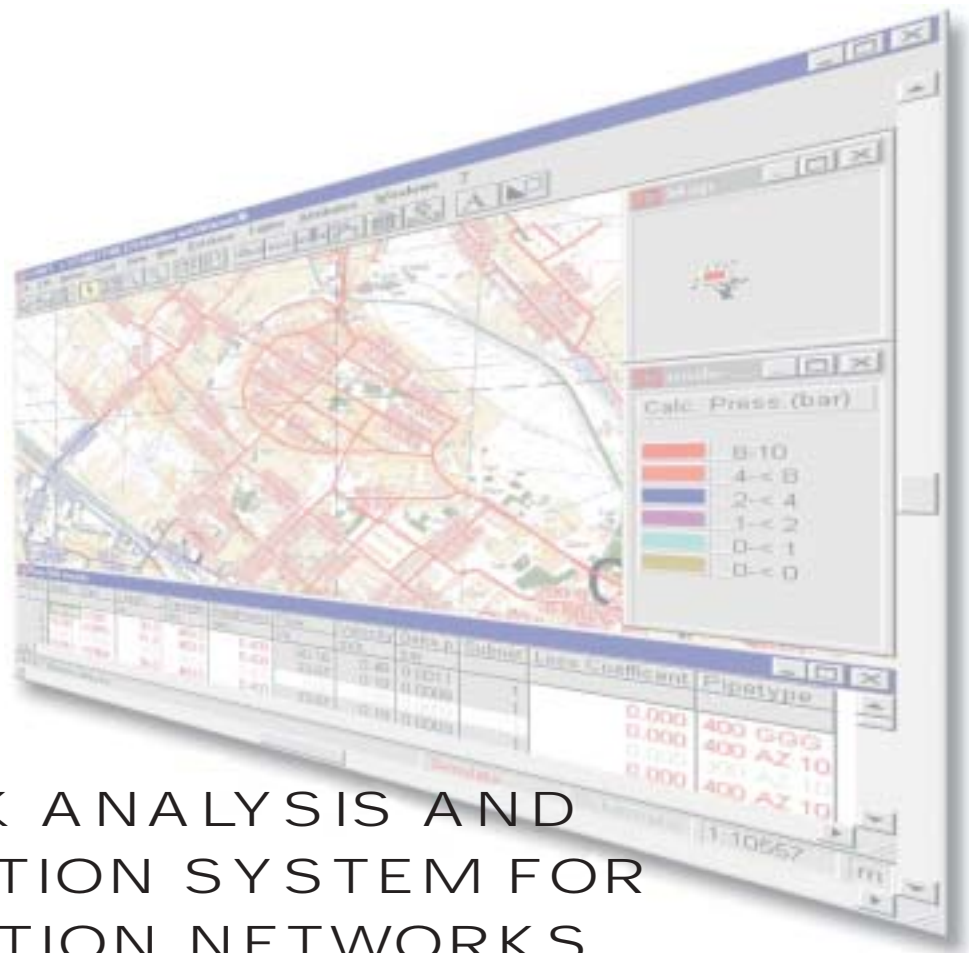


STANET

Network simulation



NETWORK ANALYSIS AND
INFORMATION SYSTEM FOR
DISTRIBUTION NETWORKS

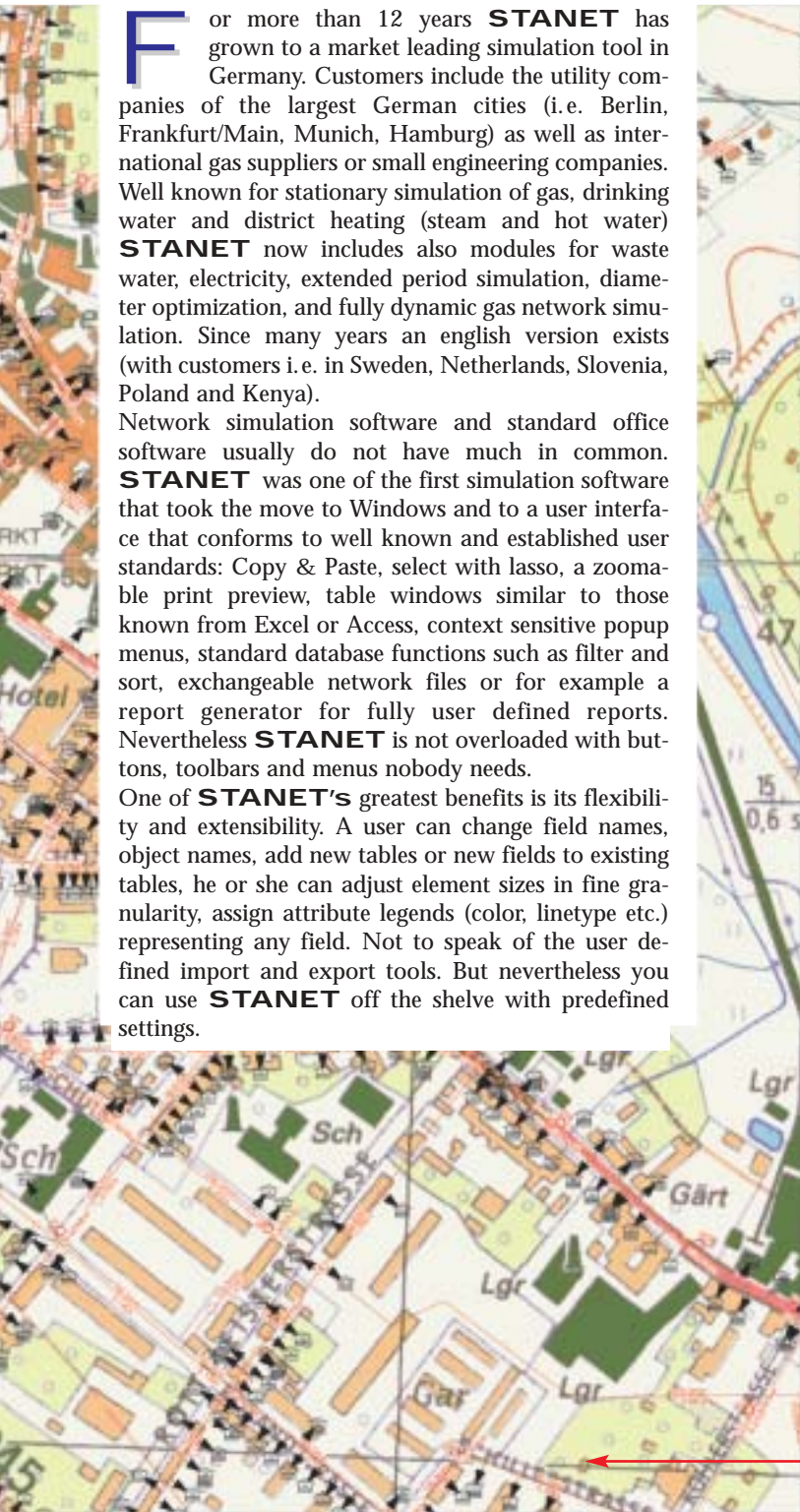
GAS | WATER | STEAM
DISTRICT HEATING
WASTE WATER | ELECTRICITY

STANET NETWORK SIMULATION

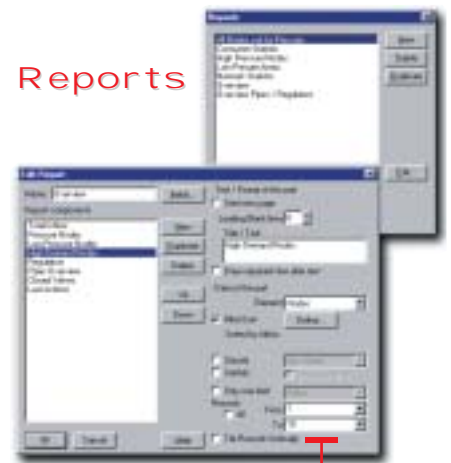
For more than 12 years **STANET** has grown to a market leading simulation tool in Germany. Customers include the utility companies of the largest German cities (i.e. Berlin, Frankfurt/Main, Munich, Hamburg) as well as international gas suppliers or small engineering companies. Well known for stationary simulation of gas, drinking water and district heating (steam and hot water) **STANET** now includes also modules for waste water, electricity, extended period simulation, diameter optimization, and fully dynamic gas network simulation. Since many years an english version exists (with customers i.e. in Sweden, Netherlands, Slovenia, Poland and Kenya).

Network simulation software and standard office software usually do not have much in common. **STANET** was one of the first simulation software that took the move to Windows and to a user interface that conforms to well known and established user standards: Copy & Paste, select with lasso, a zoomable print preview, table windows similar to those known from Excel or Access, context sensitive popup menus, standard database functions such as filter and sort, exchangeable network files or for example a report generator for fully user defined reports. Nevertheless **STANET** is not overloaded with buttons, toolbars and menus nobody needs.

