# VENTILATION PROFESSIONAL

This CAE program represents a huge increase in productivity for the user:
Using the construction line, engineering bureaus can develop a 3D plan extremely quickly and simply during the planning phase. Applying a process of fitting and joining, planners and performers can make precise constructions in 3D, followed by automatic calculation of duct surface and pressure loss.
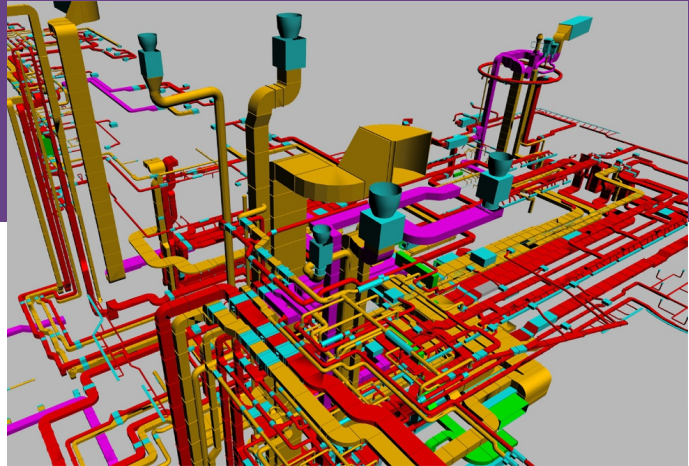
The user can choose between two construction options: the so-called installation procedure, and construction on the trace line or construction line. It is this which makes it possible to display the course of the duct in a single line. This means that it is possible to construct the duct system quickly and simply using the CAD command "Line", in the preliminary draft.

Users who have prior knowledge of AutoCAD can use all the commands as usual. The line course can be adapted to the building using integrated filter functions and transparent angle entries in 3D.

Standard CAD commands such as "Trim", "Extend", "Fillet" etc. can be used to construct an exact duct course.

An automatic function is provided for making the connections to the respective air outlets. In this option, the user can decide how the outlets are to be connected. From above or the side, any connection is possible following the entry of of the respective angle.
A command is available which can be used to render a line "intelligent". It is now possible to assign dimensions to the line or to dimension a duct. An integrated duct shifter enables the deduction of all relevant values.

By using attribute information, it is possible to assign air volumes and pressure losses to the outlets. This enables the automatic dimensioning of cross-sections using the optional calculation module. A maximum speed must be entered, and, in the case of a quadrilateral cross-section, the ratio between the height and the width; dimensioning is then conducted automatically.

All relevant data is laid down in a further dialogue. The length of the transitions can be determined as can the connection with flexible pipes. After selecting the start object and determining the desired layer, construction can begin.

The user has a number of labelling options available: Positioning via
- Flange dimension,
- Intelligent information signs, or
- Height indications.

Labelling can be performed in the modelling area or in the ground plan, as preferred.

This function is, of course, also associative, and all changes and redimensioning activities are immediately implemented and updated.

Following the construction, the masses are extracted by means of the calculation module. Various output formats are available, including Excel, Access etc.
Numerous tools are available for subsequent changes and redimensioning; dimensions of entire sections can be changed with one function. Complex duct connections can be created automatically. Connection angles can be specified or automatically determined on the basis of the construction.

The C.A.T.S.-internal "Hide" function ensures that in the event of an overlap, dotted lines are used to indicate the covered part.

Finally, pressure loss can be calculated using the optional calculation module. The calculation is conducted separately by air type, e.g. incoming and outgoing air. The Zeta values are deduced dynamically and therefore provide an exact result. If any outlets require regulation, the values are listed. Individual stretches can be displayed immediately in the calculation dialogue, and the least favourable route can also be shown.

All the usual output options are available, from Excel to PDF.

In a short space of time, a realistic 3D display can be created from a single-line display. This makes it possible to react even to the most difficult installation situations. Cross-sections and views can be generated automatically. Changes are also incorporated in a short space of time. The module-universal collision test assists the user in coordinating the individual modules
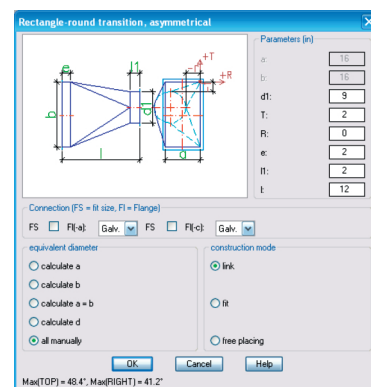
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Overview of functions for planners and constructors
- Generation of drawing, assembly and as-built drawings
- Automatic generation of isometric and section views even in 2D
- Realistic 2D and 3D display of duct system
- Flexible layer management with freely selectable layer names
- 3D libraries for components, air outlets, fittings (circular or quadrilateral), and fire protection
- Pilot for comfortable placement of structural elements and components
- Multi-adapter to allow all possible combinations of fittings
- Automatic display of duct shadow in every view
- Display of duct insulation and insulation thickness
- Fully automatic duct generation using the construction line and existing boundary conditions
- Variable specification of maximum air speed, maximum duct height, etc.
- Assistant for calculating cross-sections, speeds, volume flows, equivalent diameters, etc.
- Rapid redimensioning of individual parts
- Retrospective setting of components and fittings
- Retrospective assignment of attributes, such as material, insulation, etc.
- Automatic generation of 3D links, manual or automatic angle input
- Associative dimensioning and labelling in model and floor plan area
- Automatic flange dimensioning, information signs, height indications, offset texts, etc.
- Comfortable tool tips for all components, display of dimensions, angles, etc.
- Automatic and/or manual issuing of item numbers
- Module-universal collision test

