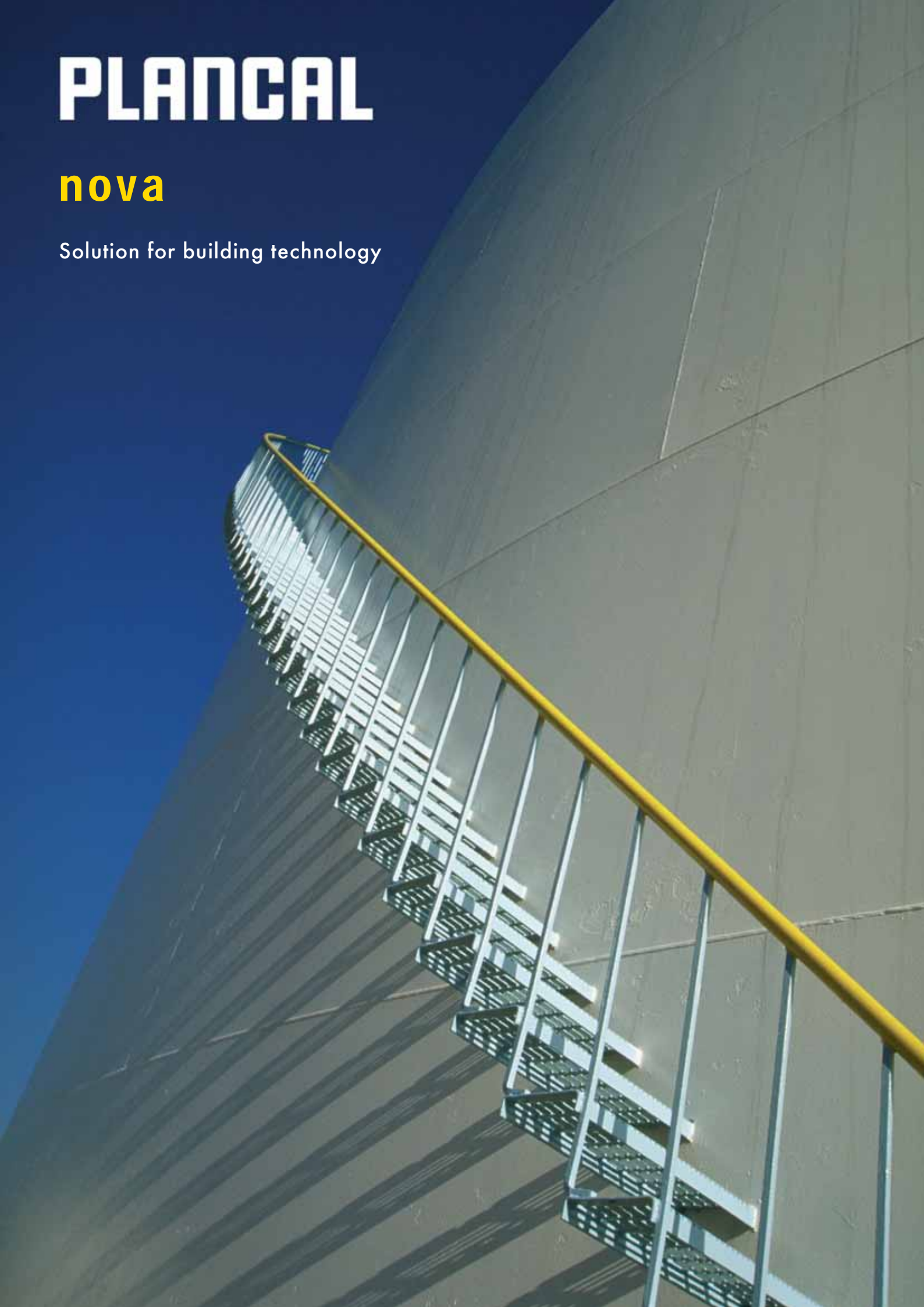


# PLANCAL

## nova

Solution for building technology



## Basis

### The most important facts:

- Self-contained CAD solution
- Numerous characters and editing functions
- Reading in and out on DWG and DXF basis
- Scales DWG files
- Print with scaling
- Scale line thicknesses in the printout
- Work through true scale
- Support the model and paper area
- Individual transfer of paper ranges to DWG and DXF format
- Simple layer adjustment
- Use colour schemes
- Support layer groups
- Line types
- SHX fonts
- Windows fonts
- Reference technique
- Block and macro technique

nova is based on a self-contained proprietary and thus ACAD independent CAD solution, eliminating the possible need for problem-generating interfaces between a CAD basic software and a device top.