One of **STANET's** greatest benefits is its flexibility and extensibility. A user can change field names, object names, add new tables or new fields to existing tables, he or she can adjust element sizes in fine granularity, assign attribute legends (color, linetype etc.) representing any field. Not to speak of the user defined import and export tools. But nevertheless you can use **STANET** off the shelf with predefined settings.



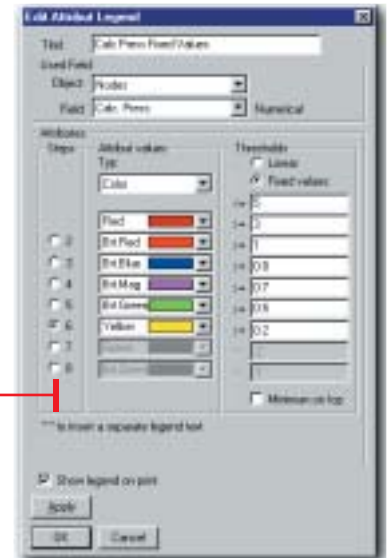
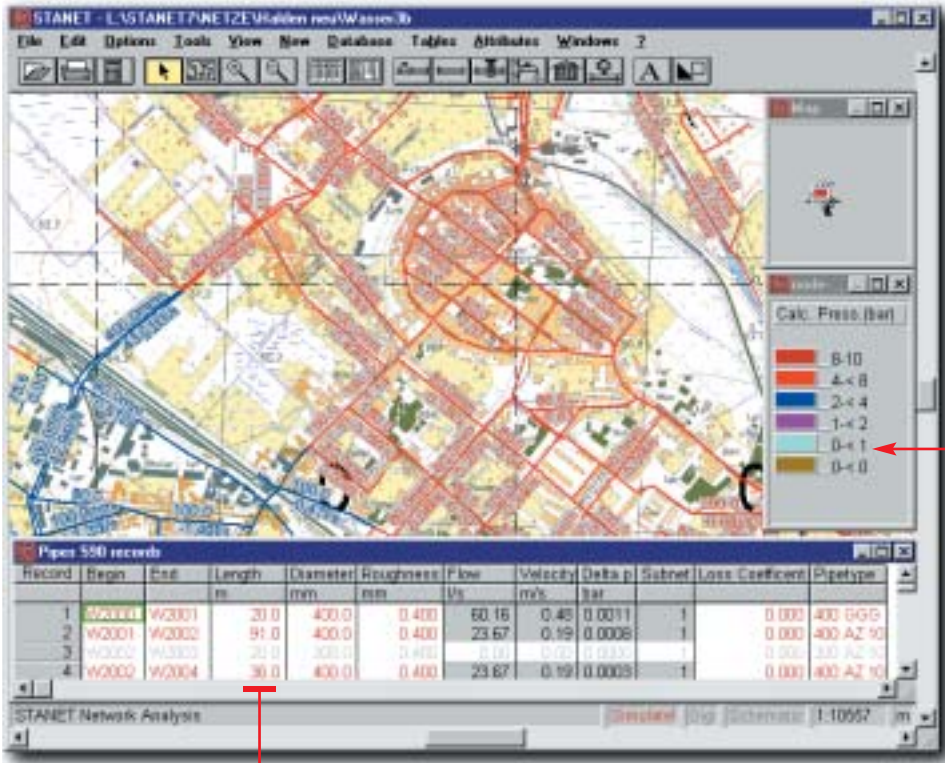
Reports



Print & Preview

“ NETWORK SIMULATION IS NOT AN EASY TASK BUT STANET MAKES IT MUCH EASIER ”

STANET NETWORK SIMULATION

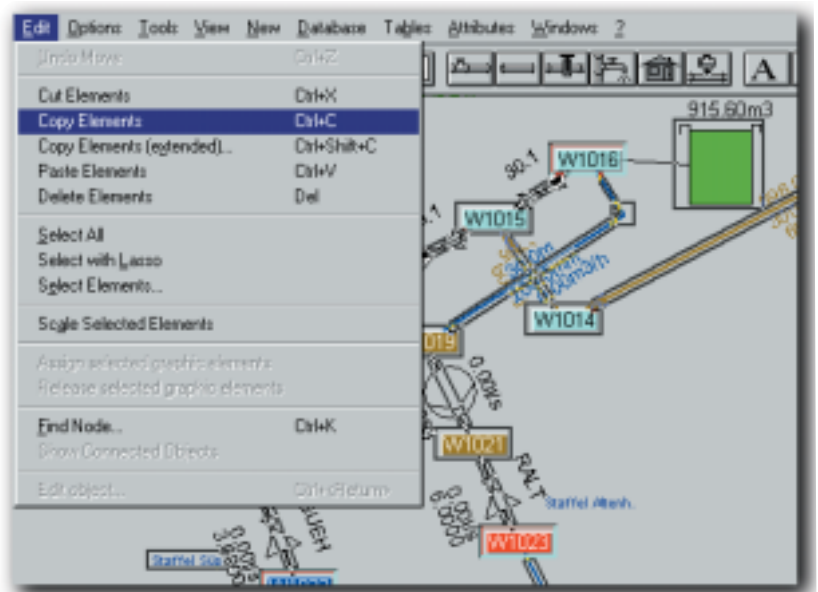


Attribute Assignment



Database Functionality

"WE GREW BY OUR CUSTOMERS WISHES"



