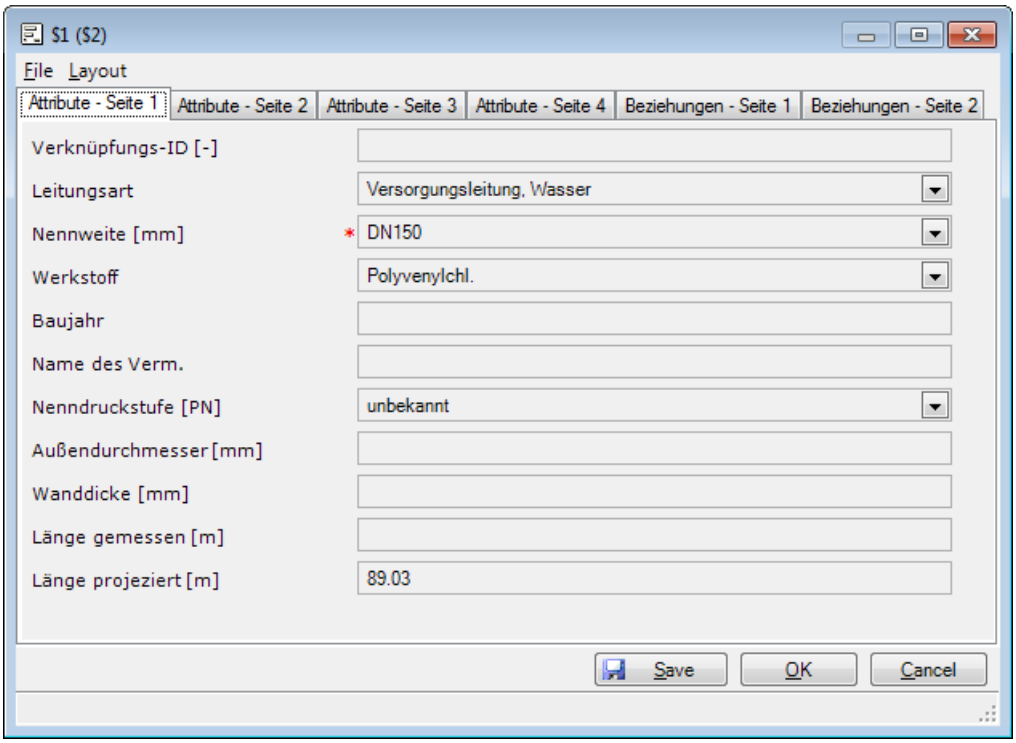
3. Use Element
   With this method, the user is prompted to click a line-shaped element which is then used to generate the required line-shaped object. This method can also be combined with the variants outlined for method 2.
4. Use Segment
   This method is like method 3 except that, instead of the element (object) that has been clicked, only the segment of this line (between 2 inflexion points) that is currently clicked is used to generate the object. This method can also be combined with the variants outlined for method 2.
5. Parallel to element
   This method is like method 3 except that the object is not generated superimposed on the selected element, but in parallel to it at a definable distance. This method can also be combined with the variants outlined for method 2.

sisNET saves the choice of a particular method in the object resource file objxxx.yy so that every method selected in a particular category for a particular object by a particular user remains active until that user explicitly selects a different method in this category for this object.

Data input mask

When creating and when changing an object’s attribute values, during the course of the action an input mask (or object editor) opens in which the relevant real values for the object can be entered. Note, here, that the mandatory attributes (red asterisk) have to be entered while the optional attributes need not be. After entering the relevant attribute values and confirming the dialog box with the “OK” or “Save” button, the attribute values entered are saved to the database.

We shall now explain the structure of the data input box and how it works.



The number and name of the tabs in the data input mask differ according to the category and the selected object type. However, the basic layout remains the same.

The different tabs divide the overview information that is to be entered into separate areas. Each tab provides a number of attributes for which the values either need to typed in manually or selected using a list of options.

Any changes made can be saved using “Save”, in which case the window does not close. “Close and save” and “OK” also save the entries but the window then closes automatically. “Cancel” discards the changes and the window closes with no save procedure.

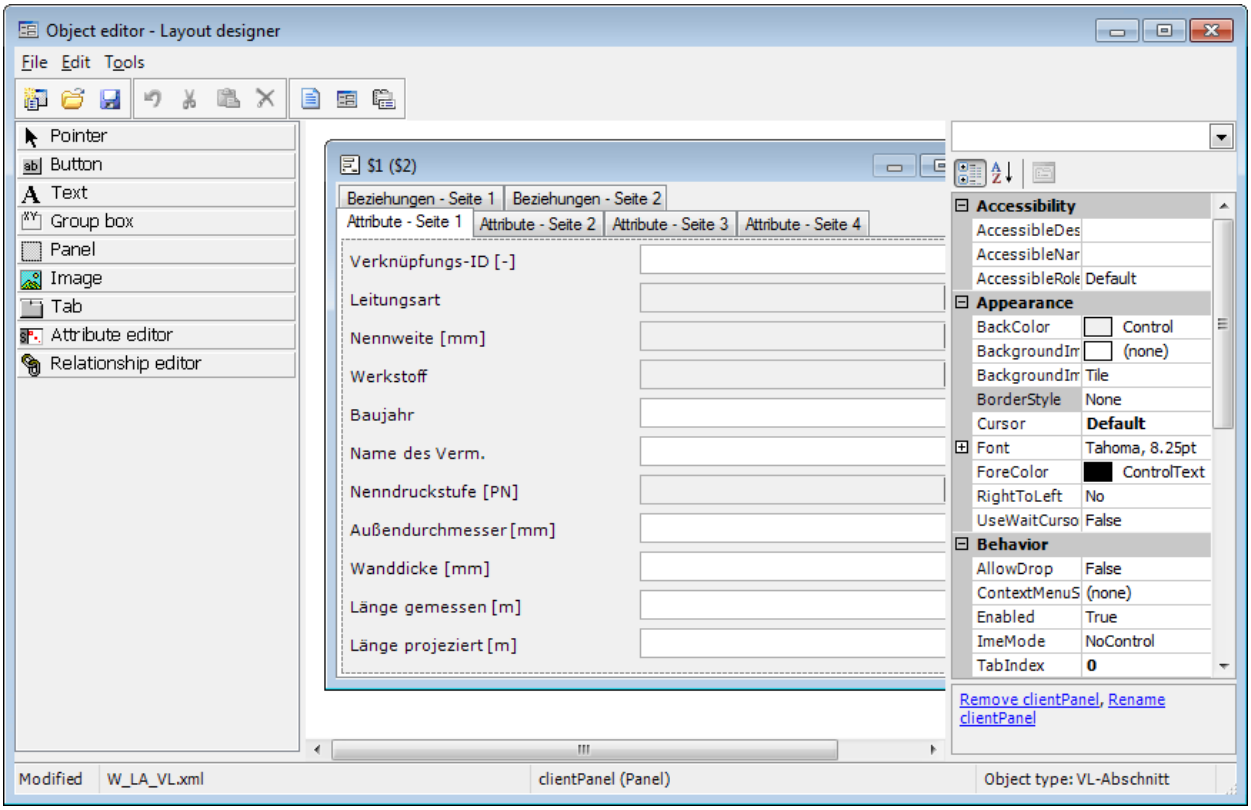
File

The “File” menu provides the following functions: “Save”, “Cancel” and “Close and Save”. These equate to the three buttons “Save”, “OK” and “Cancel” in the lower right of the window.

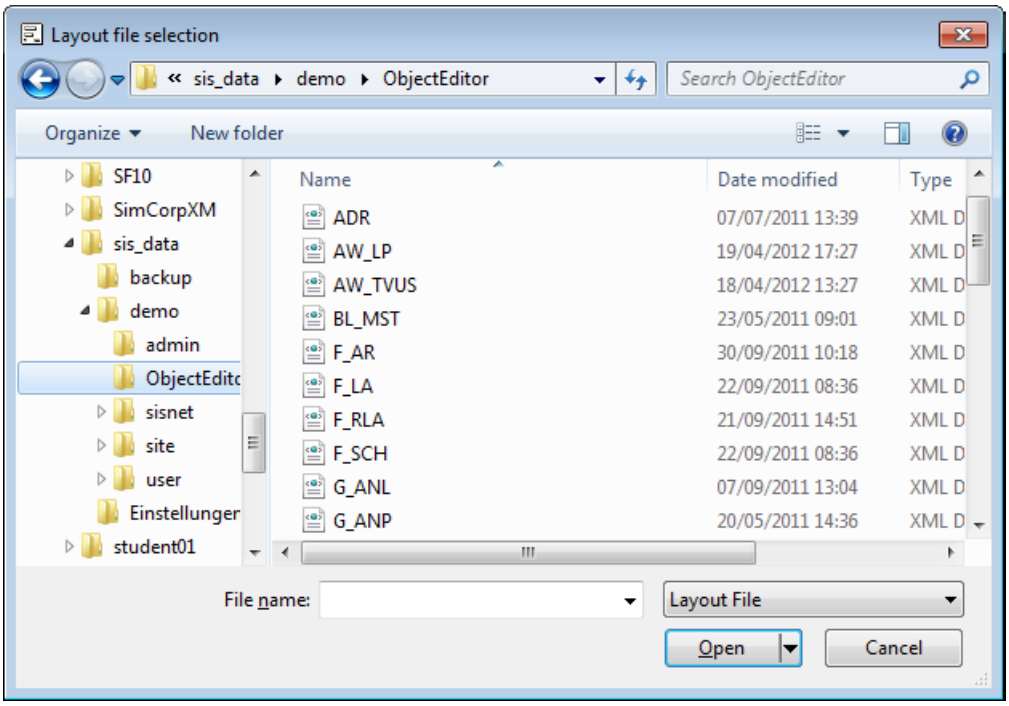
Layout

The “Layout” menu provides access to three selection options: “Edit current layout”, “Edit other layout” and “Select layout family”.

The appearance of the currently opened file input mask can be changed using the “Edit current layout” function. When the function is clicked, the “Object editor - Layout designer” window opens.



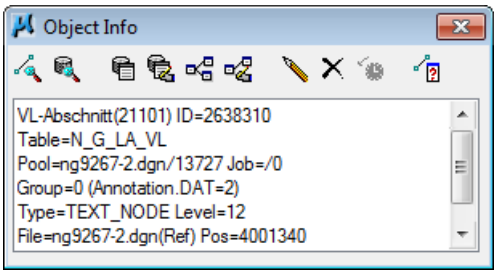
The appearance of layouts that have been saved for file input masks can be changed using the “Edit other layout” function. When the function is clicked, the “Layout file selection” window opens. The default path points to the ObjectEditor directory in the project folder. The available layout files (*.xml) can be selected there. However, the only layout files that can be edited are those which match the same object type as that in the open data input mask. “Open” opens the selected layout file for editing, while “Cancel” aborts the action.



The “Select layout family” function enables a layout family in the same way as with the “Edit other layout” function.

Object info

Selecting this function opens a dialog box called “Object Info”. This dialog box enables users to view, change and delete information about the individual elements held as objects in the database. Aswell as the open dialog window, the prompt “Identify object!” appears in the status row in the ***sisNET*** command window. Then, when an object is clicked, the information associated with the selected object displays in the dialog box.



The dialog box has a number of function buttons which will now be explained.

Select element in map

Selecting the “Select element in map” button enables individual elements to be selected. The selected elements display in the selected highlight colour. At this point, the relevant buttons in the “Object Info” dialog box are activated and can be selected. After selecting the “Select element in map” button, the status message “Identify object!” also appears in the ***sisNET*** command window.

Search object in the database

Selecting the “Search object in the database” button opens the “Database Selection” dialog box which the user can use to search the database for those objects that have no graphic representation (See “Search... > via object” Page 55).

View attributes

Selecting the “View attributes” button displays the data input mask (See “Data input mask” Page 78) for the selected object, where all the database attributes for the selected object can be viewed.

Edit attributes

Selecting this button opens the same window as with the “View attributes” button. The difference between the two buttons is that, in the case of “View attributes”, the database attributes are only displayed, and cannot be changed. When the window is opened with the “Edit attributes” button, the database attributes may be retrospectively changed.

View relations

Selecting the “View relations” button displays all of the selected object’s existing relations in the box “Relations <Object name>” (See “Dialog box Relations <Object name>” Page 83).

Edit relations

Selecting the “Edit relations” button opens the relations list, as is the case with the “View relations” function. The relations box (See “Dialog box Show relations dialog” Page 84), where all the potential relationship objects for the current object are entered, also opens. This box can be used to create additional relations or delete existing ones.

Zoom to object geometry

Selecting the “Zoom to object geometry” button fits the selected object into the active view, i.e. the rectangular area is automatically selected so that the object displays at a sensible size (e.g. in the case of a pipe, the pipe from the startpoint to endpoint).

Delete object

Selecting the “Delete object” button deletes the selected object. This also deletes all the relations connected to the object and any objects (e.g. nodes), both in the graphic and in the database.

Object history

The object history first needs to be activated:

The history object type is activated in the application module via the line {{0,8,0},"N_[OBJEKTTYPKURZNAME]_HIST"}, where [OBJEKTTYPKURZNAME] needs to be replaced by the object’s short name.

If an object with an activated history is changed (graphic or object data), the history is created (object data and graphic) when the job is created with this object.

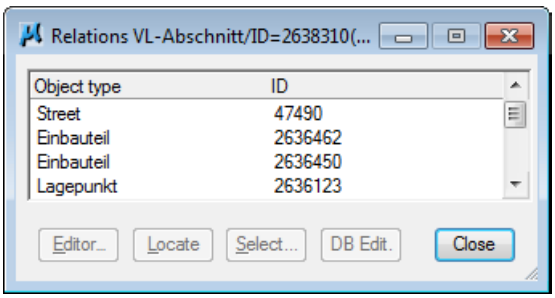
When the object history is selected, a selection list appears with all of the object’s stati throughout its lifetime. Only attributes that have been changed are displayed. So you can use this to temporarily display the object’s historic stati in a view.

Information about the object geometry

Selecting the “Information about the object geometry” button opens the MicroStation box for element information and displays the information about the selected graphic element which is customary in MicroStation (See “(MS)Information” Page 117).

Dialog box Relations <Object name>

This dialog box has two slightly different versions, depending on whether it was opened using the “View relations” button or “Edit relations”. In the “View relations” function it looks like this:



A scroll box in the window lists all the objects which have a relation to the selected object.

Object

Beneath the “Object” header there is a list of the long names of the objects found which have a relation with the selected object.

ID

Beneath the “ID” header is a list of the primary keys (mslink) of the objects found.

DB attributes

When the “DB attributes” button is selected the data input mask for the relation object selected with the scroll bar opens in “View mode”, which displays the attributes of the selected relation object (See “Data input mask” Page 78).

Graphic

Selecting the “Graphic” button the relation object selected with the scroll bar is “fitted into” a newly opened window and displayed.

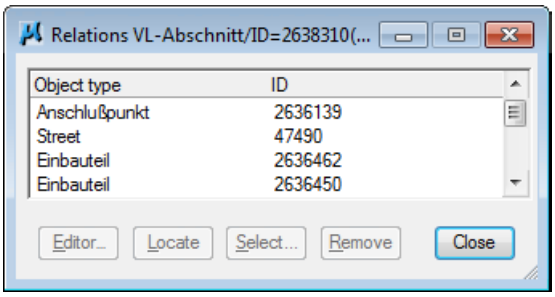
Selection Tool

This function copies the selected object straight to the selection tool (See “Selection” Page 131).

DB Edit

When the “DB Edit” button is selected the data input mask for the relation object selected with the scroll bar opens in “Update mode”, in which the attributes of the selected relation object are displayed and can be changed (See “Data input mask” Page 78).

In the “Change relations” function the relations list looks like this:



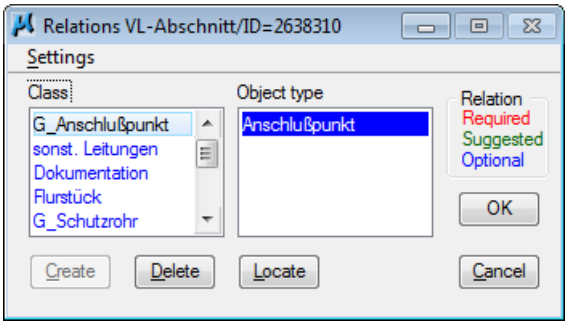
The “Delete” button is there instead of the “DB Edit” button. This can be used to delete the relation selected with the scroll bar.

Close

Selecting the “Close” button closes the relations list.

Dialog box Show relations dialog

The relations box opens for the relations list if the “Edit relations” function has been selected in the “Object Info” dialog box. The relations box lists all the objects that might potentially have a relation with the selected object.



Settings

The Settings menu has two settings:

- Relationship list: opens the “Relationship list” box if it is not yet open.
- Database selection...: opens the data record selection box (See “Search... > via object” Page 55) which can be used to select a specific relation object. This function is particularly useful if relations to non-graphic objects are to be created.

class

Beneath the “Class” header, in the scroll box, there is a list of the long names of the objects to which the current object can have a relation.

Objects

Beneath the “Objects” header there is a list of the long names of the objects to which the current object can have a relation.

Create

The “Create” button is used to create a new relation and is activated after a particular object type has been selected from the list of objects and either the relevant object has been clicked in the graphic or selected using the database selection. Clicking the button creates the relation and enters it into the relations list.

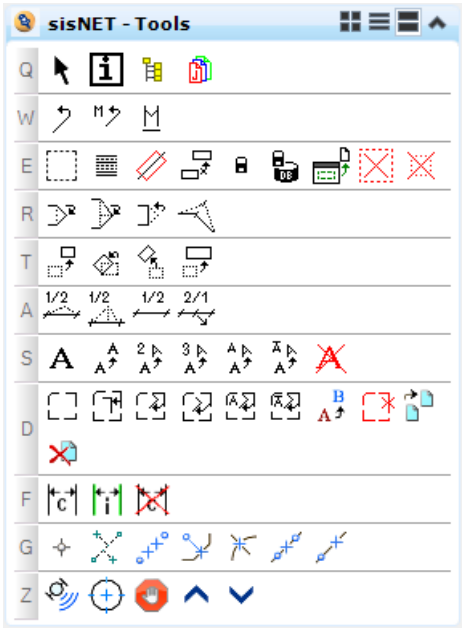
Delete

The “Delete” button is used to delete all the specific relations of the object type selected with the scroll bar in the objects list. In contrast to the Delete function in the relations list, therefore, multiple relations can be deleted simultaneously in this way.

Search

The “Search” button prompts the user to click a specific relation object in the graphic or, in the case of non-graphic relation objects, to select it from the record selection box (See “Search... > via object” Page 55). After selecting the required object, the relation to it can be created or deleted.

Tools (*sisNET* Tools)

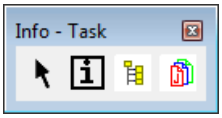


The former ***sisNET*** toolbox is available as a MicroStation taskbar in ***sisNET*** V8i and later. During a transitional period, the old toolbox can still be opened using this menu function. We shall now describe the functions of the ***sisNET*** tools that have been implemented as tasks. The ***sisNET*** tools contain different tasks for editing open jobs. E.g. this set of tools can be used to:

- create construction points
- undo activities
- insert, delete and move points in pipes
- move and rotate elements

- divide pipes
- edit annotations (create, move and delete)
- fence off multiple elements for simultaneous editing
- delete individual elements
- open the Job Manager
- open the Explorer

sisNET Tools > INFO



The Info toolbox is used to systematically query information about the graphic objects.

Element selection

Any command that is running is cancelled and the element selection is switched on.

The “Object Info box” button opens the “Object Info” dialog box and its effect is the same as selecting the menu “Edit > Object Info” (See “Object info” Page 81).

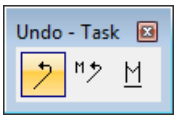
Explorer

This is used to display the *sisNET* Explorer.

Job Manager

This is used to display the Job Manager.

sisNET Tools > Undo



The “Undo” toolbox enables single or multiple activities to be revoked.

Undo

The “Undo” function enables the last action to be undone. The function is the same as the command “Edit > Previous view” (See “Undo” Page 54).

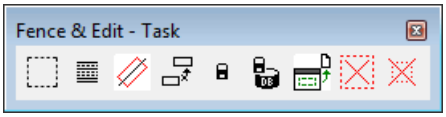
Undo to mark

The “Undo to mark” function enables multiple activities prior to a set mark to be undone simultaneously. This command is the same as the command “Undo to mark” (See “Undo to mark” Page 54).

Set undo mark

This function enables you to set an undo mark so that the “Undo to mark” function can be used to undo all the actions up until the undo mark set. This command is the same as the “Set undo mark” command (See “Set UNDO mark” Page 54).

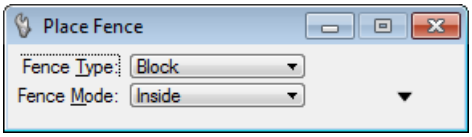
sisNET Tools > Fence



The “Fence” toolbox is used to edit (e.g. delete, move, etc.) different objects in the graphic all together and in a uniform way.

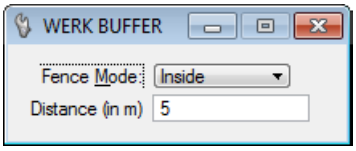
Fence Block

The “Fence Block” button is used to combine elements which are then all going to be edited (e.g. deleted, moved, etc.) together. Users are free to select the shape of this fence, e.g. block, polygon area, circle, etc., under Fence Type in the box that opens. The mouse is used to place the relevant fence in the drawing. The user is prompted to define the fence points in the drawing. At the same time, the user can select the required fence mode (inside, outside, overlapping, etc.) in the box.



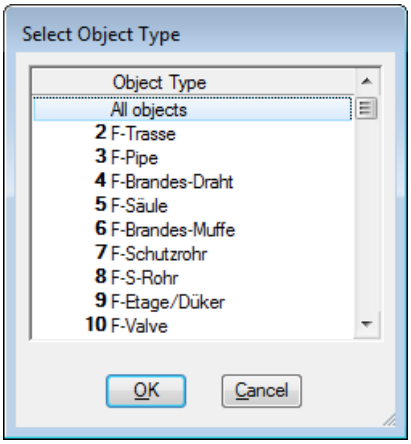
Create fence from buffer

The “Fence Block” button is used to combine elements which are then all going to be edited (e.g. deleted, moved, etc.) together. If an object in this mode is clicked, the fence is placed based on the buffer size that has been set. This can be specified in the box under “Distance (in m)”. The user is prompted to click an object in the drawing around which the relevant fence is to be placed. At the same time, the user can select the required fence mode (inside, outside, overlapping, etc.) in the box.



Select fence

The “Select fence” button is used to select objects and CAD elements, to be specified by the user, inside a fence. To select those objects and CAD elements which are to be selected inside the fence, the “Objects” dialog box opens, listing all the objects in those application modules with their long names. The scroll bar can be used to select one, more or all of these objects for the selection set.



The selected objects and elements are written to the selection table and can then be viewed and edited using the menu “Selection > Selection...” (See “Selection” Page 131).

Copy the geometry of the objects in the fence to a job

The “Copy the geometry of the object(s) in the fence to the Job” button is used to copy selected objects to the current job. The user is prompted to specify the source of the copy function by clicking in the drawing. The mouse can then be used to place the selected content. Pressing the Data button confirms the copy procedure. The user can now place as many other identical copies as they wish, or use the Reset button to select a new source. The database links and user links for the objects copied using this function are detached when they are copied so that the copied objects are pure CAD elements. If using original MicroStation copy function, the objects’ user link would always be copied and, depending on the copy mode specified, the database link might also be copied.

A further option is to keep the object connection. To prevent contradictions, all the object graphics become “parts” of your source object, i.e. main objects, annotations, transition cells of nodes become parts and, in turn, parts become new parts. All parts are identified by a new type identifier.

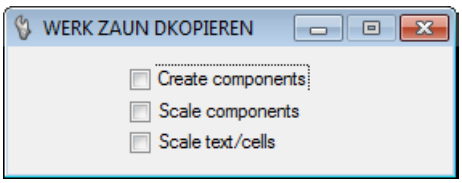
```
(Type: PART_FROM_FENCE_PART=14).
```

Benefits

- The tooltip will show the individual parts with their object attributes.
- Users can access the relevant object functions using the context-sensitive menu.
- If the object is deleted, these parts are deleted too.

Procedure:

The following function settings box needs to be noted for this:



The first option button determines whether the procedure is to work using the old method, i.e. generate simple CAD objects. Relevant parts are only also generated if the “Create components” box is checked. The second option enables scaling to be done in the fence’s target area. To enable precise positioning, we recommend that users select the lower left-hand corner of the fence as the move’s source point.

Changing the application module

The application module must be used to specify which object types are included in this operation. For this purpose we created the new action (ACTION_TEIL_FROM_FENCE=35). The 2 should be used as the action time.

```
{{0,17, ACTION_TEIL_FROM_FENCE},  "2, 8001, 0, 0,,,"},
```

Objects without this line will not be copied.

If the parts are still going to be changed, a macro can be used (as in the above line: 8001). The colour, level, line width and line style in the macro can be changed. When doing this, note that the new Part Type=14 is used as the second parameter, so that only the recently generated parts of this type are changed.

```
{{0,8001,0}, "MODOBJPARTBYTYPE(P_(),14,'FARBE',146)"},
```

Lock fence

The “Lock fence” button is used to lock the objects that have been fenced in. This copies the fenced in objects from the inventory plan to the current job so that they are locked to other editors.

Lock fence objects in the DB

The “Lock fence objects in the DB” button locks the objects within the fence into the object type tables in the database as though they had been copied to the job. However, the graphic of the objects is itself not copied to the job. The locking is done by discarding the job.

Copy graphics from the update view to new file

With this task, the content in the view can be exported as a DGN, DWG or DXF file for the reference update. There is also an option to place a fence within the update view. The fence is then incorporated in line with the fence mode. However, the exported graphics are not clipped either at the edge of the view or at the border of the fence (except if the mode is set to Clip). The exported graphics have no ***sisNET*** links. When the tool is activated, the user is prompted to select a new file. If this file ends in DWG or DXF, it is not a DGN file that is generated but an AutoCAD DWG or DXF file. With any other file ending, a MicroStation v8 DGN file is generated. The task can also be addressed using the keyin “WERK ZAUN EXPORTIEREN <File name>“ in which <File name> is the optional, complete file name. If an existing file is specified, it is immediately overwritten.

Delete fence

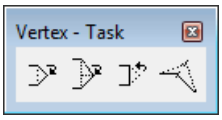
The “Delete fence” button is used to delete the objects selected by means of the fence. Before the delete process, a box opens listing all the elements which are within the fence. Here the user can, again, carefully select the area from which elements are to be deleted. A warning box opens and asks the user whether the selected objects really should be deleted.

Delete object

The “Delete object” function enables elements to be deleted. When this is done, the elements are not just deleted from the database but also from the drawing, in the process of which various plausibility checks are run and other objects may, if necessary, be automatically deleted or modified.

The elements to be deleted are selected and confirmed with the Data button on the mouse.

sisNET Tools > Point



The toolbox with the point-related tasks contains functions for inserting, deleting and panning points and for restoring constraints.

Insert point

The “Insert point” function is used to retrospectively insert inflexion points into line-shaped objects. “Identify Object” appears as a status message in the ***sisNET*** command window. A pipe can then be selected with the mouse. The breakpoint is inserted at the position where the pipe was clicked. The pipe then “hangs” from the cursor and the breakpoint can be placed with the Data button.

Insert point with projection

The “Insert point with projection” function enables points to be inserted into pipes retrospectively, with the original pipeline, in contrast to the “Insert point” task, not being changed. So the inflexion point that has been inserted is, initially, not visible. This task is the used if the original pipeline is to be kept but an inflexion point, for example, is required for placing a connection point. The inflexion point is inserted at the position where the pipe was clicked.

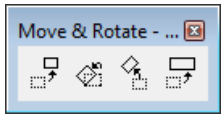
Delete point

You can use the “Delete point” function to remove unwanted inflexion points from line-shaped objects. When the function is selected, the prompt “click point to be deleted” appears in the ***sisNET*** command window, at which point the point to be deleted is selected with the Tentative button and accepted with the Data button. The graphic and database are then updated and modified accordingly.

Move point

The “Move point” function is used to move points on the pipe. First, the message “click point to be moved” appears in the status row of the ***sisNET*** command window. This point can be selected with the Tentative button and accepted with the Data button. The selected point then hangs from the cursor and can be placed afresh with the mouse. All the necessary information is then modfied in the database (e.g. the point’s coordinates, length of the pipe, etc.). This function can also be used if, e.g., a connection system lying on the pipe is to be moved. In such a case, along with the pipe point, the connection point and the connecting cables that extend from the connection system are also automatically modified too, and all the relevant database entries are updated.

sisNET Tools > Move & Rotate



The “Move & Rotate” toolbox for modifying elements includes functions for moving and rotating elements.

Move & Rotate

The “Move” function is used to move elements. First, the message “click object to be moved” appears in the status row of the *sisNET* command window. When the element required has been selected, it “hangs” from the cursor and the Data button can be used to place it afresh. All the necessary information is then also modfied in the database (e.g. coordinates of nodes, etc.).

With this function, note that the only elements that can be moved are those for which movement is not forbidden under the rules of the application module.

Rotate Object

The “Rotate Object” function is used to rotate elements. First, the message “click element to rotate” appears in the status row of the *sisNET* command window. When the element required has been selected, it “hangs” from the cursor and it can be rotated by moving the mouse. The required position is confirmed with the Data button. All the necessary information is then also modfied in the database (e.g. coordinates of nodes, etc.).

With this function, note that the only elements that can be rotated are those for which rotation is not forbidden under the rules of the application module.

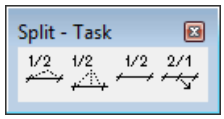
Rotate over 3 points

The “Rotate over 3 points” function is used to rotate elements. First, the message “click element to be rotated” appears in the status row of the *sisNET* command window. When the required element has been selected, the user needs to click to specify the rotation point. Now the selected element “hangs” from the cursor and can be rotated by moving the mouse. The required position is confirmed with the Data button. All the necessary information is then also modfied in the database (e.g. coordinates of nodes, etc.).

Scaling

This icon starts the scaling function. There are no special icons for annotations and parts. The element that is clicked is scaled. The scale factor is entered in the function settings box. An element that is clicked is immediately scaled. It only makes sense to use this tool for cells, texts and text nodes (sisNET object annotations). Before clicking the tool, the option also exists to use the MicroStation selection function to group a number of elements (including various sisNET objects) and then scale them with a single scale factor. For security purposes, this action needs to be confirmed with a data point.

sisNET Tools > Parts/Merge



The Divide functions are used to divide sections of pipe that have already been created. And the Merge function that the toolbox also provides can be used to merge neighbouring sections of pipe. There are various ways of dividing pipes:

- The pipe can be divided by inserting an additional inflexion point
- The pipe can be divided by inserting an inflexion point into the projection of the old pipe
- The pipe can be divided at an existing inflexion point

Split and bend

The “Split and bend” function is used to divide a pipe while, at the same time, inserting a new inflexion point. To do this, first of all, the user selects pipe which is to be split, and then the point in the pipe which is to be defined as the “separation point” (the new endpoint of one pipe and, at the same time, the new startpoint of the other pipe). When the selected elements (pipe and separation point) have been confirmed with the Data button, the pipe section is split into two pipe sections.

Parts with projection

In principle, the “Split along object” function has the same task as the “Split and bend” function. However, in contrast to splitting with no projection, in this method the division does not change the original pipeline. The two pipe sections which result have an identical path to the source section from which they were created.

Divide

The “Divide” function splits the pipe at an existing inflexion point. The user is prompted to click the pipe at the inflexion point. After confirming with the Data button, the pipe is split at the existing inflexion point.

Merge

The “Merge” function is used to merge two neighbouring pipe sections. After selecting this function, the user must click the pipe sections which are to be merged at their common node (merge point) and, if there is more than one object at this point, keep right-clicking until one of the two pipe sections which are to be merged is found and displayed in the highlight colour. After confirming with the left mouse button, the two pipe sections adjacent to one another at the merge point are merged into one pipe section. The pipes being merged need to have all their attribute values matching before the merge can take place. Otherwise an error message will appear indicating that the objects being merged have a different attribute value.

If a merge is to be possible despite differing values for particular attributes (this makes sense, e.g., with an attribute such as LAENGE for the length of the pipes), this attribute needs to be explicitly flagged for this action to be permitted in the application module.

Constraints

The “sisNET - Tools” taskbar contains 3 tools for working with objects which are subject to a parallel constraint.

The tools perform the following tasks:

- Create constraint relation
- Display constraint relation
- Remove constraint

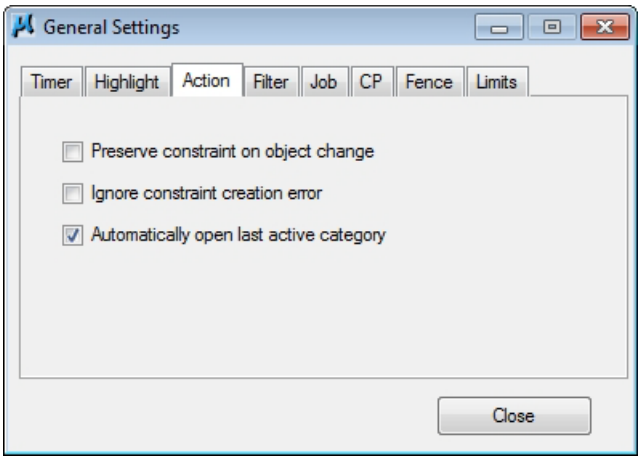
Numerous checks are run before attempting to create a constraint relation between objects. The result is shown in graphic form. Any errors are listed in the Messages Centre in the sub-section “Message details”. The following errors are identified:

- The objects involved have a different number of points
- Line-shaped objects have different directions
- Nodes in relation are missing at the ends of line-shaped objects
- Group numbers missing
- Group number incorrect
- Group numbers differ in the graphic and the database

The graphic display of the test is done using the graphic attributes as defined in the element templates (see below). The displays are kept until a new test or different primitive are started. If you wish to deactivate the display manually, you can select the “Highlight off” item in the context menu.

About creating and repairing

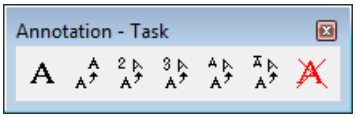
Objects with constraint relations are always repaired in two steps; the 1st step is to remove the existing constraints and the 2nd step is the attempt to create the constraint afresh. If the only error is that the direction of line-shaped objects differs, this is repaired automatically. A differing number of points cannot be repaired. The re-creation of the constraint is aborted. However, under certain conditions a constraint of line-shaped objects with a differing number of points can work correctly (e.g. when moving points). To enable this, you can check “Ignore constraint creation error” in the “General Settings”.



Before doing the create, you are warned once again that not everything is correct. You can still abort the creation of the constraint group at this point. If you continue, you need to study the result of any subsequent operation (e.g. moving or inserting points) carefully.

sisNET Tools > Annotation

The annotation functions enable you to generate and manipulate annotations e.g. for pipes, manholes, etc. There are functions for creating, moving, rotating and deleting an annotation.

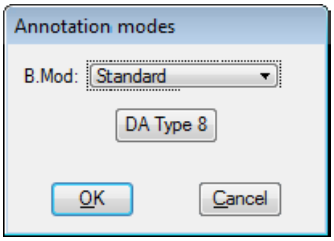


Place annotation

The “Place annotation” button is used to create an annotation for an existing object. In this case, the text is not manually entered with the keyboard, but generated automatically based on relevant attributes of the object types to be annotated. When the function is selected, first of all the message “Identify object!” appears in the status line of the *sisNET* command window. If more than one annotation mode is planned for the selected object, the “Annotation modes” dialog window opens after the element to be annotated has been selected. Appropriate forms of annotation can be selected in this window (See “The Annotation modes command window” Page 94). Once the appropriate annotation type has been selected, the left and right annotation points need to be selected with the mouse. The annotation is then fitted in between those two points, in line with the selected annotation mode (e.g. centred, left-justified, right-justified, etc.).

The Annotation modes command window

In this command window, different modes can be selected for the annotation type.



A.Mod: (Annotation modes)

Predefined annotation modes can be selected from this popup list. The main thing here is to specify which of the attribute values of the object to be annotated are going to be used. E.g. when the annotation type is LTG-ART/NW, attribute values for the attributes, pipe type and nominal width are used to annotate the pipe.

DA Type X

The label on this button is “dynamic” and matches the annotation mode set above.

OK

When the “OK” button is selected, the “Place annotation” function, as described above, is continued by entering the left and right annotation points.

Cancel

Selecting the “Cancel” button aborts the “Place annotation” function.

Move annotation

Selecting the “Move annotation” function enables the user to move annotations which have already been placed. The annotation element to be moved is selected with the mouse and can then be moved to any other position. Note, here, that the text that has been placed can be made up of more than one text element. If multiple text elements are to be moved at the same time, this can be done by, e.g., placing a fence around the relevant elements.

Rotate annotation over 2 points

Selecting the “Rotate annotation over 2 points” function enables the user to rotate annotations which have already been placed. The annotation element to be rotated is selected with the mouse and can then be rotated as required around its insertion point. Note, here, that the rotated text can be made up of more than one text element. If multiple text elements are to be rotated at the same time, this can be done by, e.g., placing a fence around the relevant elements. The angle of rotation is specified by clicking with the Data button on any point in the drawing.

Rotate annotation over 3 points

The “Rotate annotation over 3 points” function enables annotation elements to be rotated over 3 points. With this function, a rotation point also has to be entered after the element has been selected. The annotation element to be rotated is selected with the mouse and can then be rotated as required. Note, here, that the rotated text can be made up of more than one text element. If multiple text elements are to be rotated at the same time, this can be done by, e.g., placing a fence around the relevant elements. The angle of rotation is specified by clicking with the Data button on any point in the drawing.

Rotate annotation with an active angle

The “Rotate annotation with an active angle” function is used to rotate annotation elements around the active angle set in the methods box. This enables the user to rotate an annotation around a pre-defined angle.

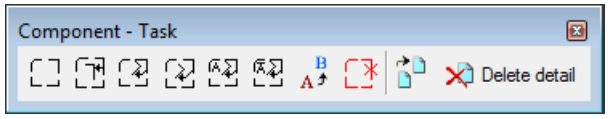
Rotate annotation to the active angle

The “Rotate annotation to the active angle” function is used to rotate annotation elements on the active angle set in the methods box. So if the active angle is set to 90° in the methods box, the annotation is aligned exactly vertical to the x-axis in the drawing file.

Delete text

The “Delete text” function is used to delete individual text elements by selecting them and accepting with the Data button.

sisNET Tools > Part



The Part toolbox is used to create and manipulate parts of a (main) object. Object parts have the same database record as the main object, but are differentiated from it through the user link. They can be regarded as a sort of child object to the main object. This enables the creating of complex graphic objects which do not merely consist of a graphic primitive (point, line, etc.). A prerequisite for the existence of parts of objects are special user modules and relevant entries in the resource files.

Place component

The “Place component” button is used to create a new part for an existing main object. The user is prompted to click the main object and confirm the selected object with the Data button.

Move part

The “Move component” button is used to move a part of an existing main object. The user is prompted to, firstly, click the required part and then click with the Data button at the moved object’s insertion point.

Rotate part over 2 points

The “Rotate part over 2 points” button is used to rotate a part around its insertion point. The user is prompted to, firstly, click the required part and then specify the angle of rotation.

Rotate part over 3 points

The “Rotate part over 3 points” button is used to rotate a part around a point of rotation that can be freely selected. The user is prompted to, firstly, click the required part, then specify the rotation point and, finally, the angle of rotation.

Rotate part with an active angle

The “Rotate part with an active angle” function is used to rotate parts around the active angle set in the methods box. This enables the user to rotate an annotation around a precisely pre-defined angle.

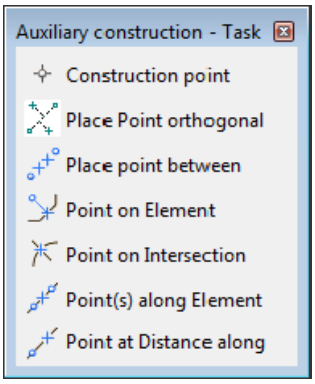
Rotate part to the active angle

The “Rotate part to the active angle” function is used to rotate parts on the active angle set in the methods box. So if the active angle is set to 90° in the methods box, the annotation is aligned exactly vertical to the x-axis in the drawing file.

Delete part

The “Delete part” button is used to delete a part of an existing main object. The user is prompted to, firstly, click the required part and confirm their choice with the Data button or reject it with the Reset button.

sisNET Tools - Help construction



The “CP” toolbox is used to set construction points based on different methods.

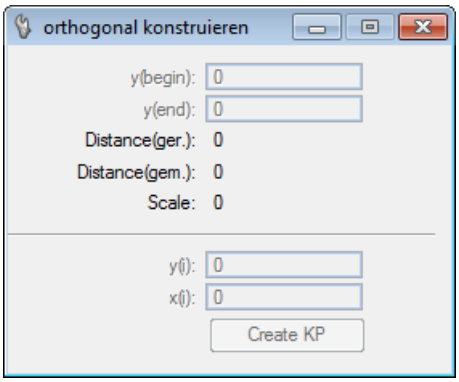
Set construction points

The “Construction point” function is used to place construction points in the drawing which are then used later on for designing pipes, house connections or nodes. When the function is selected the status message “Select node!” appears in the ***sisNET*** command window. The user can then set construction points wherever they wish.

Design orthogonal construction points

The “Design orthogonal construction points” function is used to generate construction points by entering dimensions in a rotated local coordinate system. With this type of design, the y-axis in a local coordinate system is defined using a measurement line y(start) - y(end). Then new points, which are known by their coordinates in the local system (xi, yi), are passed to the higher-level coordinate system (X, Y) and a construction point is generated at that point.