Therefore, nova provides the solution from one company!

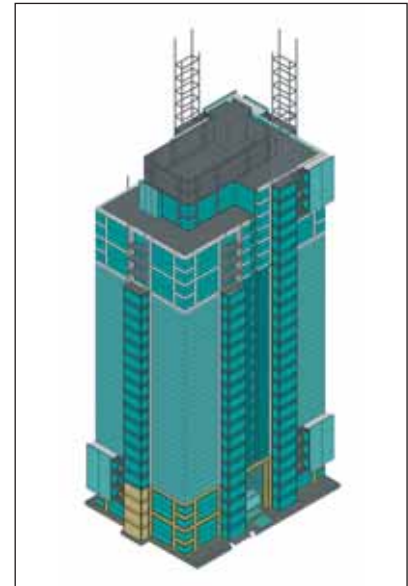
The functions in nova are customized to the requirements of building engineering plants.

In addition to the basic drawing functions, a number of editing functions are available.

Due to the direct development of the Windows environment, each user is familiar with the structures and user prompts of the software on the basis of his own Windows experience.

The complete integration of the latest development standards provide optimum support for all hardware and software resources.

Thanks to an intelligent converter module, nova not only opens DWG and DXF files, but also actively supports the different output formats. This means highest safety of the transferred data and efficient interaction with OEM systems.



**Isometric representation of a 3D-DWG drawing in nova**

In addition to these basic features, nova provides numerous functions which allow quick and targeted work. For example, colour and width assignment can be called by a simple mouseclick, using a colour scheme. Layers may be collected to form groups and can then be shown and hidden without any problems. Furthermore, drawing elements are automatically laid to the corresponding system layer. Layers already existing may be edited in a tabular overview. Thus, not only the colour and the line width but also the layer name can be overwritten to ensure a quick adaptation of the layer assignment regarding a specification from the customer.

## Building technology

### The most important facts:

- Building acquisition via polygons or walls
- Numerous architectural elements
- Breaches and wall slots
- Architectural assistant for an automatic collection of DWG/DXF files
- Sections and isometries in the model and paper area
- Building perspective
- Online shading (free rotation of the drawing in the 3D view window)
- Free 3D solids
- Multiple screen technology
- Storage of blocks and macros in templates
- Symbol administration, using templates

The building system technology module extends the nova basis, providing all architecture functions, the template techniques and the extended 3D functionality.

The extended 3D functionality can be used to generate constant views and sections.

The templates allow an individual and user-oriented storage of components, elements, macros and blocks within the system so that the user can work according to his/her individual desires and requirements.

### Building acquisition

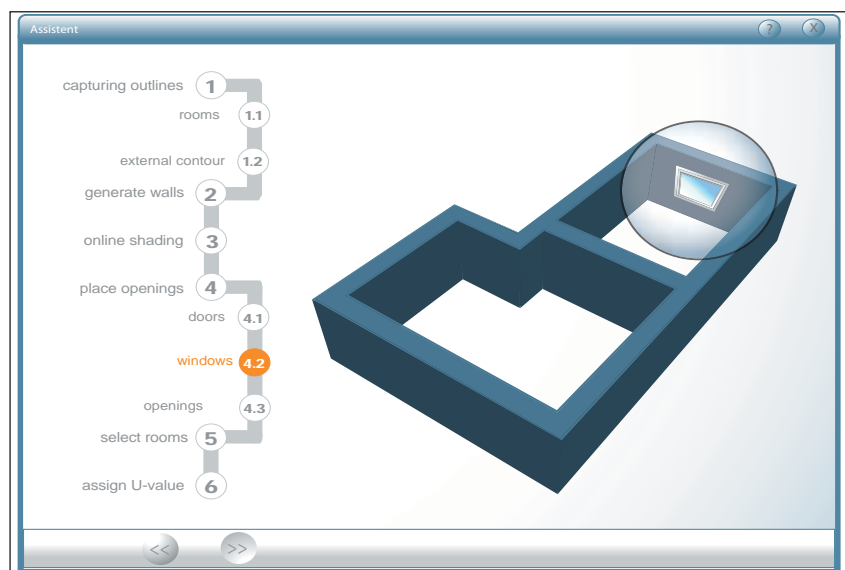
The graphical acquisition of the building is a central part in nova, forming the basis for the calculation of heating and cooling loads.