Copy & Paste

Data import and export is a key feature in a state of the art application. You may want to import data from an older simulation software, from a GIS or you may want to import consumer meter data.

One of **STANET's** greatest powers lies in its **Import/Export Engine**:

- Fully user configurable
- Any text format, ODBC, DXF, ArcInfo and MapInfo formats
- Bi-directional

The main applications of these **STANET** services are:

- Import existing network data
- Synchronize data with another parallel running system (i.e. GIS)
- Export data for further processing (i.e. AutoCad or Excel)

Thanks to a clear but powerful user interface it is very easy to tell **STANET** where to find what information: Just select columns in a text window and choose a matching **STANET** field. Or just create a list of matching tables and their fields for ODBC, ArcInfo or MapInfo.

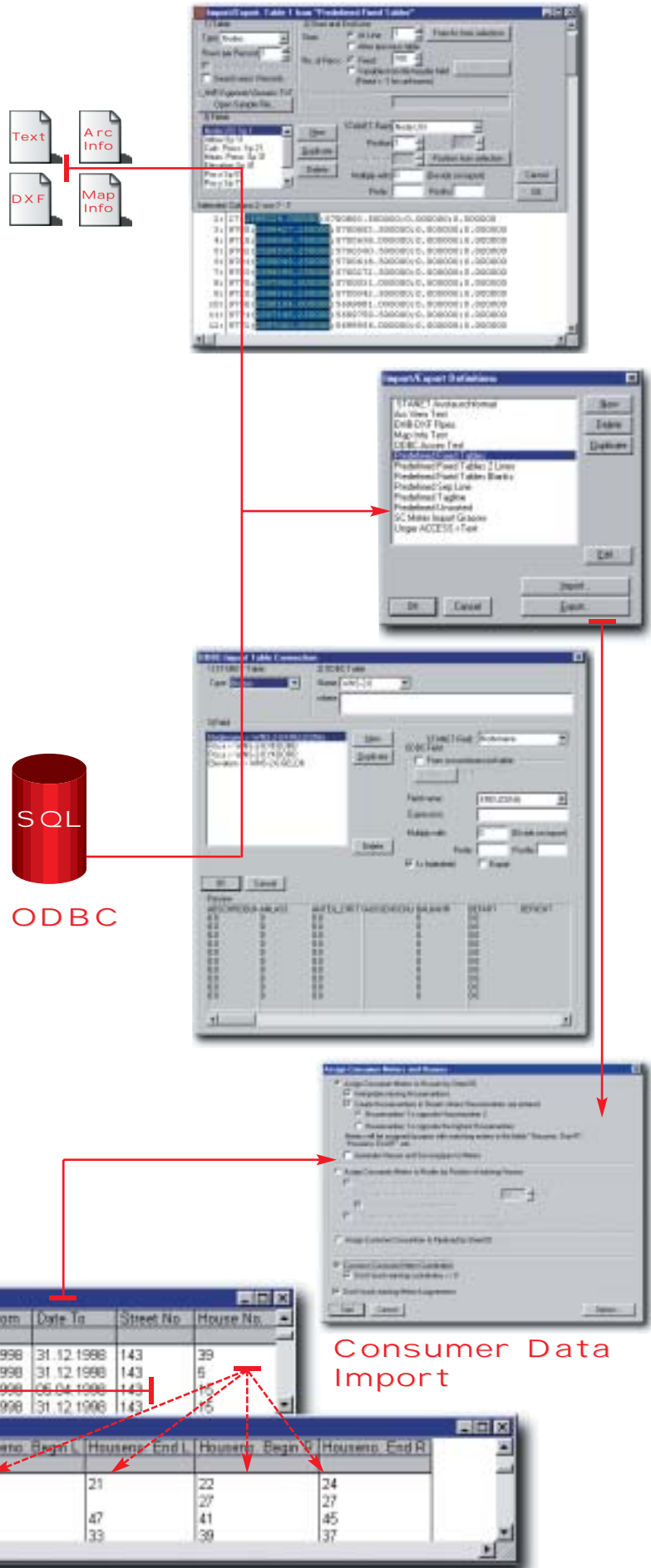
Once such a format has been defined, it can be imported and exported. ODBC export may be used to export simulation results of existing elements to a GIS. DXF exports may be used for further processing in AutoCad.