When the function is selected, the “Design orthogonal” dialog box opens for entering the local coordinates.



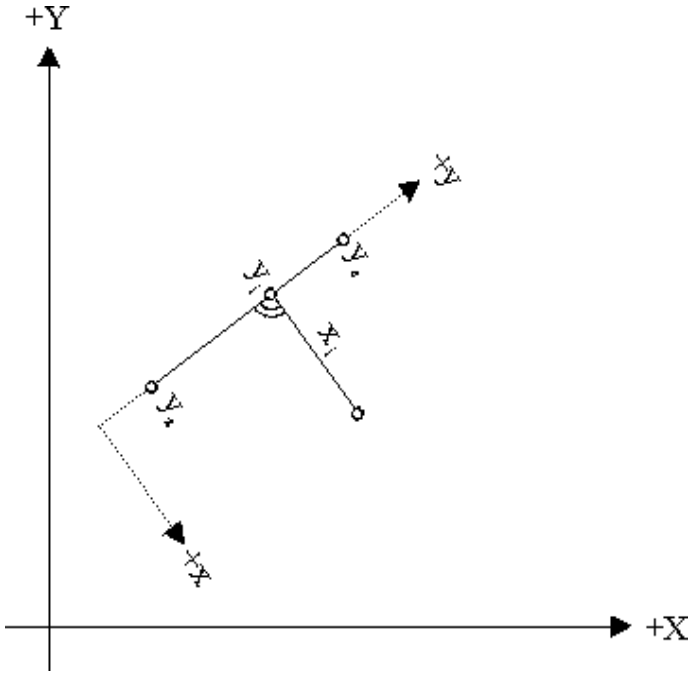
First of all, the user is prompted to click, first, the start point y(start) and then the endpoint y(end) of the local measurement line. This determines the direction of the measurement line and the dialog becomes active.

If the dimensions of the CP to be generated relate to the local measurement system, the start measurement and the end measurement of the measurement line can be entered. The local coordinate system is now defined. The difference between the measured section and the section which is calculated based on the coordinates of the start and end points is calculated, and the scale of the local system is displayed in the higher-level system.

You can now create new CPs using the coordinates x(i) and y(i) related to the measurement line. If you want to create CPs to the right of the measurement line, enter positive x(i) values, negative x(i) values result in points to the left of the measurement line. Enter the values in the fields and terminate your input with Return; the “Create CP” button generates the CP at the position calculated. The focus is put back on the input field “x(i):” so that you can enter the next point straight away.

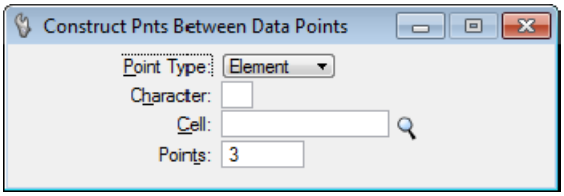
When you have generated all the construction points that are related to this measurement line, you can create a new measurement line by pressing the Reset button. Pressing the Reset button twice exits the function.

The drawing below clarifies the terms used in this description:



Design construction points between data points

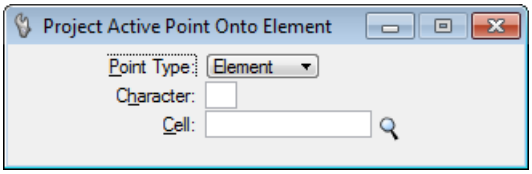
The “Point(s) between” function enables the user to place any number of construction points, characters or cells in the drawing file, equidistant between two freely selectable points. When the function is selected, the “Design points between data points” dialog box opens, which is used to specify the number of points, characters or cells that are to be placed.



The magnifying glass can be used here to open the cell library. When the user has selected the type and number of the points they want to place, they are prompted to click the start and end points of the (planned) line on which the points are then automatically placed.

Project active point on element

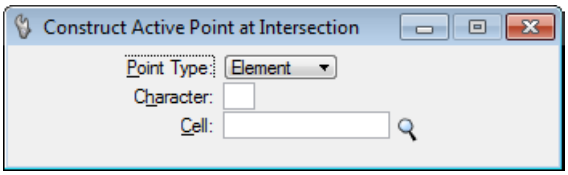
The “Point on element” function is used to place a construction point, a character or a cell precisely on an existing drawing element. When the function is selected, the “Project active point on element” dialog box opens, which is used to specify the type of point, character or cell that is to be placed.



After specifying the type of point to be placed, the user is prompted to click the required drawing element on which the point is then placed at the position they choose.

Design active point at intersection

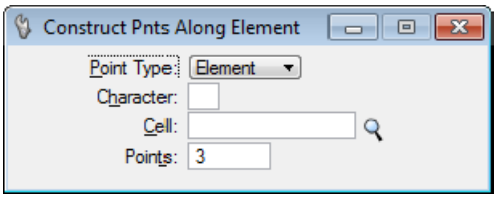
The “Point at intersection” function is used to place a construction point, a character or a cell precisely at an existing intersection of two existing drawing elements. When the function is selected, the “Design active point at intersection” dialog box opens, which is used to specify the type of point, character or cell that is to be placed.



After specifying the type of point to be placed, the user is prompted to click the first drawing element and then the second drawing element, at whose intersection the point is then placed.

Design points along element

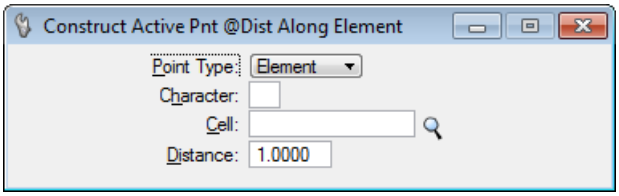
The “Point(s) along element” function is used to place any number of construction points, characters or cells equidistant between two freely selectable points along an existing element (including if the selected element has inflexion points). When the function is selected, the “Design points along element” dialog box opens, which is used to specify the number of points, characters or cells that are to be placed.



When the user has selected the type and number of the points they want to place, they are prompted to click the start and end points of the required element, on which the points are then automatically placed, equidistant.

Design active point at distance along element

The “Point at distance along” function is used to place a construction point, a character or a cell at a definable distance from the data point along the selected element. When the function is selected, the “Design active point at distance along element” dialog box opens, which is used to specify the type of point, character or cell and the required distance from the data point.



After selecting the required type and distance of the point to be placed, the user is prompted to click the required element at the data point, at which point the point is then placed on the element at the distance selected.

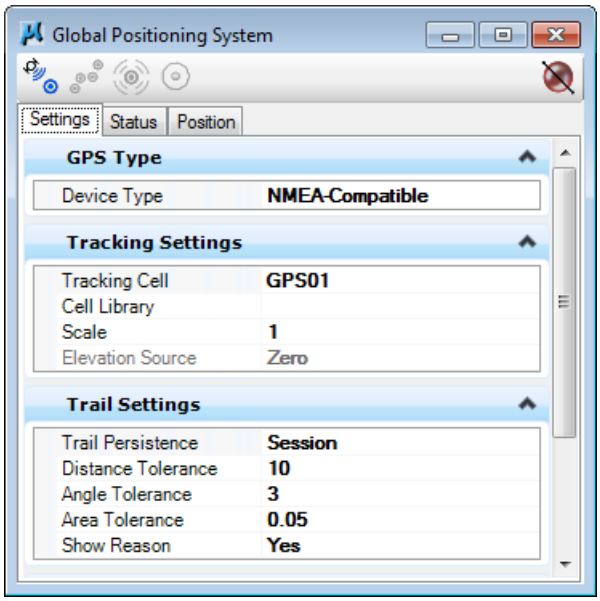
With this function, note that the only elements that can be rotated are those for which rotation is not forbidden under the rules of the application module.

sisNET Tools GPS

You can use the GPS tools to configure and launch the use of a GPS receiver in ***sisNET***.

GPS Module

This opens the dialog for configuring the GPS module. In this dialog you can configure a GPS receiver connected to the computer and query its status. You will find more information about this dialog in the relevant section of the MicroStation help.



Start view centering

This starts the automated view centering. At a configurable time interval, the current view is centred on the current GPS position.

Stop view centering

You use this to stop the view being automatically centred on the current GPS position.

Increase time interval

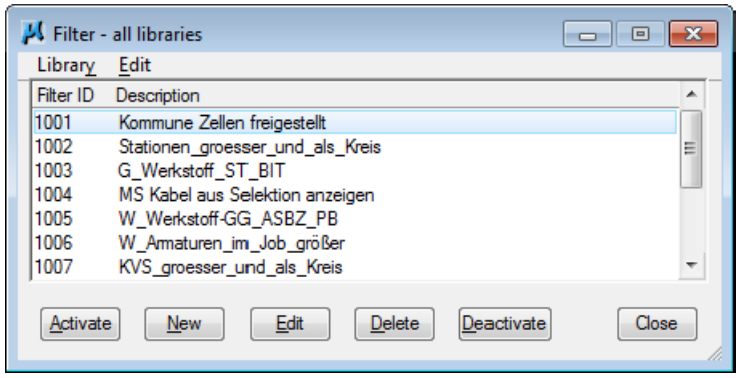
You use this to increase the time interval after which the view is automatically centred. Each time this button is selected, the size of the time interval is doubled.

Reduce time interval

You use this to reduce the time interval after which the view is automatically centred. Each time this button is selected, the size of the time interval is halved.

Thematic Analysis > Activate

Opens the “Filter” dialog box which you can use to create, change and start filters. A filter is used to change the graphic appearance of objects and elements, to control the sequence when plotting, and to make selections based on object attributes. A view is used as the input for a filter, while the output is to a view or also to a file. If objects from more than one category are to be used, the reading has to be done in multiple categories in ***sisNET***.
A prerequisite for working with filters is an entry for a filter library in the ***sisNET*** config file.

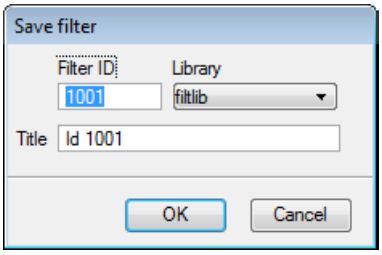


The “Library” menu

In this menu you can select a particular filter library file *.rsc in which the required filters are saved.

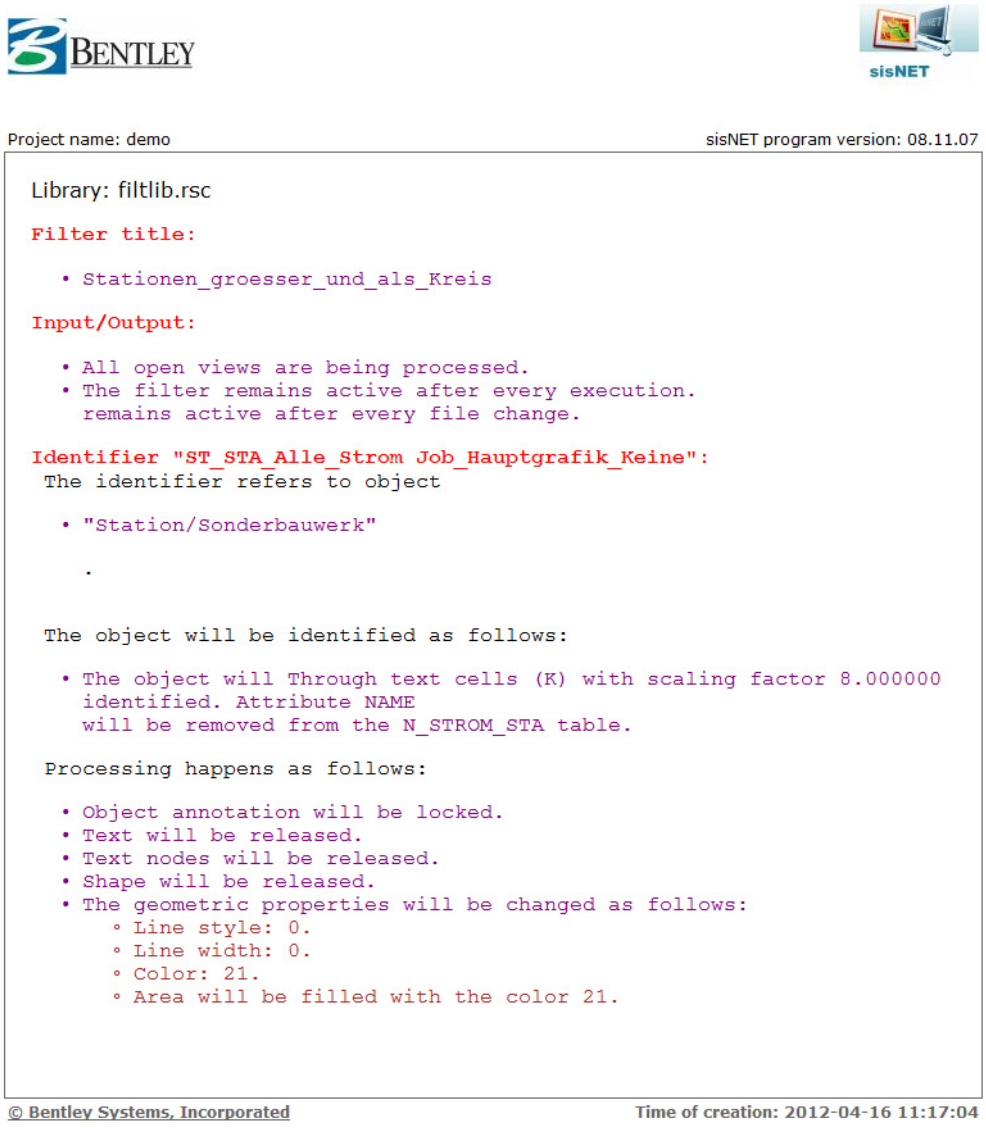
The “Edit” menu

The “Copy filter” menu item is used to copy an existing filter under a new name to a different filter library with a new filter ID. The settings are made in the “Save filter” dialog box.



The “Filter Description” menu item displays a text file which displays a textual description of the filter that is currently selected with the scroll bar.” This text file *.txt is saved in the directory that the environment variable SISNET_DIR_HTML points to. An HTML file can also be generated instead of a text file if the option “HTML output for filter description” is activated in the menu “Extras > General settings > Output” (See “The Output tab” Page 160).

Here is an example of a filter's HTML output:



Project name: demo — sisNET program version: 08.11.07

Library: filtlib.rsc

Filter title:

- Stationen_groesser_und_als_Kreis

Input/Output:

- All open views are being processed.
- The filter remains active after every execution.
  remains active after every file change.

Identifier "ST_STA_Alle_Strom Job_Hauptgrafik_Keine":
The identifier refers to object

- "Station/Sonderbauwerk"

  .

The object will be identified as follows:

- The object will Through text cells (K) with scaling factor 8.000000
  identified. Attribute NAME
  will be removed from the N_STROM_STA table.

Processing happens as follows:

- Object annotation will be locked.
- Text will be released.
- Text nodes will be released.
- Shape will be released.
- The geometric properties will be changed as follows:
  - Line style: 0.
  - Line width: 0.
  - Color: 21.
  - Area will be filled with the color 21.

© Bentley Systems, Incorporated Time of creation: 2012-04-16 11:17:04

Run

This button is used to run the filter selected with the scroll bar in the "Filter" dialog box. Based on the filter definitions (identifiers) that have been set, the objects and elements are highlighted and/or have their appearance changed. The graphic and drawing file are updated. The current filter settings remain active until the filter settings are deactivated with the "Stop" button.

New

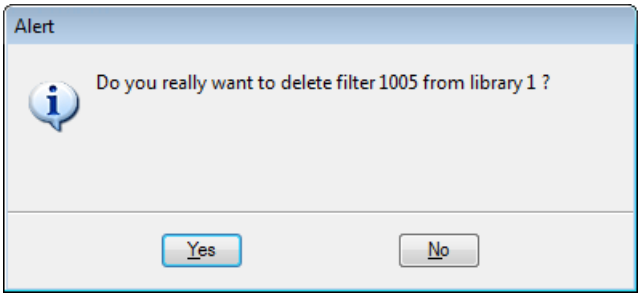
This function is used to create new filter definitions. The "Define new filter" dialog box, which is the same as the "Edit filter" box, opens (See "Edit filter" Page 103). The filter's function is defined in this dialog box.

Edit

When a filter has previously been selected in the “Filter” dialog box, an existing filter definition can be edited. The “Edit filter” dialog box opens for this purpose (See “Edit filter” Page 103).

Delete

Select the filter you wish to delete in the “Filter” list box and click the “Delete” button. The “Warning” window opens.



Select “Yes” to delete the filter from the filter library. The “No” button aborts the delete process.

Stop

The running of the active filter is terminated. “Refresh view” rebuilds the drawing. This releases all the objects and elements manipulated by the filter definition. The content of the view is the same as was displayed before running the filter.

Close

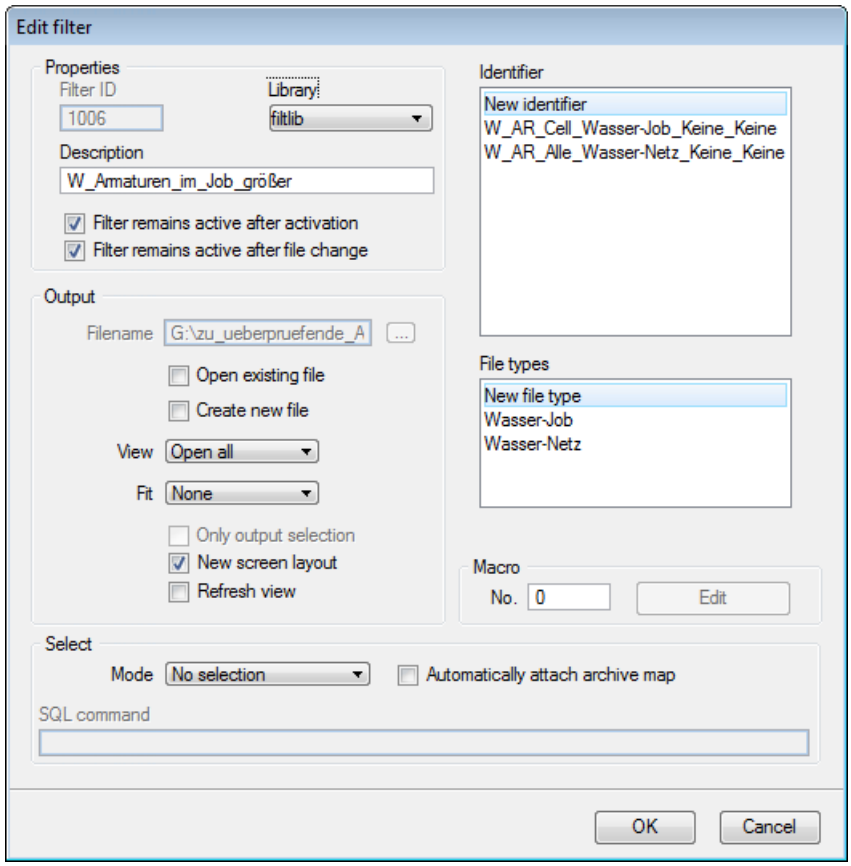
Closes the “Filter” dialog box.

Edit filter

The lists below describe the possible entries in the “Define new filter” and “Edit filter” dialog boxes for defining a new filter and editing an existing filter.

The dialog box enables filters to be created and changed.

⚠ If an existing filter is being edited it may not be active or the changes made have no effect. It is important to bear this point in mind when testing filters, as the user must not forget to stop or exit the filter before each change.



“Output” group field

In the “Output” group field, entries are provided for describing a filter’s output (screen output and possibly file output).

File name

A file name can be specified here for the output file which is to be created. If no path is specified, the output file is placed in the current work directory. If the user wishes to specify a particular path for the output file to be created, they can achieve this using the button to the right of the input line. When this button is clicked, the “Output file” file selection box opens, with which the user can specify a path and file name for the output file to be created. The input field is only activated if the “Create new file” setting is marked.

Open existing file

If this option is selected, before the filter is run the file output box appears which the user has to use to select an existing filter output file *flt. The current filter output is then attached to the existing filter output file.

Create new file

If no output file has yet been entered in the “File name” input field and this option is selected, before the filter is run the “Filter files” file selection box appears with which the user can select a path and file name for the output file which is to be created. Filter output files have the extension *.flt and can be loaded and edited like normal *.dgn files with MicroStation. The only objects written to the specified filter output file are those for which a filter identifier has been defined. If you also want to copy the rest of the

drawing's content to this output file, an identifier must be defined for all the remaining objects for the relevant filter ID. This identifier must appear as the last identifier in the list field for the identifiers defined, since the top identifier in this field has top priority and the last identifier has the lowest priority.

View

This is where you set the view you require for the filter output. The following options can be selected:

1 .. 8 : MS views 1 - 8
All open: all the open views
Last view: the last view to have been clicked
Reference update is the view set for Ref.update in the menu item "Tools > General settings" (See "The Timer tab" Page 158).

If an output file is being created, in the views, the view in which the filter is activated should be set precisely. If the "All open" views option has been selected and more than one view is actually open, this results in the the objects occurring more than once in the output file.

Fit

The user can select here whether the filtered objects are to be fitted into all or a particular view, or if they are not to be fitted in at all.

Only output selection

This field is only activated in connection with a selected selection mode. If a selection mode has been selected, the user can specify here that only the selected objects will be output.

Refresh screen layout

When this option is selected, the screen content of the selected view prior to the filter is deleted and then rebuilt. If this option is not activated, the filtered screen content is overlaid onto the unfiltered content.

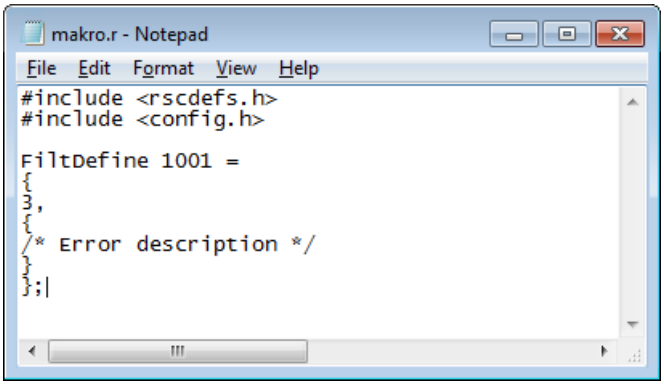
Include fence

Selecting this option restricts the output to just the content of the fence. Objects outside the fence area are not taken into account for the output.

"Macro" group field

No.

After entering a valid macro ID (ID>=1000) and selecting the Edit button, the "Macro Editor" dialog box opens, with which the user can create or edit any macros (which comply with the usual ***sisNET*** macro language conventions.



The open editor is the Windows editor and it is used in exactly the same way. When a filter macro has been created, the editor can simply be closed. The edited file macro.r is located in the directory which the environment variable SIS_LOCAL points to. When the editor is compiled, the macro.r file is automatically compiled and the macro.rsc file is generated. This is stored in the same directory. Both files are only required temporarily and can be deleted again after a filter macro has been created. The compiled macro is always automatically integrated into the associated filter.

“Select” group field

There are various selection modes which enable the user to specify whether the current filter definition is to be valid generally or for specifically selected objects. The following selection methods are available:

Mode

The “Mode” popup menu is used to specify the mode for a selection set. The following modes are available:

No selection: The filter settings apply generally to the objects and elements specified in the identifiers

Selection table: The filter only edits the objects selected in ***sisNET*** via the menu (See “Search... > via object” Page 55) and described in the selection table.

SQL command: This option is recommended when there are more than 500 objects. The objects required can be selected using an SQL command. The SQL query has the following general format: select mslink from <table name> where mslink = %ld and <search criterion>.

```
select mslink from N_G_ANL where mslink = %ld and TYP=1;
```

Generate list: When there are fewer than 500 objects this can be used to generate a list of the selected objects. The SQL command has the following format: select mslink,objekt, poolix from <table name>;

```
select mslink,objekt,poolix from N_G_ANL;
```

The relevant SQL commands need to be written to the input line “SQL command”.

Automatically attach archive maps

If this option is activated, the associated archive maps are attached for all the objects which are included in the selection set, if this has not yet been done.

“Properties” group field

Filter ID

Here the user needs to enter a unique filter ID which is greater than or equal to 1000 from the assigned filter library.

Library

Name of the file in which the filter data is stored. The file name may be up to 8 characters long. You may choose, here, from all the libraries that have been entered in the string list SISNET_DEFAULT_KUNDE in the system settings in the ***sisNET*** configuration file config.r. The Extension “.rsc” is added automatically.

Comment

A filter title up to 80 characters long may be entered in the list field. The text entered here appears in the “Comment” column in the “Filter” dialog box.

Filter remains active after execution

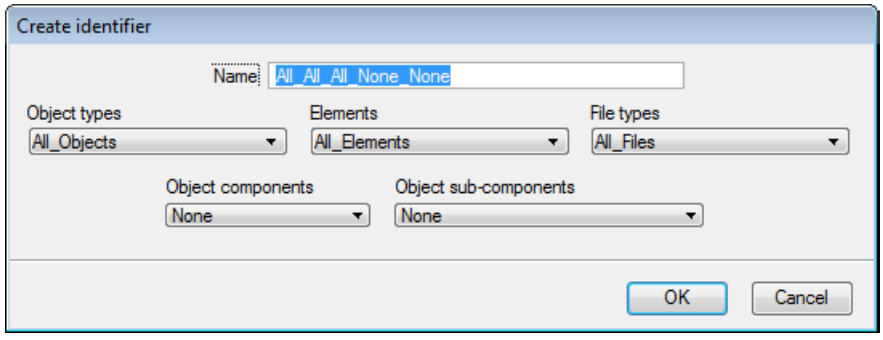
If this field is checked, when the filter function is selected a warning box appears with which the user can confirm, with the OK button, that the filter is to stay active or, with the Cancel button, that the filter function can stop running.

Activate filter after file change

If this field is checked, after a file is changed the filter is also immediately run in the newly loaded file.

Identifiers list field

In the “Identifiers” users can enter or edit the filter definitions required (identifiers) for a particular filter ID. The “New identifier” entry is always available and is used to define a new identifier. Double-clicking this row opens the “Create identifier” dialog box, with which a new identifier can be generated for the current filter ID.



Identifier (Create identifier dialog box)

In the “Identifier” list field, the user can enter a freely selectable name for the identifier being defined. The associated filter definition is then entered under this name in the “Identifiers” list field in the dialog box for creating and editing filters.

Object types (Create identifier dialog box)

In this input field the user selects the object type to which this identifier is to apply.

Elements (Create identifier dialog box)

In this input field the user selects the CAD elements to which this identifier is to apply.

File types (Create identifier dialog box)

In this input field the user selects in which of the defined file types this identifier is to apply.

Object components button

This button is used to select the parts of an entire object to which the identifier defined applies. Object components and object sub-components relate to the object type set. If object components and/or object sub-components are specified, the filter only works on the specified part of an object. The following options are available:

The identifier applies to

- the entire object (*none*)
- the *main geometry* of the object (main geometry)
- the *transition* symbol (as part of a node)
- the *annotation* (of the annotated object type)
- the other *components* (of the selected main object)

Object sub-components button

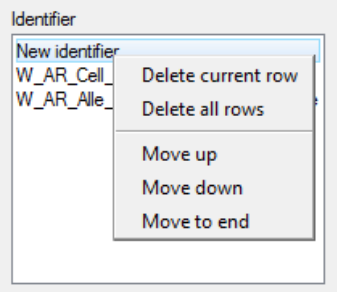
Some object components, for example annotations, can be further sub-divided into object sub-components. With annotations these are, for example, DAS type IDs, so that, by using this type of identifier, only very specific annotation for an object type can be edited in this type of identifier.

If, for an identifier, the other components (parts) have been selected, the following special sub-components are available

- abscissa
- ordinate
- underscore
- base line
- arrow
- cell with empty text node
- symbol frame in route profile
- cell in route profile

The identifier, the object types to be filtered, the CAD elements and the file types to be included have been selected, an appropriate identifier is generated by selecting the OK button and entered in the “Identifier” list field in the dialog box for creating and editing filters.

⚠ Each newly created identifier is, by default, placed at the bottom of the list of all the identifiers available for this filter ID, so it gets the lowest priority in the processing sequence of the available filter identifiers, while the top identifier always has the highest priority. If you want to change the order of priority for processing the various identifiers in the list, this can be done by right-clicking the required identifier. A context-sensitive menu appears that you can use to move the required identifier upwards or downwards in the list or delete the identifier.

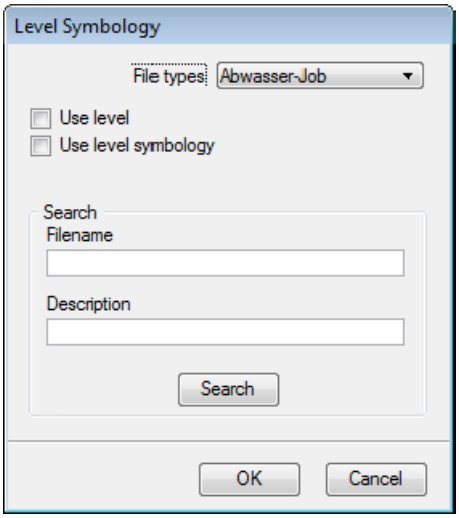


Each object that has been defined in an identifier is processed with this identifier; the processing for that object type is then complete.

If an existing identifier is to be edited, this is done by double-clicking the identifier to be processed, which opens the “Identifier <Identifier name> Edit” dialog box, with which an existing identifier can be edited (See “Edit identifier” Page 110).

File types list field

This list field contains all the file types that are being used in any identifier of the current filter. For each file type entered here, a specific level symbology can also be activated for the filter function. Double-clicking the required file type opens the “Level symbology” dialog box with which the user can select a level symbology file for activating a level symbology defined within it.



File types

In this list field the file type is entered that was previously selected from the “File types” list field in the “Edit filter” dialog box. The field cannot be edited.

Levels

If this settings field is selected, only the level settings from the level description file are included.

Symbology level

If this settings field is selected, the symbology settings (columns 2,3,4) from the level description file are also included.

File name

Here you must enter the path and file name of the level description file (*.dat) that is to be used.

Name

The name of the symbology to be used in the selected level description file must be entered here.

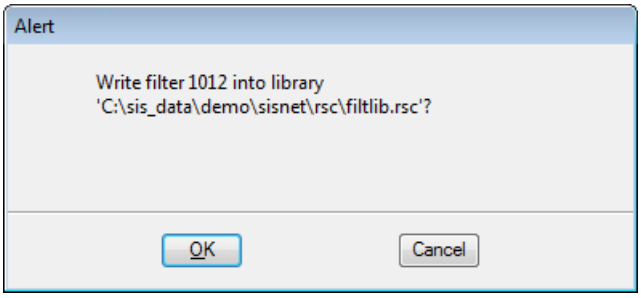
Search

Selecting the “Search” button opens the “Level-Symb files” file selection box with which the user can select the level symbology file *.dat they require.

The file selection box automatically branches to the path that the environment variable SISNET_DIR_LEVELSYMB points to.

OK (Edit filter dialog box)

If the dialog box for creating and changing filters was opened in “Create New Filter” mode, the following warning appears when the OK button is selected.



“OK” adopts the proposed path and file name. Selecting the “Cancel” button aborts the definition and save.

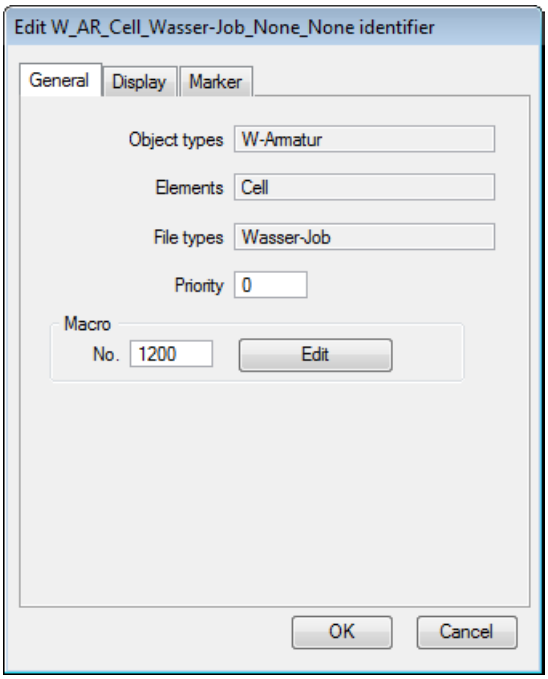
Cancel (Edit filter dialog box)

The “Cancel” button closes the dialog box for creating new filters or editing existing filters, and the settings that have been made are discarded.

Edit identifier

Double-clicking an existing filter in the “Edit filter” dialog box opens the “Identifier <Name of identifier> Edit” dialog box. This dialog box enables the filter identifiers for the various object types and elements to be edited. This dialog box has 3 tabs.

The General tab



Object types

Displays the object type associated with the selected identifier. The field cannot be edited.

Elements

Displays the element associated with the selected identifier. The field cannot be edited.

File types

Displays the file type associated with the selected identifier. The field cannot be edited.

Priority

By entering a priority you can specify the order in which the identifiers associated with a filter are to be output. The identifier with the lowest priority is output first.

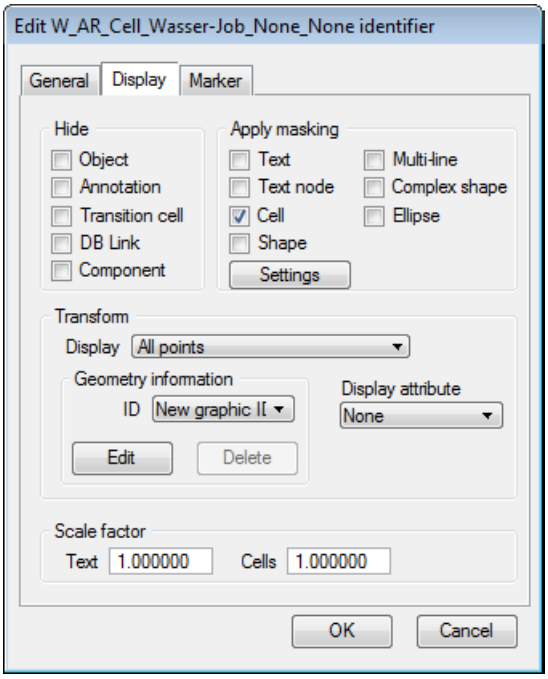
Macro

Here you can enter the ID of any macro you wish, which is to be activated for this identifier. The “Edit macro” button becomes active after the TAB or RETURN keys are pressed. The macro specified is only processed in connection with this identifier.

Edit macro

Opens the “Edit macro” dialog box (See ““Macro” group field” Page 105). The button is only active if a macro number has been entered.

The Edit tab



Hide group field

The “Hide” group field enables graphic objects to be excluded from the filter editing.

Object

The object type (element) selected via the identifier is blocked (not displayed) for the output.

Annotation

The annotation of the object type/element selected via the identifier is blocked (not displayed) for the output.

Transition

This hide only works with nodes. The transition symbols are not displayed if the hide is activated.

Link

Activating this settings field only makes sense in connection with the outputting of the filter results to a new file. In such cases, a database link attached to the objects is not part of the output, so that the new file only contains pure CAD elements.

Parts

When this field is activated, the components of a main object are not displayed. This hide does not affect annotations and transition symbols.

Apply masking group field

In the “Apply masking” settings field, graphic objects can be released.

Text

When this settings field is activated, texts are released. If this function is activated in connection with an identifier for a particular object type, it only affects texts associated with that object type. If you want to release texts for all object types in general, you need to make the relevant activation in an identifier for all object types.

Text nodes

When this settings field is activated, text nodes are released. If this function is activated in connection with an identifier for a particular object type, it only affects text nodes associated with that object type. If you want to release text nodes for all object types in general, you need to make the relevant activation in an identifier for all object types.

✍ Note: In MicroStation, texts and text nodes are different types of element. Texts may be single line only, while text nodes may be multi-line. In contrast, a text element can be placed more than once, while a text node can only be placed once. On the other hand, a text node can be updated from a database table, while this cannot be done with text elements. In ***sisNET***, all the annotations used are usually text nodes. Only streets and house numbers are text-shaped objects in some application modules.

Cell

When this settings field is activated, cells are released. If this function is activated in connection with an identifier for a particular object type, it only affects cells that represent this object type. If you want to release cells for all object types in general, you need to make the relevant activation in an identifier for all object types.

Shape

When this settings field is activated, area-shaped objects (shapes) are released. If this function is activated in connection with an identifier for a particular object type, it only affects area-shaped objects (shapes) that represent this object type. If you want to release area-shaped objects (shapes) for all object types in general, you need to make the relevant activation in an identifier for all object types.

Multiline

When this settings field is activated, multilines are released. If this function is activated in connection with an identifier for a particular object type, it only affects multilines that represent this object type. If you want to release multilines for all object types in general, you need to make the relevant activation in an identifier for all object types.

Complex shape

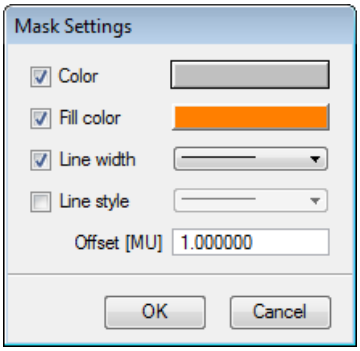
In contrast to shapes, complex shapes can have up to 100 corner points. When this settings field is activated, these objects (complex shapes) are released. If this function is activated in connection with an identifier for a particular object type, it only affects these objects (complex shapes) that represent this object type. If you want to release these objects (complex shapes) for all object types in general, you need to make the relevant activation in an identifier for all object types.

Ellipse

When this settings field is activated, objects of this element type (ellipse) are released. If this function is activated in connection with an identifier for a particular object type, it only affects these objects (ellipses) that represent this object type. If you want to release these objects (ellipses) for all object types in general, you need to make the relevant activation in an identifier for all object types.

The “Settings” button

This button is used to change the colour, fill colour, line width, line style and offset of the release shape. The settings required are made with the “Shape Settings” dialog box.



“Transform” group field

The “Transform” group field can be used to completely change the entire graphic appearance of an object type.

Mode

The following settings can be selected:

All points: All the individual points (inflexion points) of line-shaped objects are displayed.

Start/end points: The line-shaped objects are only displayed as a straight line connection between startpoint and endpoint. All the intermediary points are filtered out.

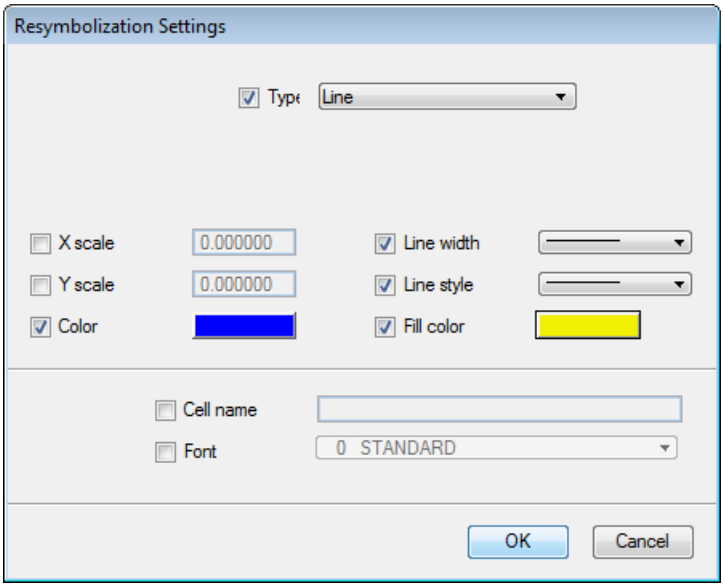
Node: The only individual points of line-shaped objects that are displayed are those that are also nodes.

Start/end/connection point: The only individual points of line-shaped objects that are displayed are those that are either the startpoint or endpoint of the object, or those a connection point is resting on.

Graphic ID

In the “Graphic ID” settings field, the user can view the available graphic information (graphic ID=0) for the current object type, or create a new, additional piece of graphic information.

Clicking the “Edit” button opens the “Geometry information” dialog box with which the user can view the current graphic information about the object type, or create a new piece of graphic information about displaying this object type.



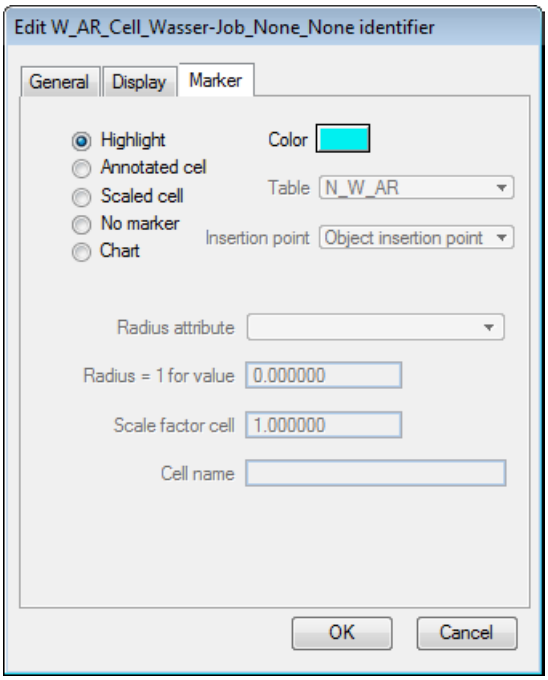
In terms of its layout, the dialog box is the same as the dialog box used by **sisCONF** to change or create graphic information about an object, and you can find out the meaning of the individual settings fields in the **sisCONF** guide.

The "Attribute" popup menu
From this popup menu, the user can select a particular attribute of the object type selected in the identifier. The content of this attribute is then output as text instead of the object graphic if the object has been given an annotation.