Normally, acquisition is by an architecture layout which was entered via DWG or DXF.

nova allows the acquisition of the layout by a free drawing of architectural elements.

In addition to walls, windows, doors, roofs and ceilings which are evaluated in calculations later, staircases, floor joists, steel girders, columns and general symbols (north arrow, furniture etc.) are available.

Since it is possible to orient oneself in read-in architecture plans by convenient search function, it is not necessary to enter geometric values to support quicker planning.



Architectural assistant in nova for interrogation of the windows



Since the width of windows and doors can be generated from the drawing, it is not necessary to enter numeric values. This nova architecture is available in all plants for sections and isometric representations.

The plant plans may optionally be output to the architecture read-in or to the collected architecture.

As an alternative, the nova architectural assistant is available, allowing nova to analyze the current architectural drawing step by step.

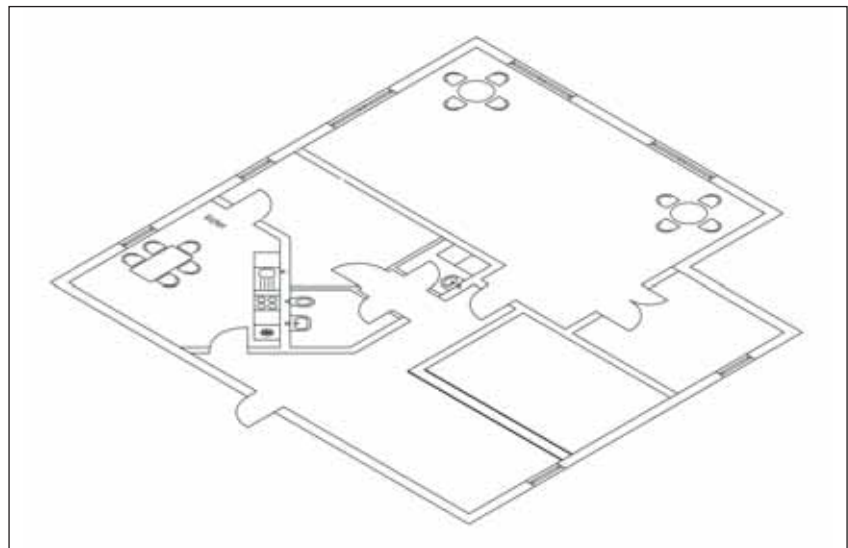
In a continual dialog with the user nova represents the determined structures and offers automatic transfer or manual intervention.

Thus, nova can generate walls from room polygons and building polygons. Room texts are automatically entered into the determined room contours, and the designation and room number from the architectural drawing may be assigned to the nova room text, eliminating the need for entering the values into the heating load calculation. Also, the heat transition coefficients may be assigned to the wall thickness, using a dialog. The architect's lines which are on the layer may be interpreted as windows or doors.

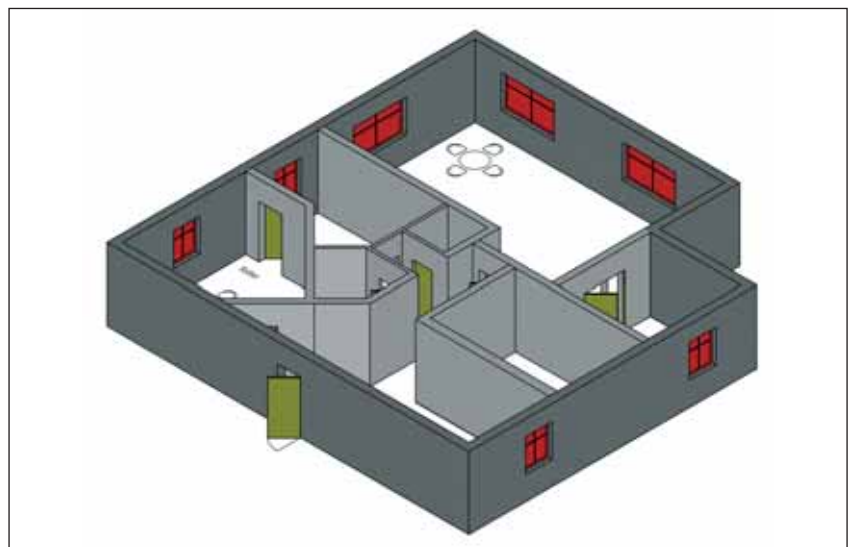
These functions allow nova to create a three-dimensional building model within the scope of the quality of the current architectural drawings.