Import consumer meter data and use it as data source for the simulation.

Meter data containing street codes and house numbers can be assigned to network nodes in three different ways:

- Spatially by existing houses
- By street code and start/end house numbers entered in pipes
- By street code only

STANET even can automatically create service connection pipes for each house which can be fully simulated. Thereby **STANET** will detect houses that are not supplied in cause of closed valves. Set a filter, copy the contents of the resulting database window to Word and print a serial letter to the concerned customers.



Record	Profile	Inflow	Elevation	Nodename	Consumption	Date From	Date To	Street No.	House No.
248	HALDW	0.0000	0.00	W2081	134.00	01.01.1998	31.12.1998	143	39
249	HALDW	0.0000	0.00	W2084	221.00	01.01.1998	31.12.1998	143	6
250	HALDW	0.0000	0.00	W2079	9.00	01.01.1998	05.04.1998	143	5
251	HALDW	0.0000	0.00	W2079	26.00	05.04.1998	31.12.1998	143	5

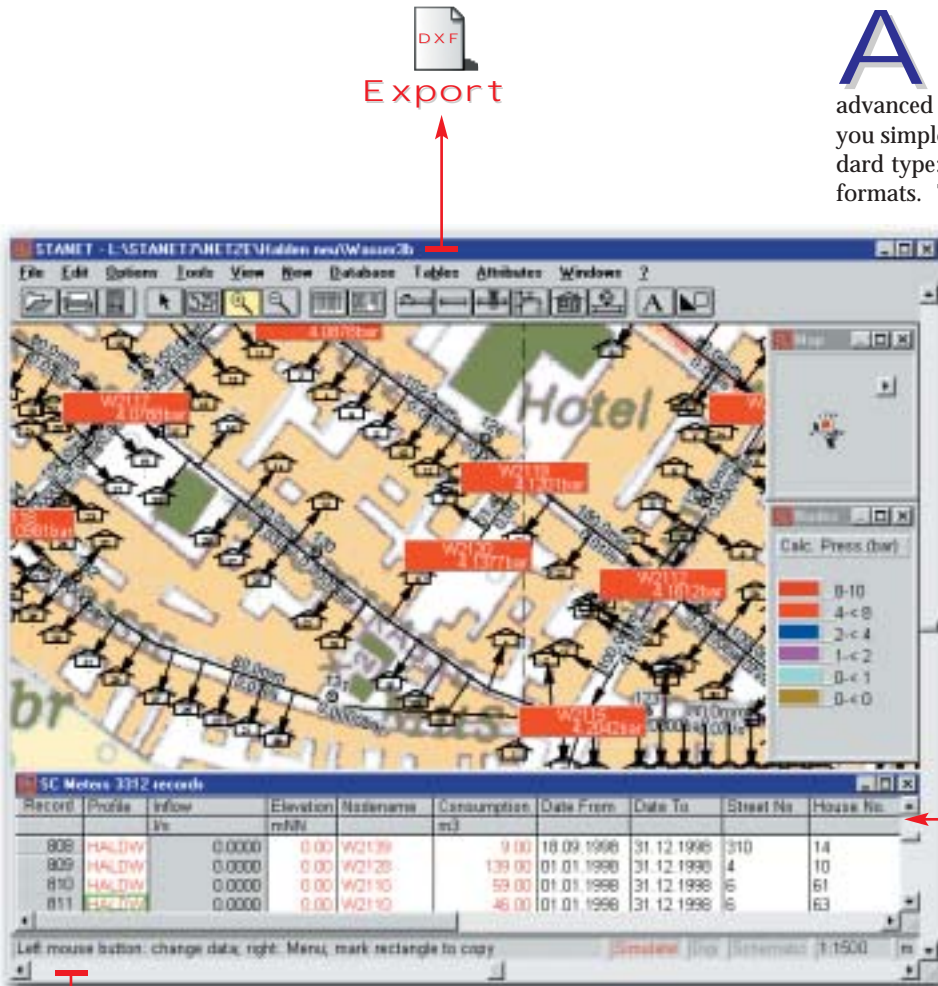
Record	Begin	End	Streets	Houses Begin	Houses End	Houses Begin	Houses End
83	W2079	W2080	143	15b	21	22	24
84	W2080	W2081	143			27	27
85	W2081	W2082	143	47	47	41	45
86	W2081	W2083	143	29	33	39	37

All geographical information becomes much more reasonable when a map is shown in the background. **STANET's** advanced management of background images gives you simple and powerful access to images of any standard type: Tiff, DXF, BMP and about 30 other raster formats. The amount of simultaneously displayed

images in a network is limited by available RAM only. Just select "Import Background image" from the "New" menu, select a file and an appropriate **STANET** image layer.