"Scale factor" group field
Texts or cells can be scaled in the "Scale factor" settings field. Scale factor 1 means no scaling.

The Identifier tab

In the "Identifier" tab, you can specify how the filtered objects/elements are to be flagged.



Highlight

If this settings field is activated, the filtered object/element is displayed with the colour specified.

Annotated cell

This settings field can only be activated if the current identifier contains an object type. The filtered objects are then flagged with a circular cell which shows the value of the attribute specified in the “Annotation attribute” line.

Scaled cell

This settings field can only be activated if the current identifier contains an object type. The filtered objects are then flagged with a circular cell the radius of which is calculated from the value of the attribute specified in the “Radius attribute” line and a value entered in the “Radius reference” and “Scale factor cell” lines. The radius R of the circular cell is calculated here using the following formula (in master units):

R=attribute value/radius reference value*scale factor

To prevent the user from being able to select any illogical object attributes in the “Radius attribute” input field, the popup menu that opens when this field is clicked only contains those attributes which contain numeric values.

None

Activating this settings field means that the filtered objects/elements will not be flagged in any special way.

Pie

The “Pie” settings field only makes sense in connection with specific macro functions.

Insertion point

The “Insertion point” menu is only activated in connection with the “Pie” settings field. It enables the object’s insertion point or the object’s centroid to be selected for the insertion point of the pie chart.

Table

Here the user can select between the “GRUP” table and the object type’s database table if “Annotated cell” or “Scaled cell” have been activated. An attribute can then be selected from this table for “Radius attribute”.

Radius attribute

If “Annotated cell” or “Scaled cell” have been activated, an attribute can be selected here the value of which is displayed in the identifying circle.

Radius

If “Scaled cell” has been selected, a value can be specified here. The circle’s radius is calculated from the value of the attribute divided by the radius reference.

Scale factor cell

If “Annotated cell” or “Scaled cell” have been selected, a scale factor can be specified here. The value “1” means no scaling.

Cell name

If “Annotated cell” or “Scaled cell” have been selected, a cell name can be entered here. The objects are flagged with this cell.

Ok

The current identifier is saved and the “Edit identifier” dialog box is closed.

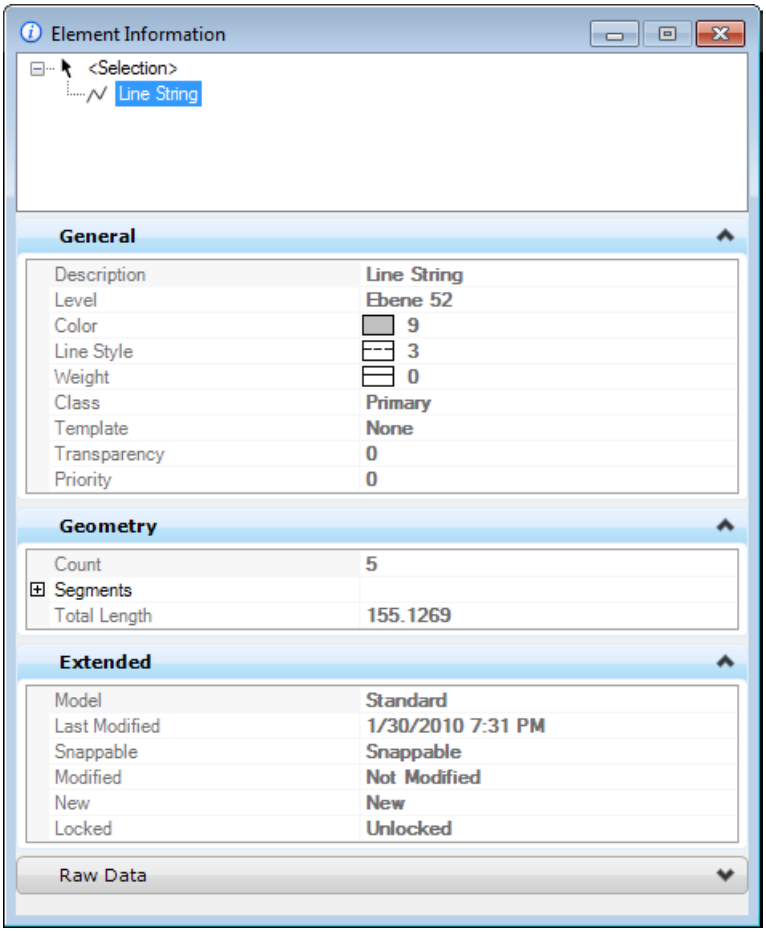
Cancel

The current identifier is discarded and the “Edit identifier” dialog box is closed.

Thematic Analysis > Close

The menu is used to close active filters. The default view is restored once more. The view may need to be updated manually (screen refresh).

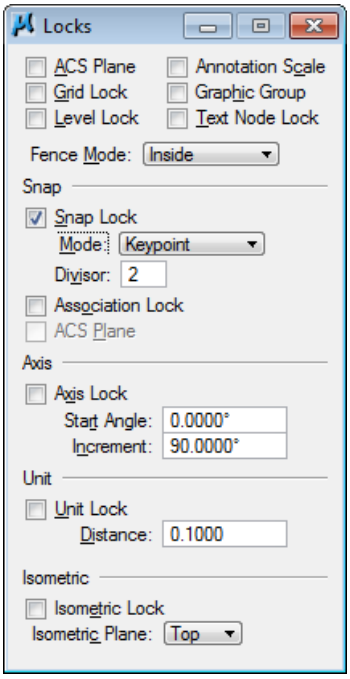
(MS)Information



The (MS)Information function is used to query information about the drawing elements. The window that opens after a relevant element has been selected displays the element coordinates, the drawing level, the drawing colour, the line width, the line style, etc.

(MS)Locks

The (MS) Locks function is a MicroStation application function. The function is used to switch certain locks on and off.



E.g. the raster lock and the levels lock can be activated and deactivated using the function. The result of this is that you can only draw on the “imaginary” raster points of a grid overlaid on the drawing, and when the levels lock is switched on you can only draw in a specified level. Other locks include, e.g., the text node lock, the graphic group, the setting for the fence mode, the snap function, axis locks, etc. Please refer to the MicroStation guide for more information about this function.

(MS)Snap function mode

The MicroStation Snap function mode can be set or changed with this function. When it is selected, the MicroStation toolbox for setting the different snap function modes appears.

Please refer to the relevant MicroStation user guides for information about the various snap function modes.

4 The View menu

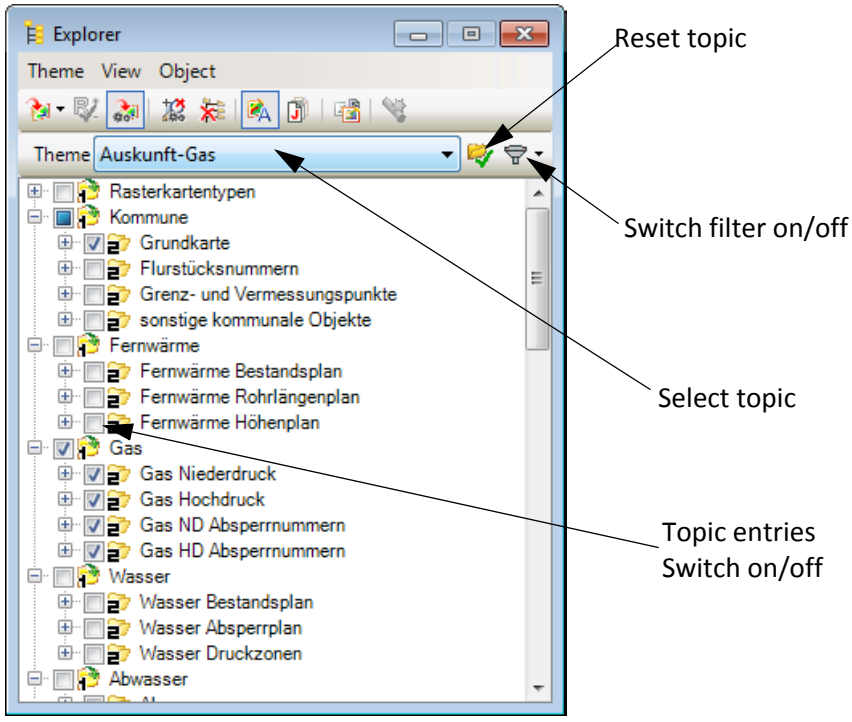
With the functions combined under the “View” menu, each user can select the way in which the drawings are displayed to them.

Task:	Selection from the “View” menu:
With the explorer, object types can be shown or hidden, sub-divided into their geometry roles and levels and depending on the zoom	Explorer (Page 120)
A dialog box is used to select from amongst the topics that have been generated	Topics > Dialog (Page 124)
This function closes the current topic	Close topic (Page 124)
This function is used to display the jobs that have been opened in the supply area	Display Map tiles (Page 125)
Highlight blocked objects in the current job	View locked objects (Page 127)
Highlight active objects in the current job	View active objects (Page 127)
Highlight active elements in the current job	View active elements (Page 127)
Specify a graphic display on a particular scale	Zoom to scale (Page 127)
Display areas that users have defined themselves	Designated areas (Page 128)
Only the current file should be displayed	Detach all ref. files (Page 128)
The function opens the dialog window in the Microstation application for editing reference files. The dialog window provides various functions for attaching and detaching reference files, and for panning, scaling and rotating the drawings, etc.	(MS) Reference (Page 128)
This function is used to control the display of one or more grid images in the view of a DGN file	(MS) Grid Manager (Page 129)
This function is used to switch the various view attributes (line types, line strengths, pattern, text, etc.) on and off	(MS) Attributes (Page 129)
This function is used to specify the active level and the displayed levels of the active drawing file for the various views	(MS) Level display (Page 130)

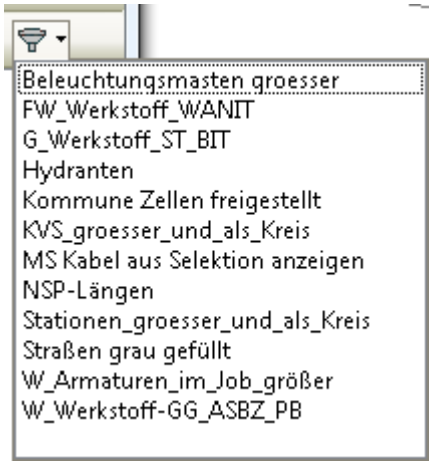
Explorer

To use the **sisNET** explorer, you need to have at least one configured topic for the user group to which the current user belongs. Topics are created in a separate configuration program which is accessed via the Topic>Configure Topics menu.

When the “Explorer” menu item is selected in **sisNET**, the “Explorer” dialog box, with which the user can select a topic they want, opens.



The topics explorer is used to select sisNET filters and switch them on and off. The colour of the symbol shows whether a filter is currently active. If the symbol is grey, you can click the button to select a filter



If the symbol is red, you can click the button to switch off a filter the filter that is currently active.

When using the explorer and filters at the same time, you should ensure that the explorer and the filters *have no contradictory entries*, e.g. water pipes are hidden in the explorer and water pipes are highlighted by the filter.

Within a topic there are different types of topic entry. By using a grouping, you can combine several topic entries so that you can switch them all on and off together.

A CAD map type indicates a map type that only contains CAD elements. CAD elements have no object data. Within a CAD map type, one can further differentiate between different geometry roles (e.g. lines and texts) and between levels.

A grid map type only contains grid files; e.g. TIF files.

An object type can contain all sorts of graphics with object data. Within an object type, one can differentiate between the four geometry roles: main geometry, annotation, transition and part. Within the geometry roles, one can further differentiate between various levels.

The geometry role is the 1st sub-division level for object type and CAD map type entries.

CAD map types are sub-divided as follows:

- Lines with the MicroStation element types: Line (3), polygonal line (4), curve (11), complex chain (12), arc (16), BSpline pole (21), BSpline node (26), BSpline curve (27), BSpline weighting (28) und polyline (36)
- Symbols with the MicroStation element types: Cell (2), dot chain (22), pseudo cell definition (34) and pseudo cell (35)
- Texts with the MicroStation element types: Text (7) and text node (17)
- Areas with the MicroStation element types: Surface (6), complexe surface (14) and ellipsis (15)
- Dimensionings with the MicroStation element type: Dimensioning (33)
- 3D elements with the MicroStation element types: 3D surface (18), 3D solid (19), 3D cone (23), 3D BSpline surface (24) and 3D BSpline margin (25)

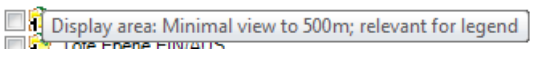
Object type entries are sub-divided as follows:

- Main geometry
- Annotation
- Transition cell
- Part

Beneath the geometry role is the sub-division into MicroStation levels. This enables, e.g., an annotation for a particular object type that is on a particular level to shown or hidden.

Zoom shot dependence

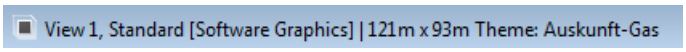
The graphic that is linked to each topic entry can be shown or hidden depending on the relevant zoom level in the MicroStation view. A topic entry's zoom shot dependence is shown in the tooltip for the entry.



There are four basic settings for the zoom shot dependence:

- Minimal view to maximum view: The topic entry's graphics are not dependent on the zoom level
- Minimal view to xxx m: The topic entry's graphics are only displayed up to the view level specified

- xxx m to Maximum view: The topic entry's graphics are only displayed from the view level specified
- xxx m to yyy m: The topic entry's graphics are displayed from the view level specified (xxx) and hidden again after the other limit (yyy).



The width and height of each view, and the name of the active topic, are noted in the view header.

Activate > topic

Use this to select from between different topics. Alternatively, there is a topic selection box in the upper area, beneath the button bar. It can be expanded using the arrow on the right-hand side. Then you can select a topic. This causes the tree view of the topic entries to be updated.

Topic > Reset theme to default settings

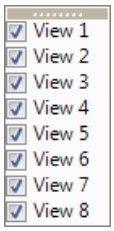
This resets the current topic setting back to the default setting. The standard setting is specified in the topic configurator.

Topic > Configure topics

If you have the appropriate permission, the dialog for configuring the sisNET explorer will open. The sisNET topic configurator is described in the sisNET administration guide.

View > Update all views

This button is used to update one or more open MicroStation views. You can specify which views are to be updated in the Settings menu.



This runs a complete design view. When a topic entry has been shown or hidden, the view is not yet updated. It is only when the "Refresh view" button is clicked in the relevant MicroStation view, or when this function is used, that a view is updated based on the topic entries that have been switched on and off.

View > Update contents based on range of View 1

This button is only enabled if the fully automated view update (see next point) has not been switched on. You can specify which view is the update view in the sisNET menu under "Extras > General Settings > Timer > Reload on view" (See "Reload on view" Page 158). This button is used to load the maps needed to create the update view and remove the maps that are no longer required. After a view is zoomed or scrolled, this button should be used to load the maps required if the "Fully automated view and content update" button has not been activated.

View > Fully automated view and content update

Activating this button automatically updates the reference files required for the design view when scrolling and zooming, so that the view and the content do not have to be refreshed by clicking the “Refresh view” button. When this button is activated, the “Update content by range” function cannot be used.

In general, the design view causes performance to deteriorate. However, this is offset by the convenience of having the maps load automatically.

View > Deactivate zoom dependency

When the zoom dependency is deactivate, all the graphics for the selected topic entries are displayed, no matter what the zoom level of the MicroStation view.

View > Deactivate Explorer

By deactivating the **sisNET** explorer, the graphics displayed in the various views are no longer filtered based on the topic entries selected. The same effect can be achieved if no topic entry is selected.

View > Display as-built map

By default, the archive maps are displayed. This button can be used to hide the archive maps.

View > Show all jobs of all categories within the area

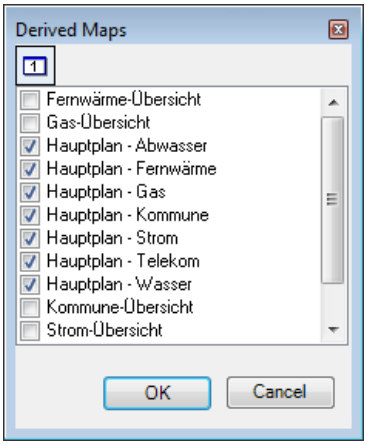
By default, the job maps are not displayed. This button can be used to display the job maps. The only jobs that display are those for which objects are also displayed in the MicroStation view.

View > Show legend for view 1

This menu item is used to show or hide the legend display for the sisNET update view. A topic needs to be active for the legend to be displayed. The legend displays in a separate view. The sorting and grouping of the legend entries is based on the sorting and grouping of the entries in the active topic. The only elements that are displayed in the legend are those which also appear in the update view. You can use the topic configurator to specify, for each topic entry, whether the entry is also to appear in the legend. If nothing is configured, all the entries are copied to the legend.

View > Derived maps...

Besides the main plan, other plans can also be configured in a project. This button is used to display the maps from the other plans. This function opens another dialog field:



This dialog is used to specify in which views (buttons 1, 2, ..., 8 for the 8 MicroStation views) which plans are to be displayed.

The main plan in the “Derived maps” dialog is divided into various categories so that, for the gas overview plan, for example, only the municipality objects from the main plan can be displayed in the same view.

The dialog box only displays main plans and overview plans that occur in the topic.

Theme > Big/Small toolbar icons

This is used to toggle between big and small icons in the explorer toolbar.

View > Other maps

This function is used to attach reference files. These are specified dynamically, using environment variables. This type of reference file might, for example, be a town plan that includes an overview of the supply area. It could point to the environment variable SISNET_FILE_STADTDGN. For this menu item to be available, the environment variables need to have been defined and set in a donfiguration file *.cfg. Then, as sub-menu items for this fuction, the functions to attach and detach the files defined using these environment variables will be available.

Object > Create new object from selected object type

This menu item and the button are only active if an object type topic entry has been selected. These entries are indicated by the general object icon . This function starts the create process for a new object from the selected object type. Prerequisites for creating a new object are:

- A job in the relevant category must be open.
- The user currently logged into **sisNET** must have the right to create for this object type.

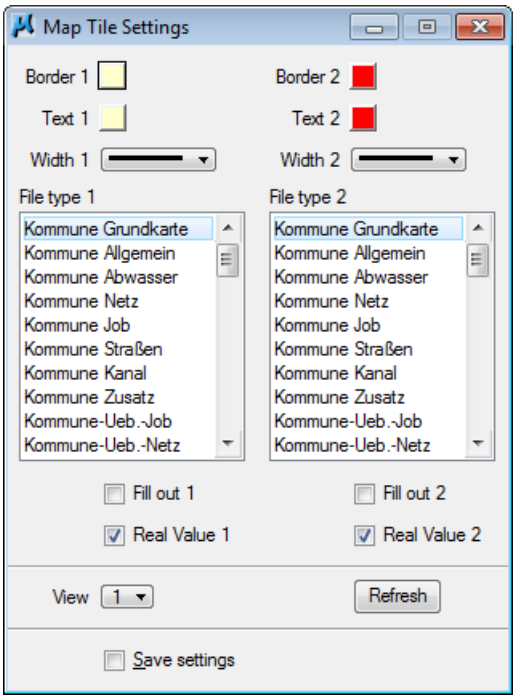
Topics > Dialog

A topic can be selected without having to open the explorer under “View > Topics”. As stated before, the individual topics need first to have been set up in the **sisCONF**. When the sub-menu item “Dialog” is clicked, the “Topics” dialog box appears, listing all the topics. They are also listed beneath the “Dialog” menu item so that the topic required can also be selected in this way as an alternative to the dialog box.

Close topic

This exits the current topic and deactivates the explorer. The topic selection box in the explorer, the tree view of the topic entries and the sub items in the “Topic” menu are then greyed out. They are only reactivated if a new topic is selected via “View > Topics”.

Display Map tiles



The “Display Map tiles” function is used to display the total expanse of the file types (maps) managed in the relevant schema. This function can be used to display the position and spread of each available map can be using a border within the overview map across the supply area. The overview map loaded here is the one which the environment variable SISNET_FILE_STADTDGN points to. The “Display Map tiles” function enables two different file types to display at the same time and to be displayed with different borders or fillings.

Border 1

The popup list enables you to specify the colour of the border that is to mark the required file type.

Text 1

The popup list enables you to specify the text colour with which the file name is to display.

B.strength 1

The popup list enables you to specify the border strength.

File type 1

The popup list enables different types of file to be displayed. E.g. by selecting “Gas job” the current gas jobs are displayed, and by selecting “Gas archive”, all the pool files (network maps) in the gas supply area are displayed.

Fill out 1

You select this button to, e.g., fill in the border for the display of the current file type with the selected colour.

Real Values 1

Two pairs of values (default/real) are stored for each of the different graphic files. The default values contain e.g. the corner coordinates as they have been specified when defining the maps (urban area divided into sheet extracts). The real values contain the actual corner coordinates, which may differ from the original data, e.g. due to the fact that pipes have been drawn beyond the bounds of the map. After any such action, the "real values" are readjusted to suit the map size.

When the "Real values" button is selected, the maps display in their actual dimensions.

Border 2

The popup list enables you to specify the colour of the border that is to mark the required file type.

Text 2

The popup list enables you to specify the text colour with which the file name is to display.

B.strength 2

The popup list enables you to specify the border strength.

File type 2

The popup list enables different types of file to be displayed. E.g. by selecting "Gas job" the current gas jobs are displayed, and by selecting "Gas archive", the entire available gas supply area.

Fill out 2

You select this button to, e.g., fill in the border for the display of the current file type with the selected colour.

Real Values 2

Two pairs of values (default/real) are stored for each of the different graphic files. The default values contain e.g. the corner coordinates as they have been specified when defining the maps (urban area divided into sheet extracts). The real values contain the actual corner coordinates, which may differ from the original data, e.g. due to the fact that pipes have been drawn beyond the bounds of the map. After any such action, the "real values" are readjusted to suit the map size.

When the "Real values" button is selected, the maps display in their actual dimensions.

View

The popup list enables you to select the view to which the selected parameters apply and in which the relevant information is displayed.

Time interval

The popup list enables you to specify the time interval (in secs.) at which the displayed values are updated.

Save settings

Selecting this button saves the selected settings, which are again available the next time the "Display Map tiles" function is selected.

View locked objects

This function enables you to highlight the objects that are being edited in other jobs and which, therefore, are locked for editing in the current job.

You can specify the colour in which the locked objects are displayed in the “Colour” tab in the “Extras > General Settings” menu (See “Colour locked objects” Page 159). All the remaining geometries are greyed out.

The display is only temporary - it switches back to the normal view when the view is moved or a different topic is selected.

View active objects

This function enables you to highlight the objects that are being edited in the current job. Active objects are those objects which have either been created in the current job or copied from the archives for the purpose of editing. The active objects in the current job are, at the same time, locked objects for other jobs.

You can specify the colour in which the active objects are displayed in the “Colour” tab in the “Extras > General Settings” menu (See “Colour active objects” Page 159).

Load job

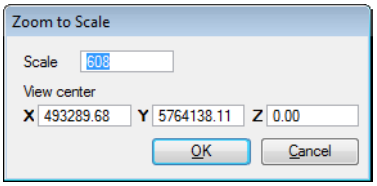
View active elements

This function is largely the same as the “View active objects” function, with the difference that active elements may also be dummy graphics. So active elements do not need to be objects in the **sisNET** sense. Selecting this function involves selecting the “View active objects” function.

You can specify the colour in which the active elements are displayed in the “Colour” tab in the “Extras > General Settings” menu (See “Colour active elements” Page 159).

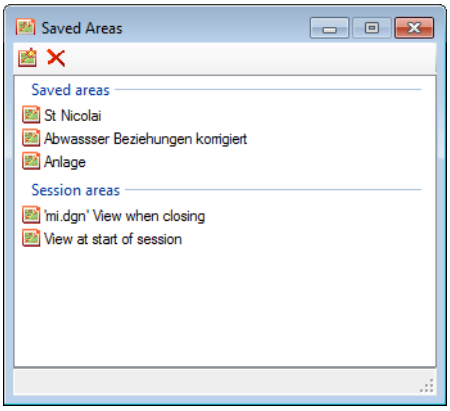
Zoom to scale

Here you can enter a specific scale for the active view. You should bear in mind that what you specify should only be regarded as an approximate value, because it depends on the size of the screen you are using.



Designated areas

A dialog window opens in which you can save sections of views under names which you are free to choose. You can navigate to these saved views with one mouse click.



This function opens by default when you start sisVIEW.

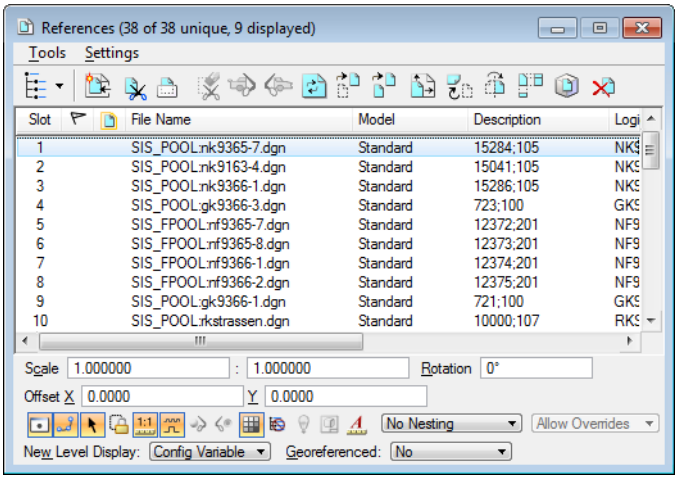
You can save the current view as a designated area by clicking the map symbol. Double-clicking a designated area centres the current view on it again.

To save designated areas for the longer term, the storage folder needs to be specified in "SISNET_DIR_EXTENTS".

Detach all ref. files

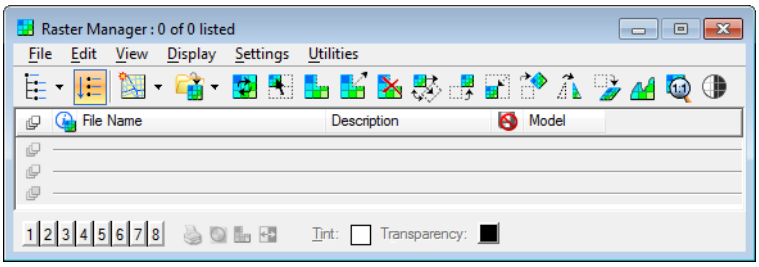
When you select the "Detach all ref. files" function you detach (unload) all the reference files that are currently loaded. The effect is that the drawing data in these files is no longer available on the screen and only the drawing content of the currently loaded drawing file will be displayed.

(MS) Reference



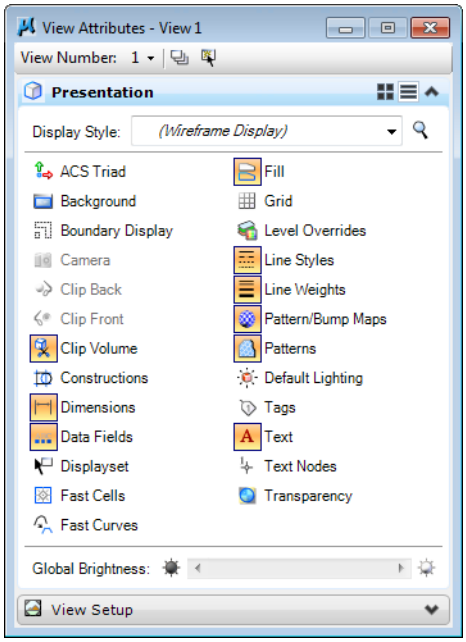
The function opens the dialog window in the Microstation application for displaying reference files. The dialog window provides various functions for attaching and detaching reference files, and for panning, scaling and rotating the drawings, etc.
For further information on working with reference files, please refer to the MicroStation reference guide.

(MS) Grid Manager



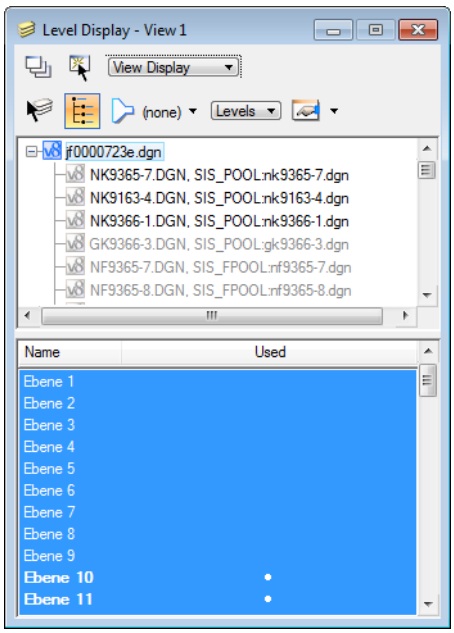
The grid manager is used to control the display of one or more grid images in the view of a DGN file. For further information on working with reference files, please refer to the MicroStation reference guide.

(MS) Attributes



This function is used to switch the various view attributes (dimensionings, fillings, line types, line strengths, pattern, text, etc.) on and off. Some attributes specify whether specific parts of a model and drawing tools are to be displayed. Others, in turn, specify how the DGN file is to be displayed. This function is a MicroStation application function. So you can get more information on this function from the MicroStation guides.

(MS) Level display



When this sub-menu item is selected, the Level Display dialog field opens. This function is a MicroStation application function. This dialog field is used to specify, e.g., the active level and the displayed levels of the active drawing file for the various views. You can get more information on other function options from the MicroStation guides.

Menu item Reference > Topics

You can use this menu item to activate a topic without starting up the explorer interface. When a topic has been activated using this menu item, the zoom dependency (See “Zoom shot dependence” Page 121) is deactivated.

5 The Selection menu

You can use the functions in the “Selection” menu to seach the data inventory using different criteria and to display and mark the objects found by different graphic means.

Task:	Select from the “Selection” menu:
These are used to make self-defined selections in the data inventory which can be graphically edited in many different ways	Selection (Page 131)
Use this to make a database selection and then create a report	Selection with standard report... (Page 142)
Use this menu item to create reports using existing report definition files	Report from template... (Page 143)
Go to the supply area via predefined database queries	Object Search (Page 144)

Selection

There are different ways to start a selection:

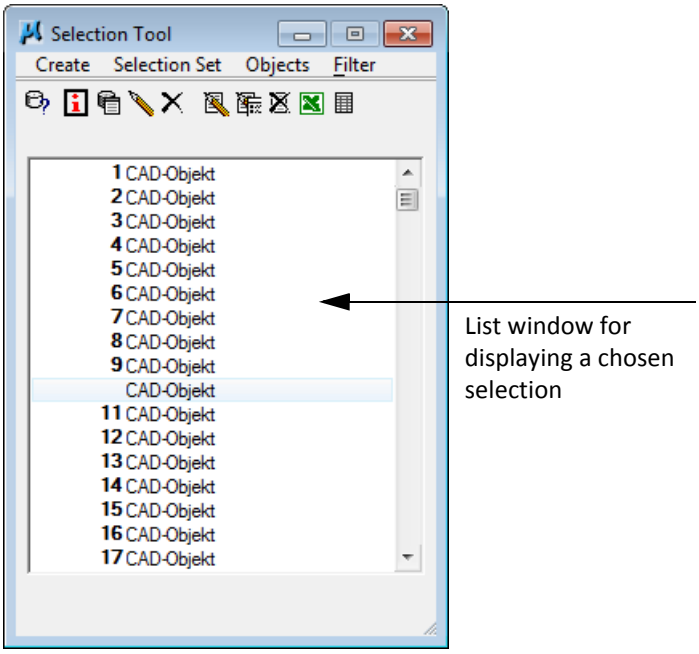
- run an existing selection file,
- load an existing selection result or
- define a new selection.

Before making the selection you can define the geographic area to which the selection should be restricted. A selection across the entire data inventory or across a defined area (fence) is possible.

After making the selection, all the objects and elements found are displayed in the list window in the “Selection Tool” dialog.

The list window displays the objects found with their long name. Each object displayed in the list window can be selected with the scroll bar, and the database attributes and relationships for each object selected can be viewed or changed. Double-clicking the object selected with the scroll bar opens the “Object Info” dialog, which enables the views or changes required (See “Object info” Page 81).

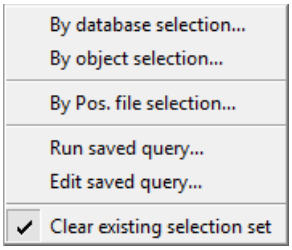
When the “Selection” menu item is clicked, the “Selection Tool” dialog opens for specifying the selection and display conditions. If objects from a previous selection are entered in the selection table, they are displayed in the box’s list window.



The dialog contains four pull-down menus for selecting create and display options for the selection required.

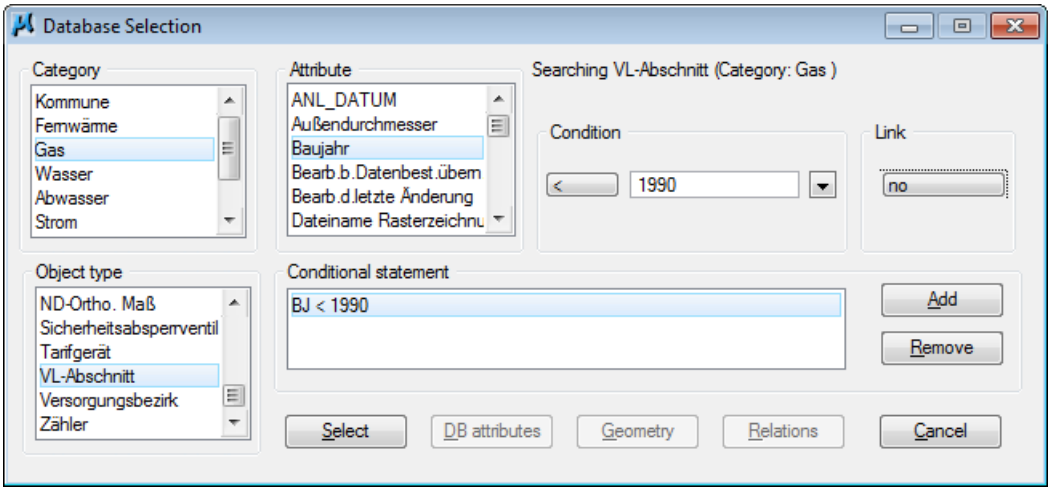
Pull-down menu: Create

This menu enables you to specify how the selection is created. These methods are possible



Database selection

The “By database selection...” function opens the “Selection” dialog which is used to define attributive selection tasks that may also encompass all object types.



Category/Object

In the upper list window you can select from the categories defined in the current configuration. Depending on the category selected, the objects belonging to it are displayed in the lower list window. In this lower list box, you select an object type on which you wish to make a data record selection.

Attributes

The available database attributes (columns) in the selected object type are listed here. For each row in the search expression, one of these attributes must be linked to a comparative value by a condition.

Activating the checkbox to the left of “Use DB column name” lists the attributes with the name that is saved in the database.

Condition

Here you can select from predefined condition types. The following relational operators are available:

<	smaller than
<=	smaller than or equal to
=	equals
>=	greater than or equal to
>	greater than
!=	does not equal
like	equals for strings (with % to be used as a placeholder)
not like	does not equal for strings
is (NULL)	Has the attribute not been given a value?
is not (NULL)	Has the attribute been given a value?

Link

If more than one search condition is to be linked together, the type of link can be specified here (*and* and *or*).

SQL expression

From the search conditions entered, an SQL expression which is valid for the database will be generated and displayed here. Each search condition equates to one row in this window. Search conditions can be added and deleted.

Add new condition

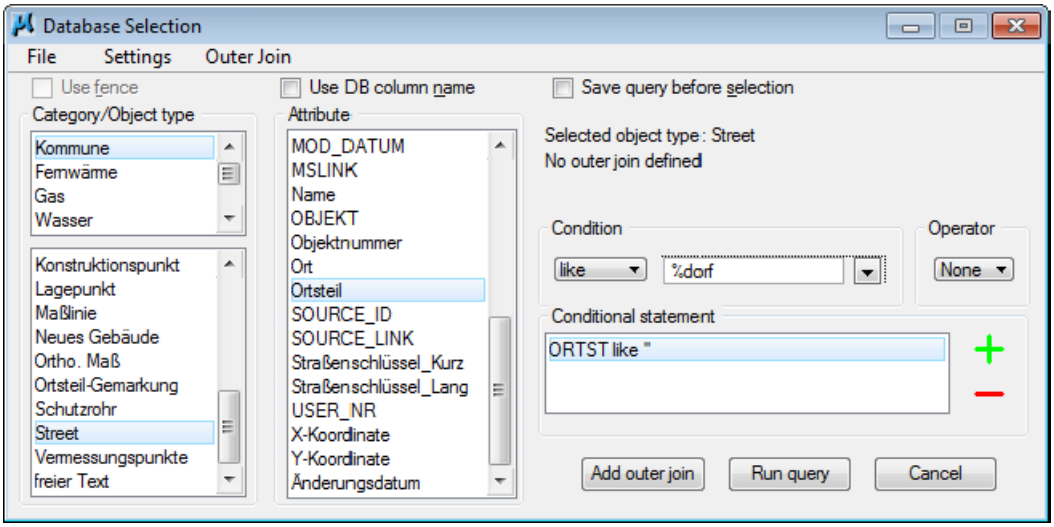
When you select this button, a new search condition is added to the SQL expression.

Delete condition

When you select this button, the search condition that is currently selected is removed from the SQL expression.

+Append

Selecting the “+Append” button opens another window in which other conditions for other objects can be entered. The conditions for the various object types that have been defined in this way can then be linked to one another to form a selection.



Select

When you select this button, the search process is triggered, providing a valid SQL expression has been formed. If at least one data record has met the search conditions, the data records that were found are displayed in the list window of the “Selection Tool” box.

Cancel

Select this button to exit the dialog. The SQL expression that is currently entered is discarded.

Selection - File > Save query

The “Save query” menu item can be used to save the finished, defined selection job under any file name of your choosing. This selection job can then be run again at some later point in the menu “Create >Run saved query...” in the “Selection Tool” box.

Selection - File > Save as web query

To use a selection query with sisIMS, the selection definition file needs to have its syntax modified. This menu item creates and saves selection queries modified in this way.

Selection - Settings > Save query before selection

The effect of this setting is that, before running the selection, a file selection dialog opens to save the query.

Selection - Settings > Query on selection table

This option can be selected if there are already records selected in the selection table and this selection is to be further restricted. So a condition formulated using this option always relates to a quantity that has already been selected in the selection table and may restrict this further.

By object selection

The “By object selection” function in the “Selection Tool” box only runs the selection for those objects which lie within an area that has been spatially delimited using a fence. So the only elements selected are those that are found inside the fence area and, at the same time, meet the selection conditions.

If a fence area has been specified and if this function is then selected, the selection box appears for the objects or CAD elements that are to be included in the selection across the fence area (See “sisNET Tools > Fence” Page 87). The objects entered in this selection box are now included in the fence selection and entered in the selection table and in the list field in the selection box.

By Pos. file selection

Position files are generated, for example, using the menu “Extras > Check consistency” if corrupt drawing elements have been found during the consistency check. The position files hold the MS file positions of the corrupt elements found during the consistency check. To be able to display these elements, a selection of these elements can be made in this menu.

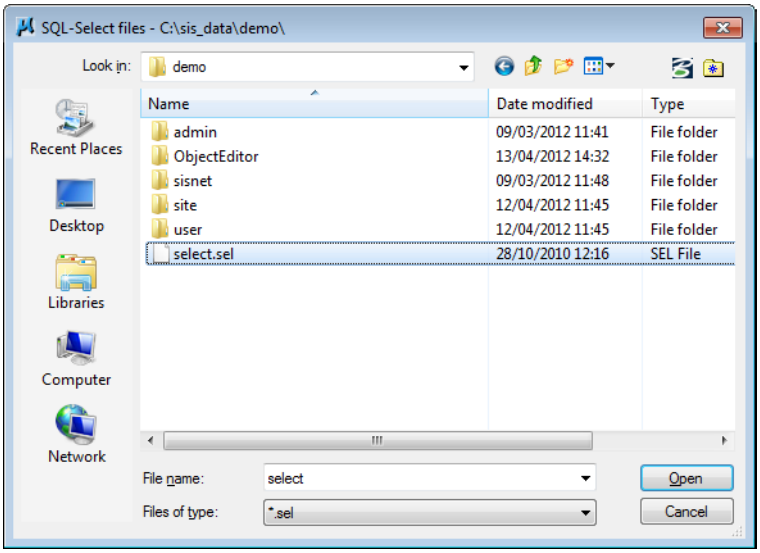
Position files are saved in the directory that the environment variable SIS_LOCAL points to.

When this menu item is selected, the “Position files” file selection box opens, which is used to select the path and file name of the position file required.

The structure and content of position files are described in the **sisNET** configuration guide.

Run saved query

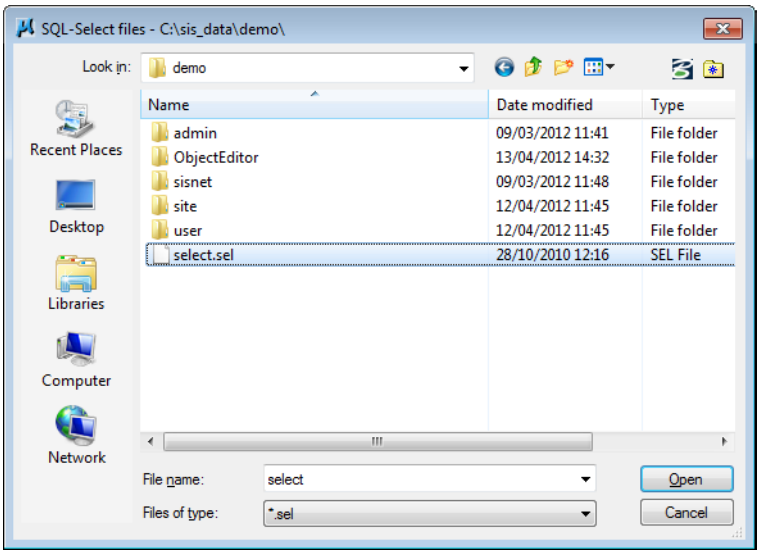
The “Run saved query” function can be used to access predefined selection jobs. The “SQL-Select files” file selection box opens, in which you can select the name of a selection job that has been saved. These SQL script files for defining a selection job can either be produced using an editor or they are created when a selection job is defined using the menu, via the “Selection” dialog and the “Save file” menu item in the “Selection” box (See “Database selection” Page 132).