After handling "genuine" components are available for editing. Thus, modifications to the architecture may quickly be edited in an unparalleled manner.

This has been proven by recognized benchmark tests.



Isometrie of a 2D-DWG drawing in nova



Isometrie of a 2D-DWG drawing in nova after editing with the architectural assistant

## Heating

### The most important facts:

- Heating load calculation
- Radiator design
- Floor heating
- Pipe network calculation
- Single-line representation
- 3D piping
- Drawing-in of the radiators by the radiator design
- Automatic update of the radiators
- Quick 3D designs
- Sections, isometries
- Lettering of all line parameters
- Height dimensioning
- Quick modifications
- Collision test
- Display of the calculation results in the drawing
- View shading

nova allows a complete graphical and technical editing of a heating project, providing the possibility of proceeding either via a tabular input or a graphical acquisition.

Tables and structure trees offer a simple environment for tabular entry. Multiselect, pattern technology and default values allow work in a result-oriented manner.

For a graphical handling nova offers an extensive and efficient component library according to the standard for planning networks, branch schemes and 3D central planning with real components (distributor, pipes, valves and fittings etc.).

Radiators are determined by the radiator design and are automatically entered into the drawing or placed individually. Then, the pipe network can optionally be entered as a 2-pipe or Tichelmann system in the branch scheme or the layout.

A dynamic automatic connection permits radiators to be connected by a mouseclick.

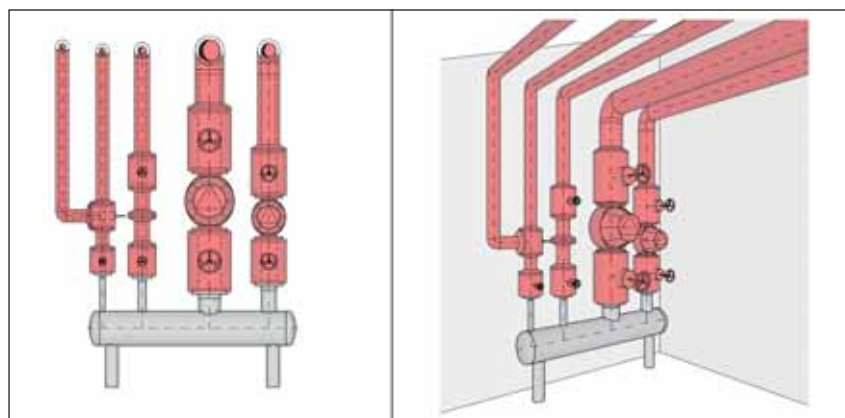
After modifications to the radiators nova changes the connecting lines, using an innovative line function.

Floor heating circuit zones, heating circuits and partial heating circuits are determined by nova on the basis of the heating load and can be transferred to the drawing.

The drawing of heating or partial heating circuits under consideration of the installation spacing, drawing surfaces, connecting lines etc. are automatic.

Printouts according to DIN and EN patterns are generated from the calculations.

Quantity extracts of the radiators, pipes, T pieces, bends and valves are provided in clear listings.



Heating distributor in nova as view and as isometry

### Calculation in the heating system:

#### Heating load

- Calculation according to EN 12831
- Determination of the heat transition coefficient
- Free definition of building material possible
- Variable calculation entry via a graphical or manual acquisition
- Default administration for U values, window and door size for buildings and for levels
- Graphic representation of the heating load calculation
- Printout according to DIN and/or EN pattern

#### Energy preservation decree

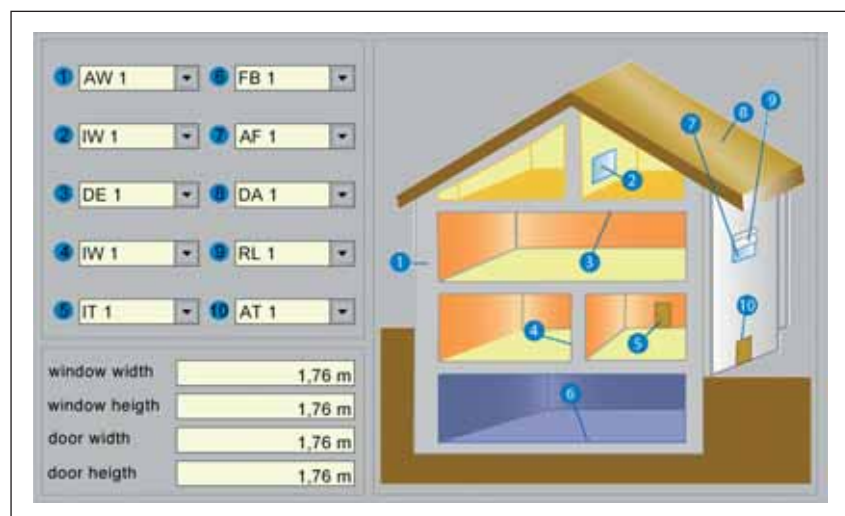
- Calculation of the calorific requirements (annual balance)
- Selection of the characteristic plant data
- Variable calculation entry via a graphical acquisition or a manual acquisition
- Note on EnEV compliance and solution proposal in case of non-compliance