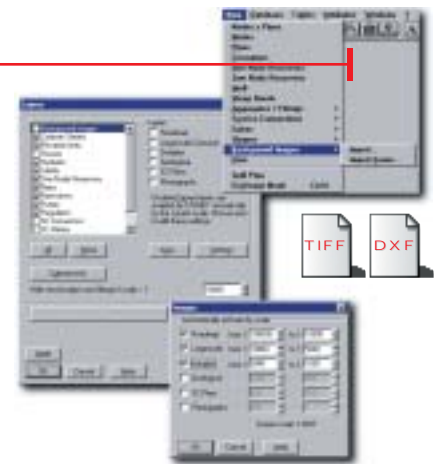
Layers of background images can be shown or hidden automatically by scale. Let **STANET** show an overview street map in a large scale, and switch automatically to more and more detailed maps when zooming closer.

Have 100 pictures to import? Just select "Import series...", select all files and have a coffee break.



1:1500

"ONE OF STANET'S GREATEST POWERS LIES IN ITS IMPORT/EXPORT ENGINE"



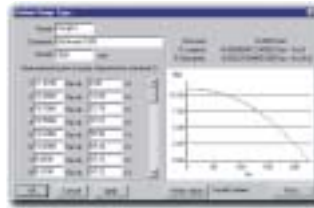
1:15 000



1:500

The simulation modules of course make up the heart of **STANET**. For stationary network simulation (gas, water and district heating) an own proprietary elimination algorithm has been developed that outperforms other simulation models in speed and accuracy. **STANET** needs as little as 1 second to simulate a 10 000 nodes network. Subnetworks are detected automatically and simulated in their dependencies. User defined pump curves and pipe types are a standard feature. Each consumer (or consumer meter) can be assigned to a user defined consumer profile which defines the relative consumption for each hour of day. Thereby different load distributions can be simulated or an extended period simulation can be started, resulting in tables and timecharts. Steps of an extended period simulation can be played back later.

Projects can be used to enable or disable network parts that are planned but still not realized. Just a few mouseclicks and the network will show its planned state in 2006 with all then realized projects activated. Any simulation can be frozen and replayed in a scenario. Thanks to **STANET's** extraordinary flexible object and field management it is very easy to create calculated table fields such as the difference between two scenarios or an existing field in a different unit. Want to add a table with graphic objects to manage trees? Just add a user defined table. Extended capabilities of the simulation include batched fire demand calculation, cost oriented diameter and routing optimization, temperature dependent consumer profiles etc. Recently **STANET** has integrated simulation models for electricity and waste water as well as fully dynamic gas network simulation.



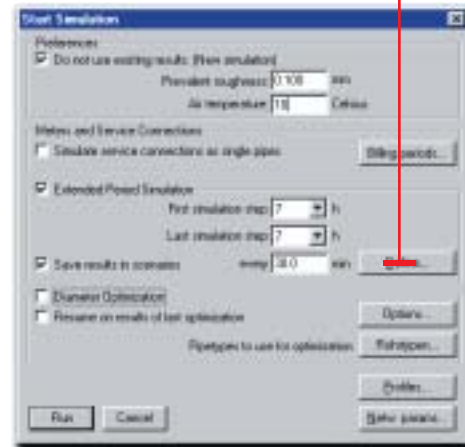
Pump Curves



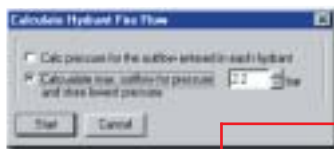
Consumer Profiles



Extended Period Simulation



Fire Flow

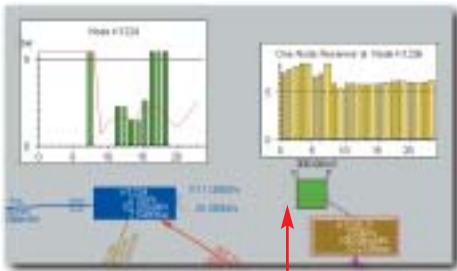


“VARIOUS SIMULATION MODULES, THE HEART OF STANET”