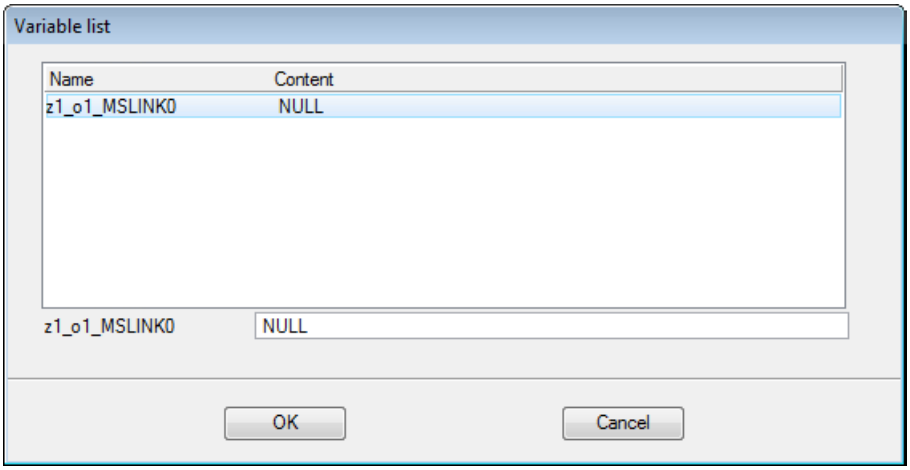
The SQL file to be selected holds the relevant SQL commands, which run after it is selected. The selection results are then available for further processing, just as if the selection job had been defined using the “Selection” dialog.

Edit saved query

This can be used to change the value assignment for search criteria (variables) in an existing selection file. After selecting this menu item, the file to be edited needs to be selected in the “SQL-Select files” file selection box.



The “Variable list” window, which contains all the search criteria with their value assignments, then opens.

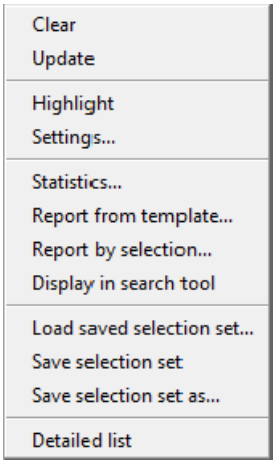


To change a value, the relevant line in the list window needs to be selected with the cursor. At that point, the value of the search criterion is released for editing in the edit line in the lower part of the dialog.

No further changes to a saved query for formulating a selection job can be made with this menu item. For example, if you wanted to also change a condition format for the selection (=, <, >), you would need to load the saved selection into a text editor and use the editor to make the changes you want.

Pull-down menu: Selection

This menu enables you to edit the current selection in various ways, and to reload a selection result produced previously to view or edit. The menu provides the following functions:



Clear

This menu item deletes the entries in the most recent selection both in the list field in the selection box and the entries in the selection table.

Update

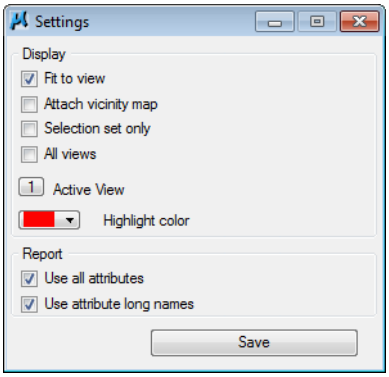
If the selection result in the selection table has been changed by another program, this menu item provides the option of refreshing the list window in the selection box with the new content in the selection table.

Highlight

This menu item is used to display the graphic for the selected objects. You can specify in which view and how the selected objects are to be displayed in the “Settings...” menu.

Settings...

You can specify how the selected objects are to be displayed in this menu. The “Settings” dialog opens for you to specify the display settings you require.

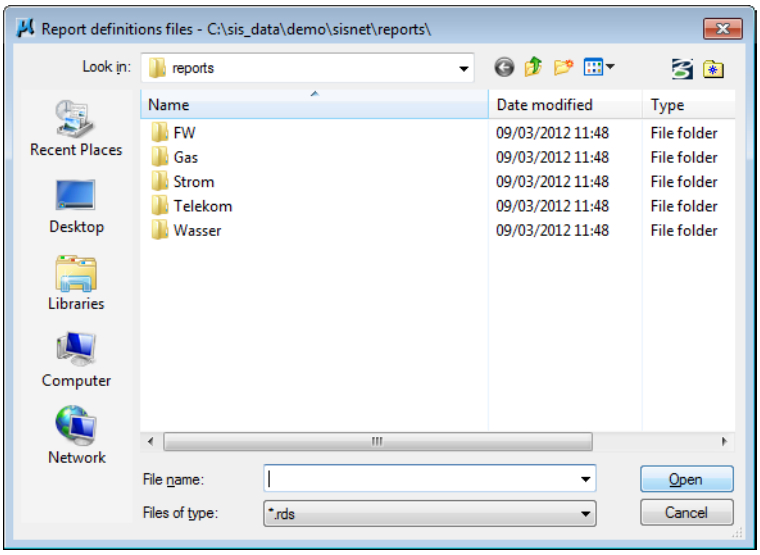


Statistics

Selecting this menu item generates statistics for the objects selected using the Selection function by displaying the objects found individually with their mslink and the total of all objects found in the Notepad editor.

Report from template...

Selecting this menu item opens the “Report definitions files” file selection box, which is used to select an existing report definition file (for creating report definition files and their syntax, see the **SISREPORTGENERATOR** guide).



In the file selection box, the path for selecting a report definition file is, by default, set to the one that the environment variable SISNET_DIR_REPDEFSEL points to. The report definition file the user selects needs to relate to the objects in the selection table before a useful report on them can be produced. The form of these report definition files is no different from the report definition files *r??, and **sisNET** does not differentiate between them. With report definition files for selections, however, it is intended that the report result file generated is only limited to the objects previously selected. The responsibility for this, however, lies with the person who programmed the report definition file, and **sisNET** does not check it.

Report by selection...

This function equates to Selection with standard report... (Page 142). However, it can only be selected if a selection has already been made using the selection tool. So the Report by Selection window opens immediately afterwards.

Display current selection as data table

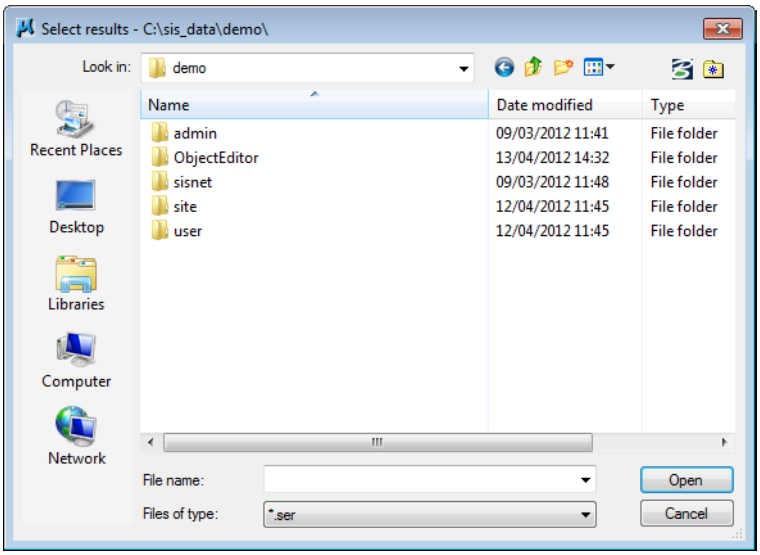
The current selection is transferred to the table in the sisNET object search. Here, the attributes of the objects selected are displayed in a table.

Load selection results & filters

The “Load selection results & filters” menu item can be used to load a selection result that was previously saved with the “Save selection results & filters as” menu item, and to display it in the list window in the “Selection Tool” dialog.

Selecting this menu item opens the “Select results” file selection box, which can be used to load a saved selection result and display it in the list field in the “Selection Tool” dialog.

By default, files for saving selection results have the extension *.ser.

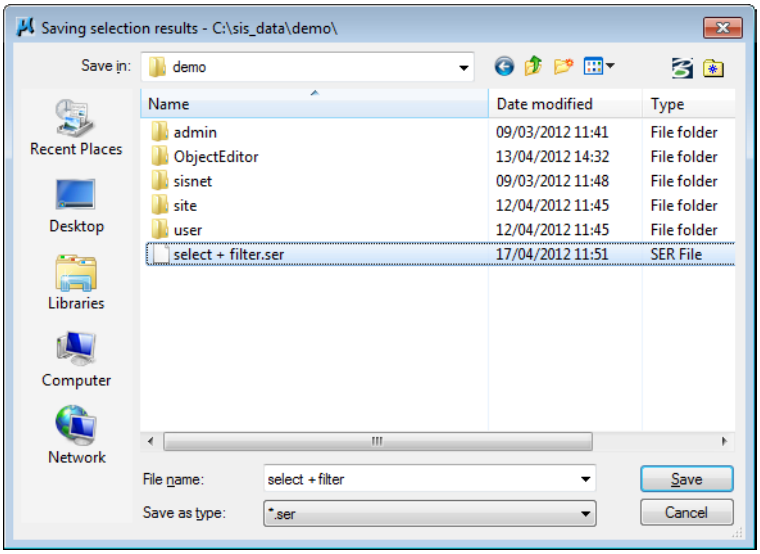


Save selection results & filters

This function saves the current selection result in a file that was previously created with “Save selection results & filters as”. All the filters defined prior to this point (Filter menu) are saved along with the selection result.

Save selection results & filters as

The result of a selection can be saved in a file. When this menu item is selected, the “Save selection results” file selection box opens in which a path and file name can be entered for the selection result. The directory to which the environment variable SISNET_DIR_SELECTERG points is proposed as the default path.

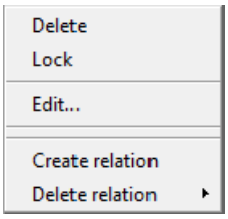


The saved selection result is a string list whose content can be displayed in the list window in the “Selection Tool” dialog.

Long/Short list

The user can use this menu item to select whether or not they wish to display, in the list field for the objects selected, the mslink and ID of the pool file for objects and the file position and file number for CAD elements.

Pull-down menu: Objects



The entries in this menu permit various manipulations of the objects selected, so they can only selected if the user is currently working in a sisNET job.

Delete

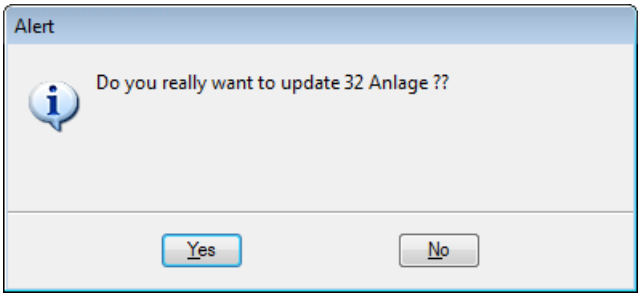
Selecting this menu item results in the deletion of all the objects selected in the selection. Before executing the delete command, the user is asked once more, for security purposes, whether they really wish to delete the number of objects displayed in the list window. The deletion is only actually done if this question is answered with OK.

Lock

This function locks the selected objects in the inventory files (network maps) and copies them to the current job. This means that these objects can now be edited like completely normal job objects. It is only when the job is saved that they are saved again in the relevant inventory files.

Edit...

This function enables the user to globally change database attributes of all the objects in the selection list of the object type which is highlighed in the list with the scrollbar. When this menu item is selected, the data entry mask for this object type opens in so-called “Prototype mode” (See “Data input mask” Page 78). Now the user can make the changes they want in this mask and confirm their entries with OK. At this point, they are asked again whether all of the objects of this type that are listed in the selection list are to be changed.



The changes entered are only made when this question is confirmed with OK.

Create relation

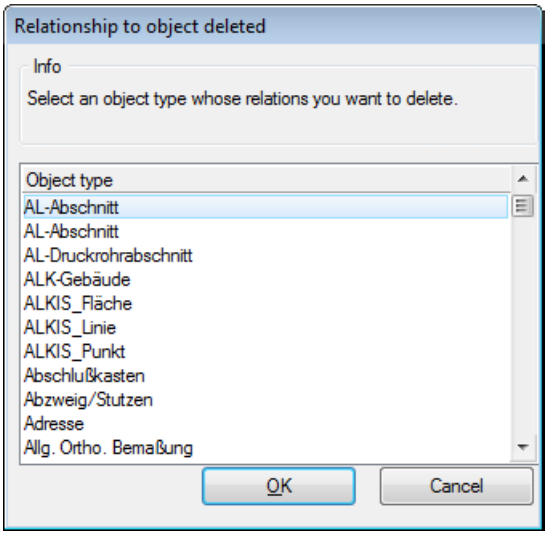
This function enables relations to be created globally for all the objects entered in the selection list. When this menu item is selected, the user is prompted to click the relation object. Relations for the selected objects can only be created for a specific new relation object which needs to be selected by clicking. All the objects selected in the selection are then given a relation to the object that was clicked.

Delete relations

For the objects selected with the scrollbar, the relations to a specific object and to an object type can be deleted. To do this, the user needs to select the relevant sub-menu item.

If the relation to be deleted is to a specific object, the user is prompted to click the relevant object to remove the relation. When it is clicked, and confirmed with the Data button, the relation of the objects selected with the scrollbar to the object clicked is deleted.

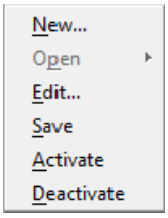
If the relation to be deleted is to an object type, the “To the Object type” selection box opens which can be used to select the object type to which the relations are to be deleted.



The user needs to select the object type they want from the list field in this box and confirm with OK, then the relations to all the objects of this type are deleted.

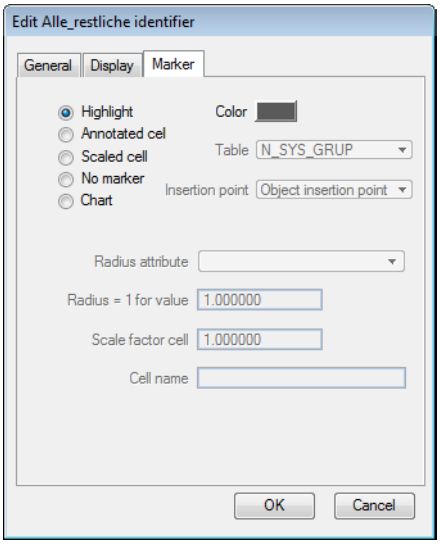
Pull-down menu: Filter

The user can use this menu item to create new filter definitions or open, activate or edit existing filter definitions.



For the functionality of filters, and the methods of editing and creating them, please refer to the description in the menu “Thematic Analysis > Activate” (See “Thematic Analysis > Activate” Page 101).

By default when a selection is displayed, a filter is activated through which the selected objects are displayed in the highlight colour and all the remaining ones in grey. If one wants the non-selected objects to continue displaying in their original colour, the relevant flag for “All_remaining” needs to be deactivated.

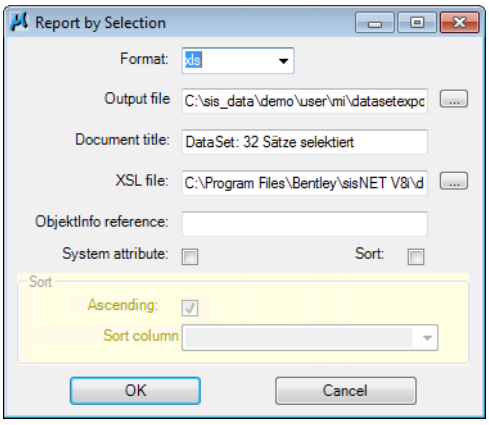


Selection with standard report...

This function can be used to create summary statistics in a file format and, at the same time, automatically display it.

Firstly, the selection window for the database selection opens Database selection (Page 132). The required selection can now be made here.

Now the Report by Selection window opens.



Format: Here you can choose from between the output formats *.html, *.xml, *.xls, *.doc and *.csv.

Output file: The storage location for the output file is specified here. By clicking the button with the three dots you can enter both the path you require and give it a name. Select “Open” to confirm the path and file name, or “Cancel” to close the window and discard any changes. If no new name is explicitly given, the default name (“datasetexport”) is kept. However, this may also overwrite existing files with the same name!

Document title: Here you can enter any title you want for the report.

XSL file: Here you can select an appropriate XSL file.

Object Info reference: Here you have the option of specifying an Object Info reference.

System attributes: If this option is activated, the system attributes are also put into the report.

Sort: If this option is activated, you can select both the column on which the sort is to be based and specify the type of sort (ascending/descending).

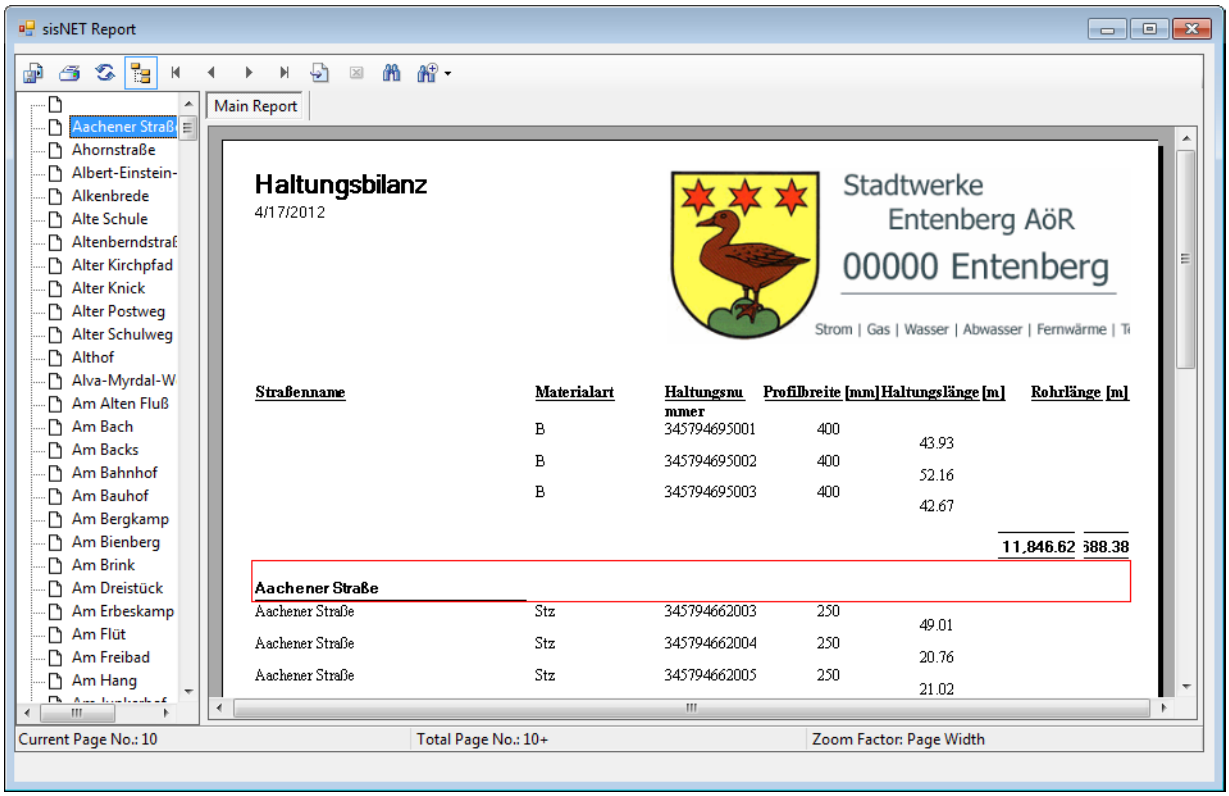
Clicking “OK” triggers the save process and opens the file in the relevant application. “Cancel” discards the entries and the dialog closes with no further action.

Report from template...

This menu item enables you to produce reports on your data inventory. To do so, report definitions will need to have been created beforehand, usually by your administrator. You can then select and run them here.

2 different report generators can be used here:

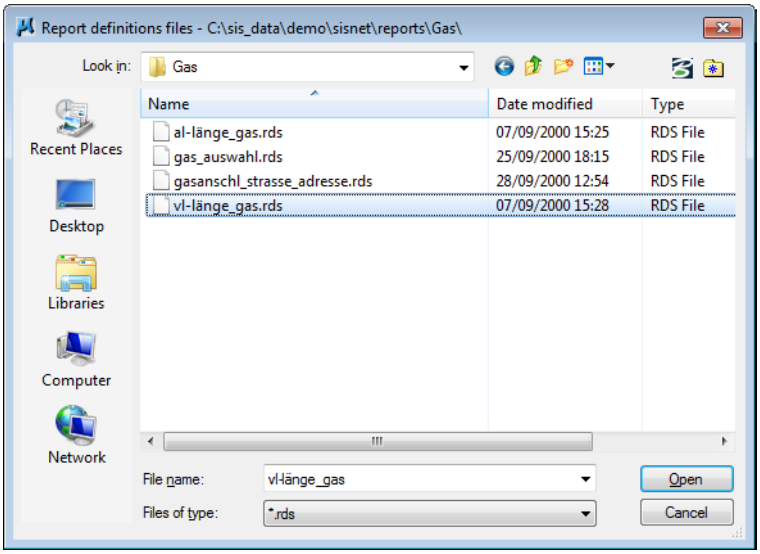
1. Report templates can be run in the SAP Crystal Reports format. This enables you to generate reports with any amount of complex formatting, which can then be exported and printed in different formats (Word, Excel, PDF, etc.). Here is an example:



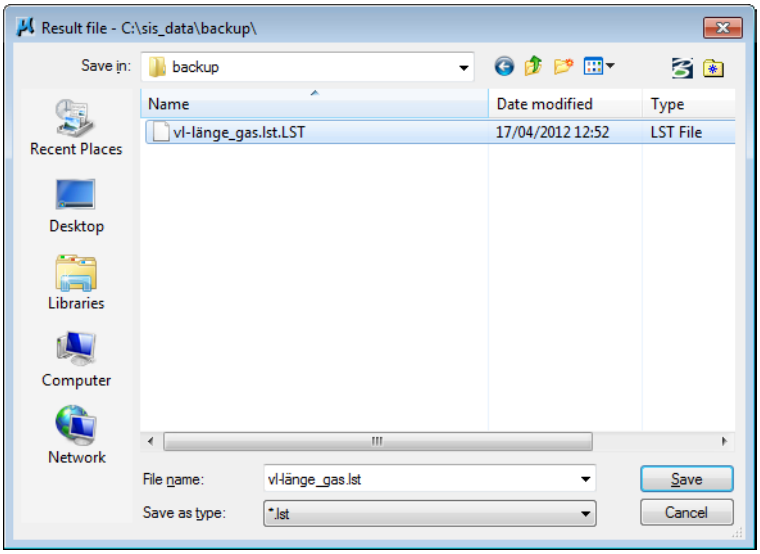
2. Reports can be produced in the *.lst file format from report definition files (*.rds).

Selecting this menu item first of all opens the “Report definitions files” file selection box, which is used to select an existing report definition file (for creating report definition files and their syntax, see the **SISREPORTGENERATOR** guide).

In the file selection box, the path for selecting a report definition file is, by default, set to the one that the environment variable SISNET_DIR_REPDEFSEL points to.

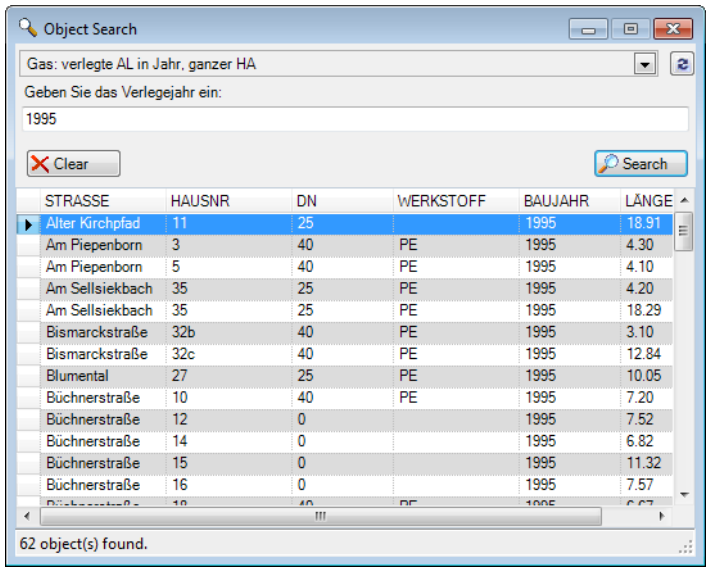


You confirm the selection with OK. The results file window then opens. You can specify in this where the *.lst file is to be saved and which name it is to be given. By default, the path in the SIS_LOCAL environment variable is proposed.



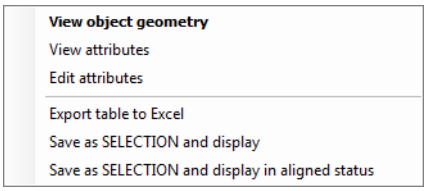
Object Search

A dialog opens which enables one or more predefined database queries to be run.
The top input field enables you to select a query that your administrator has predefined. Depending on the query definition, you can then restrict the query in one or more input fields. You can also use selection lists instead of input fields. This depends on the query definition. For background information on creating and using selection files, please refer to the sisNET administration guide.



Selecting the “Search” button triggers the query. The result then displays in a table in the lower half of the dialog. The content and headers of the result’s columns depends, again, on the query definition.

The individual rows in the table enable you to select, while the right mouse button opens this context menu:



View object geometry

The graphic for the object selected appears in the map display

View attributes

The attributes mask for the object selected appears in read mode

Edit attributes

The attributes mask for the object selected appears in edit mode

Export table to Excel

The table content is exported to a new Excel table

Save as selection and display

The table content is moved to a sisNET selection (saved in the user’s selection table and the sisNET selection dialog opens, where you can further process the objects selected)

Save as selection and display adjusted

Here the objects selected are displayed fitted into the map view and highlighted - see Highlight (Page 137)

6 The Application menu

The “Application” menu groups functions that enable users to process or display the data inventory from different perspectives. For example, elevation profiles, area network plans and length statistics can be generated.

Task:	Select from the “Application” menu:
Enables conversions between different coordinate systems	Coordinate system module (Page 147)
This function enables any elevation profiles which have been generated to be displayed graphically	Display elevation profile... (Page 151)
This function enables any areas that have been specified to be graded	Blend tool... (Page 152)
This function enables an isolation tracing zone associated with a particular pipe section to be displayed	Isolation tracing zone... (Page 152)
Hydraulic calculation module	Hydraulic calculation network model... (Page 152)
Electrical calculation module	Electrical calculation network model... (Page 152)
Enables network paths to be displayed according to different criteria	Network paths... (Page 153)
This function enables a schematic display of an electricity station to be generated	Schema... (Page 154)
Activity recording	Activity recording... (Page 154)

Coordinate system module

The coordinate tool is used to display and convert drawing coordinates in different coordinate systems. Particularly in the case of data inventories which include a very large area so that different regional systems overlap, a key question is: “What are the coordinates of Point X in coordinate system Y?”

Configuration

The system tables required are created during installation. The configuration of the coordinate system module is saved in them.

The very first time that the coordinate system module is launched, if the system tables are still empty, a message appears saying that the coordinate tool has not yet been configured. So you need to configure it.

A new version of the coordinate system module may also mean that the structure of the system tables needs to be changed. If so, a message appears prompting you to reconcile databases using **sisCONF**. In such cases, first run the database reconciliation with **sisCONF**, and then the default configuration.

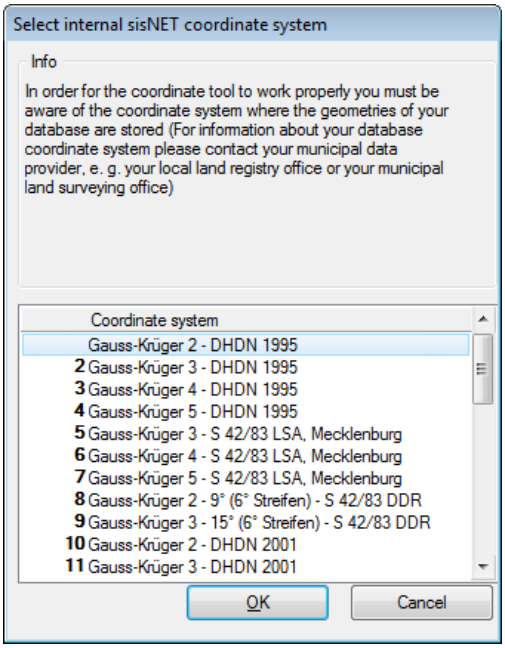
Standard configuration

The coordinate tool provides the option to run a standard configuration which will be sufficient in most cases. It is triggered in the coordinate tool via the menu item “Configuration> Reset to standard configuration”

⚠ The standard configuration can only be run by a user in the “Admin” group.
The standard configuration deletes the previous configuration. So a further security question gives the user the opportunity to abort the standard configuration.

A series of standard coordinate systems is now loaded to the system tables.

In the next step, the user needs to select the internal **sisNET** coordinate system from the available coordinate systems (see image). It displays the coordinate system in which all the **sisNET** geodata is saved. So it is the reference coordinate system for the coordinate tool.

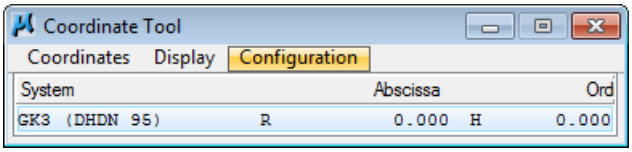


When the selection made has been confirmed with OK, a message displays about the successful configuration. After a reboot, the coordinate tool becomes available.

✍ User-defined configurations of the coordinate tool are the task of the administrator. They will find a description of the system tables that hold the configurations in the application module configuration guide.

Use

When the coordinate tool is configured, selecting the menu item “Coordinate Tool” opens the “Coordinate Tool” dialog box.



Coordinate display field

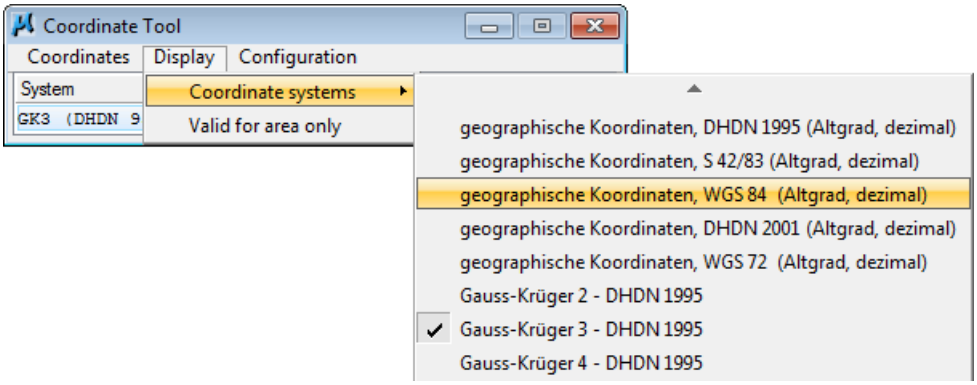
The coordinate display field shows the coordinates of the current position in the active systems. The current position can be determined in various ways:

1. By entering coordinates in the coordinate display field
2. By selecting a position in an MS view with the mouse’s Data button
3. By dynamic calculation while moving the mouse within a view
4. By an ASCII import
5. By copying the coordinates from a GPS receiver

By clicking a cell in the column “Abscissa” or “Ordinate”, the value of the cell can be edited. If you leave the cell with the Tab or Return key, the coordinates of all other systems are recalculated.

Display menu

In the “Display” menu, you select the systems that are to be displayed.

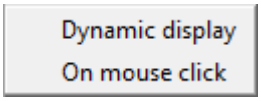


The “Systems...” menu item contains a sub-menu with the known (i.e. configured) coordinate systems. You activate a system by selecting the system in this sub-menu. The selected system is then given an “Activated” symbol (in Windows: a tick). The coordinate display field has a new row added which displays the activated system. If, in the “Systems...” sub-menu, you select a system that is already activated, it becomes deactivated.

If the “Valid for area only” menu entry is activated, the coordinate tool automatically determines which coordinate systems are displayed. Every coordinate system definition is given a definition area (e.g. Gauß-Krüger3 from 7.5° east length to 10.5° east length), the coordinate tool calculates the geographic coordinates of the position required, and only displays the coordinate systems whose definition area includes the current position. If “Valid for area only” is activated, the “Systems...” menu entry is deactivated, because systems are selected automatically.

Coordinates menu

The user uses the “Coordinates” menu to specify the type of current position calculation or display the current position.



If the “Dynamic display” menu item is activated, the current position is continuously calculated, and displayed in the coordinate display field, as the mouse is moved within a view. The dynamic display can be deactivated by selecting the menu item again or using the Reset (right mouse) button.

The “On mouse click” menu item enables individual positions to be clicked. The Data button triggers a recalculation of the current coordinates, and the Tentative functionality can be used here (see MicroStation help). This mode, too, can be deactivated by selecting the menu item again or using the Reset (right mouse) button.

Configuration menu

The “Run standard configuration” menu item deletes the existing configuration of the coordinate tool and replaces it with a standard configuration. The standard configuration is described in chapter Configuration on page 234.

The following coordinate systems can be selected in **sisNET**:

- geographic coordinates, DHDN 1995 (degree, decimal)
- geographic coordinates, S 42/83 (degree, decimal)
- geographic coordinates, WGS 84 (degree, decimal)
- geographic coordinates, DHDN 2001 (degree, decimal)
- geographic coordinates, WGS 72 (degree, decimal)
- Gauss-Krüger 2 - DHDN 1995
- Gauss-Krüger 3 - DHDN 1995
- Gauss-Krüger 4 - DHDN 1995
- Gauss-Krüger 5 - DHDN 1995
- Gauss-Krüger 3 - S 42/83 LSA, Mecklenburg
- Gauss-Krüger 4 - S 42/83 LSA, Mecklenburg
- Gauss-Krüger 5 - S 42/83 LSA, Mecklenburg
- Gauss-Krüger 2 - 9° (6° strips) - S 42/83 DDR
- Gauss-Krüger 3 - 15° (6° strips) - S 42/83 DDR
- Gauss-Krüger 2 - DHDN 2001
- Gauss-Krüger 3 - DHDN 2001
- Gauss-Krüger 4 - DHDN 2001
- Gauss-Krüger 5 - DHDN 2001
- UTM 2 - 9° - Brandenburg (Zone 32)
- UTM 3 - 15° - Brandenburg (Zone 32)

- Gauss-Krüger 3 - PD 83 Thüringen
- Gauss-Krüger 4 - PD 83 Thüringen
- Gauss-Krüger 4 - RD 83 Sachsen
- Gauss-Krüger 5 - RD 83 Sachsen
- Gauss-Krüger 2 - DHDN 2001 Nord
- Gauss-Krüger 3 - DHDN 2001 Nord
- Gauss-Krüger 4 - DHDN 2001 Nord
- Gauss-Krüger 5 - DHDN 2001 Nord
- Gauss-Krüger 2 - DHDN 2001 Mitte
- Gauss-Krüger 3 - DHDN 2001 Mitte
- Gauss-Krüger 4 - DHDN 2001 Mitte
- Gauss-Krüger 5 - DHDN 2001 Mitte
- Gauss-Krüger 2 - DHDN 2001 Süd
- Gauss-Krüger 3 - DHDN 2001 Süd
- Gauss-Krüger 4 - DHDN 2001 Süd
- Gauss-Krüger 5 - DHDN 2001 Süd

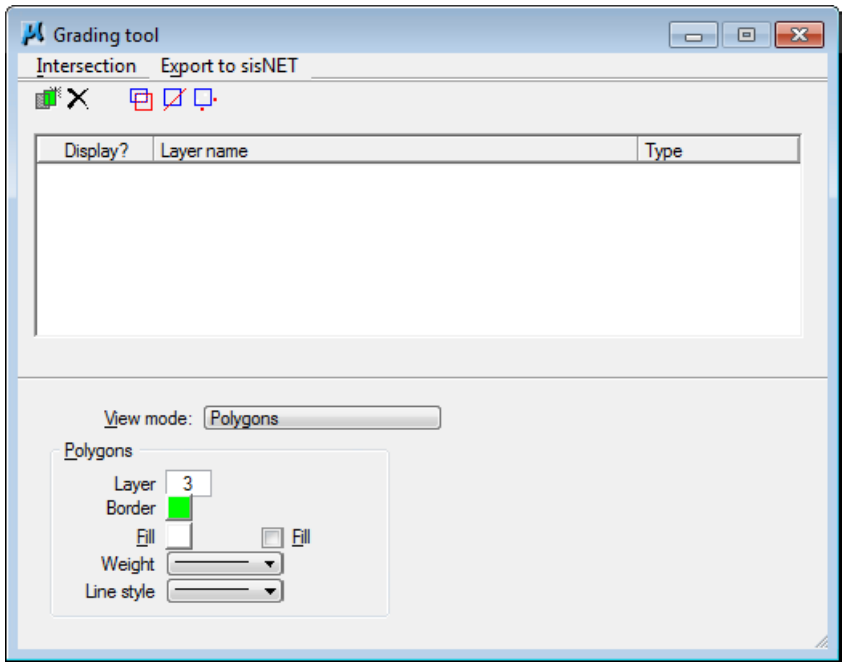
About the datum shift: A datum shift occurs if one ellipsoid datum is transformed into a different ellipsoid datum. There is no datum shift when switching from the meridian strip to the same ellipsoid datum. The datum shift is calculated as follows (simplified): Coordinates in the initial coordinate system -> Coordinates in the WGS84 -> Coordinates in the target coordinate system.

Display elevation profile...

This module is described in Display elevation profile (Page 235).

Blend tool...

This module enables areas to be blended with areas, areas with lines and areas with points, so that new objects are generated. These can also be saved as a DGN file.



Isolation tracing zone...

This module is described in Isolation tracing zone (Page 191).

Hydraulic calculation network model...

The “Hydraulic calculation network model” module is a standalone program which does not come as standard with **sisNET**, but which can be purchased as an add-on application.

This module is described in Generating hydraulic calculation network models (Page 195).

Electrical calculation network model...

The “Electrical calculation network model” module is a standalone program which does not come as standard with **sisNET**, but which can be purchased as an add-on application.

This module is described in Generating electrical calculation network models (Page 225).

Network paths...

With the “Network Paths” application module, users can display connecting pipe sections between any two selectable start and end points of pipes which satisfy certain, freely selectable conditions (shortest path, paths below a certain length, etc.). The option is also provided to search for and display all the paths with a specified length, starting from a freely selectable point on a pipe.

Prerequisites for using the Network Paths module

Because the **sisNET** data structure can, to a great extent, be freely configured, the Network Paths module can be configured to different customer data models. To do this, the associated **sisNET** object types from the **sisNET** schema for the current category, and the required display attributes, need to be assigned to the object types which are to be differentiated in the Network Paths module.

Only two object types are required for the Network Paths module:

- the node object type, with the connection object between the pipe sections (this is usually the situation point), and
- the pipe object type for the pipe objects whose path is to be displayed as a network path. The application module attribute for the length of the pipe is also required for the pipe object type.

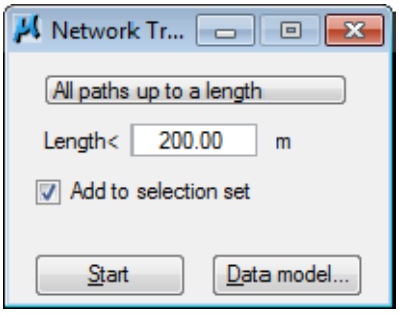
To search for paths, certain conditions, described below, are also required for the data model in the customer schema.

1. The pipe objects are all linked to one another by common node objects (e.g. situation points).

For this program module to be started, an environment variable SIS_LOCAL needs to be defined. The value of SIS_LOCAL should point to the **sisNET** work directory. As soon as the program has been configured once, the parameter file wayxxx.par (xxx is the internal number of the category for the parameter file), containing the settings made while configuring the program, is created in the directory defined by SIS_LOCAL.

Using the Network Paths module

The “Search for paths” dialog in the “Network Paths” module is used to search for paths. This is where you specify the pipe path to be searched for (shortest path, paths with a length, etc.) and start the search for it:



After selecting the search mode (all paths, shortest path, all paths up to a length, all paths with a length) and, possibly, entering the maximum or required path length, you select the “Start” button to trigger the path search. The user guide in the **sisNET** main menu prompts the user to click the start and end point for the network path to be searched for. In line with the conditions that have been entered, the system then searches for the relevant network path and displays it in the highlight colour selected.

If the “Add to selection set” box has been checked, the pipes in the path found are written to the current **sisNET** user’s selection table.

The “Parameter” button can be used to change the setting parameters for tracing the pipes.

The last selected settings in each case are saved in the current **sisNET** user’s user settings.

Schema...