### Radiator design – floor heating

- Design of the radiators according to the heating load calculation or free default values
- Defaults according to the requirements for height, depth and length possible
- Automatic and manual placing in window recesses or freely in case of a CAD-based handling (in nova drawing or DXF/DWG)
- Design of the floor heating according to the heating load calculation (EN 1264)
- Selection and placing of floor profiles
- Optimization of the lead temperature
- Automatic or manual placing of the heating circuits in the drawing
- Consideration of dummy, storage or reduced surfaces

### Pipe network calculation

- Graphic acquisition of pipe networks as a layout or scheme.
- Data for the calculation may already be assigned to the pipe network in the drawing.
- Determination of nominal pipe width, pressure loss and the setting values on the valves and fitting by the pipe network calculation.
- Transfer and lettering of the calculation results to the drawing.
- Automatic lettering of all partial sections.
- "Manual" acquisition of pipe networks.
- Linking of differently acquired networks to form a total network. Thus, a successive and detailed representation is possible.
- Modifications to the components will be inherited to the level/components below.



Dialog window for determining the heat transition coefficient in nova

## Ventilation

### The most important facts:

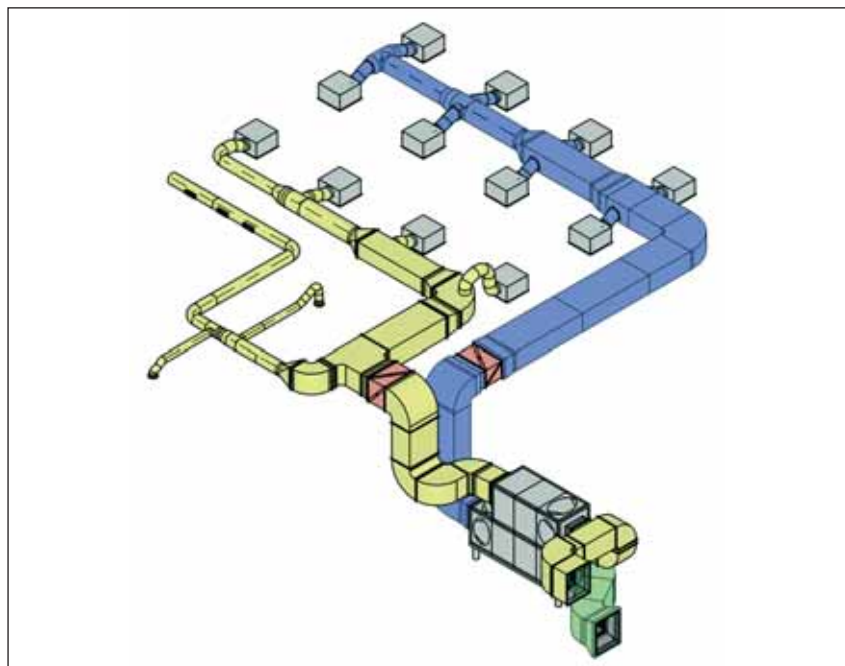
- 3D components
- Quick 3D designs
- Sections and isometries in the model and paper area
- Automatic lettering for position numbers and duct dimensions
- Height dimensioning
- Volume flow calculation
- Pressure loss calculation
- Acoustics calculation
- Automatic connector for transitions
- Collision test
- Display of the calculation results in the drawing
- View shading of the duct components
- Automated insertion of components into a ventilation duct
- Rotation and shifting of partial networks
- Quantity determination of the components according to VOB (contract procedure for building works)
- Cooling load calculation according to the VDI regulation 2078 (Association of German Engineers), DP process

nova offers an extensive and efficient component library for detailed 3D planning, the creation of schemes and manual collection.