**Web Component Libraries:**
WebCADalog and Designer
- Simple creation of user's own components with connection logic and manufacturer data with Designer
- Existing C.A.T.S. components can be refashioned into new designer parts
- Components are saved in XML format, locally, or in WebCADalog, and can be integrated into the drawing
- Library available in Internet, regular expansion through addition of new parts from C.A.T.S. customers, manufacturers or employees, Designer parts based on VDI 3805, SMACNA or predefined standards
- Full intelligence with manufacturer's data and connection logic
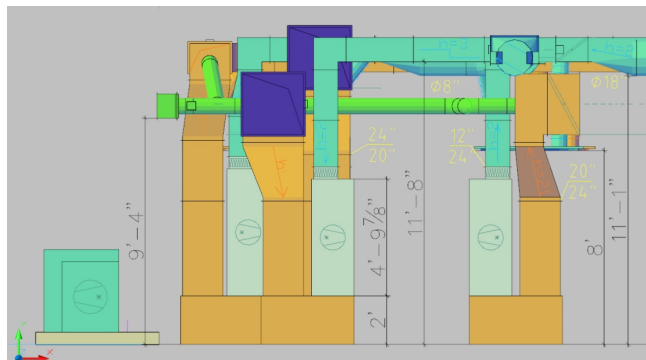
Calculations
Mass extraction as per VOB/DIN 18379
- Fully automatic mass extraction as per DIN or ÖNORM, subdivided by fitting and structural element
- Parts list generation from any number of drawings; can be outputted optionally to Excel or Access
- Parameters and standardized surface calculation including insulation
- List of duct heights and flange profiles
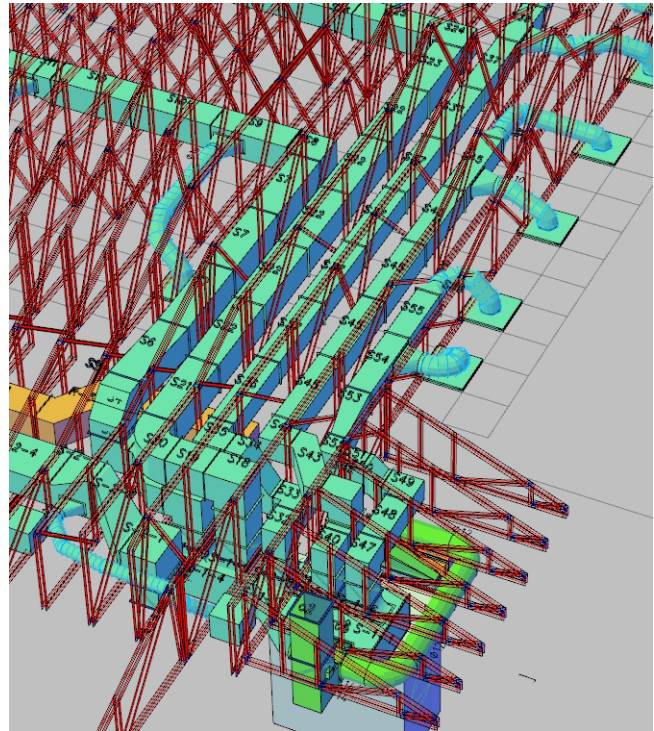
Pressure Loss Calculation
- Calculation of wall thicknesses with respect to pressure levels
- Calculation with static pressure recovery
- Separate calculation for incoming and outgoing air
- Dynamic deduction of Zeta values
- Freely selectable input of material roughness
- Coloration of most unfavourable route
- Automatic display of measurement routes in the drawing
- Regulation information
- Report generator with output of all calculation results
- Output into Excel, PDF or direct printout

Heating
Ventilation
Plumbing
Sprinkler
Piping
Cooling load