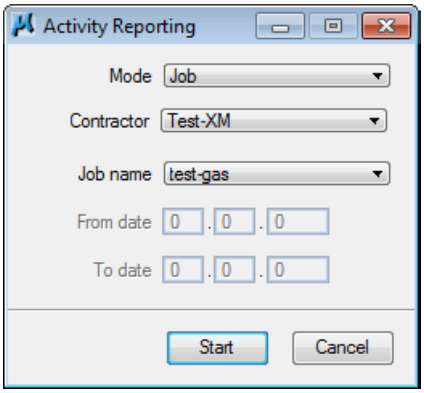
This module is used to generate schematic displays of stations in the electricity category. The station required is selected and the function is then started.

Activity recording...

This function can be used to create a statistical analysis of the **sisNET** objects that have been included. This statistical analysis can be created for a job, an mslink area or a period. To be able to use the function, a special resource file “auswert.r”, or its compiled version “auswert.rsc” needs to be installed. There is a sample “auswert.r” file in the DEFAULTS folder in the **sisNET** installation.

Analysis dialog

When selected, the “**sisNET** Activity Reporting” dialog box opens where the job name required for the Job mode should be selected. When the Start button is selected, the output file is queried and the analysis is generated.



Mode

The mode is used to select the type of activity recording. You may select from 3 modes.

1. Job - All the objects in a job are included
2. Contractor (MSLINK) - All the objects in an MSLINK area are included.
3. Contractor (Import) - All the objects that have been imported within a particular period are included.

Contractor

This button enables you select from the contractors that have been defined in the auswahl.r configuration file.

Job name

This option button is only active in Job mode. In this case, any existing job can be selected for activity recording from the pulldown menu.

From date and To date input fields

These input fields are only active in the “Contractor (MSLINK)” or “Contractor (Import)” modes. In the “From date” input field, you specify the start date you want for the activity recording, while in the “To date” input field you specify the end date you want.

Using the tool

A prerequisite for using the tool as a whole is a special configuration file auswert.r, or its compiled version auswert.rsc. The compiled file must be located in the usual RSC directory in the **sisNET** installation. There is a more detailed description of this configuration file in the sisNET administration guide.

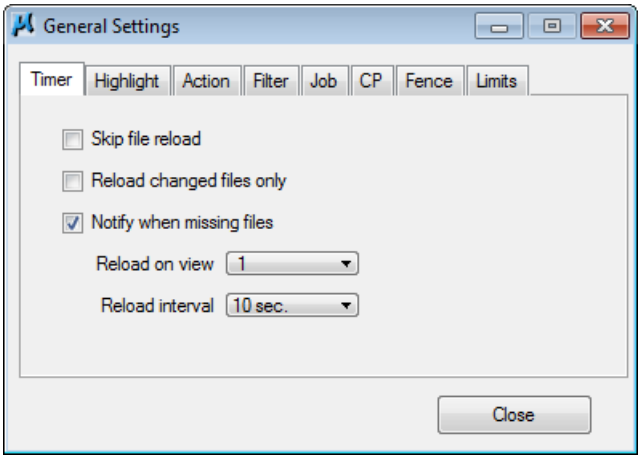
7 The Extras menu

The functions grouped into the “Extras” menu enable users to, e.g., custom-design various system settings.

Task:	Select from the “Extras” menu:
Manages the attachment mode of time-marked reference files and the highlight colours of selected objects	General settings (Page 157)
Switches debug information on or off for the macro functions	Debug Info On/Off (Page 163)
Refreshes the coordinates of the active drawing file	Update active file range (Page 165)
Refreshes the coordinates of any files	Update range of other files (Page 165)
The function can be used to check the consistency of any pool files	Check consistency > Repository file (Page 166)
The function can be used to check the consistency of all pool files of one type	Check consistency > Repository files by type (Page 167)
The function can be used to check the consistency of any individual objects	Check consistency > Single object (Page 168)
The consistency of a file is to be repaired	Repair consistency > Repository file (Page 169)
The consistency of an individual object is to be repaired	Repair consistency > Single object (Page 169)

General settings

This menu item opens the “General settings” dialog box, in which the user can use various tabs to apply user-specific settings. The general settings are saved for the specific user even after exiting from **sisNET**.



The Timer tab

Timer: Without Ref. files

A freely selectable file type with a timer marking can be given to all file types that are to be attached as reference files The effect of the timer marking is that files of this type are continuously updated and re-attached at time intervals that must be specified. The timer marking, of course, is only of use with “living” files, i.e. those such as job files and pool files which are subject to constant change. There is no point in time marking static files such as base maps.

A timer function is only ever active if **sisNET** is in Create mode, i.e. a Create box is open.

Activating this setting field deactivates the timer function for the file type given the timer marking.

Timer: Reload most recent only

If this setting is selected, when each new, time-controlled image build takes place, the only reference files reloaded are those whose creation date (incl. time) has changed since the last image build (e.g. other users’ jobs).

Timer: Error messages On

When this setting field is activated, an error message appears if a reference file which should be attached is missing.

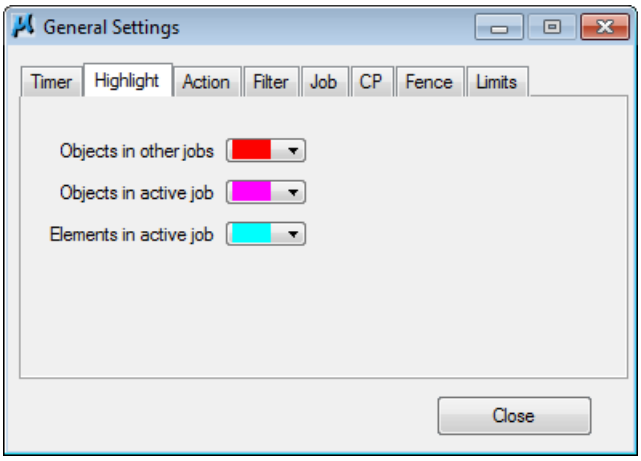
Reload on view

This function can be used to select the view in which the reference maps to be attached are displayed. When **sisNET** is rebooted, a check is run to see whether the view specified here really is the active view. If not, the setting is reset to “View 1”.

Reload interval

This function can be used to set the time interval after which the time-marked reference files are to be reloaded. Possible intervals are 5, 10, 20, 30, 60 and 90 seconds. The STOP setting can be used to switch off the timer function.

The Colour tab



Colour locked objects

This function can be used to define the highlight colour for locked objects. The objects that are selected with the function “View > View locked objects” (See “View locked objects” Page 127) are displayed in the highlight colour selected.

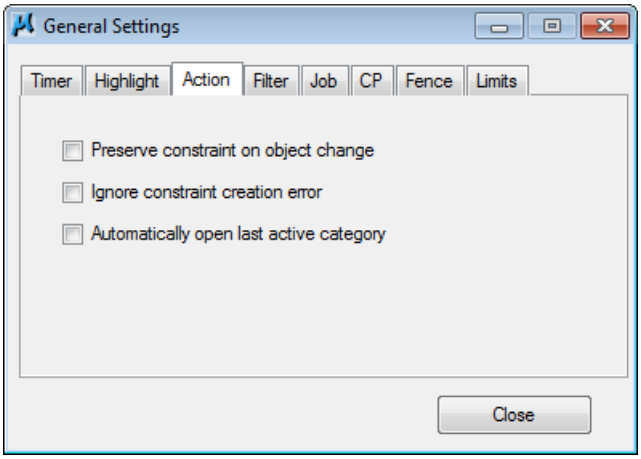
Colour active objects

This function can be used to define the highlight colour for active objects. The objects that are selected with the function “Edit > View active objects” (See “View active objects” Page 127) are displayed in the highlight colour selected.

Colour active elements

This function can be used to define the highlight colour for active elements. The elements that are selected with the function “Edit > View active elements” (See “View active elements” Page 127) are displayed in the highlight colour selected.

The Action tab



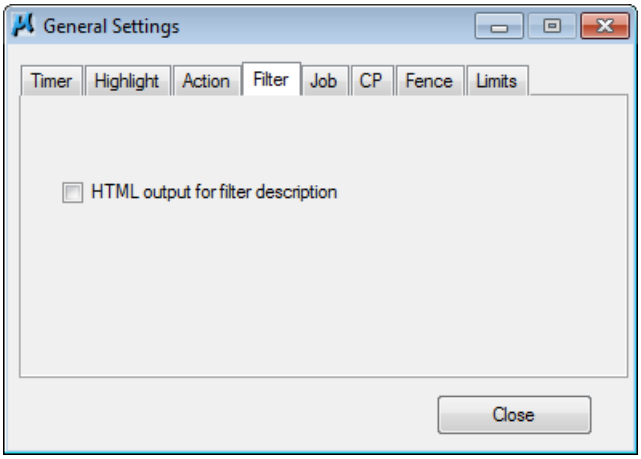
Preserve constraint on object change

You can use the “Preserve constraint on object change” setting field to specify whether, when manipulating constraint objects, the constraint is to be lifted or not.

Automatically open last active category

This setting field enables you to display the content of a job file depending on the current factor. A prerequisite for this setting to work is that the info field DFLT_SIS_RANGEVIEW is defined in the config.r configuration file in the SISNET_DEFAULT_KUNDE structure (see configuration guide, “Structure and content of configuration files”). There also needs to be a *.dat file in which the levels to be displayed or not displayed for a particular factor need to be defined. The structure of these files is the same as the files for setting a particular level symbology (see onfiguration guide, “Directory structure and environment variables”). The concept of displaying the drawing concept in a way which is view-dependent is based on switching levels off. If you want to manage the view content in a way which is object-related, this needs to be managed using relevant filter functions.

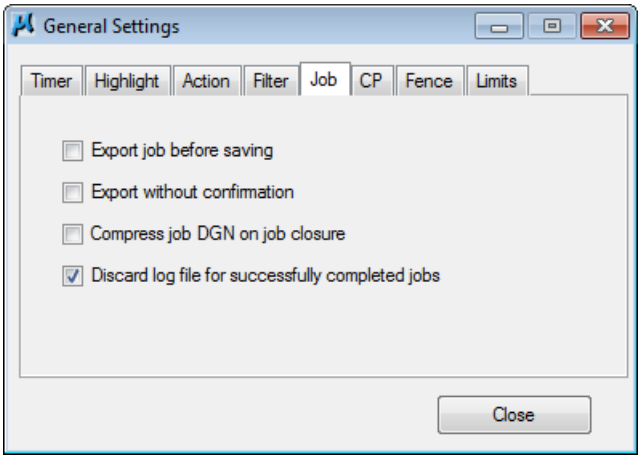
The Output tab



HTML output for filter description

This option can be used to manage whether the definition and description of a filter selected with the scroll bar in the “Filter” dialog box (See “Thematic Analysis > Activate” Page 101) is to be displayed as a pure text file or with the operating system’s HTML viewer (See “Thematic Analysis > Activate” Page 101).

The Job tab



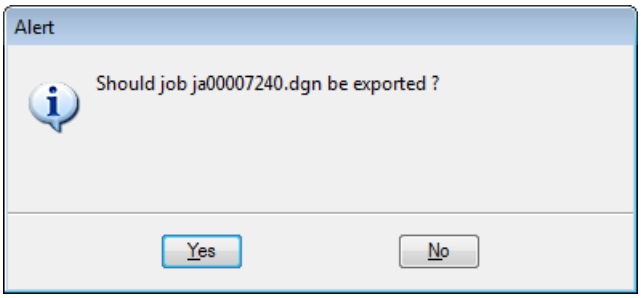
Export job before saving

This option needs to be activated if there is an intention to share data from different, non-networked data entry computers with a central system (e.g. if a company is entering data at different locations).

If this option is activated, the graphic for a job is saved as a *.dgn file when it is saved, while the associated object data is saved in a separate ASCII file. The export process runs in the same way as the method described in the menu “File > Data Exchange > Export (sisNET format)” (See “Data Exchange > Export in sisNET format” Page 43).

Export without confirmation

If this option is not activated, when the user saves a job and the previous option (“Export job before saving”) is activated, a warning box asks them again whether the job really should be exported prior to saving.



Confirming with Yes exports the job and saves it, confirming with No does not export the job and saves it.

Compress job DGN on job closure

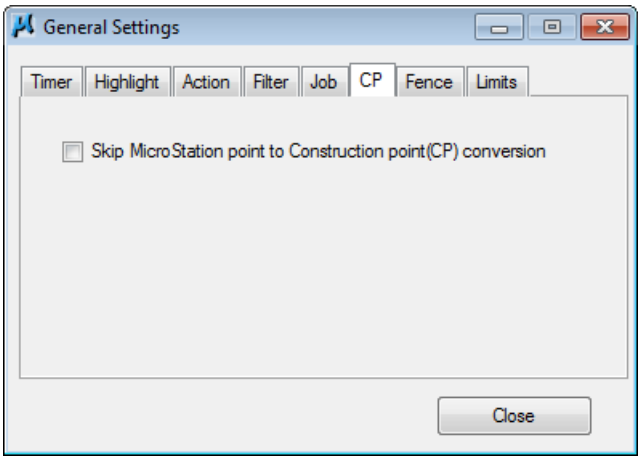
If this job is activated, the current job file is compressed when leaving the job.

Discard log file for successfully completed jobs

Discard log file for successfully completed jobs

If this option is activated the log files for a job are automatically deleted after it has been saved or discarded.

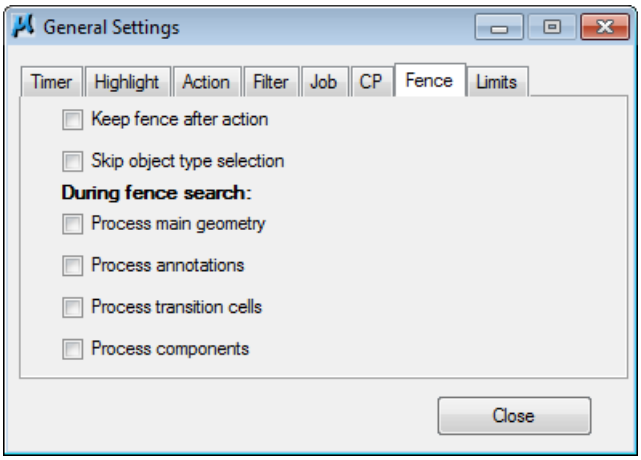
The CP Tab



No conversion of MS points to CP

In the **sisNET** toolbox for the point tools (See “sisNET Tools - Help construction” Page 96), only the “Construction point” button generates a construction point immediately. The other buttons in the CP sub-palette are actually MS tools that only capture the MS command they displace and normally generate actual **sisNET** construction points instead of MS CAD points. If the user does not want this, they need to explicitly select the “Skip MicroStation point to Construction point(CP) conversion” option in this box. The points these buttons generate are then pure CAD points with no user link, as if they had been generated with the original MS tools.

The Fence tab



Keep fence after action

By default, the fence is deleted after running a fence operation with the fence-related tasks (See “sisNET Tools > Fence” Page 87). If one wishes to carry out other operations with relation to this fence, one would have to put the fence back in place. Re-positioning the fence can be avoided by activating the “Keep fence after action” option. The fence then remains active even after running a fence operation.

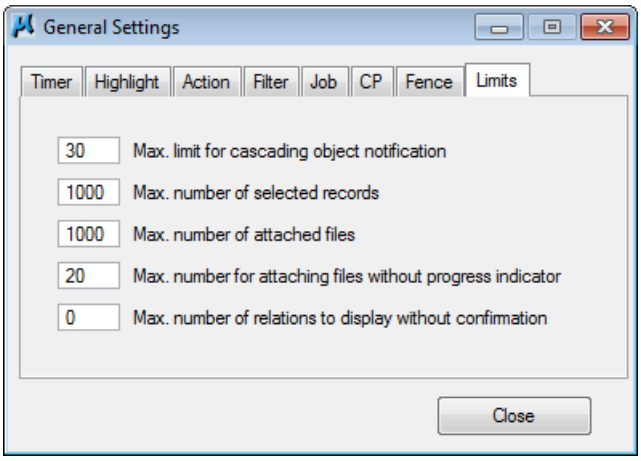
Search for all objects & CAD elements in fence

If this option is activated, all the objects and CAD elements included within the fence are selected when the fence is selected (See “sisNET Tools > Fence” Page 87). If this option is not activated, the user can use the “Objects” dialog box to select which objects or CAD elements they wish to select in the fence.

During fence search:

The options below this heading specify which graphic aspects of sisNET objects are to be included when searching in the fence. These may be main graphics, annotations, transition cells or parts.

The Limits tab



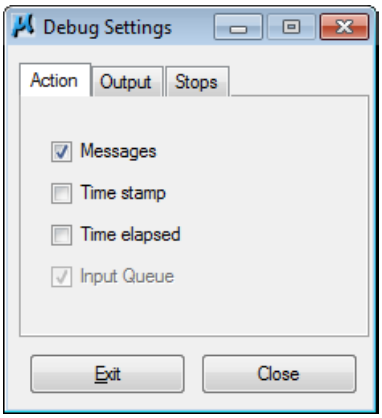
This menu can be used to make various settings with relation to the maximum number of particular view factors. The settings are possible for the following points:

- Max. nesting depth for object notification
- Max. number of selected records
- Max. number of attached files
- Max. number for attaching files without progress indicator

Debug Info On/Off

This function opens the “Debug Settings” dialog box, which the user can use to make settings for the debug information for the programs that are running for the active functions (e.g. creating an object). These functions are usually only of interest to system administrators when changing or creating an application module, as they enable the flow and functionality of the programs and macros that have been created to be examined.

The Action tab



Messages

Checking this box enables the debug messages to be viewed. This field is activated by default.

Time stamp

When this box is checked, the start and end time of an action is logged.

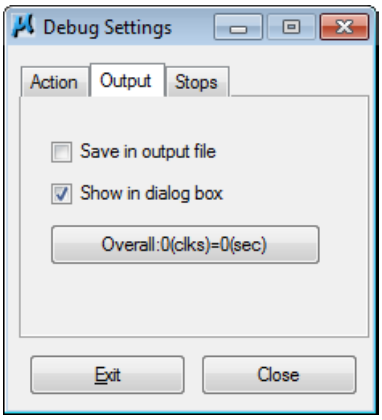
Time difference (init. overall)

When this box is checked, the time difference between the start and end of an action is logged. The time difference is given in “clicks” (each approx. 1/30 s).

Input Queue

If this option is activated the only commands that appear in the message window are those that are passed from **sisNET** to MicroStation.

The Output tab



Output file

Checking this box writes the debug messages to an output file. The log file is called sisdbg.txt and is written to the directory which the environment variable SIS_LOCAL points to. The resulting output file can only be opened with a suitable editor if the debug mode has been switched off again.

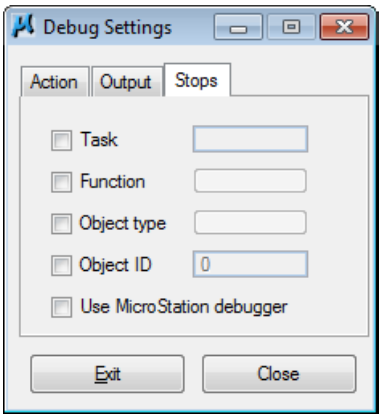
Dialog box

Checking this box writes the debug messages to the Messages dialog window so they can be seen on the screen.

Total time display

Selecting this button displays the total time of a completed action (e.g. creating a pipe).

The Stops tab



Task

Checking this box logs only the messages for a particular task (e.g. eval, commit etc.) whose name must be specified in the related input field.

Function

Checking this box and clicking the associated button opens a pulldown menu from which the user can select a particular program function. In this case, the debug file only logs the execution of this function.

Object

Checking this box and clicking the associated button opens a pulldown menu from which the user can select a particular object type from the application module. In this case, the debug file only logs messages about this object type.

ID

By checking this box and entering an object ID, you only log messages about the object with the ID entered.

Use MicroStation debugger

Checking this box activates the MicroStation debugger, which enables you to monitor in detail how the program runs in the source code.

Update active file range

Refreshes the size and range of a basic map, a job or another DGN file which is being managed in the pool table. All of these files have a default value for the coordinates of the bottom left and top right corners. These pre-set values can be changed during the files' life cycle if, e.g., pipes have been drawn beyond the original area of a basic map. To refresh the geographic range and save the actual parameters, the "Update active file range" function can be used. The function refreshes the range of the current file in contrast to the "Update range of other files", which can be used to refresh any files.

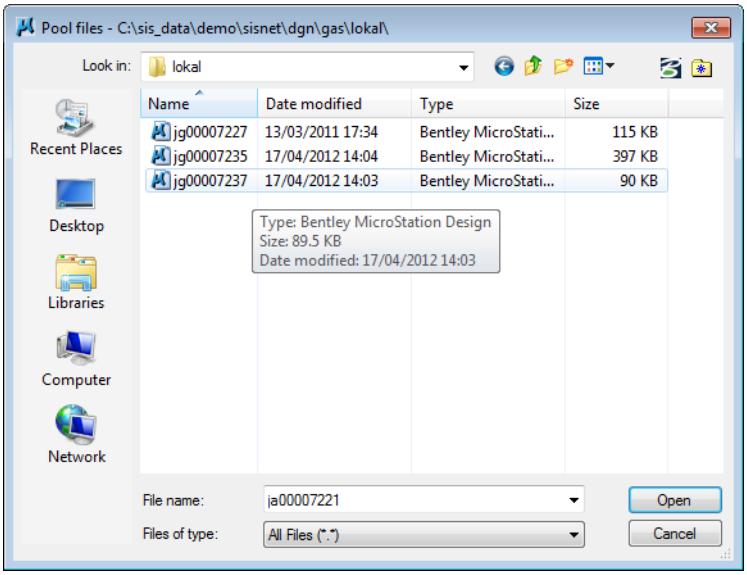
Normally when working with **sisNET**, the range is automatically refreshed in the pool table. The function is only used to correct any inconsistencies that have arisen between the geographic range of a map and the value entered in the pool table. Such inconsistencies can occur if, for example, inventory maps from a third party system are copied without the associated records in the pool table.

Update range of other files

Refreshes the size and range of a basic map, a job or another DGN file which is being managed in the pool table. All these files have a default value in terms of their geographic range. These pre-set values can be changed during the files' life cycle if, e.g., pipes have been drawn beyond the original area of a basic map. To refresh the geographic range and save the actual parameters, the "Update active file range" function can be used.

The "Pool files" file selection box opens which can be used to select the file whose range is to be updated.

Normally when working with **sisNET**, the range is automatically refreshed in the pool table. The function is only used to correct any inconsistencies that have arisen between the geographic range of a map and the value entered in the pool table. Such inconsistencies can occur if, for example, inventory maps from a third party system are copied without the associated records in the pool table.

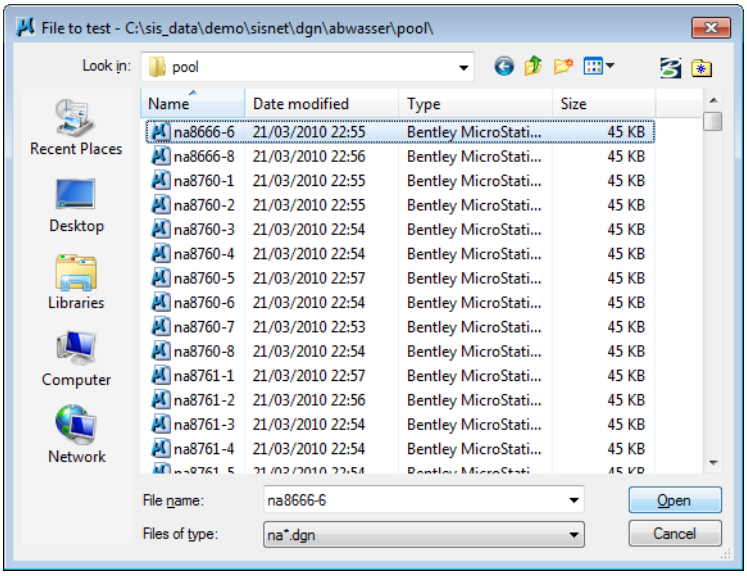


Check consistency > Repository file

The “Check consistency” function runs a consistency check. This consistency check is used to identify any differences between the graphic and the database. The consistency check routine works bidirectionally, i.e. on the one hand it checks whether there is an entry in the database for every element and, on the other hand, whether there is a graphic element for every database entry.

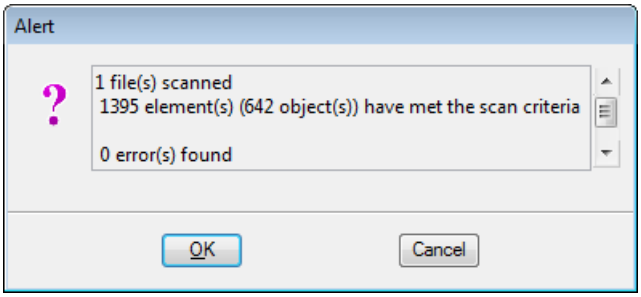
Any pool files can be checked with this function. This type of check is recommended, e.g. before a job is copied to the archive. It ensures that only consistent jobs are added to the general data inventory.

When this function is selected, the “File to test” file selection box opens, from which the user selects the name of the pool file to be checked.



"OK" triggers the check, while "Cancel" aborts the process.

When the check is finished, the user is asked whether the test report is to be displayed.

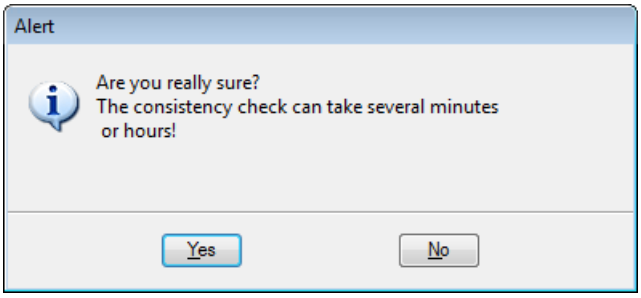


The "OK" button outputs the report to an editor window. You can skip the report with "Cancel".

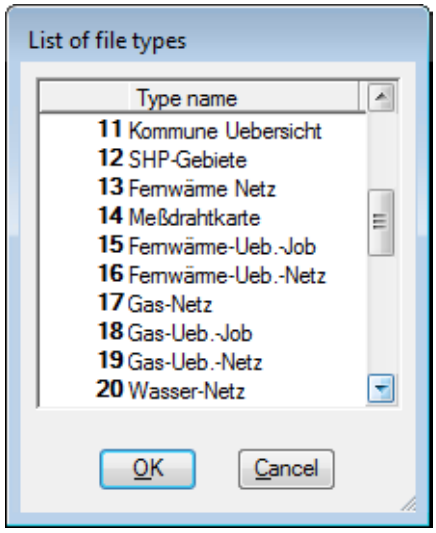
Check consistency > Repository files by type

This function checks all the pool files of one type. This type of check is recommended, e.g. before a job is copied to the archive. It ensures that only consistent jobs are added to the general data inventory.

When the function is selected, first of all the following window appears:

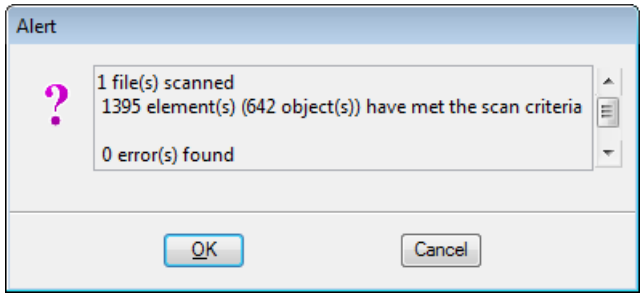


"Yes" continues the process, while "No" aborts it. In the next window you select the type that you want to be checked.



"OK" triggers the check, while "Cancel" aborts the process.

When the check is finished, the user is asked whether the test report is to be displayed.



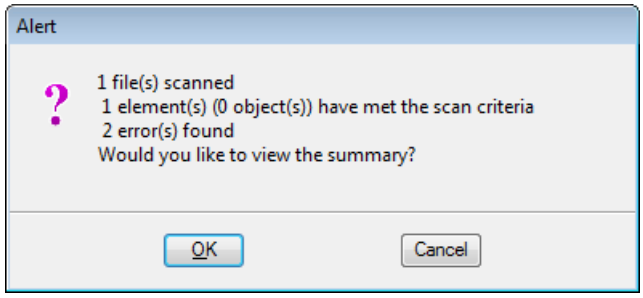
The "OK" button outputs the report to an editor window. You can skip the report with "Cancel".

Check consistency > Single object

With this function, a single object is checked. This type of check is recommended, e.g. before a job is copied to the archive. It ensures that only consistent jobs are added to the general data inventory.

When the function is selected, the user is prompted to click the object that is to be checked. Pressing the Data button confirms the selection, while the Reset button aborts the process.

When the check is finished, the user is asked whether the test report is to be displayed.



The "OK" button outputs the report to an editor window. You can skip the report with "Cancel".

Repair consistency > Repository file

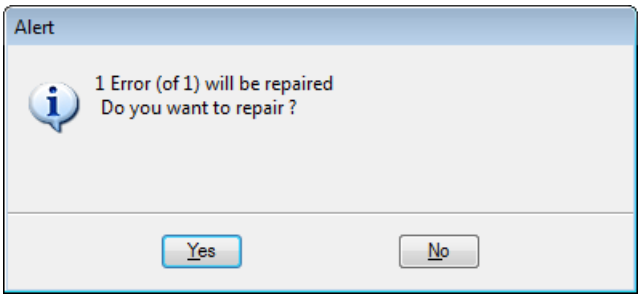
This function enables inconsistencies in pool files to be repaired. When this function is selected, a file selection box opens so that the user can select the files to be repaired. After confirming, the file is first checked for consistency. If an error is identified, a report first of all states which errors have been found and what needs to be done to repair them.

Here is a typical report:

```
**********************************************************************************************
Log: C:\SIS_DATA\sislemgo\user\martin.icking\jg0000722b.013 - 26 05 11 22 06 27
User: mi
**********************************************************************************************
-Object being checked ...
**********************************************************************************************
Active file: C:\SIS_DATA\sislemgo\sisnet\dgn\gas\lokal\jg0000722b.dgn (29227)
**********************************************************************************************
Scan: GR.:the element in the active file with the position=4000004; DB.:none; crit2:0
**********************************************************************************************
 Object with no DB record:construction point,ID: 4392373
**********************************************************************************************
File-end log:
1 elements have met the graphic search criteria !
1 objects have met the DB search criteria in 1 work processes
**********************************************************************************************
1 files examined
1 elements (1 objects) have met the DB search criteria
1 error found
Repairing files as follows...

**********************************************************************************************
Construction point,ID: 4392373 deleting the graphic found
**********************************************************************************************
```

Now the user can trigger the repair.



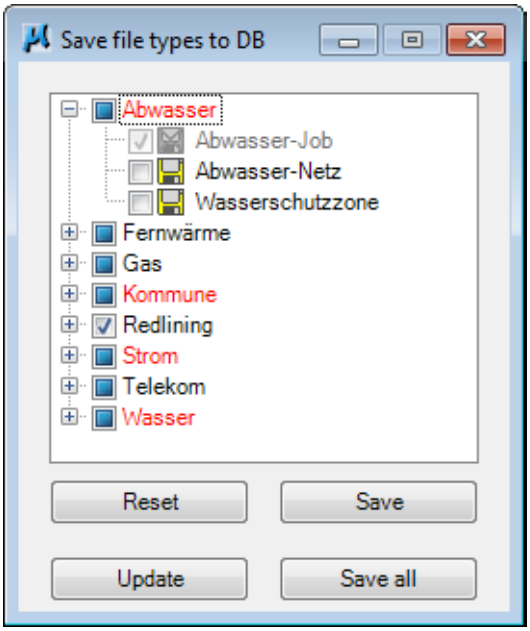
Repair consistency > Single object

This function is similar to the repairing of pool files described above, except that here the user is prompted to select an object which is then checked and, if necessary, repaired.

Update pool files in DB

This enables the sisNET pool files to be saved in the database. By default, the sisNET pool files are only held in central directories on a file server. You can use this functionality to also store pool files (as so-called BLOBs) in the database. On the one hand, this provides improved security, since the files can be restored from the database. On the other hand, almost the entire sisNET project can be saved by backing up the database.

When the menu item is selected, the dialog for setting and maintaining the file storage in the database opens.



Here you can select the individual map types that are to be saved in the database. The functions of the buttons in the lower half of the dialog:

Reset

Update

Save

Save all

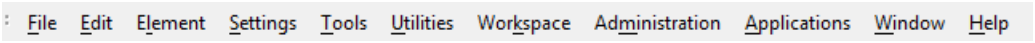
8 The Applications menu

The “Applications” menu holds entries which the user can use to change to the applications that are currently loaded.

Task:	Select from the “Applications” menu:
Change to Microstation	Microstation (Page 171)
Change to *sisNET*	sisNET (Page 171)

Microstation

This function is used to change to **Microstation**. The Microstation menu shown in the image (below) then appears.

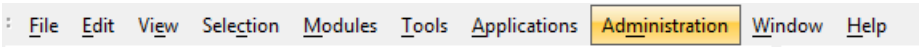


Please refer to the Microstation user guide for information and user instructions.

All the Microstation functions for editing drawing files are then available to the user. However, some editing functions are locked during a *sisNET* session so that no incorrect *sisNET* data is inadvertently produced.

sisNET

You can use this function to change to *sisNET*. All the *sisNET* functions are then available to the user. The *sisNET* menu shown in the image (below) then appears.



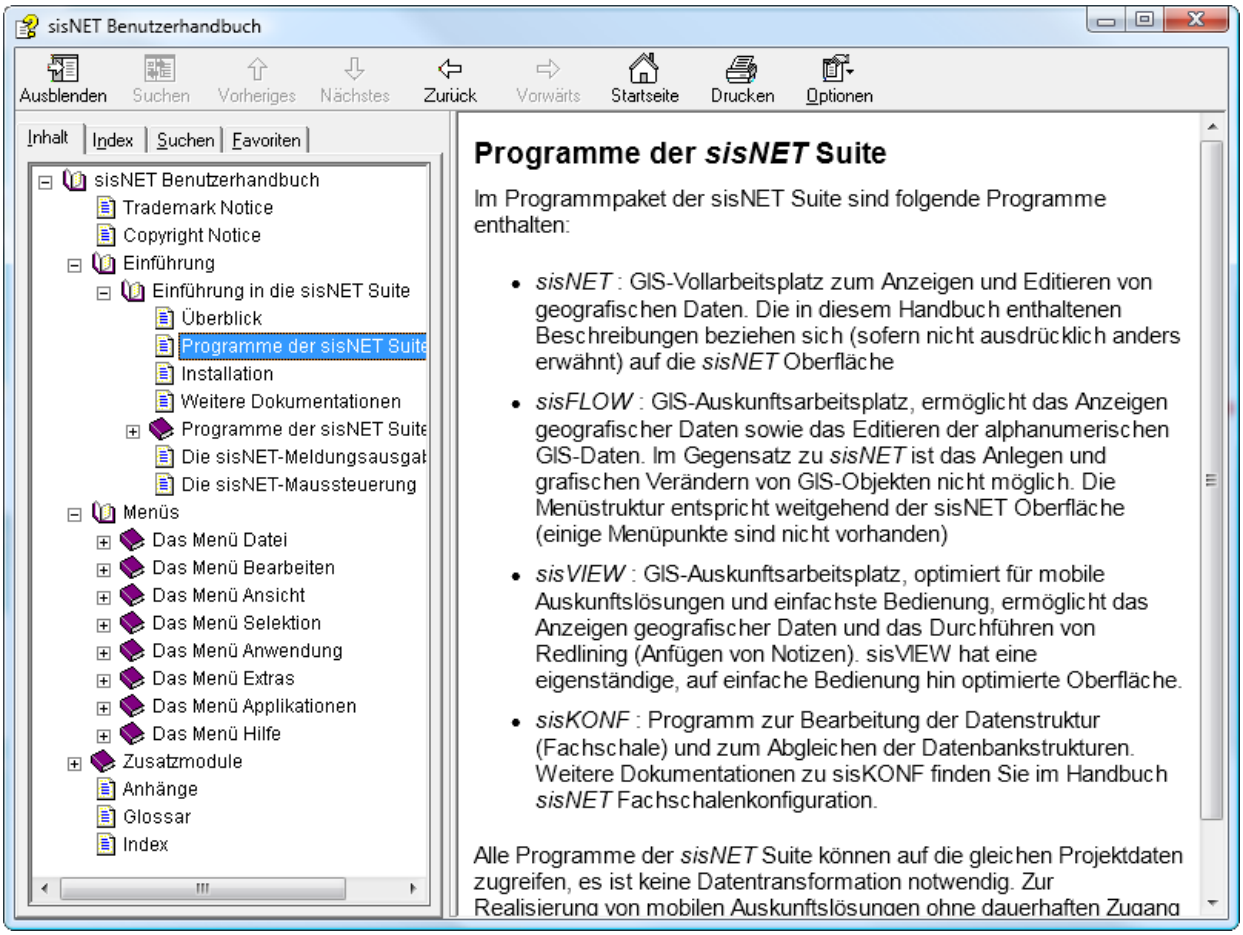
9 The Help menu

The Help menu is like the MicroStation menu but with some additional items.

Task:	Select from the “Help” menu:
Displays the index of contents of the ***sisNET*** user guide	Contents (Page 173)
Displays the index of contents of the ***sisNET*** administration guide	Administration Guide (Page 174)
Displays an application module document in the HTML format	View schema documentation (Page 174)
Reproduces an application module document in the HTML format	Create schema documentation (Page 175)
Displays the ***sisNET*** version	About Bentley sisNET V8i (Page 177)

Contents

This menu item opens the “***sisNET*** Online Help” window and displays the contents of the entire user guide.



If you click the plus sign to the left of one of the reference subjects shown, you can view the subject's sub-sections.

The structure in this index of contents is like a tree, so you can branch from each main subject to the related sub-sections.

Administration Guide

This opens the sisNET administration guide as a help file.

View schema documentation

This menu item opens the browser associated with the operating system (e.g. Internet Explorer) and displays a hierarchically structured list of content of the application modules (categories, classes, objects, file types and filters). You can branch from any main subject to its sub-sections by clicking the subject. If the documentation does not yet exist, it will be created.

Create schema documentation

In contrast to the menu item above, here the application module HTML document is created anew each time it is selected. This may require a lengthy wait and only needs to be done if changes have been made to the application module.

V:\SIS_DATA\bremen\sisnet\users\uk\index.htm - Microsoft Internet Explorer
Datei Bearbeiten Ansicht Wechseln zu Favoriten ?
Zurück Vorwärts Abbrechen Aktualisieren Startseite Suchen Favoriten Verlauf Channels Vollbild E-Mail Drucken Bearbei
Adresse V:\SIS_DATA\bremen\sisnet\users\uk\index.htm
Links
Index
Sparten
Objekte
Klassen
Dateitypen
Filter
Um diese Seiten zu erzeugen, kann man entweder im Menü Datei->Objektverwaltung bzw. Editieren->Filter aktivieren auswählen oder in der Eingabeaufforderung mdl load htmldoc x=... eingeben, wobei nach x= das Schlüsselwort für die jeweilige zu erzeugende Seite stehen muß (sparte,object, class, filetype oder filter). Das Schlüsselwort all bewirkt die Erzeugung aller dieser Seiten. Gibt man als zweites Argument das Schlüsselwort new ein, so werden zusätzlich noch alle einzelnen "Unterseiten", auf die in den obenerwähnten "Hauptseiten" verwiesen wird, neu erstellt.
Die einzelnen Seiten für Filter können auch durch die Eingabe mdl load htmldoc x=filter [filtid] [libid] ["text"/"html"]. Gibt man als letztes Argument das Wort text ein, so wird anstelle eines HTML-Dokumentes ein ASCII-Text erzeugt. (das gilt nur für Filter!)
Beispiele:
mdl l htmldoc x=sparte erstellt die Liste aller Sparten.
mdl l htmldoc x=object new erstellt die Liste aller Objekte und erzeugt zusätzlich Seiten für alle Objekttabellen neu.
mdl l htmldoc x=all erstellt Listen aller Sparten, Objekte, Klassen und Filter gleichzeitig.
mdl l htmldoc x=filter 1003 1 text erzeugt die Besreibung des Filters 1003 aus der Bibliothek 1 im Textformat.
Lokale Intranetzone

About Bentley sisNET V8i

This menu item opens the ***sisNET*** welcome screen with the version information.

Part III: Plug-ins

10 Configuring the application modules

Most application modules (e.g. Display altitude readings, Isolation Trace, Network paths, Hydraulic calculation network model) need to be customised for the current schema. For this purpose, every application module possesses its own data model with object types and associated attributes which is connected to the ***sisNET*** object types and attributes using the input dialogs described below.

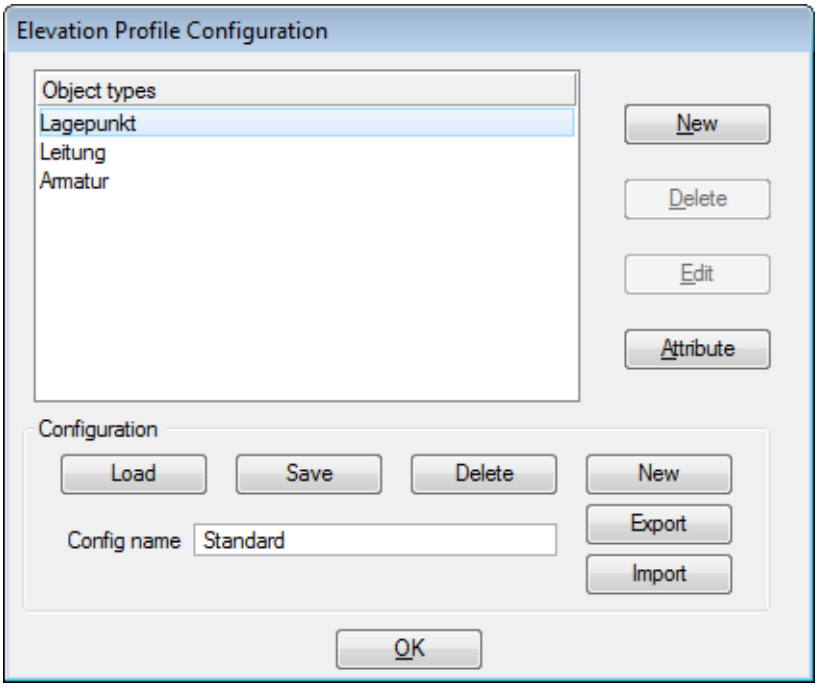
Description of function

The first time that an application module is called within a category, the user queries the category-based assignment between module object type and ***sisNET*** object type for the module and saves it as the default configuration. The "Configure application module" dialog can be used to retrospectively change this configuration, and different configurations can be saved with different assignments to ***sisNET*** object types and attributes.