In addition to manufacturer-specific information, free adjustments for components are also possible. The components may be placed with interference space. Components already placed can be edited. The handling points can be selected freely. An automatic connection of components is also possible in the 3D space. Components can be pre-adjusted, using the template technology. Components may be "installed and removed" within an existing branch. To this effect, nova automatically creates the duct transitions and adjusts the ducts.

Within a branch built-in components may be shifted and rotated. Entire air duct branches may also be moved and rotated. This allows a quick and efficient modification in the completed drawing.

nova provides support for flexible connections, cast shadows, insulations, frame, numberings, letterings, manufacturing interfaces and collision tests of 3D components. Printouts with all important information are generated from the calculations. Quantity extracts of the components including the frames and the insulation are then provided in clear listings.



Isometry of a ventilation system in nova

## Calculation of air duct networks

- Acquisition of the duct networks as a transfer from the drawing (3D or schematically)
- Manual entry of the network as a schematic network or with individual components
- Linking of differently acquired networks to form a total network. Thus, a successive and detailed calculation is possible.
- Modifications to the network can simultaneously be used for all identical components.
- Calculation of the volume flow and the pressure loss as well as a compensation of the outlets and butterfly valves.
- Representation of the speed distribution and pressure losses in the drawing.
- Updating of the letterings and position numbers in the drawing and overmeasure lists for a new calculation.

## Determination of quantities

- Output of component lists from the drawing or from the calculation.
- Output of insulation, frames, built-in parts, circular building parts etc.

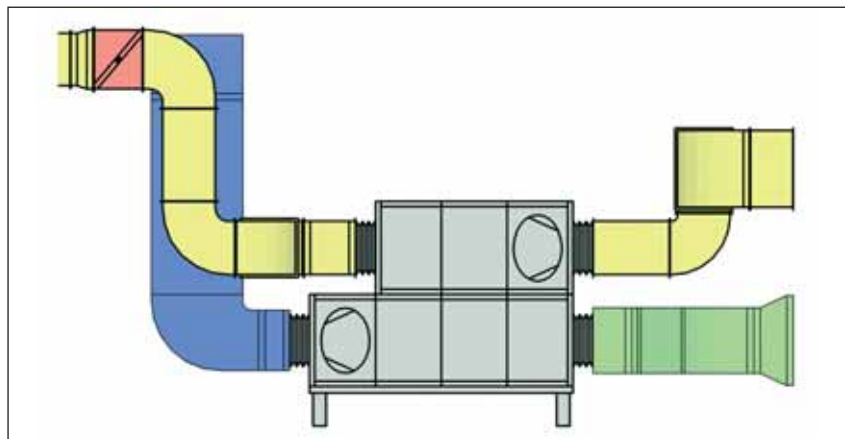
- Generation of the part lists with additional support for an output to Excel or ASCII files.

## Calculation of the cooling load

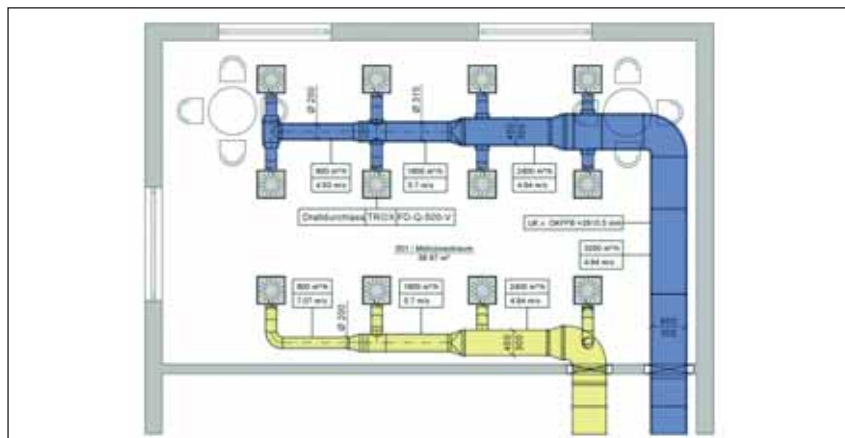
- Cooling load calculation according to the VDI regulation 2078 (Association of German Engineers), DP process
- Pattern administration for individual components, rooms, floors or entire buildings

- Variable calculation entry via graphical acquisition or manual acquisition

- The data from the heating load calculation may be used
- Graphic representation of the calculation



Section of a ventilation centre in nova



Layout of a ventilation drawing in nova

## Sanitary

### The most important facts:

- Potable water calculation
- Sewage calculation
- Single-line representation
- 3D pipe installation
- Quick 3D designs
- Sections, isometries
- Lettering of all line parameters
- Height dimensions
- Collision test
- Automatic lettering of all partial sections in the drawing
- Display of the calculation results in the drawing
- 3D sewage generation
- Material lists

nova provides an extensive library of sanitary objects with different depth of representation. Thus, each task may be edited from a schematic to a detailed three-dimensional representation.

nova uses simple drawing functions with a number of location possibilities to allow the most efficient handling for graphical editing. If equipment from a DWG or DXF file already exist, nova will support this basis.