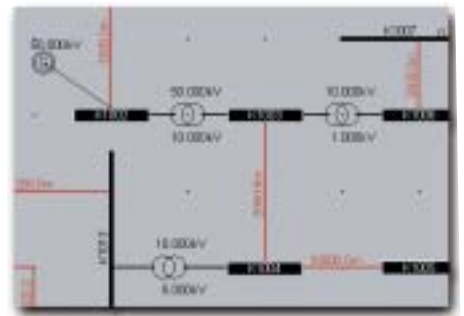
Diameter Optimization

Record	Valve No.	Calc. Outflow Vs	Def. Outflow Vs	Calc. Pressure bar
1	063	34.4102	10.0000	1.3929
2	064	35.4718	12.0000	0.8520
3	065	36.8030	10.0000	1.6111
4	066	35.6866	14.0000	0.1963
5	067	37.5504	12.0000	1.0911

Record	Begin	End	Pipe type	Optimize	Project	Diameter mm	Length m
1	W2000	W2001	400 G-G	?		400.0	2
2	W2001	W2002	400 AZ 10	?	Mainroad Step 1	400.0	8
3	W2002	W2003	300 AZ 10	?	Mainroad Step 2	300.0	3
4	W2002	W2004	400 AZ 10			400.0	3



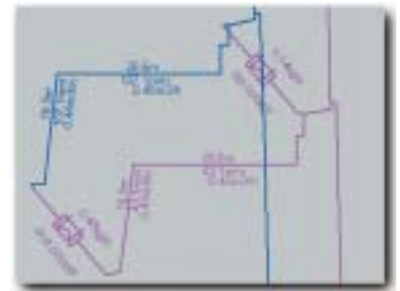
Scenario Management



Electricity Networks

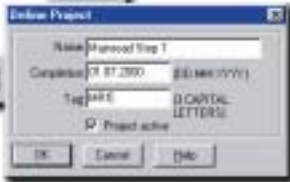
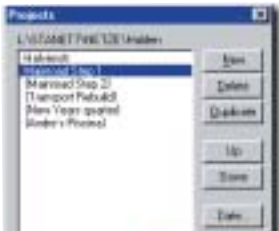


Extended Period Simulation

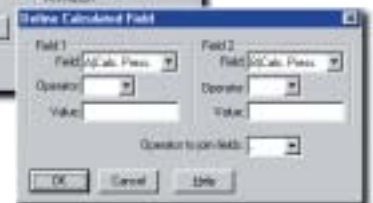
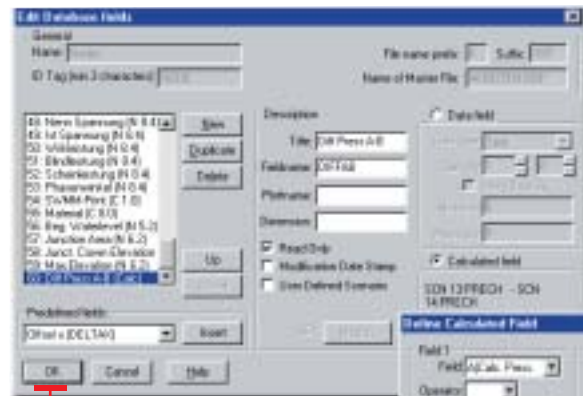