Description of the input dialogs

Configure application module

The "Configure application module" dialog (shown for the isolation trace zone in this example) enables the user to edit all the object types in the application module being called for the configuration that is currently loaded:



Object types

Contains the names of the object types for the application module.

New

Select the “New” button to add another object type. Firstly, the “New object type” dialog opens for entering the name of the object type. If no ID has been selected for the new object type, the “Select object types” dialog, for assigning the ***sisNET*** object types to the new object type, then opens.

Delete

Select the “Delete” button to delete an object type that is not required. This button is disabled for the object types that are required.

Edit

Select the “Edit” button to change the assignment of ***sisNET*** object types to the application module object type that is currently selected (“Select object types” dialog (Page 184)).

✍ No assignment is required for object types that are ID’d in ***sisNET***, e.g. for the node and the connecting point. So the “Edit” button is disabled for those object types.

Attributes

Select the “Attributes” button to display or change the attributes of the object type currently selected (“Attributes for object type” dialog (Page 185)).

Config name

This text field displays the name of the current configuration. To save a changed configuration under a different name, this name needs to be changed and the “Save” button then selected.

Load

Opens the ““Load configurations” dialog” on page 188.

Save

Saves the current configuration under the name entered.

Delete

Opens the “Delete configurations” dialog for deleting a saved configuration.

New

Starts the reconfiguration of the **sisNET** plug-in module.

Export

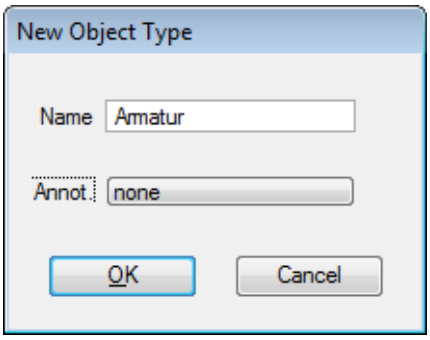
Exports the current module configuration to a text file. For this purpose, a file selection dialog opens for entering/selecting the export file. After entering a file name (the name param.cfg is the default) and confirming with the OK button, the current configuration is exported to this file.

Import

imports a module configuration file into the current configuration. This overwrites the current configuration. A file selection dialog opens for selecting the file to be imported. After selecting the import file and confirming the selection with the OK button, the selected file is imported.

"New object type" dialog

To create a new object type, the following dialog opens in which the name and, possibly, a ***sisNET*** ID are queried for the new object type.



Name

Field for entering the name of the new object type.

ID

An ID may be issued. The following options are available:

None	No additional ID
CP	Construction point
SP	The object is a node
STRA	The object is a street in ***sisNET***
ADRS	The object is an address in ***sisNET***
ANPU	The object is a connection point in ***sisNET***

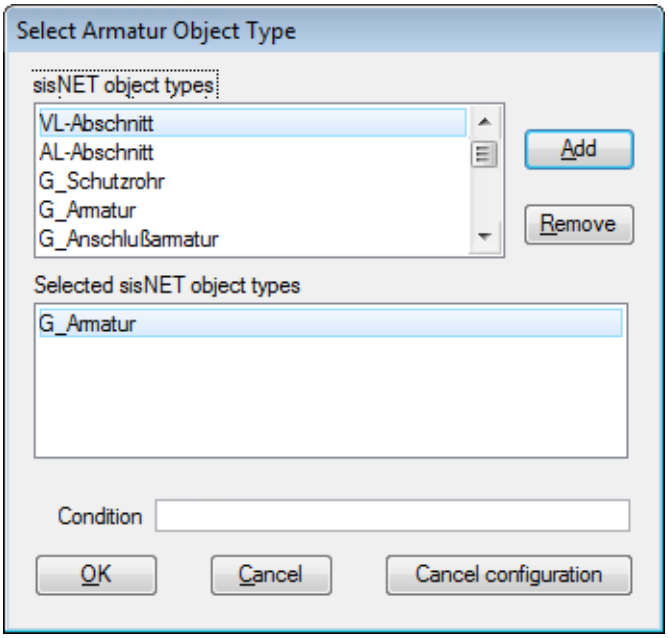
If no ID has been selected (this is usual), when the dialog is confirmed with **OK** the Select Object Types dialog (See ""Select object types" dialog" Page 184) opens for querying the ***sisNET*** object types associated with the new object type.

Delete

Deletes a user-defined entry from the list of defined object types.

"Select object types" dialog

This dialog enables the user to assign ***sisNET*** object types to an object type in the application module. Here ***sisNET*** object types are selected which, for example, are to take on the role of a stop point in the application module.



Add

The "Add" button adds the selected ***sisNET*** object type to the list of ***sisNET*** object types assigned to the application module object type.

Remove

The "Remove" button removes the selected entry from the list of ***sisNET*** object types assigned to the application module object.

Condition

Here you can specify a delimitation for the selected ***sisNET*** object type in the list of assigned ***sisNET*** object types. This delimiting condition must be entered in the database query language SQL and requires a knowledge of the database attributes of the relevant ***sisNET*** object type (only recommended for experienced users).

OK

The **OK** button confirms the changes in the dialog and exits the dialog.

Cancel

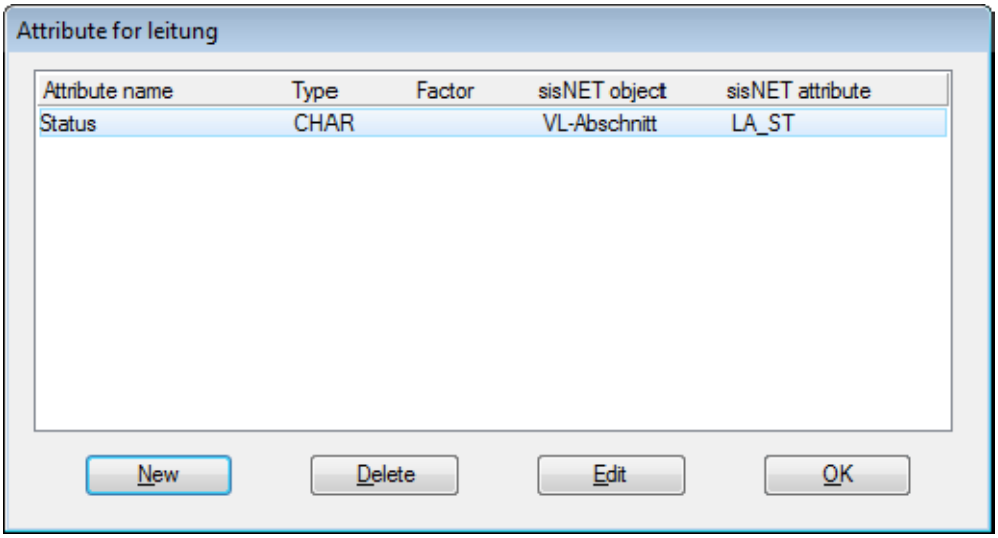
The **Cancel** button discards the changes in the dialog and returns to the previous window.

Cancel configuration

The **Cancel configuration** button discards the changes in the dialog and exits the entire configuration process.

"Attributes for object type" dialog

The Attributes dialog enables the user to enter and change the attributes assigned to the current object type. In this example, the user can configure the attribute that is going to be used later on as the pipe status in the isolate trace zone.



The list of attributes includes the following columns:

- Attribute name: Descriptive name for the ***sisNET Param*** attribute.
- Type: Data type of the ***sisNET Param*** attribute. See Type (Page 186) for possible data types.
- Factor: Conversion factor used to multiply the ***sisNET*** attribute in order to get a numeric value in the calculation network model.
- ***sisNET*** object: ***sisNET*** object type assigned to the ***sisNET Param*** object type.
- ***sisNET*** attribute: ***sisNET*** attribute within the ***sisNET*** object type which determines the value of the attribute. The value may be multiplied by the factor for numeric attributes.

New

Select the New button to insert a new attribute in the attributes list ("New attribute for object type" dialog (Page 186)).

Delete

Deletes the selected **sisNET Param** attribute from the list.

✍ Depending on the object type, a certain number and type of attributes is mandatory for the calculation network model. These attributes cannot be deleted.

Edit

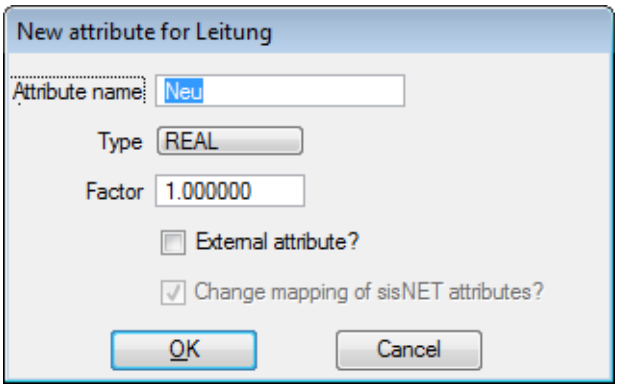
By selecting Edit you can change the entries in the selected row in the list ("Edit attribute for object type" dialog (Page 186)).

OK

Closes the configuration box and applies the changed attribute settings.

"New attribute for object type" dialog

In the "New attribute for object type" dialog, the user must enter the name, the data type and, possibly, the scaling factor for an attribute which is being created:



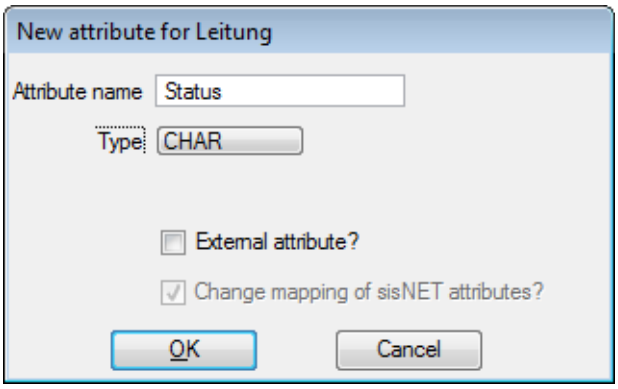
For a description of the input fields (See ""Edit attribute for object type" dialog" Page 186).

You can use the "External attribute" button to specify that this attribute does not belong to this object type but is, rather, the attribute of a related object. If this button is selected, after the "OK" button is selected, the relation object type and its attribute need to be selected.

Then the "Assign sisNET attribute for attribute" dialog (Page -187) for selecting the associated ***sisNET*** attribute for each ***sisNET*** object type is queried.

"Edit attribute for object type" dialog

The user can change the attribute name, the data type and, for numeric attributes, the scaling factor for the attribute being edited:



Attribute name

The current attribute name can be changed in this input field.

Type

The following values are available for selecting the data type

CHAR	Strings such as names and descriptive texts
REAL	numeric, floating decimal value
DATE	Date and time
INTEGER	numeric, whole number value
BINARY	Large binary objects from e.g. graphics stored in the data inventory

Factor

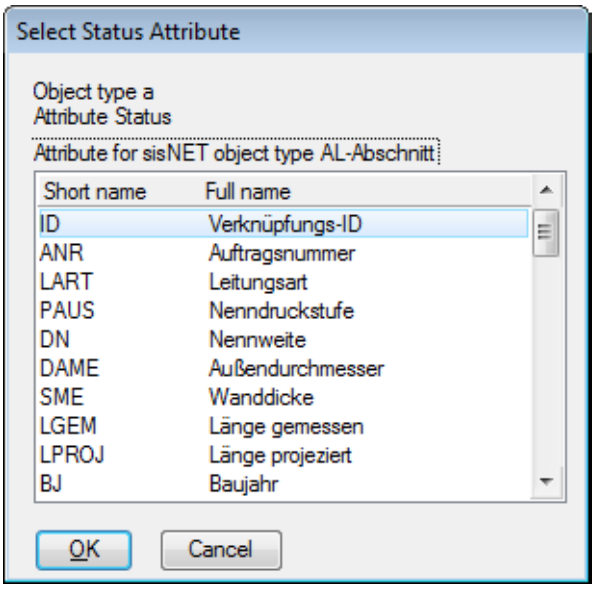
The factor can only be entered for numeric types. The target value for the hydraulic model is derived from multiplying the numeric *sisNET* attribute value by the factor.

Change mapping of *sisNET*attributes?

The user can use the "Change mapping of *sisNET*attributes?" field to decide whether the attribute needs to be reassigned to the *sisNET* attributes. If this field is selected, when the OK button is selected to close this dialog, the "Assign sisNET attribute for attribute" dialog opens.

"Assign *sisNET* attribute for attribute" dialog

This dialog is used to assign the application module attribute an attribute of the corresponding *sisNET* object type. In this example, the attribute of the *sisNET* object type "AL Section" is selected, which is to represent the status of a pipe in the isolation tracing zone.

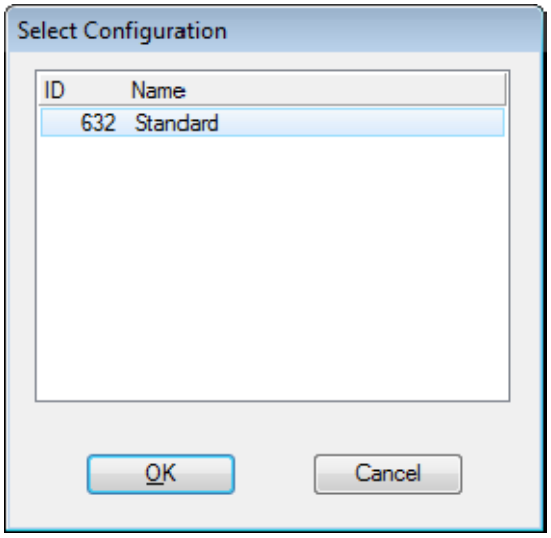


If the current **sisNET Param** object type has more than one *sisNET* object type assigned to it, an assigned *sisNET* attribute is queried for the current **sisNET Param** attribute for each *sisNET* object type.

If the attribute is not essential for the application module, you can also exit the dialog with "Cancel".

“Load configurations” dialog

The “Load configurations” dialog mask provides a list of the configurations that have been created for the current **sisNET** plug-in module.



OK

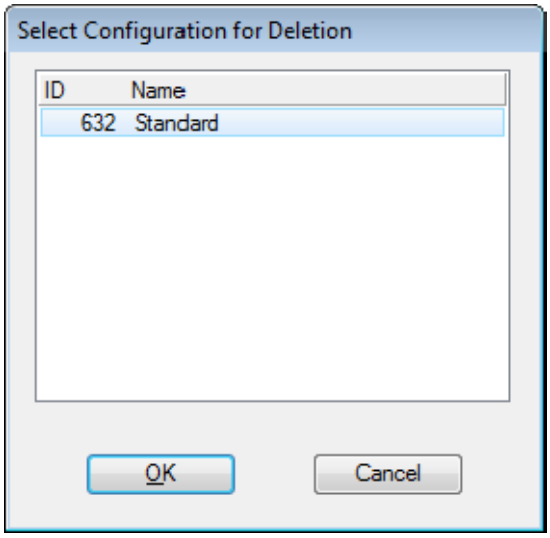
Loads the selected configuration and closes the dialog mask. The data is then available for further processing.

Cancel

Closes the dialog mask without loading a new configuration. The configuration data that has already been modified in the system is retained and can continue to be used.

“Delete configurations” dialog

The “Delete configurations” dialog mask offers for deletion a list of the configurations that have been created for the elevation profile.



OK

Deletes the selected configuration and closes the dialog mask.

⚠ The current configuration cannot be deleted.

Cancel

Closes the dialog mask without deleting a configuration.

11 Isolation tracing zone

The “Isolation tracing zone” application module can be used to select and display related line sections which meet particular, selectable criteria.

Description of function

The “Isolation tracing zone” module is a standalone program which does not come as standard with ***sisNET***, but which can be purchased as an add-on application.

The “Isolation tracing zone” function can be used to select and display related line sections which meet particular, selectable criteria. The selection conditions for the pipes’ section area which is to be selected can be specified using either a selectable attribute value for the pipe itself or for a stop point built into the pipe.

Conditions for using the isolation tracing zone

Because the ***sisNET*** data structure can, to a great extent, be freely configured, the isolation tracing zone can be configured to different customer data models. To do this, the associated ***sisNET*** object types from the ***sisNET*** schema for the current category, and the required display attributes, need to be assigned to the object types which are to be differentiated in the isolation tracing zone.

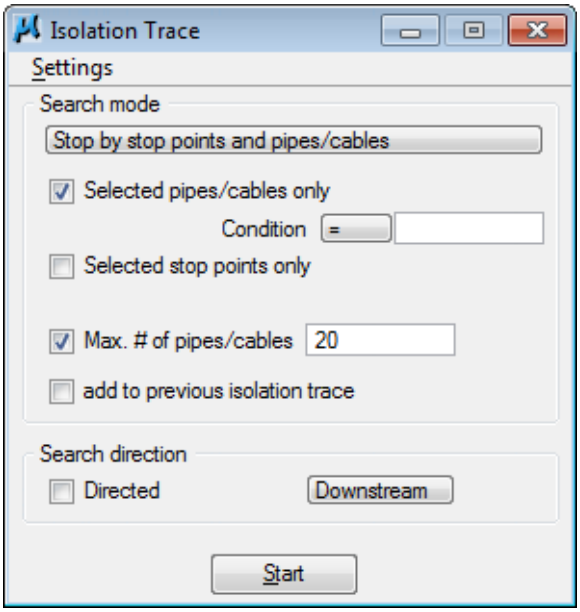
Only three object types are required for the isolation tracing zone:

- the node (without attributes).
- the pipe object type for the pipe objects whose isolation tracing zone is to be displayed based on a start point. The schema attribute for the status of the pipe (Operational/Not operational), which it might be possible to use as a criterion for aborting the isolation tracing zone search, is required for the pipe object type.
- the stop point object type for the stop point objects which might, under certain circumstances, restrict the search area. The schema attribute for the status of the stop point (Open/Closed), which can be used as a potential abort criterion for the isolation tracing zone search, is required for the stop point object type.

To create an isolation tracing zone, certain conditions, described below, are also required for the data model in the customer schema.

1. the pipe objects are all linked to one another by common nodes.
2. the stop points have a relationship to the pipe which is to be isolated and to a node in the pipe which is to be isolated.

Using the Isolation tracing zone module



By selecting the search mode, the user can decide how the pipes in the isolation tracing zone are searched for, starting from the first pipe clicked on. These search modes are possible

- No restriction
  this mode finds all the pipes that are connected to the starting pipe by a particular path.
- Stop by stop points
  in this mode, and beginning with the starting pipe, all the possible pipe paths are followed until the program comes to any stop point that lies on the pipe. This search condition can be further restricted by only specifying a stop condition for selected stop points with defined attribute values.
- Stop by pipes/cables
  in this mode, and beginning with the starting pipe, all the possible pipe paths are followed until the program comes to a pipe for which there is, or is not, depending on the choice of condition operator (= or !=), a particular attribute value.
- Stop by stop points and pipes/cables
  this mode combines the two previous modes and identifies the pipes in the isolation tracing zone beginning with the starting pipe along a path until one of the specified conditions is met.

For this search mode there is an option to restrict the search to a maximum number of pipes. When this option is used, once the maximum number of pipes has been reached in the isolation tracing zone found, the user is asked whether to search for the same number of pipes again or abort the search.

The option “Add to previous isolation tracing zone” can be used to, after the 2nd isolation tracing zone search after the application is started, add the newly found isolation tracing zone to the one found previously.

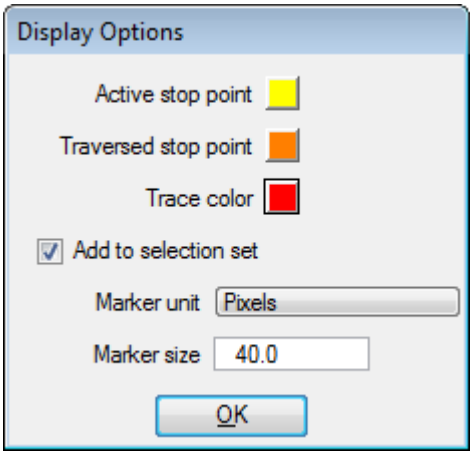
In addition to the search modes, the user can specify whether the search for pipes in the isolation tracing zone, beginning with the starting pipe, should only go in one direction (a directed search) or in both directions. With the directed search, they can also specify whether the search should go forwards or backwards in relation to the direction of the starting pipe. The directions forwards and backwards here relate to the beginning point of the starting pipe. Forwards means away from the starting point, while backwards means back to the starting point.

The Settings menu can also be used to configure the various settings for the isolation tracing zone:

Configuring the object types pipe, stop point and node with their attributes	Configure application module (Page 181)
Options	Isolation tracing zone settings (Page 193)

Isolation tracing zone settings

The “Settings” dialog is opened under the menu item “Settings > Options”:



Active stop point colour

Display colour for active stop points A circle in the colour selected in this dialog, plus the display size selected, indicate active stop points.

Other stop point colour

Display colour for non-active stop points. A circle in the colour selected in this dialog, plus the display size selected, indicate all the non-active stop points.

Isolation tracing zone colour

All the pipes belonging to the isolation tracing zone currently identified are shown in the colour selected.

Stop point display

This selection field is used to select the display size for the stop point, in pixels or metres.

Stop point size

You can enter the size you want as a numeric value (pixels or m) in the “Stop point size” field. If pixels is chosen for the display size, the size shown is independent of the current level, but it depends on the current level if you specify metres.

OK

You can close the dialog with the “OK” button. The colour and display size settings for each individual user are stored in a parameter file abxxx.par, where xxx stands for the category ID.

Initially configuring the Isolation tracing zone

You need to configure the object types node, pipe and stop point along with the attributes required for the isolation tracing zone.

To do this, first of all, for each object type (exception: node; the associated ***sisNET***object type node can be identified by the LP flag in the schema without any user query) the associated ***sisNET*** object type or types need to be assigned (See ““Select object types” dialog” Page 184).

Then, for each object type, the associated ***sisNET*** attributes must be queried for the attributes required (See ““Assign sisNET attribute for attribute” dialog” Page 187).

12 Generating hydraulic calculation network models

Description of function

The network calculation models used when planning pipeline systems require time-consuming, error-prone preparatory work to obtain data, particularly in large networks. As a result of the large data volumes and ever-changing customer structure, maintaining the data required for the network calculation is also associated with substantial costs.

At the same time **sisNET** is deployed as a GIS system for documenting and managing the pipe networks in the supply industry. **sisNET** is used to manage and maintain all the graphic information and object data from the company's networks in a central, integrated system.

For companies who are simultaneously using **sisNET** and network calculation programs, the **generating of hydraulic calculation network models**, from now to be referred to as **sisNET HR Module**, provides an opportunity to connect these data-heavy systems to avoid keeping redundant data. The **sisNET HR Module** uses the GS data maintained in **sisNET** to generate input data for network calculation programs.

Because of the high level of detail in the data from pipeline networks that is held in GIS, and the consequent volume of data for the network calculation, which it is difficult to get an overview of, the **sisNET HR Module** also provides various methods for simplifying the network structure in an automated, reproducible way.

Requirements of the data structures in the GIS data

For it to be able to perform its tasks, the **sisNET HR Module** can be configured for a range of data structures both on the **sisNET** side and (to a limited degree) the network calculation side. We shall now describe what the **sisNET HR Module** requires of the data structures in the **sisNET** data and how the **sisNET HR Module** handles them.

Data structures in sisNET

The data structures in **sisNET** are not usually specified in advance but can, to a very large extent, be configured by and for the end users, depending on their needs. In principle, a distinction is drawn between 2 different network structures when managing the network data in the **sisNET**:

1. Common route and pipeline data (the usual data model for 1-conductor networks such as gas and water networks):

- The pipeline topology is described by one or more pipeline object types in which the pipeline data, such as length, diameter, wall thickness, year of manufacture, etc., is also maintained.
- There needs to be a node at least at the beginning and end of the pipeline objects. The node must have relations to the pipelines beginning and ending at the node, so that the network structure can be calculated using the relations between pipelines and nodes.
- The nodes between the pipeline objects must have, as an attribute, at least one elevation value for the position of the pipeline.
- In the case of networks with more than one conductor, (e.g. district heating networks), the possibly differing attributes such as internal diameter, K-value and cladding diameter must be present with this type of data structure for each conductor.
- If connecting systems are being worked with in the data inventory, a distinction may be drawn, with the pipeline objects, between supply line and connecting line. To be able to distinguish supply lines and connecting lines, there needs to be either different object types or a pipe type attribute.
- In the case of data inventories in large companies, there is also a relation of pipeline objects to an object of the network type. This assignment can be used to restict the model generation to one or more networks.

2. Separate route and pipeline data (the usual data model for multi-conductor networks such as in the district heating sector):

- The pipeline topology is described by one or more route objects which only describe the local path of the pipeline network.
- There needs to be a node at least at the beginning and end of the route objects. The node must have relations to the pipelines beginning and ending at the point, so that the network structure can be calculated using the relations between route objects and nodes.
- For each conductor in the network (e.g. supply and return or steam and condensation pipe) there is, in parallel to the route object, a pipeline object with the relevant pipeline data such as length, diameter, wall thickness and year of manufacture. These pipelines are connected to one another by nodes, too. The pipeline objects must have a relation to the associated route object. The pipeline objects also need to have an attribute for determining the conductor (supply/return or steam/condensation).
- The nodes between the pipeline objects must have, as an attribute, at least one elevation value for the position of the pipeline.

As a further object type for generating a calculation model, there needs to be at least one consumer object type for determining the connection power or the volume consumed by heat consumers. The consumer object type (the building connection in the default district heating application module) must have a relation to a node which, in turn, must have a relation to a route object (for separate route and pipe data) and to a pipeline object type. If, in the case of consumer objects, no consumption quantity is being maintained (this is normal) there must be either a unique ID for assigning the consumption data from a customer charging system or the address of the consumption point either as attributes for the consumer object type or via a relation to an address object.

For the feed object type, too, the same relation requirements apply as with the consumers; however, this object type is not essential for generating a calculation model - the feeds can be added to in the hydraulic calculation program.

The hydraulic object types pump and stop point must have a relation to a node which, in turn, must have a relation to a pipeline object type. The stop point must also have a relation to the pipeline object type which is to be isolated, and the pump must have a relation to the pipeline object type which the pump delivers to or from. The pump and stop point object types are not essential for generating a calculation model and can be added to in the hydraulic calculation program.

In many application modules, connecting systems are also used to input the service connection pipes including the service connection. The outflow point of the connecting system from the so-called supply pipe is indicated, here, by a connecting point type object. Each connecting point must lie on a node of a supply pipe and have a relation to this point. All the connecting pipes and the service connection have a relation to this connecting point.

Data structures in network calculation programs

In contrast to **sisNET**, network calculation programs use data models which are fundamentally similar, due to the same physical descriptive equations which are to be applied in each program. The objects that occur in almost every calculation program are:

- Pipe runs,
- Nodes,
- Consumers,
- Suppliers,
- Pumps,
- Stop points.

Advanced network calculation programs, such as the **SISHYD** network calculation program, have a large number of objects in addition to these, which can be used to describe networks' installations, control elements, operating methods, etc.

The **sisNET HR Module** focuses on transmitting the mass data from **sisNET** so that the supplementing of the calculation network data through the objects, which are weakly represented in numeric terms, is done manually after the automated transformation of the **sisNET** data.

In addition to the 6 standard object types mentioned initially, the **sisNET HR Module** creates object classifications which enable users to specify particular object properties for entire groups:

- Pipe classes,
- Consumer groups,
- Organisation groups,
- Pump types,
- Fitting types.

The **sisNET HR Module** can generate the groups and associations to a group both automatically and configured by the user. There is more on this in "Generating the calculation network model" on page 204.

Object types in the *sisNET* HR module

Due to the minimum technical data requirements of pipe network calculation programs, the **sisNET HR Module** has 20 object types, in all:

- Network,
- Sub-network,
- Nodes,
- Connecting point,
- Route (only for multi-conductor networks with separate route and pipeline data),
- Pipe,
- Connecting cable,
- Consumers,
- Suppliers,
- Pump,
- Stop point,
- Disconnecting point,
- Hydrant (for water only),
- Hydrant (for water and WaterCAD export format only),
- Tank (for water and WaterCAD export format only),
- Pipe classes,
- Consumer groups,
- Organisation groups,
- Pump types,
- Fitting types.

We shall now describe these object types and their minimum attibutes.

Network

This object is currently only used to restrict the model generation to one or more networks in the data inventory.

Sub-network

This object can be used to divide the network into different geographic areas. If sub-networks are to be generated, each pipe object must have a relation to a sub-network object (in the water category e.g. the pressure zone).

Node

The nodes in the calculation network model are generated from the start and end points in the route line sections and from interim nodes in route sections with associated branch route pipe, pump or stop point. The minimum attribute is the geodetic height, a corresponding **sisNET** attribute is to be provided. Other attributes can be configured. Attributes generated by the **sisNET HR Module** are:

- Node name: unique text identifier for the node; in multi-conductor systems, supply and return nodes, like the pipes, are identified by an appended ‘V’ or ‘R’.
- Node number: unique numeric identifier for the node. Used in the relational link to the pipes.
- X, Y coordinates: derived from the graphic position of the nodes in **sisNET**.
- Z coordinate: where there is separate route and pipeline data, calculated from the elevation values of the nearest pipeline nodes, otherwise directly from the node in the pipeline section.

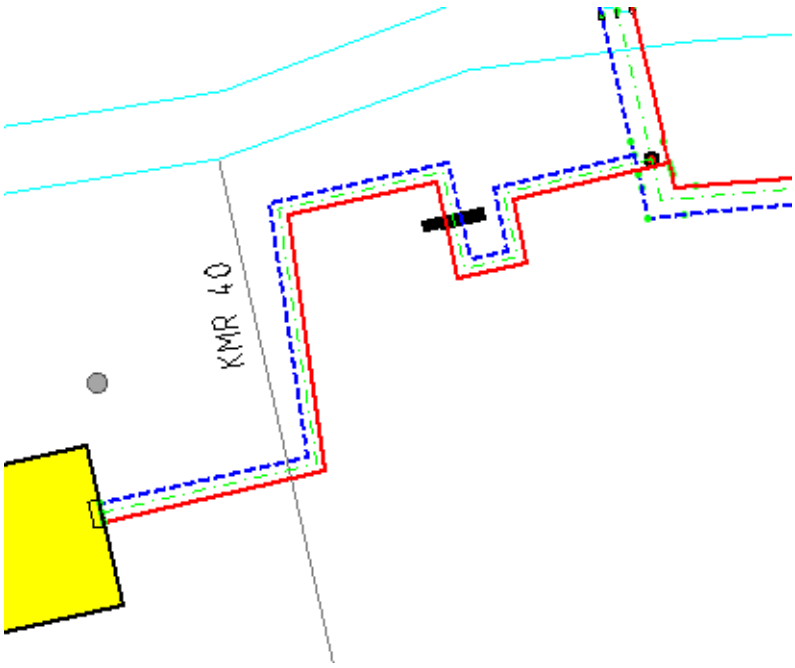
Connecting point

This object is only used to combine connecting lines and service connections into one connecting system. When generating the network model without including the connecting lines, the consumer assignment to the supply pipe from which the connection system leaves is derived from the position of the connection point.

Route

This object relates to the route (mid) line usually maintained in **sisNET** in multi-conductor systems.

Example of a district heating pipe: with route in a **sisNET** system



In **sisNET**, the physically existing pipes have a technical data relation to this route line. So that, the data for the pipes and nodes for supply and return can be managed together in the pipe network calculation program, the network geometry is calculated from the path of the route line and not from the path of the pipelines. This enables a symmetrical supply and return path where possible. As the route line itself is inconsequential for a network calculation, the **sisNET HR Module** does not export it; no attribute information can be configured for this object, either. The user can assign one or more **sisNET** objects to the route object.

Pipe

This object's minimum attributes are length, internal diameter (or external diameter and wall thickness) and the operating status (operational or not operational) and, in multi-conductor networks, the pipe type (supply or return). One or more **sisNET** objects are to be assigned to the pipe object. For each one of the **sisNET** objects, the **sisNET** attributes that are to match the relevant **sisNET HR Module** attributes need to be selected. Other attributes (e.g. resistance factors, heat transfer coefficients, wall thicknesses, laying procedure, etc.) can be added. **sisNET HR Module** also generates attributes that are used to identify the data records:

- Pipe name: unique text identifier for the pipe; in multi-conductor systems, supply pipes are given a final letter 'V', and return pipes an 'R'.
- Pipe number: unique numeric identifier for the pipe
- Start number, End number: unique numeric identifier for the pipe's start and end nodes
- Pipe class number: unique numeric identifier for the pipe's pipe class (providing the **sisNET HR Module** is to create pipe classes)

Connecting line (for common route and pipe data only)

For data inventories using connecting systems, the connecting lines are distinguished from the supply pipes. The pipe object type is then only given the supply pipe objects, while the connecting line object type is given the connecting lines to the service connections. The minimum attributes are identical to the pipe object type.

Inflection points

If, in ***sisNET***, a pipeline does not run straight between the start and end point, the **sisNET HR Module** can write the intermediary inflection points to the calculation network model, which means that a network calculation with a separate graphic display can be mapped to the network in a way that is more true to the original. The **sisNET HR Module** generates the following attributes:

- Pipe number: numeric identifier for the pipe to which the inflection point belongs
- Inflection no.: serial number of the inflection point, calculated from the start to the end point of the pipe
- X, Y coordinates: derived from the graphic position of the inflections in ***sisNET***

Consumer

One or more **sisNET** objects are to be assigned to this **sisNET HR Module** object type. The minimum attribute is the consumption data, which is to be taken from a relevant **sisNET** attribute. Other useful attributes might, for example, be:

- Other consumption values (e.g. volumes)
- Associations with consumer groups (sector, consumer type)
- Return temperature
- Address (street, house number, postcode)

The **sisNET HR Module** generates the following attributes:

- Consumer name: unique text identifier for the consumer
- Consumer number: unique numeric identifier for the consumer
- Node number: Numeric identifier for the calculation network node in the supply to which the consumer is connected
- Start number, End number: Unique numeric identifier for the consumer's start and end nodes

Supplier

In the **sisNET HR Modules** minimal functionality, this object is only used to prevent network points with this object having to submit to any reduction procedure. For this reason, too, there is no minimum attribute. The values characterising the generator's operation, such as current feed-in capacities and supply temperatures, are usually only entered into the network calculation and calculated when a calculation run is being configured. Other useful attributes may be, e.g.:

- Maximum feed-in capacity
- Maximum feed-in temperature

The **sisNET HR Module** generates the following attributes:

- Supplier name: unique text identifier for the supplier
- Supplier number: unique numeric identifier for the supplier
- Node number: Numeric identifier for the calculation network node in the supply to which the consumer is connected
- Start number, End number: Unique numeric identifier for the supplier's start and end nodes

Pump

This object type is optional. One or more **sisNET** objects can be assigned to this **sisNET HR Module** object type. The minimum attribute is the name, which is to be taken from a relevant **sisNET** attribute. Other useful attributes might, for example, be:

- Engine power
- Construction type
- Factory no., manufacturer, etc.

The **sisNET HR Module** generates the following attributes:

- Pump name: unique text identifier for the pump
- Pump number unique numeric identifier for the consumer
- Start number, End number: Unique numeric identifier for the pump's start and end nodes

Stop point

This object type is optional, i.e. one or more **sisNET** objects can be assigned to this **sisNET HR Module** object type, but the generating of the calculation network also runs when no stop point object types are assigned.

Because a stop point in the middle of a pipeline object requires a division of this pipeline (=> 1 additional pipe object and 2 additional node objects) and additionally for each stop point in a network calculation operation specifications are required, this object type should only include control stop points and important shut-off fittings. To do this, a restricting condition, e.g. only stop points with the construction type valve or cover, can be entered in the *Condition* input field for the assigned ***sisNET*** object type. Any other stop point types can be assigned to the disconnecting point object type.

The minimum attribute is the stop point name, which is to be taken from a relevant **sisNET** attribute. Other useful attributes might, for example, be:

- Stop point type (construction type)
- Stop point function (lockable, controllable, etc.)
- KVS value
- Operational status (OPEN/CLOSED)

The **sisNET HR Module** generates the following attributes:

- Stop point name: unique text identifier for the stop point
- Stop point number: unique numeric identifier for the consumer
- Start number, End number: Unique numeric identifier for the stop point's start and end nodes

Disconnecting point

This object type enables stop points with a purely locking function to be taken over for particular operating situations as an additional attribute for the pipeline on which the disconnecting point lies. This enables the number of stop points to be generated for the calculation network and, thus, the operational specifications required a later hydraulic calculation, to be reduced. Also, sometimes, a pipeline does not need to be divided because of a stop point that lies in the middle of the pipe, so that, instead of 3 network elements (2 pipelines and 1 stop point), only one pipeline is generated. For this object type there are no attributes.

Pipe classes

Pipe classes are used in network calculation programs in order to be able to assign the same types of property to groups of pipelines. The main attribute here is the pipe's internal diameter. The user can configure other attributes (e.g. resistance factors, heat transfer coefficients, etc.). For each combination of attribute values to be found in **sisNET**, the **sisNET HR Module** can create a pipe class and assign it to the pipes concerned.

Consumer groups

Consumer groups are sometimes used in network calculation programs to be able to assign the same types of load profiles to groups of consumers. To classify the consumers into consumer groups, for each ***sisNET*** object type assigned to the consumer type there needs to be at least one attribute suitable for categorising the consumers. For each combination of attribute values to be found in **sisNET**, the **sisNET HR Module** generates a consumer group and assigns it to the consumers concerned.

Organisation groups

Organisation groups are sometimes used in network calculation programs as an additional organisation unit to be able to assign the same types of load profiles to groups of consumers. To classify the consumers into organisation groups, for each ***sisNET*** object type assigned to the consumer type there needs to be at least one attribute suitable for categorising the consumers. For each combination of attribute values to be found in **sisNET**, the **sisNET HR Module** generates an organisation group and assigns it to the consumers concerned.

Pump groups

Pump groups are used in some network calculation programs (e.g. in **sisHYD**) in order to be able to assign the same types of property to groups of pumps. The user can configure available attributes such as manufacturer, construction type, engine power for the generation of pump groups. For each combination of attribute values to be found in **sisNET**, the **sisNET HR Module** can create a pump group and assign it to the associated pumps.

Stop point groups

Stop point groups are used in some network calculation programs (e.g. in **sisHYD**) in order to be able to assign the same types of property to groups of stop points. The user can configure available attributes such as construction type, KVS value, nominal width for the generation of stop point groups. For each combination of attribute values to be found in **sisNET**, the **sisNET HR Module** can create a stop point group and assign it to the associated stop points.

Output file

The **sisNET HR Module** output file is an ASCII file in which the data records are separated from one another by an empty line. Each record begins with a header row which specifies the type of record (pipe, node, etc.). The individual attributes of the records are each in a separate row that begins with a keyword that identifies the attribute. The user can configure the keywords for both the object types and the attributes. An extract from a calculation network model file generated by **sisNET HR Module** is displayed below.

```
NODE
NODE_IDK_0011499V
NODE_NO22998
MSLINK22998
X_COORD      3476701.2147
Y_COORD      5757777.6897
Z_COORD         0.0000

PIPE
ELEM_IDK0022991-K0022999R
MSLINK2
ELEM_NO2
START_NO22991
END_NO22999
PIPECLASSES_NO1
LENGTH         94.1600
NOMINALDIAMETER         150.0000

CONSUM_DATA
CONSUMER_IDK_0022994
CONSUMER_NO11687
START_KNR122994
NOMINALOUTPUT0.0

INFLEXION POINTS
ELEM_NO2
INFLECTION_NO1
X_COORD      3476726.7353
Y_COORD      5757709.3040

PIPE CLASSES
PIPECLASSES_IDN_2
PIPECLASSES_NO2
NOMINALDIAMETER25
```

Generating the calculation network model

The **sisNET HR Module** automatically generates the calculation network model after the user has configured the system and, by possibly isolating any necessary pipelines, delimited the area to be converted (see “Using the sisNET HR module” on page 205). To start the conversion, the user graphically selects a node inside the area to be converted. The **sisNET HR Module** now uses a topology tracing method to determine the data to be converted and its links. In multi-conductor systems, the calculation network is mapped using the trace lines; in one-conductor systems the pipelines are used straightaway.

1. Generate list of all traces starting from the current node
2. Is there any trace remaining in the trace list which has not been marked? If No, end the sub-program, if Yes, this becomes the current trace
3. If trace contains branches, divide trace into relevant trace sections, create list of trace sections
4. Is there any trace section remaining in the trace section list which has not been marked? If No, go to **2.**, if Yes, this becomes the current trace

5. Mark trace, trace's end node becomes current node
6. Open **1.** as sub-program
7. Go to **4.**

After the calculation network framework has been created in this way, the supply and return pipes that have a relation to the trace lines and their length and diameter attributes are extracted. The connected consumers with consumption values and the suppliers are also determined.

This raw data model which has been created in this way now contains all the data required for any subsequent network compression (compression procedure described in Simplifying calculation network models (Page 221)).