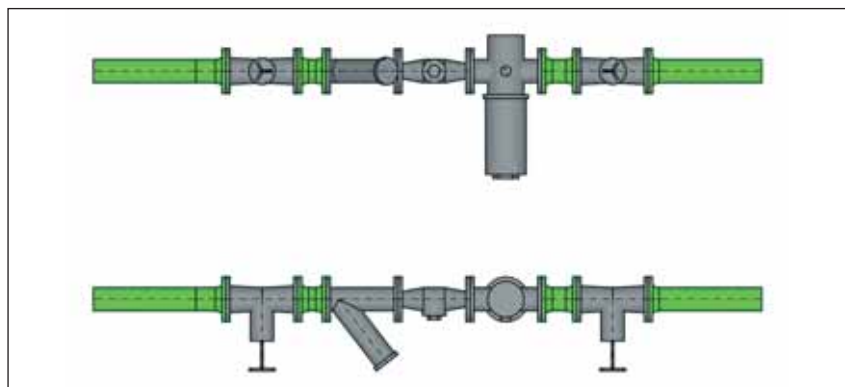
For a creation of the line routes nova provides all necessary tools, using multilines, dynamic automatic connection and a number of editing capabilities. If components are moved, an innovative line function also moves them if components are shifted.

Also, individual connecting points may be moved without losing the connection to the sanitary objects or to the connected line.

Furthermore, 3D central planning may be performed.

The simple operation typical for nova allows distributors, pumps, gateways, pipes, flanges, screwed joints to be located in the 3D space.

The created line networks may be transferred to the potable water and sewage calculation for calculation. The results of calculations are written back to the drawing. The sewage line may be generated as a 3D plan by a 3D generation, the bafflings will here be shaped to form complete components. Detailed printouts are generated from the calculations. Quantity extracts of the pipeline, T pieces, bends and valves are provided in clear lists.



House service segment in the sanitary section as a top view and layout

### Sanitary engineering

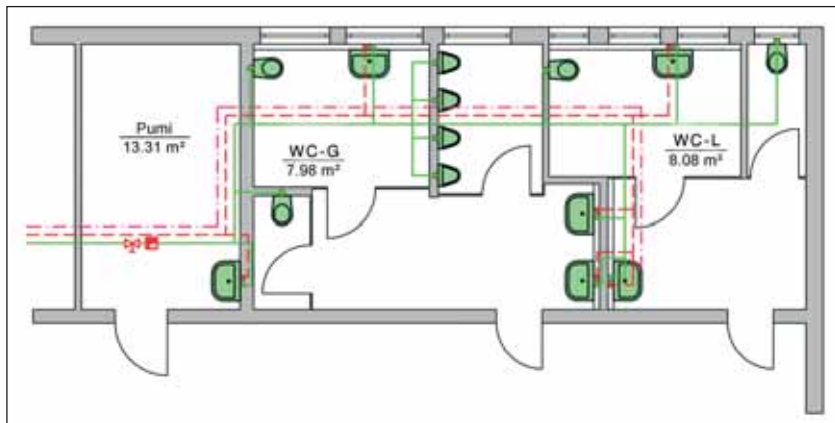
#### General

- Windows operation standards such as multiselect
- Copy/move or objects, components, even project-wide
- All values can be edited
- Uniform handling for all modules and constant views which can be edited
- Pattern administration for all objects/components
- Inheritance of modifications to the lower levels

#### Calculation of the potable water pipe network

- Graphical acquisition of pipe networks as a layout or scheme.
- Data for the calculation can already be provided for the pipe network in the drawing.
- Determination of nominal pipe widths, pressure losses and valves and fittings by the calculation of the pipe network.
- Transfer to the calculation results to the drawing.
- Calculation of the cold water, hot water and circulation line.