District Heating

Projects



User Defined Fields



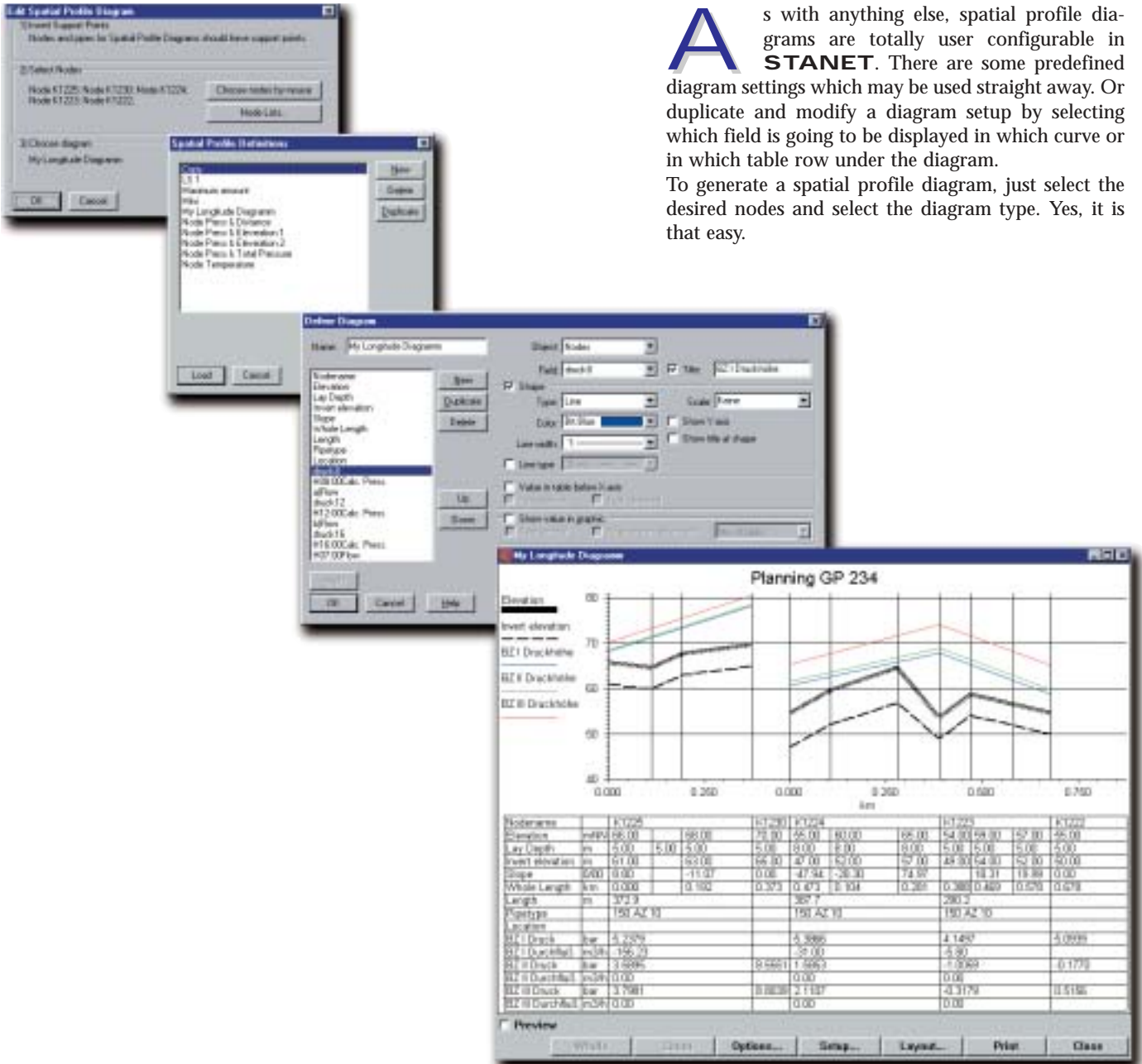
Calculation Fields

Record	NodeName	Inflow	Calc. Press	A\Calc. Press	B\Calc. Press	Dif Press A-B	A\Inflow	B\Inflow
		l/s	bar	bar	bar		l/s	l/s
1	W2000	60.18	3.9071	3.9000	2.8000	1.1000	0.00	60
2	W2001	0.00	4.0066	4.0066	3.5000	0.5066	0.00	0.1
3	W2002	0.00	4.2310	4.2310	3.9000	0.3310	0.00	0.1
4	W2003	0.00	4.3094	4.3093	2.1000	2.2093	0.00	0.1
5	W2004	0.00	4.2111	4.2111	2.8000	1.4111	0.00	0.1

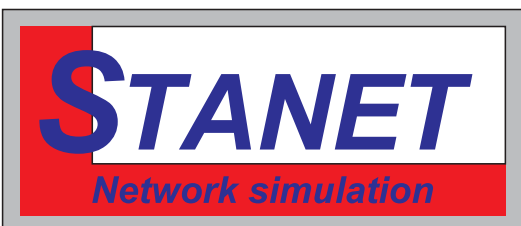
SPATIAL PROFILE DIAGRAM

As with anything else, spatial profile diagrams are totally user configurable in **STANET**. There are some predefined diagram settings which may be used straight away. Or duplicate and modify a diagram setup by selecting which field is going to be displayed in which curve or in which table row under the diagram.

To generate a spatial profile diagram, just select the desired nodes and select the diagram type. Yes, it is that easy.



“ SPATIAL PROFILE DIAGRAMS - TOTALLY USER CONFIGURABLE IN STANET ”



Fischer-Uhrig Engineering
 Wuerttembergallee 27
 D 14052 Berlin
 Germany
 Tel: ++ 49 30 - 30 09 93 90
 Fax: ++ 49 30 - 3 04 43 05
 e-mail: info@stafu.de
 Internet: http://www.stafu.de