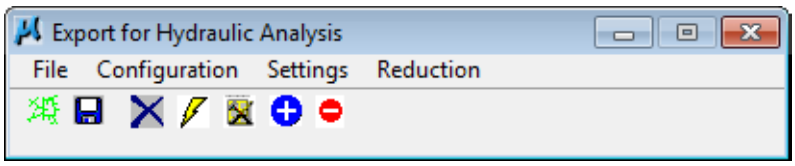
When any network simplification has been done, the definitive calculation network model can now be generated. The first part of this process involves extracting the additional attributes of the objects that the user has configured from ***sisNET***.

The **sisNET HR Module** can then generate the pipe classes, consumer groups, pump groups and/or stop point groups as required. The user can define a catalogue of pipe, consumer, stop point and pump attributes. Based on this catalogue, the **sisNET HR Module** generates, for each combination of attributes, a pipe class, consumer group, stop pipe group and pump group, and assigns these to the relevant pipes, consumers, pumps or stop points.

The calculation network model is then exported as an ASCII file.

Using the *sisNET* HR module

The **sisNET HR Module**'s main dialog controls all the activities, from configuring the hydraulic calculation network model through the extracting of the model from the ***sisNET*** data to backing up the data. All the functions needed to generate the calculation model can be accessed via the menu bar and the button bar.



Button bar

The button bar has 7 icon buttons for the functions that are frequently required to generate a hydraulic calculation model.

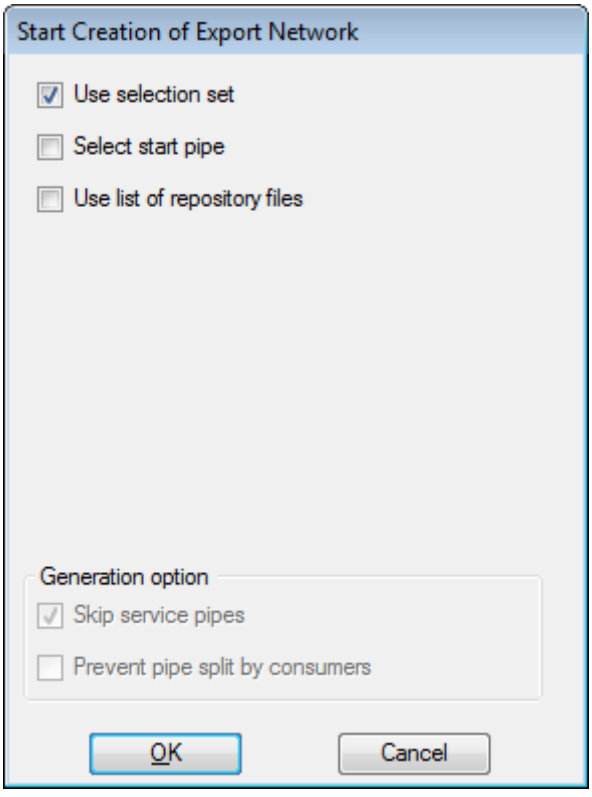
These include, for example, triggering the generation and triggering the outputting of the network model to a text file. The icon buttons also provide functions for delimiting the network area permitted for the model generation. Pipe sections (for separate trace and pipeline data) and pipeline sections can be blocked for the model generation and then approved again, and the pipe sections that are currently excluded can be displayed.

Task:	Icon button to select:
Start calculating the topology	"Generate" on page 206
Export the hydraulic analysis that has been generated	"Export" on page 208

Task:	Icon button to select:
Delete the pipelines blocked for the network topology search	“Delete” on page 209
Display all the pipelines blocked for the network topology search	“Display” on page 209
Hide the display of all the pipelines blocked for the network topology search	“Hide” on page 209
Add a new pipe to the list of pipelines blocked for the network topology search	“Add” on page 210
Remove a new pipe from the list of pipelines blocked for the network topology search	“Remove” on page 210

Generate

Selecting this icon button opens the dialog with which you start generating the calculation network model from the ***sisNET*** data.



In this dialog you select the generation mode for the model generation that is to be started. The pipe objects for the model to be generated can either be identified using the selection table of the current ***sisNET*** user, using a list of pool indices, or using a topology search from a start node. For GIS models with connecting pipes, there is also the option to exclude the connecting pipes when the network model is generated. In these cases,

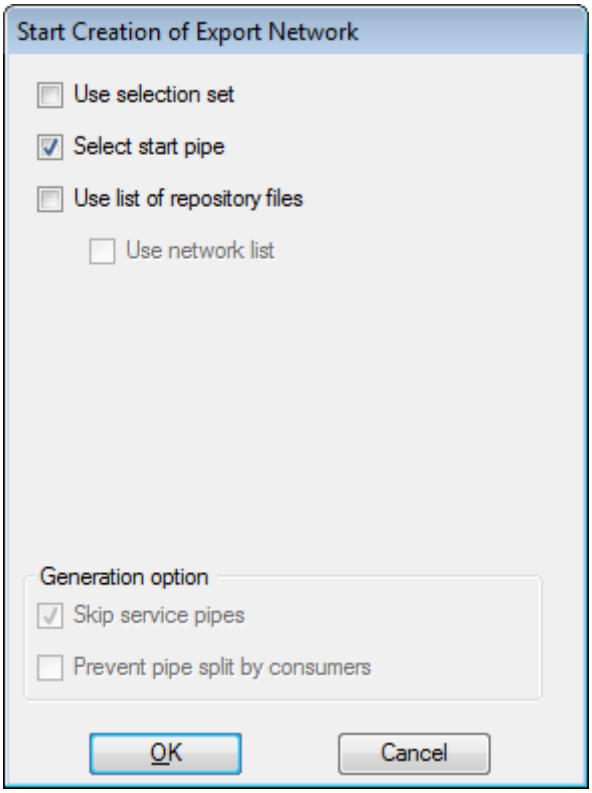
the consumers on the connecting pipes are assigned via the connecting point to either the start or end of the supply lines to which the connecting system branches. For the STANET export format, there is also the option to suppress the separating of pipes by acceptors on the pipe.

Generation mode via the selection table:

The ***sisNET*** Selection module can be used to insert into the selection table all the pipe objects from any fence which are required to generate a model. The calculation model is generated for all the pipe objects included in the current selection table and calculates the network model from these pipes with connected stop point/pump/supplier/acceptor objects.

✍ In the case of a model with separate trace and pipe data, the trace objects need to be written to the selection table using a selection.

Generation mode by selecting a start pipe:



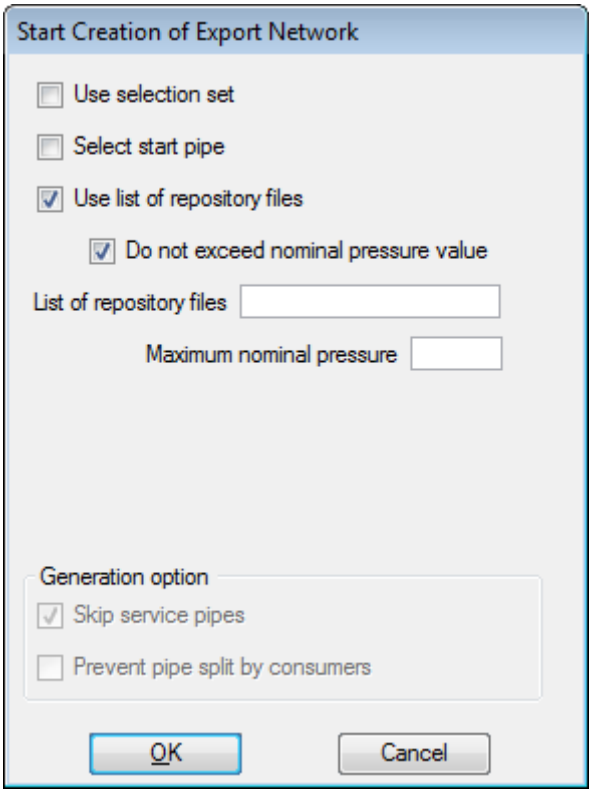
With this type of generation, the user has to select a start pipe for the model generation. If the network object type has been configured, the networks to be included can also be restricted for the subsequent generation of a network model.

In selecting the start pipe, AccuSnap only offers the user suitable ***sisNET*** objects. When a pipe has been selected, the user must confirm with the left mouse button (Generating the calculation network model (Page 204)).

During the 1st generation phase (the topology search), the user has the option of cancelling the generation by pressing the Reset button (usually the right mouse button). If the Reset button is pressed, the user is asked whether they really wish to cancel the

generation. If they select the No button, the generation proceeds, whereas if they select the Yes button, the network generation is aborted at the pipe currently being examined and the network model generated prior to the abort appears in the network display.

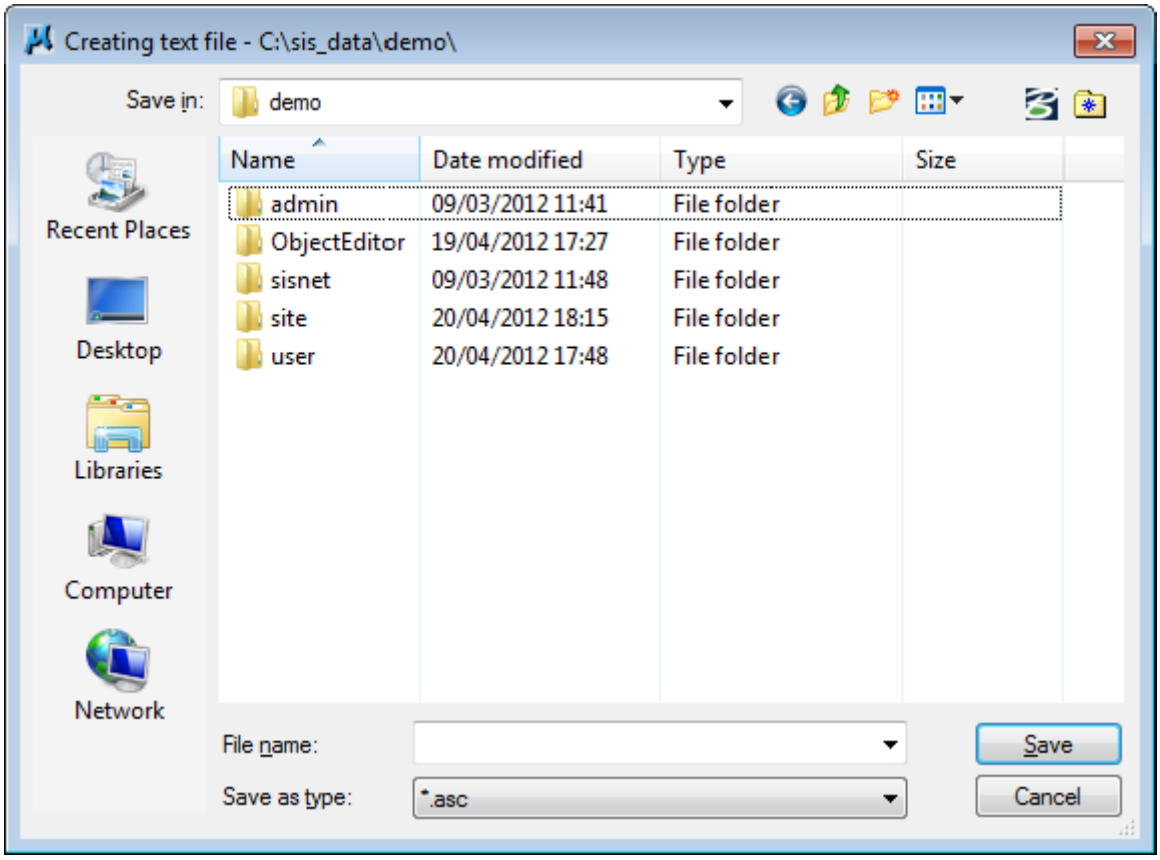
Generation mode via the list of pool indices:



To generate a partial model from individual ***sisNET*** inventory files, the *via a list of pool indices* generation mode can be used. The user can enter a comma-delimited list of pool indices in the *List of pool indices* input field. The network model is then generated from all the pipes whose graphic is in the required inventory files.

Export

Opens a box to select files for exporting the data generated for the hydraulic calculation network model in the ASCII format. A default setting gives the text files the filename ending *.ASC. However, the user can set any other name ending.



To save the text file, switch to the required directory, enter a file name and select OK. If a file of the same name already exists, a dialog will ask whether the existing one should be overwritten or if the process should be cancelled.

Delete

Selecting this icon button deletes the list of pipes excluded for the model generation.

Display

Selecting this icon button highlights, in the graphic, all the pipes that are excluded for the model generation.

Hide

Selecting this icon button returns all the excluded pipes which are highighted in the graphic to their normal display.

Add

Excludes one or more pipeline sections or pipe sections for the model generation. When the Add button has been selected, pressing the left mouse button selects the pipe to be excluded; after the selected pipe has been highlighted, pressing the left mouse button again confirms the choice of pipe, while pressing the right mouse button rejects it.

Remove

Removes one or more pipe sections or pipeline sections from the list of excluded pipes. When the Remove button has been selected, pressing the left mouse button selects the pipe to be re-released; after the selected pipe has been highlighted, pressing the left mouse button again confirms the choice of pipe, while pressing the right mouse button rejects it.

The “File” menu

The “File” menu contains functions for the full range of input and output functions for the **sisNET HR Module**.

Task:	Select from the “File” menu:
Load and draw a network model that has been generated	“Load” on page 210
Export the current model network	“Export” on page 210
Exit the **sisNET HR Module**	“Close” on page 210

Load

Reads in an existing, generated network model (with no network reductions) and displays the network elements based on the symbol colours set in the current views. With this function, after a network reduction, the original network can be restored or, after rebooting the **sisNET HR Module** without identifying the topology, a network model that has been generated can be loaded.

✍ This enables multiple network reduction strategies to be tested without repeatedly, laboriously identifying the network topology from the ***sisNET*** data.

Export

Starts outputting the generated network model to a text file (Export (Page 208)).

Close

Exits the application module **sisNET HR Module** and saves the setting changes.

The “Configuration” menu

The “Configuration” menu is used to enter all the configuration data for generating and outputting a network model.

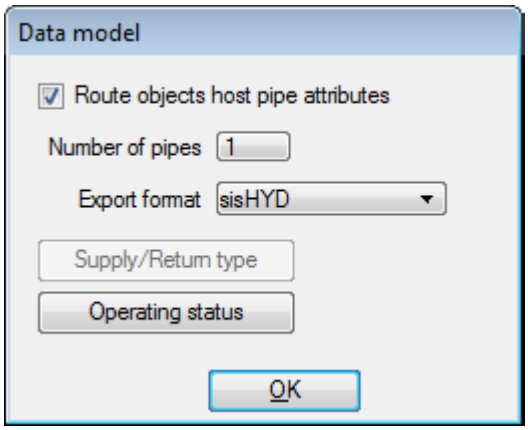
Task:	Select from the “Configuration” menu:
Assign the *sisNET* object types and *sisNET* attributes to the object types for the hydraulic model network	“Data model” on page 211
Enter/change the setting for the model network to be generated, such as network type, attribute value for network position, etc.	“Model network” on page 211
Select attributes for generating the pipe classes	“Type classes > Pipe classes” on page 213
Select attributes for generating the consumer groups	“Type classes > Consumer groups” on page 214
Select attributes for generating the pump types	“Type classes > Pump types” on page 214
Select attributes for generating the stop point types	“Type classes > Stop point types” on page 214
Select attributes for generating the organisation groups	“Type classes > Org groups” on page 214
Assign keywords for exporting the generated model network	“Keywords” on page 215

Data model

Opens the dialog Configure application module (Page 181). This is used to configure the object types in the hydraulic calculation network model by assigning them to *sisNET* object types and their attributes.

Model network

Opens the “Data model” dialog. This dialog is used to configure the network model for the current category.



Common route and pipeline data

Check the selection field if you wish to generate a hydraulic calculation network model for one-conductor systems (Data structures in sisNET (Page 196)).

✍ Any change made to this setting will require the entire **sisNET HR Module** to be reconfigured.

Number of pipes

For network data in which the trace and pipeline data is maintained together in one ***sisNET*** object, you can specify the number of pipes to be generated from one pipe object.

✍ If this setting is changed and the number of pipes to be generated is increased, the parameters will need to be reconfigured.

Export format

Allows the user to select the network calculation program for which the network model is to be exported. Different options may be selected, depending on the category:

Category	Export formats
District heating	sisHYD
Gas	sisHYD, Stanet, Optiplan
Water	sisHYD, WaterCAD, Stanet, REHMCROSS

Hydraulic pipe assignment

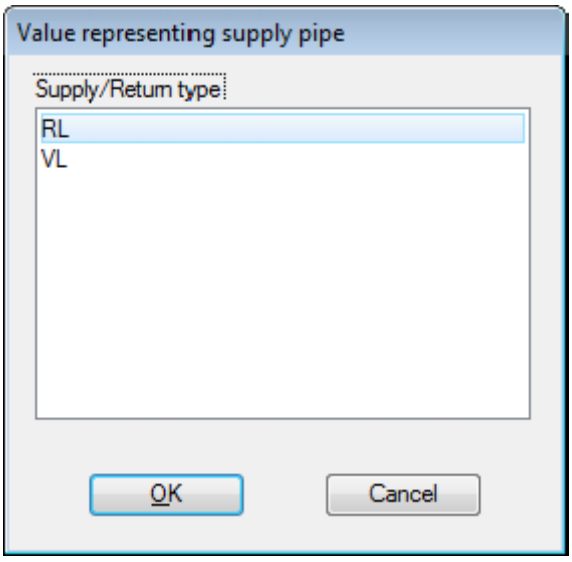
Opens, in turn, the dialog “Value representing supply pipe” and “Value representing return pipe” for querying the attribute values for assigning the pipeline sections to the supply or return pipe (“Value representing supply/return pipe” dialog (Page 212)).

Operating status

Opens the “Non-operational status for pipe” dialog for assigning an attribute value for flagging a pipe for the “Non-operational” operating status (“Non-operational status” dialog (Page 213)).

“Value representing supply/return pipe” dialog

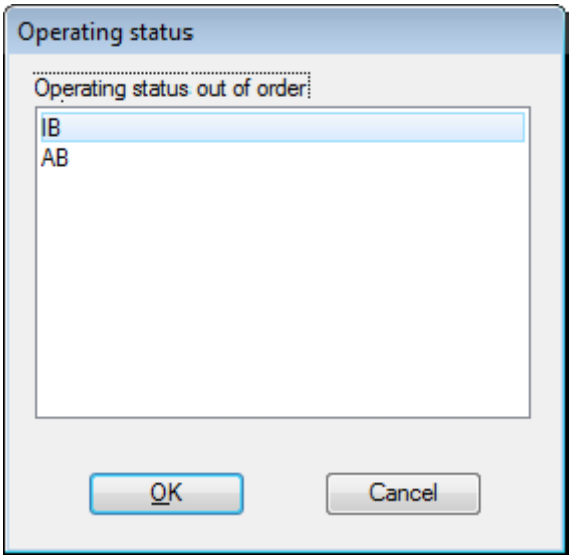
This dialog is used to specify the attribute values for assigning a pipe to the supply or return pipe.



The user can select the entry they want from the displayed list of network positions found, and select OK to confirm.

“Non-operational status” dialog

This dialog is used to query, for the **Status** attribute, the attribute value for flagging a pipe for the “Non-operational” operating status.

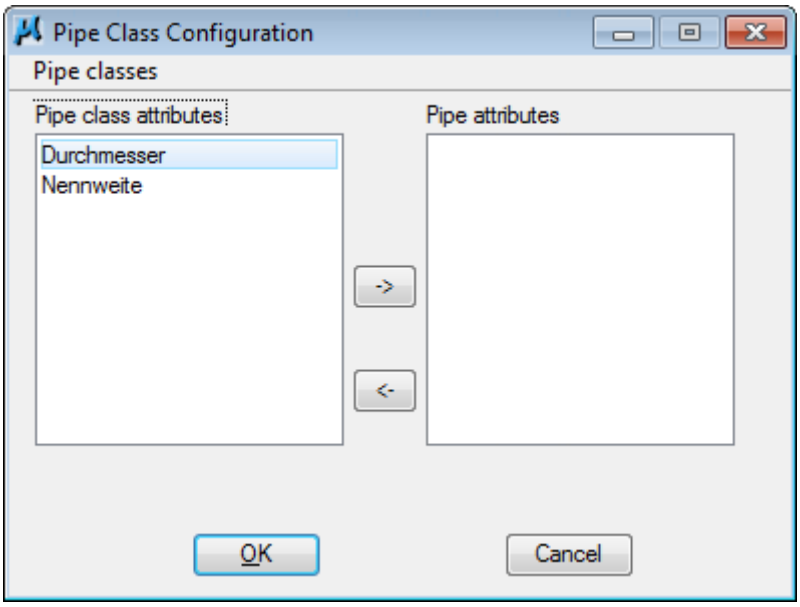


A pipe with this attribute value is not copied to the hydraulic network model.

✍ If the Cancel button is used to exit this dialog, all the pipes will be copied to the hydraulic network model, whatever their operational status.

Type classes > Pipe classes

Opens the “Pipe Class Configuration” dialog mask. Here you specify the attributes whose unique combination defines the relevant pipe classes (e.g. generate a pipe class for each combination of internal diameter, installation type and installation system that occurs in the network generated).



The list of pipeline attributes comprises all the potential, pipe class-relevant attributes that have not yet been used to for pipe class generation.

The list of pipeline attributes lists all the pipeline attributes currently selected for pipe class generation. The buttons “->” and “<-” can be used to swap pipeline attributes between the two lists in order to change the pipe class generation.

OK

Applies the pipeline attributes selected for pipe class generation, and closes the dialog mask.

Cancel

Closes the dialog mask without saving the entries.

Type classes > Consumer groups

Opens the “Consumer Group Configuration” dialog mask. Here you specify the attributes whose unique combination defines the relevant consumer group (e.g. generate a consumer group for each different consumer type that occurs in the network generated).

The consumer attributes that can be used to generate consumer groups are selected in the same way as the pipe class attributes (See “Type classes > Pipe classes” Page 213).

Type classes > Pump types

Opens the “Pump Type Configuration” dialog mask. Here you specify the attributes whose unique combination defines the relevant pump type (e.g. generate a pump type for each combination of engine power and manufacturer that occurs in the network generated).

The pump attributes that can be used to generate pump types are selected in the same way as the pipe class attributes (See “Type classes > Pipe classes” Page 213).

Type classes > Stop point types

Opens the “Stop Point Type Configuration” dialog mask. Here you specify the attributes whose unique combination defines the relevant stop point type (e.g. generate a stop point type for each combination of nominal flow and manufacturer that occurs in the network generated).

The stop point attributes that can be used to generate stop point types are selected in the same way as the pipe class attributes (See “Type classes > Pipe classes” Page 213).

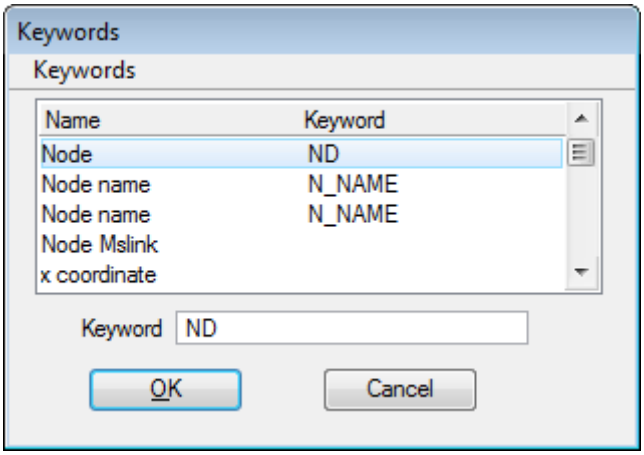
Type classes > Org groups

Opens the “Organization Group Configuration” dialog mask. Here you specify the attributes whose unique combination defines the relevant organisation group (e.g. generate an organisation group for each different year of manufacture that occurs in the network generated).

The organisation group attributes that can be used to generate organisation groups are selected in the same way as the pipe class attributes (See “Type classes > Pipe classes” Page 213).

Keywords

Opens the “Keyword Configuration” dialog. Here, for every object and every attribute, you specify a keyword that inserts the relevant value into the export file generated.



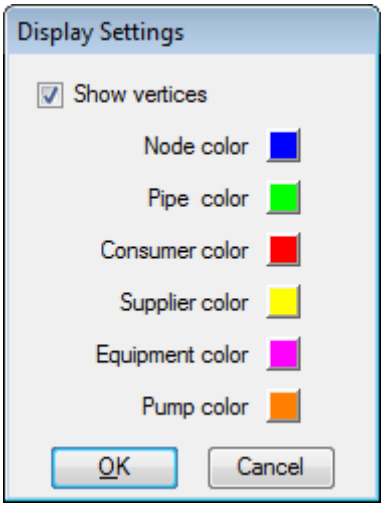
The “Settings” menu

The “Configuration” menu is used to enter all the configuration data for generating and outputting a network model.

Task:	Select from the “Settings” menu:
Enter/change the setting for the model network to be generated, such as network type, attribute value for network position, etc.	“Display” on page 215
Select attributes for generating the pipe classes	“Export” on page 216

Display

Opens the “Network display settings” dialog. You can use this to specify the colours for displaying the generated calculation network model.



Display inflection points

If this button is selected, the pipeline’s inflection points will display when the calculation network model is displayed, otherwise they are not displayed.

Node color

Specifies the fill colour of the calculation network’s nodes.

Pipe colour

Specifies the fill colour of pipes that are used for the hydraulic calculation network model.

Consumer

Specifies the colour which identifies the consumers that are put into the hydraulic calculation network model.

Supplier colour

Specifies the fill colour of suppliers that are used for the hydraulic calculation network model.

Stop point colour

Specifies the fill colour of stop points that are used for the hydraulic calculation network model.

Pump colour

Specifies the fill colour of pumps that are used for the hydraulic calculation network model.

✍ The entries in the ***sisNET*** colour palette are available as colours. The colour palette opens as soon as the user clicks the coloured in field or, if the focus is on the input field, presses the space bar.

OK

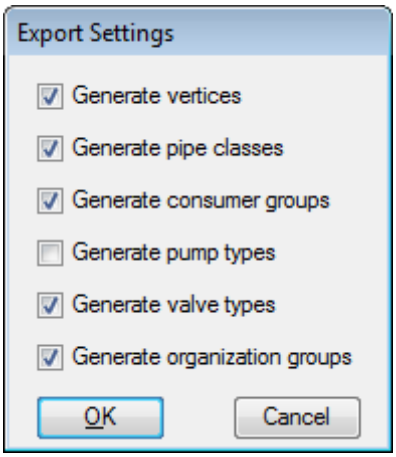
Selecting the OK button closes the dialog mask and the settings are applied to the fill colour.

Cancel

Closes the dialog mask without saving the entries.

Export

Opens the “Export Settings” dialog. You can use this dialog to change the settings for the next network model export.



Generate inflection points

When this box is checked, when the hydraulic network model is calculated, inflection points are generated for each pipeline with more than 2 graphic points for graphic points without an associaed node, to display the precise path of the pipeline.

✍ Generating inflection point information is only useful if your network calculation program, or the program to be used to post-process the data, is capable of re-assigning the inflection points to the pipes.

Generate pipe classes

When this box is checked, pipe classes are generated for the generated pipelines in line with the pipeline attributes configured in the “Pipe Class Configuration” dialog (See “Type classes > Pipe classes” Page 213).

Generate consumer groups

When this box is checked, consumer groups are generated for the generated consumers in line with the consumer attributes configured in the “Consumer Group Configuration” dialog (See “Type classes > Pipe classes” Page 213).

Generate pump types

When this box is checked, pump types are generated for the generated pumps in line with the pump attributes configured in the “Configure Pump Type” dialog (See “Type classes > Pump types” Page 214).

Generate stop point types

When this box is checked, stop point types are generated for the generated stop points in line with the stop point attributes configured in the “Stop Point Type Configuration” dialog (See “Type classes > Stop point types” Page 214).

Generate organisation groups

When this box is checked, organisation groups are generated for the generated consumers in line with the consumer attributes configured in the “Organisation Group Configuration” dialog (See “Type classes > Org groups” Page 214).

OK

Adopts the setting for the export and closes the dialog mask.

Cancel

Closes the dialog mask without saving the entries.

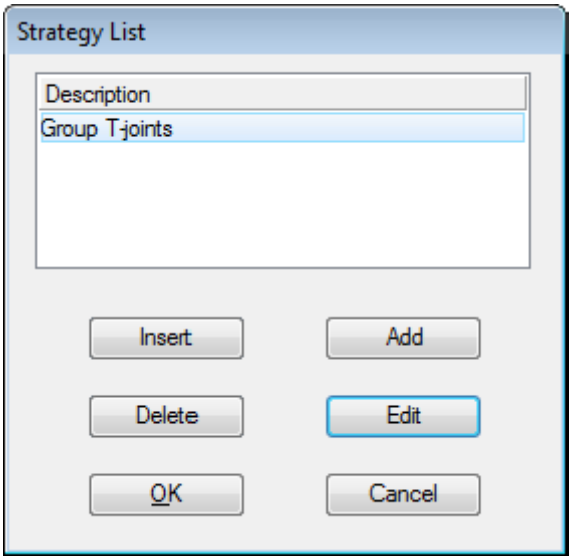
The “Reduction” menu

The “Reduction” menu holds the functions for reducing the generated network model.

Task:	Select from the “Reduction” menu:
Configure and manage different reduction methods	“Strategies” on page 218
Reduce network model	“Reduce” on page 221

Strategies

Opens the “Strategy List” dialog. This dialog can be used to manage different network reduction strategies and configure a current sequence of different reduction methods for compressing the calculation model network.



Insert

The Insert button is used to insert a new reduction strategy in front of the entry currently selected. The “Edit strategy” dialog (Page 219) opens for entering the reduction strategy you wish to insert.

Add

The Add button is used to add a new reduction strategy after the entry currently selected. The “Edit strategy” dialog (Page 219) opens for entering the reduction strategy you wish to add.

Delete

The Delete button deletes the reduction strategy which is currently selected from the list of reduction strategies.

Edit

The Edit button is used to edit the reduction strategy which is currently selected. The “Edit strategy” dialog (Page 219) opens for editing the strategy.

OK

When this button is selected, the changes made in the dialog are applied and the dialog mask closes.

Cancel

When this button is selected, the changes made in the dialog are discarded and the dialog mask closes.

“Edit strategy” dialog

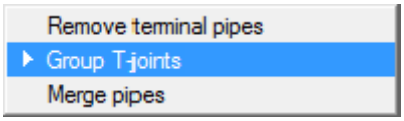
The “Edit strategy” dialog enables the user to configure a network reduction strategy. Depending on the reduction method selected (there are currently 3 methods), different setting options display for the current strategy.

Description

Describes the strategy.

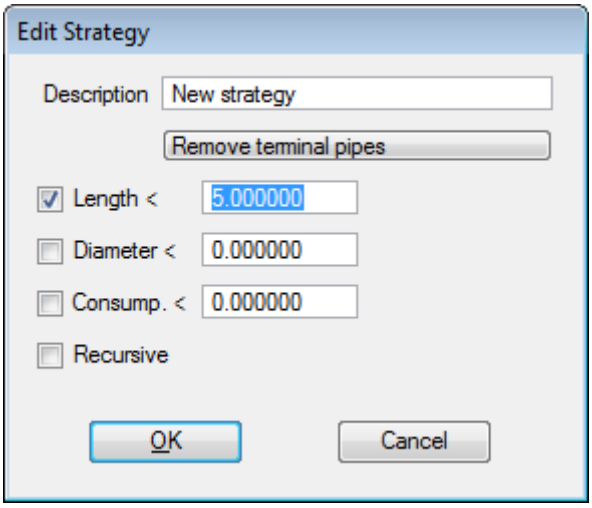
Reduction method

This selection menu enables the user to specify the reduction method they want for the current strategy.



Depending on the reduction method selected, the other input fields for the current strategy differ:

“Remove terminal pipes” reduction method



With this method, the last pipes to the consumers are removed and the entry node to the terminal pipe is activated for the consumer.

The following entry fields specify under which conditions terminal pipes may be removed:

Length

Check the box if the terminal pipe is to be reduced if the length falls short of a length that you specify.

✍ If the box is not checked, the reduction is done whatever the length of the pipeline.

Diameter

Check the box if the terminal pipe is to be reduced if the diameter is less than you specify.

✍ If the box is not checked, the reduction is done whatever the diameter of the pipeline.

Consumption

Check the box if the terminal pipe is to be reduced if the minimum consumption is less than you specify.

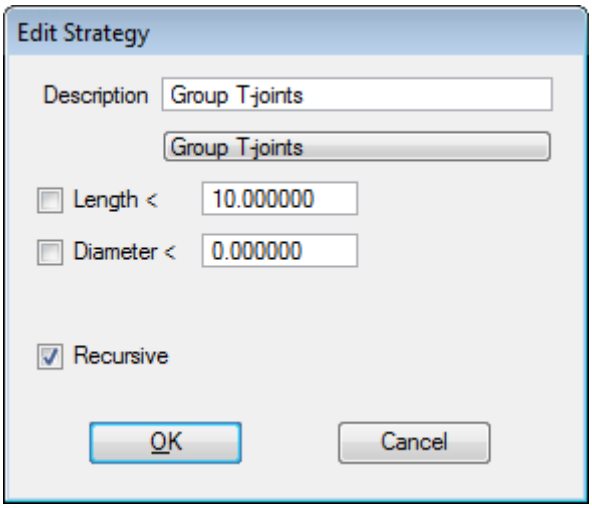
✍ If the box is not checked, the reduction is done whatever the consumption connected.

Recursive

Check the box if the reduction of terminal pipes is to be done recursively.

✍ If the box is not checked, with each reduction step, just one terminal pipe in a run, which meets the criterion, is removed.

“Group T-joints” reduction method



With this reduction method, T-joint nodes which are adjacent can be combined into a single calculation node (See “Merge crossing points” Page 223).

Length

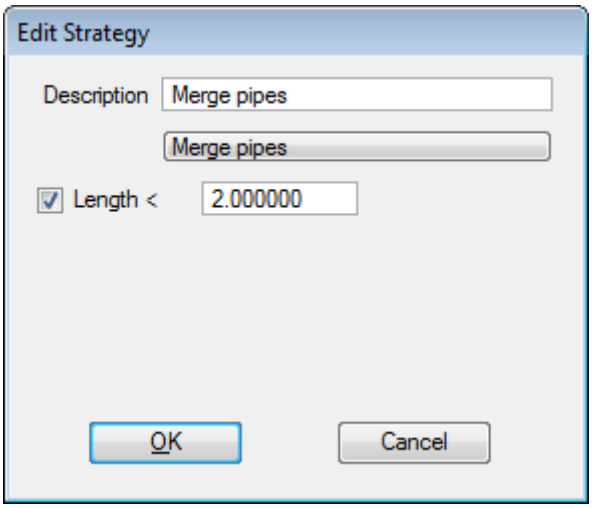
Check the box if the T-joint nodes are to be grouped if the length falls short of a length that you specify.

Diameter

Check the box if the T-joint nodes are only to be grouped if the diameter of the main pipe on which the T-joint nodes lie is less than you specify.

“Merge pipes” strategy

With this reduction method, pipelines lying one behind the other that have the same pipe class data (diameter, wall thickness, etc.) and between which there is no T-joint or any pump, stop point, consumer or supplier, can be merged into one common pipeline.



Length

Check the box if two pipes with the same pipe class data are only to be merged if the length falls short of a length that you specify, and enter the maximum length for the removal of intermediary nodes.

Tolerances

This button is currently still inactive.

OK

Applies the settings in the strategy and closes the dialog mask.

Cancel

Discards the settings and changes and closes the dialog mask.

Reduce

The last network model generated is reduced in line with the strategy list that has been configured, and displayed in the current views. If a model has yet to be loaded, the last model generated is loaded (See “Load” Page 210).

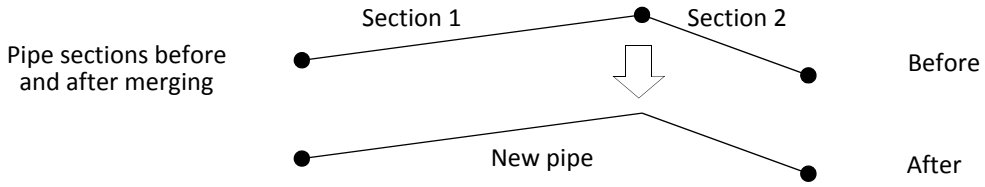
The reduction in network elements and nodes that has been achieved in the relevant reduction steps is output in the message window.

Simplifying calculation network models

The calculation network models extracted from a GIS system usually have a degree of detail which is undesirably great for doing network calculations. So **sisNET HR Module**’s ability to automatically run different, parametrisable, network simplification methods is of great benefit to the user. Each of these methods is described in the sections that follow.

Merge hydraulically identical pipe sections

In GIS systems, in contrast to network calculation programs, pipes are often divided into individual sections without changing any hydraulically related parameters (e.g. changing the material, manufacturer, year of manufacture, etc.). The **sisNET HR Module** is able to merge such pipe sections into a single pipe.



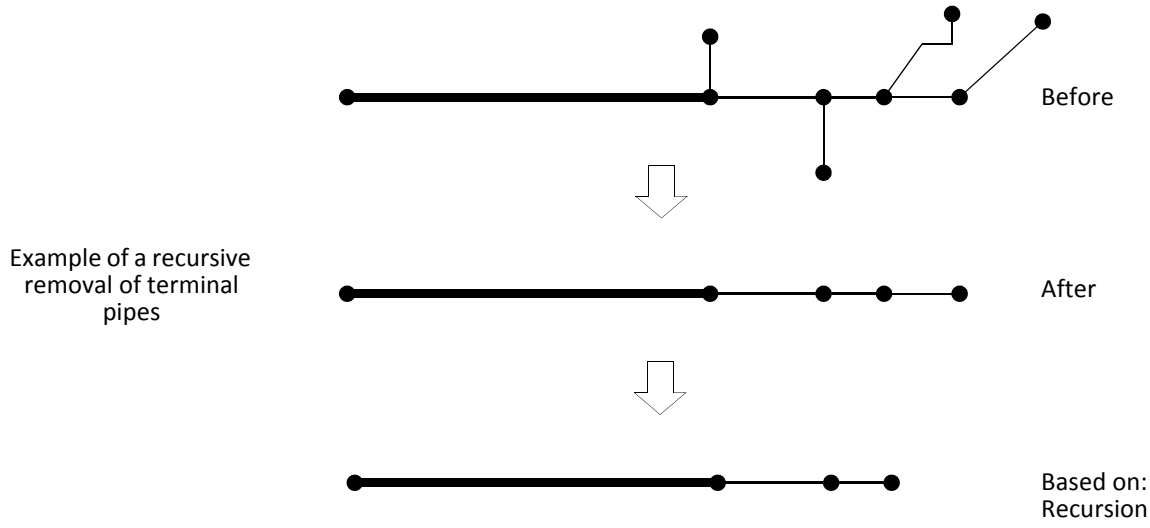
This **sisNET HR Module** method can be parametrised:

- Only pipes shorter than a prescribed length are merged.
- Pipe sections whereby “just a little” differs are merged. Tolerance values can be defined for any relevant attributes as percentage changes from one pipe section to the next. If these tolerances are not reached for all the attributes, the pipes concerned can be merged. The attributes of the pipe section that was originally longer are used as the attributes for the newly merged pipe.

✍ If the pipe sections are merged with no tolerances, this method does not affect the precision of the calculation results, despite its data reduction, so all users should generally use it.

Remove terminal pipes

Terminal pipes (e.g. stub lines to service connections) do not usually have a major impact on a hydraulic network calculation. So they, too, lend themselves to a network reduction with no negative consequences.



The **sisNET HR Module** places consumers who are supplied by the removed terminal pipes on the start nodes of the removed pipes.

The method can also be applied recursively so that pipes can be removed which themselves become terminal pipes when terminal pipes are removed.

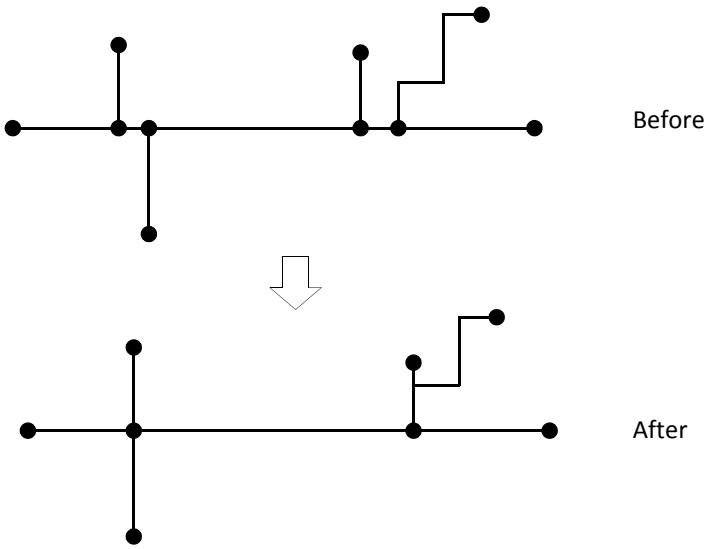
The method for removing terminal pipes can be parametrised in **sisNET HR Module**:

- Only terminal pipes with a length smaller than a prescribable threshold value are removed
- Only terminal pipes with a diameter smaller than a prescribable threshold value are removed
- The only terminal pipes removed are those used to supply a consumer with a consumption smaller than a prescribable threshold value.

Merge crossing points

Since almost all service connections are managed in GIS systems, it is relatively often the case that multiple stub pipes come off a main pipe within a relatively short distance. **sisNET HR Module** is able to merge such densely positioned branches.

Example of merging branches



The position of the merged branch is the position of the branch with the greater connected consumption.