- Modifications to the network will be inherited to the level/components below.
- Generation of the hot water line from the route of a current cold water line.
- Updating of the letterings and partial section numbers in the drawings and oversize lists for a new calculation.
- Linking of differently acquired networks to form a total network. Thus, successive and details calculation is possible.



#### Sanitary layout in nova

- Continuous transparency by the infoline
- Calculation of the temperature drop in the circulation route.
- "Manual" acquisition of pipe networks by structure trees and automatic generation of the circulation line.

#### Calculation of the sewage pipe network

- Graphical acquisition of sewage networks as a layout or a scheme.
- The equipment of the potable water representation can be used actively.
- Height and slope calculation in the drawing.
- Transfer of the calculation results to the drawing.
- 3D generation of the sewage network with elevations, bafflings, branches and reductions.
- "Manual" acquisition of pipe networks.
- Modifications to the network can simultaneously be used for all identical components.

## Electrical

### The most important facts:

- Extensive object library
- Automatic alignment of the electrical components to lines
- Serial placing and focal placing for luminaries, loudspeakers, fire alarm boxes etc.
- Escape way symbols
- 3D components for sectional representations
- Quick routes for 3D designs
- Sections, isometries
- Automatic lettering
- Collision test
- Quantity determination from the drawing
- Dialux interface
- EPLAN interface
- View-shading

nova provides a standard-wide and efficient object library and free attributing of the components. From fire alarm and intrusion alarm to hospital symbols even rarely used symbols are available.

The symbols are drawn in on the basis of numerous placing possibilities such as "to line", "let a perpendicular fall to component", "center to line" or "place above center of gravity" are supported. Here, lines from DWG or DXF files are also used actively.

Drawn-in wall symbols may be represented as 3D symbols in wall views. The 3D representation can be adjusted freely.

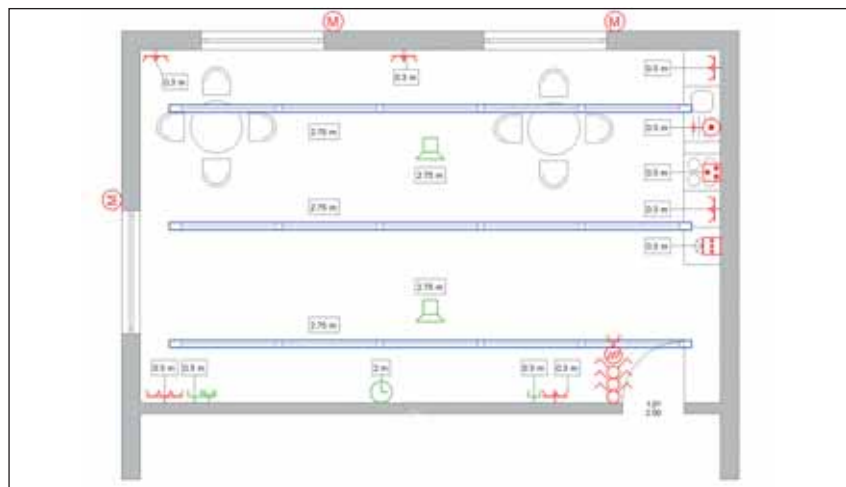
The routes are created in nova via constructive 3D planning which features high adaptation capabilities and simple handling.

The routes may be represented by sections and isometric views.

Numerous possibilities of lettering are offered especially for electrical installations.

A generation of defined part lists and printouts with an additional support for an output in Excel or ASCII files from the drawing is possible. An interface to the Dialux lighting calculation program ensures both an export and an import of data (bidirectional). The room data is transferred to Dialux, and after calculation the lighting data (height, make, type) may be transferred back to the drawing.

The interface to the worldmarket-leading electrical CAE system EPLAN additionally allows an automatic creation of circuit diagrams.



Electrical layout in nova

## nova modules

nova modules		
CAD		Calculations
<p>CAD Basis DWG/DXF module 3D simple</p> <p>CAD building technology I Architecture module Ground plan detection</p> <p>CAD building technology II 3D extensive Stencil administration Multiple screen support</p>	CAD Heating	<p>Heating technology 1 Heat transition coefficient determination Heating load calculation Energy preservation decree Heating technology 2 Pipe network calculation</p>
	CAD Sanitary	<p>Potable water pipeline network calculation Sewage pipeline network calculation</p>
	CAD Ventilation	<p>Air duct network calculation Determination of quantities Cooling load calculation</p>
	CAD Electrical	<p>EPLAN interface Dialux interface</p>
Interfaces VDI - BDH - UGS		

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