This **sisNET HR Module** simplification method, too, can be parametrised:

- Only branches with a distance below a prescribable threshold value are merged
- Only branches between which there is a pipe with a diameter smaller than a prescribable threshold value are merged

Merge “connection systems”

Specifically in ***sisNET***, the option is available to assign network parts of any size to a “connection system”. The **sisNET HR Module** can combine this connection system completely into one consumer. All the consumers in this connection system that are maintained in the GIS are added to it.

13 Generating electrical calculation network models

Description of function

The network calculation models used when planning power distribution networks require time-consuming, error-prone preparatory work to obtain data, particularly in large networks. As a result of the large data volumes and ever-changing customer structure, maintaining the data required for the network calculation is also associated with substantial costs.

At the same time **sisNET** is deployed as a GIS system for documenting and managing the lines networks in the supply industry. **sisNET** is used to manage and maintain all the graphic information and object data from the company's networks in a central, integrated system.

For companies simultaneously using **sisNET** and network calculation programs, the **generation of electrical calculation network models**, referred to in the following as **sisNET SR Module**, provides an opportunity to connect these data-heavy systems to avoid keeping redundant data. The **sisNET SR Module** uses the GS data maintained in **sisNET** to generate input data for electrical network calculation programs.

Requirements of the data structures in the GIS data

For it to be able to perform its tasks, the **sisNET SR Module** can be configured for a range of data structures both on the **sisNET** side and (to a limited degree) on the network calculation side. We shall now describe what the **sisNET SR Module** requires of the data structures in the **sisNET** data and how the **sisNET SR Module** handles them.

Data structures in sisNET

The data structures in **sisNET** are not usually specified in advance but can, to a very large extent, be configured by and for the end users, depending on their needs.

The topology of an electricity network is described by one or more cable object types, bus bar object types and transformer object types, in which the electrical attributes, such as length, nominal voltage, resistances, etc., are also maintained.

- There needs to be a node at least at the beginning and end of the cable, bus bar and transformer objects. The node must have relations to the topology objects beginning and ending at the node, so that the network structure can be calculated using the relations between cables, bus bars, and transformers.
- In the case of data inventories in large companies, there is also a relation of pipeline objects to an object of the network type. This assignment can be used to restict the model generation to one or more networks.

Other object types for generating a calculation model are consumers and the switch object types load switch, protection switch, isolating switch and switch connector. The consumer objects must have a relation to a node which, in turn, must have a relation to a topology object.

The switch objects must also have a relation to a node in a topology object; a relation to the cable/transformer object which is switched/protected by the switch is also required.

Object types in the *sisNET* SR module

Due to the minimum technical data requirements of network calculation programs, the **sisNET SR Module** has 10 object types, in all:

- Network,
- Node,
- Cable,
- Bus bar,
- Transformer,
- Consumer,
- Load switch,
- Isolating switch,
- Protection switch,
- Load isolating switch,
- Cable types.

Output file

The **sisNET SR Module**'s output depends on the export format selected. The ASCII file generated for the DigSilent calculation program looks like this:

```
$$General;No(i);Descr(a:40);Val(a:40)
1;Version;4.0
2:Source;sisNET

$$ElmCoup;No(i);Name(a:40);Table_Cub1(a:15);Cub1(i);Table_Cub2(a:15);Cub2(i);aUsage(a:4);chr_name(a:20)
*********************************************************************
* No,Name: Number and Name of Element
* Station_I; Cub_I: Connection
* aUsage: Switch Type, cbk=Circuit-Breaker, dct=Disconnector, sdc=Load-Break-Disconnector,swt=Load-Switch
*********************************************************************
100000003;P035DBF3;Cubicles;100000002;Cubicles;100000049;swt;3529715
100000008;P035DBF5;Cubicles;100000007;Cubicles;100000050;swt;3529717
100000010;P035DD51;Cubicles;100000009;Cubicles;100000051;swt;3530065
100000012;P035DD4E;Cubicles;100000011;Cubicles;100000052;swt;3530062
100000016;P035DBF4;Cubicles;100000015;Cubicles;100000053;swt;3529716
100000018;P035DBBE;Cubicles;100000017;Cubicles;100000119;swt;3529662

$$ElmTerm;No(i);Name(a:40);iUsage(i);uknom(r);chr_name(a:20)
*********************************************************************
* No,Name: Number and Name of Element
* iUsage: Usage: Busbar=0,Junction Node=1, Internal Node=2
* uknom: Nominal Voltage: Line-Line in kV
* char_name: Characteristic name
*********************************************************************
100000023;G035E415;0;0.999;3531797
```

```
100000102;K0342204;2;1;3416580
100000076;K034253B;2;1;3417403
100000070;K0342898;2;1;3418264
100000040;K0343146;2;1;3420486
100000060;K0343196;2;1;3420566
100000072;K03433C6;2;1;3421126
100000043;K0343C6F;2;1;3423343
100000063;K0343D4A;2;1;3423562

$$ElmLne;No(i);Name(a:40);Table_typ_id(a:15);typ_id(i);Table_Cub1(a:15);Cub1(i);Table_Cub2(a:15);Cub2(i);dline(r);
chr_name(a:20)
************************************************************************
* No,Name: Number and Name of Element
* typ_id: Type of Element
* Station_I; Cub_I: Connection
* dline: Parameters: Length of Line in km
* char_name: Characteristic Name
************************************************************************
100000006;R03402B1-0345021;TypLne;1;Cubicles;100000049;Cubicles;100000005;0.026260;3444158
100000025;R0345021-03448CE;TypLne;1;Cubicles;100000005;Cubicles;100000024;0.023780;3444159
100000027;R0346313-0345021;TypLne;2;Cubicles;100000026;Cubicles;100000005;0.019490;3445472

$$TypLne;No(i);Name(a:40);uline(r);sline(r);aohl_(a:3);rline(r);xline(r);cline(r);rline0(r);xline0(r);cline0(r);rtemp(r);lthr
(r)
************************************************************************
* No,Name: Number and Name of Element
* uline: Rated Voltage in kV
* sline: Rated Current in kA
* aohl: Cable / OHL
* rline: Parameters per Length 1,2-Sequence: Resistance R' in Ohm/km
* xline: Parameters per Length 1,2-Sequence: Reactance X' in Ohm/km
* cline: Parameters per Length 1,2-Sequence: Capacitance C' in µF/km
* rline0: Parameters per Length Zero Sequence: Resistance R0' in Ohm/km
* xline0: Parameters per Length Zero Sequence: Reactance X0' in Ohm/km
* cline0: Parameters per Length Zero Sequence: Capacitance C0' in µF/km
* rtemp: Max. End Temperature in degC
* lthr: Rated Short-Time (1s) Current (Conductor) in kA
* char_name: Characteristic Name
************************************************************************
3;C_3;1;;ohl;;;;;;;;
2;C_2;1;;ohl;;;;;;;;
1;C_1;1;;ohl;;;;;;;;

$$ElmLod;No(i);Name(a:40);Table_Cub1(a:15);Cub1(i);chr_name(a:20)
************************************************************************
* No,Name: Number and Name of Element
* Station_I; Cub_I: Connection
* char_name: Characteristic name
************************************************************************

$$ElmTr2;No(i);Name(a:40);Table_Cub1(a:15);Cub1(i);Table_Cub2(a:15);Cub2(i);chr_name(a:20)
************************************************************************
* No,Name: Number and Name of Element
* Station_I; Cub_I: Connection
* char_name: Characteristic name
************************************************************************
100000118;R035C28C-035BAAA;Cubicles;100000119;Cubicles;100000117;3528097

$$Cubicles;No(i);Name(a:40);Table_Station(a:15);Station(i);chr_name(a:20)
************************************************************************
* No,Name: Number and Name of Element
* Station: Name of Terminal
* char_name: Characteristic Name
************************************************************************
100000102;K0342204;ElmTerm;100000102;3416580
100000076;K034253B;ElmTerm;100000076;3417403
100000070;K0342898;ElmTerm;100000070;3418264
100000040;K0343146;ElmTerm;100000040;3420486
```

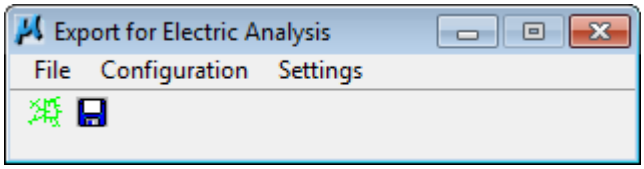
Generating the calculation network model

The **sisNET SR Module** automatically generates the calculation network model after the user has configured the system (see “Using the sisNET SR module” on page 228). To start the conversion, the user either graphically selects a start cable inside the area to be converted, or uses a fence to generate a ***sisNET*** selection of all the topology objects located in the required area. The **sisNET SR Module** generates an electrical network model based on the start cable selected or on the content in the selection.

When the calculation model generated is exported in the export format selected, the cable types for the cable/aerial line segments are generated and, when the export is ended, saved in a separate file for changing the name / adding missing attribute values.

Using the *sisNET* SR module

The **sisNET SR Module**’s main dialog controls all the activities, from configuring the electrical calculation network model through the extracting of the model from the ***sisNET*** data to backing up the data. All the functions needed to generate the calculation model can be accessed via the menu bar and the button bar.



Button bar

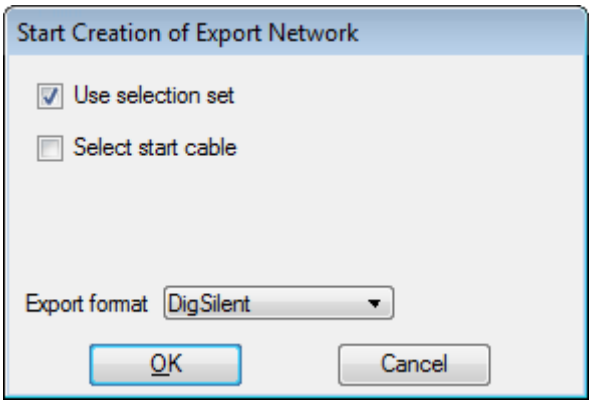
The button bar has 2 icon buttons for the functions that are frequently required to generate an electrical calculation model.

These include triggering the generation and triggering the outputting of the network model to a text file.

Task:	Icon button to activate:
Starting the topology investigation	“Generating” on page 229
Exporting the generated electrical analysis	“Exporting” on page 230

Generating

Selecting this icon button opens the dialog with which you start generating the calculation network model from the ***sisNET*** data.

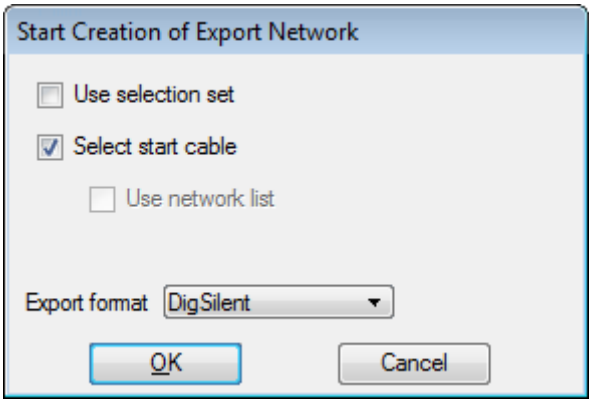


In this dialog you select the generation mode for the model generation that is to be started. The topology objects for the model to be generated can either be identified using the selection table of the current ***sisNET*** user, or using a topology search from a start cable.

Generation mode via the selection table:

The ***sisNET*** selection module can be used to insert all the topology objects (cables, transformers and bus bars) into the selection table from any fence which are selected to generate a model. The calculation model is generated for all the topology objects included in the current selection table and calculates the network model from these objects with connected switch/acceptor objects.

Generation mode by selecting a start cable:



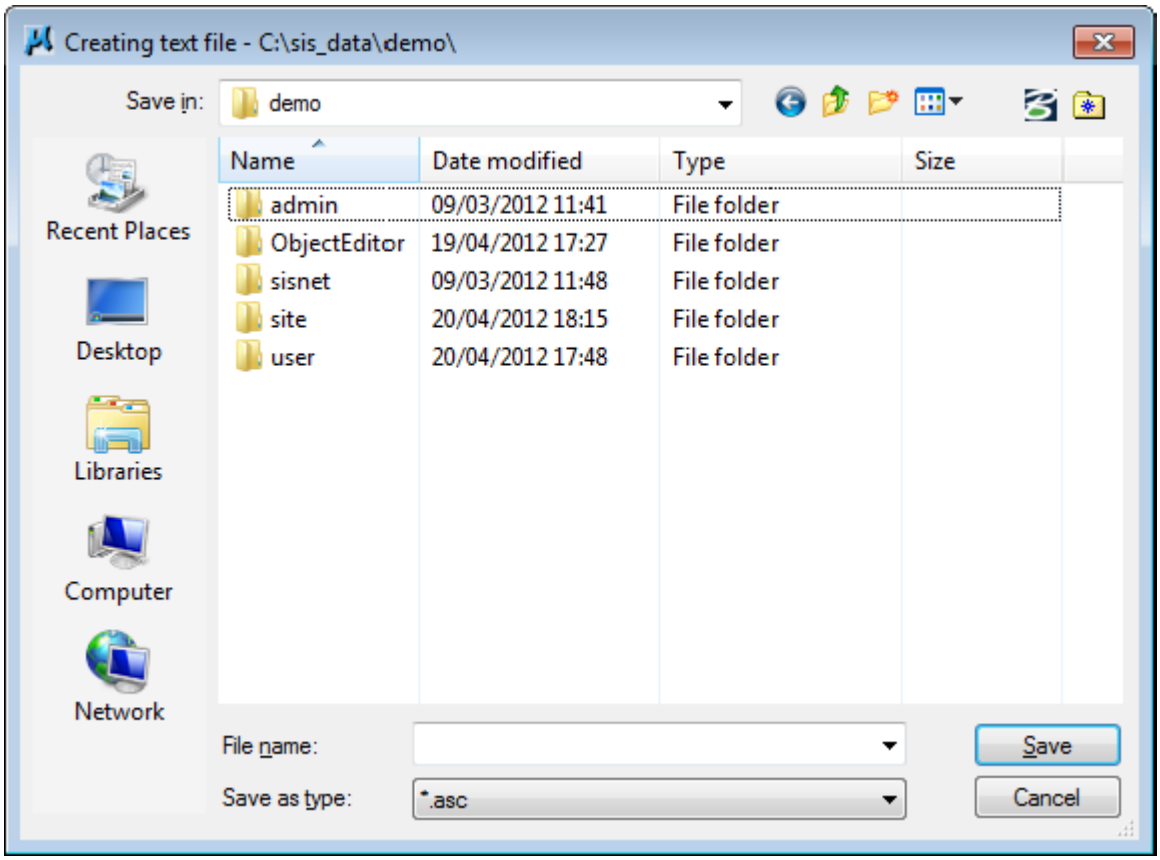
With this type of generation, the user must select a start cable for the model generation. If the network object type has been configured, the networks to be included can also be restricted for the subsequent generation of a network model.

To select the start cable, the user must only select the start line desired with the left mouse button (Generating the calculation network model (Page 228)).

While the electrical network model is being generated, the user has the option of cancelling the generation by pressing the Reset button (usually the right mouse button). If the Reset button is pressed, the user is asked whether they really wish to cancel the generation. If they select the No button, the generation resumes, otherwise the model generation is aborted after the current generation step so that there is only an incomplete model.

Exporting

Opens a box to select files for exporting the data generated for the electrical calculation network model in the ASCII format. A default setting gives the text files the filename ending *.txt. However, the user can set any other name ending.



To save the text file, switch to the required directory, enter a file name and select OK. If a file of the same name already exists, a dialog will ask whether the existing one should be overwritten or if the process should be cancelled. For the DigSilent export format, an optional cable type file from a previous generation, which is to be used when determining the cable types for the cable and aerial line segments, is then queried. Without a loaded cable types file the type classes are generated during the export, otherwise the cable types that have been read are used and new cable types are only generated for new cable/aerial line attribute combinations which are not contained in the cable types file.

If no cable types file has been loaded or if new cable types have been added, when the export is complete there is a prompt for a file name for saving the cable types that have been generated.

The “File” menu

The “File” menu contains functions for the full range of input and output functions for the **sisNET SR Module**

Task:	Select from the “File” menu:
Load and draw a network model that has been generated	“Loading” on page 231
Export the current model network	“Exporting” on page 231
Exit the **sisNET SR Module**	“Closing” on page 231

Loading

Reads in an existing, generated network model and displays the network elements based on the symbol colours set in the current views. With this function, after rebooting the **sisNET SR Module** without identifying the topology, a network model that has been generated can be loaded.

Exporting

Starts the output of the generated network model to a text file (Exporting (Page 230)).

Closing

Closes the application module **sisNET SR Module** and saves the setting changes.

The “Configuration” menu

The “Configuration” menu is used to enter all the configuration data for generating and outputting a network model.

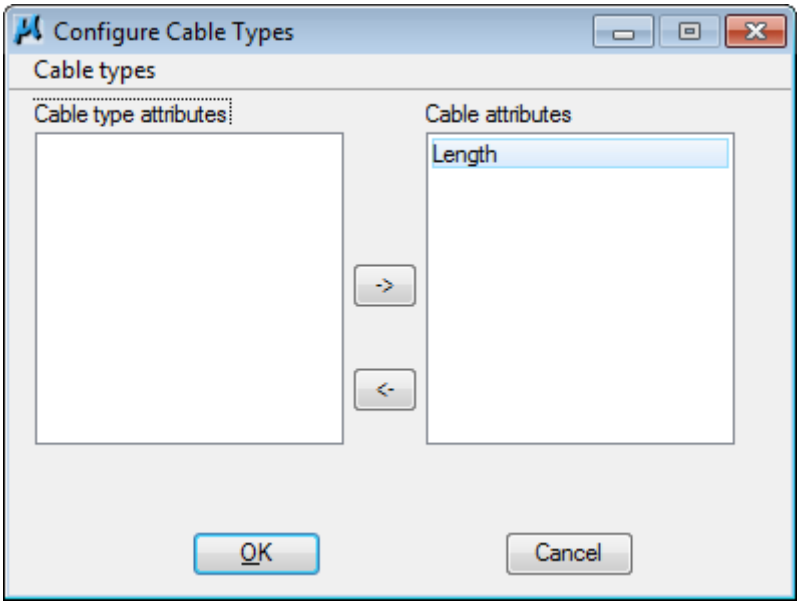
Task:	Select from the “Configuration” menu:
Assign the ***sisNET*** object types and ***sisNET*** attributes to the object types for the electrical model network	“Application module objects” on page 231
Select attributes for generating the cable types	“Type classes > Cable types” on page 232

Application module objects

Opens the dialog Configure application module (Page 181). This is used to configure the object types in the electrical calculation network model by assigning them to ***sisNET*** object types and their attributes.

Type classes > Cable types

Opens the “Configure Cable Types” dialog mask. Here you specify the attributes whose unique combination defines the relevant cable types (e.g. generate a cable type for each combination of nominal voltage, DIN name and dimension that occurs in the network generated).



The list of cable attributes comprises all the potential, cable type-relevant attributes that have not yet been used to for cable type generation.

The list of cable type attributes lists all the cable attributes currently selected for cable type generation. The buttons “->“ and “<-“ can be used to swap cable attributes between the two lists in order to change the cable type generation.

OK

Applies the cable attributes selected for cable type generation, and closes the dialog mask.

Cancel

Closes the dialog mask without saving the entries.

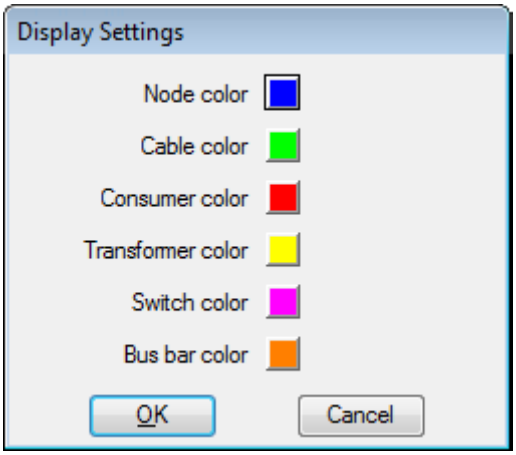
The “Settings” menu

The “Configuration” menu is used to enter all the configuration data for generating and outputting a network model.

Task:	Selection from the “Settings” menu:
Enter/change the presentation colours for the graphic for the generated the model network	“Presentation” on page 233

Presentation

Opens the “Network presentation settings” dialog. The colours for presenting the generated calculation network model can be set here.



Node color

Determines the colour for the calculation network’s nodes.

Cable color

Specifies the fill colour for cable segments that are used for the electrical calculation network model.

Consumer

Specifies the colour which identifies the consumers that are put into the electrical calculation network model.

Transformer color

Specifies the fill colour of transformers that are used for the electrical calculation network model.

Switch color

Specifies the fill colour of switches that are used for the electrical calculation network model.

Bus bar color

Specifies the fill colour of bus bars that are used for the electrical calculation network model.

✍ The entries in the ***sisNET*** colour palette are available as colours. The colour palette opens as soon as the user clicks the coloured in field or, if the focus is on the input field, presses the space bar.

OK

Selecting the OK button closes the dialog mask and the settings are applied to the fill colour.

Cancel

Closes the dialog mask without saving the entries.

14 Display elevation profile

The “Display elevation profile” application module enables, for a freely selectable pipeline, the elevation profile along that section to be displayed in a 3D profile (providing elevation information is maintained for the relevant ***sisNET*** objects).

Description of function

The “Elevation profile” application module enables, for a freely selectable pipeline, the elevation profile of the associated pipe sections to be displayed in a 3D profile.

Which object types are to be used to display the longitudinal section can be configured separately for each category.

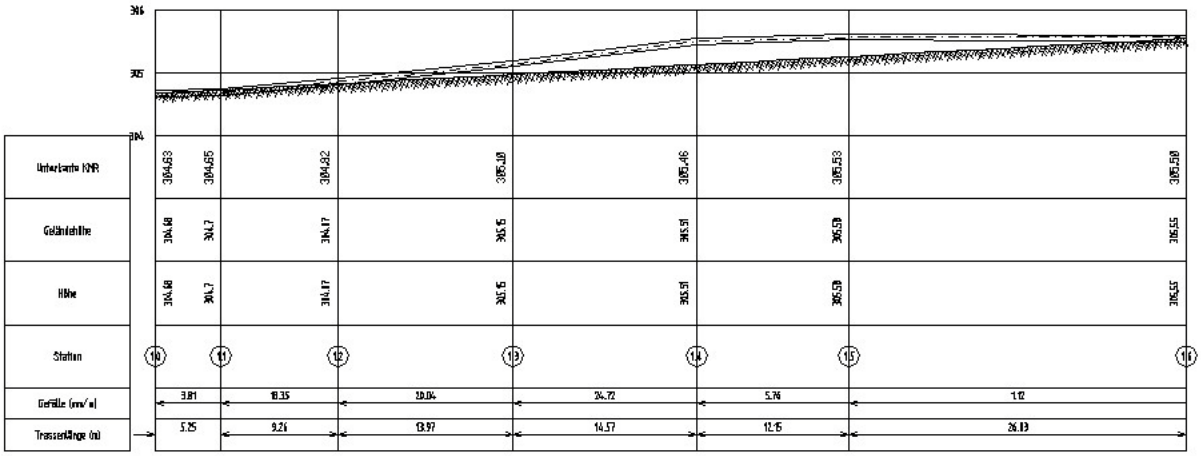
There are 2 different configurations, depending on the category selected:

1. the default configuration for “normal, generally pressure-driven pipe networks” (the district heating, gas, and water categories) and
2. the wastewater configuration for wastewater pipe networks (the wastewater category).

The “Elevation Profile” module automatically detects which type of configuration is required.

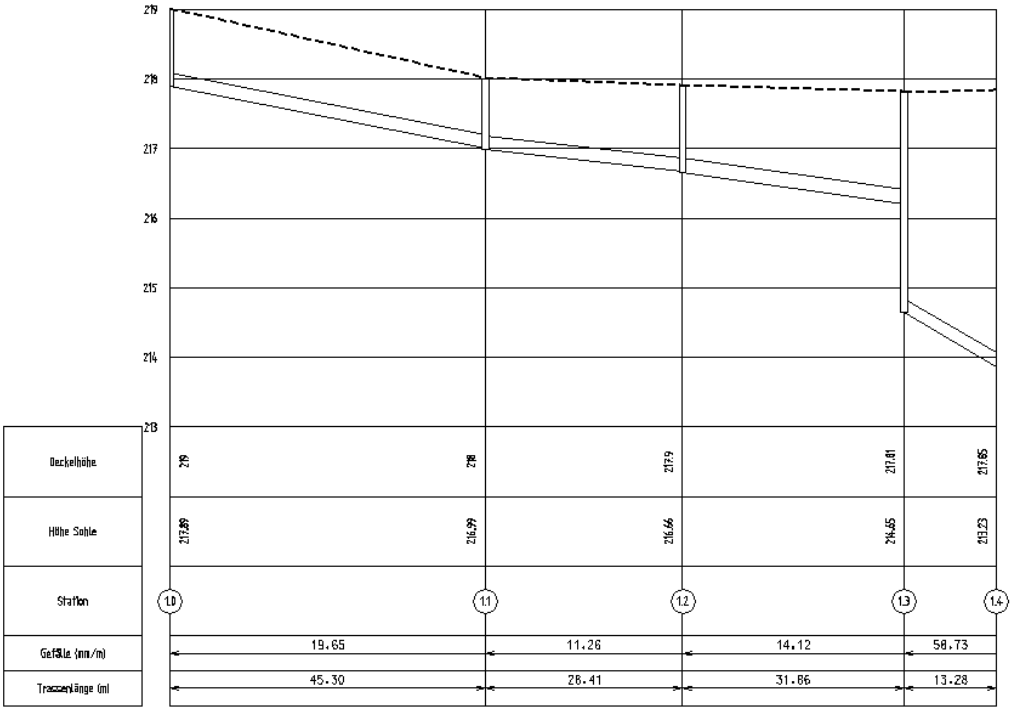
For the default elevation profile, the elevation profile between 2 nodes, connected by any number of pipe sections, is displayed.

The diagram below, for example, shows the 3D profile for a district heating pipe:



For the wastewater elevation profile, the elevation profile between 2 manholes or special constructions, connected by any number of line reaches and manholes/special constructions, is displayed.

The diagram below, for example, shows the 3D profile for a wastewater pipe:



The elevation profile display can largely be configured in terms of the graphic design of the elevation profile diagram generated. So you can configure the display colours, line type, line width and font for all the elements to be graphically displayed, and you can switch the display of some legend texts on and off.

Prerequisites for using the elevation profile module

Because the ***sisNET*** data structure can, to a great extent, be freely configured, the elevation profile module can be configured to different customer data models. To do this, the associated ***sisNET*** object types from the ***sisNET*** schema for the current category, and the required display attributes, need to be assigned to the object types which are to be differentiated in the elevation profile.

Only two object types are required for the default elevation profile:

- the node with the attributes height and ground elevation (optional) for the vertical sections to be displayed and
- the pipe object type for the pipe objects whose path is to be displayed as a 3D profile. The application module attributes for the length, the installation type, and a maximum of 3 different pipe diameters are required for the pipe object type.

Four object types, in all, are required for the wastewater elevation profile:

- the site point as connection components between the line reaches,
- the object type line reach for the line objects whose path is to be displayed as a 3D profile. The application module attributes for the entry and exit base elevation and for the elevation of the line reach are required for the line reach object type.
- the manhole object type with the attributes base height and cover height and, optionally, the diameter for the manholes to be displayed and
- the special structure object type with the attributes base height and cover height and, optionally, the diameter for the special structures to be displayed.

To create an elevation profile, certain conditions, described below, are also required for the data model in the customer schema.

For the standard elevation profile:

1. the pipe line objects for the elevation profile to be displayed are all linked to one another by common site points,
2. the site points have at least one attribute for the height.

If the path passes through site points with missing height values, there is the option of temporarily adding the height values or having them interpolated The elevation module cannot be used to make any permanent changes to the height values - this needs to be done in ***sisNET*** itself.

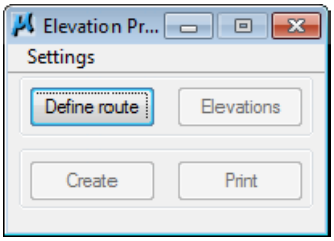
For the wastewater elevation profile:

1. the pipe objects (line reaches) for the elevation profile to be displayed are all linked to one another by common site points,
2. the line reaches have an attribute for both the exit and entry elevation and the start and end elevations (in the flow direction) and are laid out graphically in the flow direction,
3. the manholes and special structures have the attributes cover height and base height,
4. in the case of line reaches that are connected to one another by a manhole, the start and endpoints are at the midpoint of the manhole; in the case of line reaches that are connected to one another by a special structure, the start and endpoints are at the edge of the special structure and the channels inside the special structure are created as separate line reach objects (with a different profile type) with relations to the line reaches coming in from the outside and those going out, and to the special structure.

For this program module to be started, an environment variable SIS_LOCAL needs to be defined. The value of SIS_LOCAL should point to the ***sisNET*** work directory. As soon as the program has been configured once, the parameter file hoehexxx.par (xxx is the internal number of the category for the parameter file), containing the settings made while configuring the program, is created in the directory defined by SIS_LOCAL.

Using the Elevation Profile module

When Elevation Profile is launched (via the menu item “Display elevation profile” beneath the main Application menu in ***sisNET***), the main dialog window opens:



The four buttons are used to launch the main functions of the Elevation module:

Task:	Button to select:
Start selecting the starting point and end point of the elevation profile	Route search (Page 239)
Return from the graphic display of the elevation profile to the elevation coordinates	Elevations (Page 239)
Create the current elevation profile	Redraw (Page 241)
Plot the current elevation profile	Plot (Page 241)

The Settings menu can also be used to configure the various settings for the elevation profile:

Task:	Selection from the “Settings” menu:
Configure the object types pipe and node and line reach, manhole and special structure with their attributes	Data model Configure application module (Page 181)
Make settings for the diagram display	Diagram display Settings > Diagram display (Page 241)
Make settings for the installation system display (for the standard elevation profile only)	Linear display Settings > Linear Display (Page 242)

Route search

By pressing the switch route search the selection of the start and endpoint for the displayed elevation profile is started. First of all, the message line in the ***sisNET*** main menu prompts the user to select the startpoint.

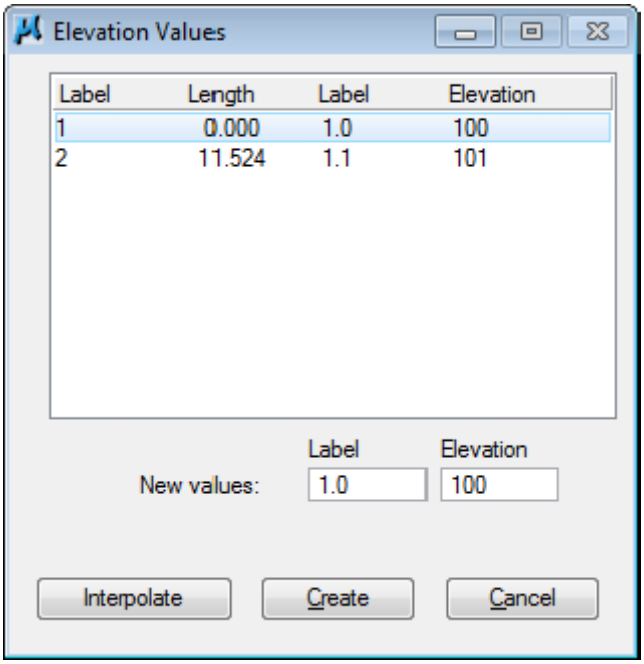
A node is selected by selecting the required start situation point with the Tentative button, which causes the selected node to appear with a large cross, and then confirming the selection with the left mouse button. After confirming the selection of the start node, the user is prompted to select the end point for the elevation profile. This is selected in the same way as the start node.

Now the program searches for the possible paths between the selected endpoints. If more than one path is found, first of all the number of paths is given. Then the first path found in the graphic is highlighted and the user is prompted to confirm or reject the path found. Clicking the left mouse button confirms the displayed path, while the right mouse button rejects it. If it is rejected, the next path found is highlighted in the graphic and the user is prompted to confirm or reject. If no other path has been found, the path search is restarted by querying the start node.

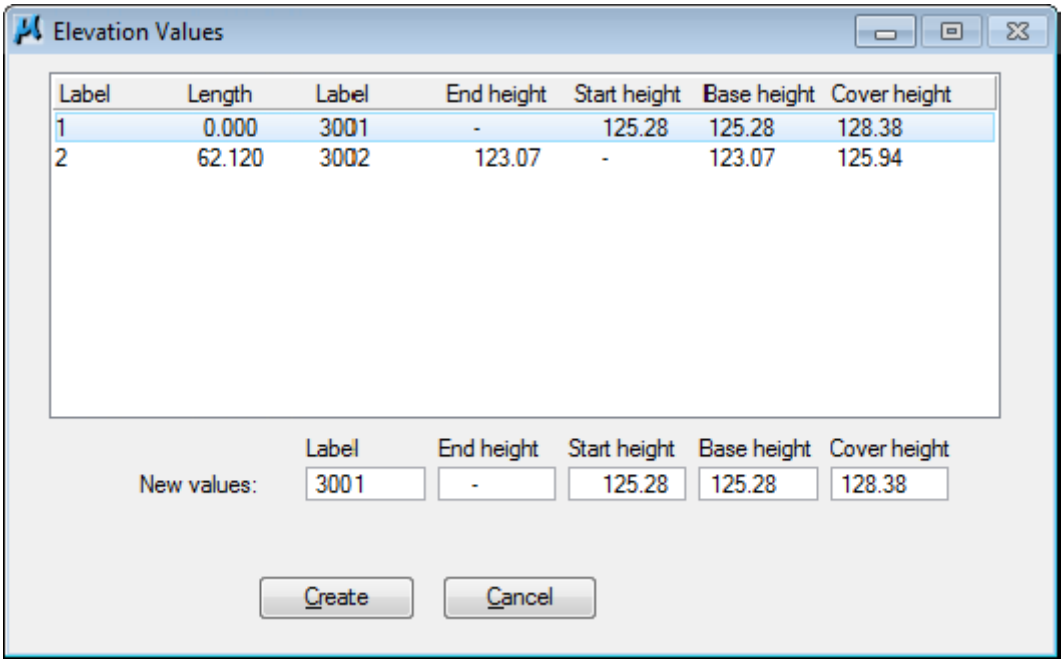
When a path between the 2 selected endpoints is confirmed, the elevation values are displayed along the path and in the dialog "Elevations".

Elevations

This dialog displays the elevation values for the nodes along the elevation profile calculated. For a default elevation profile, the dialog looks like this:



With the elevation profile for wastewater pipes, more elevations need to be displayed, so the Elevation values for the wastewater pipes dialog looks like this:



The various nodes in the elevation profile are numbered consecutively (station), with the position in front of the decimal point showing the pipes in the elevation profile, and the position after the decimal point showing the sequential number of the nodes inside the pipe. The station numbers and the elevation values of the nodes can be temporarily changed and missing values can be interpolated in linear fashion.

Interpolate

When this button is selected, missing elevation values are calculated, using linear interpolation, based on the elevations of the adjacent nodes.

✍ Only elevations between 2 nodes with known elevation values can be interpolated.

Draw

Clicking on the “Draw” button closes the current dialog and the elevation profile of the displayed situation points is shown graphically.

✍ The elevation profile shown graphically is automatically saved to a MicroStation drawing file “Hoehexxx.dgn” in the directory defined by the environment variable SIS_LOCAL. The xxx symbol in this file name stands for a 3-digit number, with the previously highest existing number in the directory being automatically incremented by the value 1 for each new 3D profile file.

Cancel

This button cancels the elevation profile for the currently selected pipeline by closing the current dialog and returning to the main elevation profile dialog. If an elevation profile diagram is open, the current drawing file is closed and the drawing file (job or inventory file) that was originally loaded is reopened.

Redraw

Selecting this button rebuilds the drawing file with the elevation profile.

✍ This enables you to test the effect of changes in the settings dialogs (Settings > Diagram display and Settings > Linear Display) without doing another search for a pipe path.

Plot

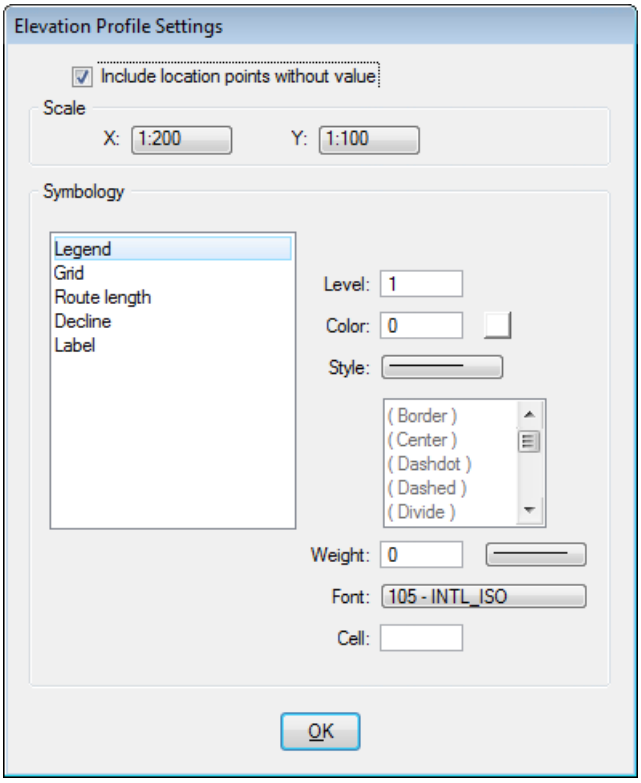
Selecting this button launches the MicroStation plot dialog for outputting the elevation profile that has been generated to a printer/plotter.

Application module objects

This menu item opens the dialog for displaying and changing the application module modification of the elevation profile Configure application module (Page 181).

Settings > Diagram display

The “Elevation Profile Settings” dialog is opened by the menu item “Settings > Diagram display”:



Site points with NULL values

If the “Include site points without value” button is not selected, only site points with a specified height attribute are included. The default setting is that site points with unspecified height attributes are also included.

✍ In the dialog Elevations (Page 239) users can retrospectively, manually enter missing elevations for the elevation profile display or interpolate them in linear fashion based on known adjacent values.

Scale

In the “Scale” input group, a different scale can be specified for the horizontal and vertical display so that the actual elevation profile of the pipe can be displayed enlarged.

Symbology

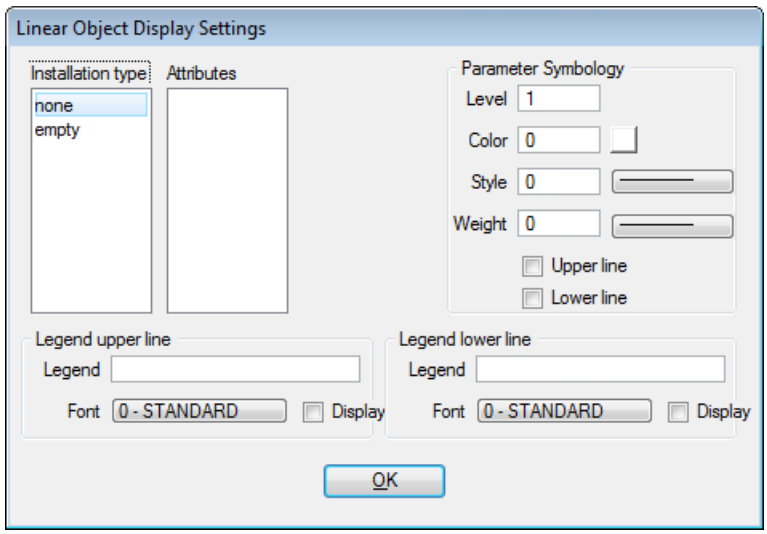
The “Symbology” field lists the symbol elements used in the elevation profile diagram. For each symbol element used (legend, grid, route length, decline, station numbers, and the elevations to be displayed), the user can individually specify the drawing level, colour, line style, line width and font. For the elevation lines, route length, decline and station numbers, the user can also switch the legend output on and off.

These display attributes are specified by selecting the symbol required in the list field using the scroll bar, and then setting the display attributes using the setting fields for each attribute.

The configuration selected for the graphic display of the 3D profile is confirmed and made effective with “OK”.

Settings > Linear Display

For the default elevation profile, in this box the user can select a display symbol for the display parameters selected for this installation type for every attribute value for the attribute entered in the database.



.

The user selects the display symbols for the installation types (pipe types) and their attributes by specifying the relevant combination in the VLSYS, Parameter and Status list fields. In the “Status” list field you can specify whether the attribute set for the selected installation type is not available (none) or whether the attribute has been assigned a value (OK) or the attributed value is empty.

For each combination used, the user can individually specify the drawing level, colour, line style, line width and font. These display attributes are specified in the “Parameter Symbology” field by setting the display attributes using the setting fields for each attribute.

The configuration selected for the graphic display of the pipes in the 3D profile is confirmed and made effective with “OK”.

Initially configuring the elevation profile

Depending on the elevation profile (default or wastewater), the object types pipe and node (for the default elevation profile) or the object types line reach, manhole and special structure need to be configured with the attributes required for the elevation profile.

To do this, first of all, for each object type (except for nodes; the associated ***sisNET*** object type node can be identified by the LP flag in the schema without any user query) the associated ***sisNET*** object type or types need to be assigned "Select object types" dialog (Page 184).

Then, for each object type, the associated ***sisNET*** attribute must be queried for the attributes required "Assign sisNET attribute for attribute" dialog (Page 187).

Part IV: Attachments

Glossary

The glossary explains terms and expressions that have been included in the documentation.

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