

# AeroCAD 6

User Manual



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# Introduction

Thank you very much for your interest in REMAK products. This AeroCAD software will help you especially when designing REMAK air-handling units, their control and when selecting accessories from our portfolio. It contains an extensive database of components and their parameters. These parameters enter the sophisticated computation, resulting in all data needed for production of the designed device.

The AeroCAD program is interconnected with the REMAK ERP system. For example, quotations generated from completed projects or user authorizations are registered or supervised in cooperation with the server. The server also provides the on-line function of storage space and a platform for project sharing with authorized users.

AeroCAD is a freeware program. However, its use is defined by the software license agreement available within the framework of the program (*Help – About AeroCAD Program*).

## Terminology Used

There are some terms used in this manual which may not be immediately clear, therefore, please first read the following explanations:

**Project** – is the highest level in the hierarchy of AeroCAD objects. It can contain one or more devices which are mostly related – for example, as parts of one investment action. An AeroCAD project is identified by a name and an additional number (more specifically, by general marking). On a computer, it is represented by the file with the \*.rmk extension.

**Device** – in AeroCAD terminology, it mostly indicates an air-handling unit, defined by input parameters, with inlet and/or outlet branches and represented by a 3D graphic model.

**Branch** - indicates logical unit parts. There is either an input or an output branch. The branch of accessories is a special case, containing helpful unit parts in cases where it is not practical to differentiate whether they belong to the air inlet or outlet.

**Component** – a particular part from which the final device is assembled (e.g. a water heater section or plate heat exchanger) in the context of modular air-handling units.

**Block of sections** – interconnects several components (sections) of a device in one assembly group. *It refers only to the AeroMaster XP product range.*

**Casing** – an external casing of components and assemblies of the AeroMaster Cirrus product range. Components with a common casing represent one assembly group. Thus a casing is the equivalent of a *block of sections*.

**Assembly** – indicates a general device built into an air-handling section which has a certain specific function (e.g. fan assembly, humidifier assembly, etc.).

**Control** – this term represents the means by which air-handling unit operation is controlled, especially sensors and control units.

**Calculation** – a process following the air-handling unit’s assembly during which the most suitable types of components are designed on the basis of the entered input parameters and other parameters of the unit are calculated.

**Completion** – serves for registration of the quotation in the REMAK economic information system. This function is essential for putting the designed unit into production and is available only to a limited circle of users.

## User Registration



Immediately after installation, the program functions are limited and the user can work as an unregistered user. Taking full advantage of the AeroCAD program is not possible until the user enters the required data in the registration wizard (*Help – Register AeroCAD or Ctrl+R*) and obtains a license number.

### Instructions for Program Registration

The license window is displayed each time the program is started. It is necessary to create a local user account when the program is opened for the first time after installation to be able to continue. You can do this by clicking the marked button next to the user name text box:

**AeroCAD**

**User's login**  
Enter name and password. Upon first startup create Your new user's account which You will use for login to the program.

**Licence agreement**  
between the user of AeroCAD and the company REMAK a.s.

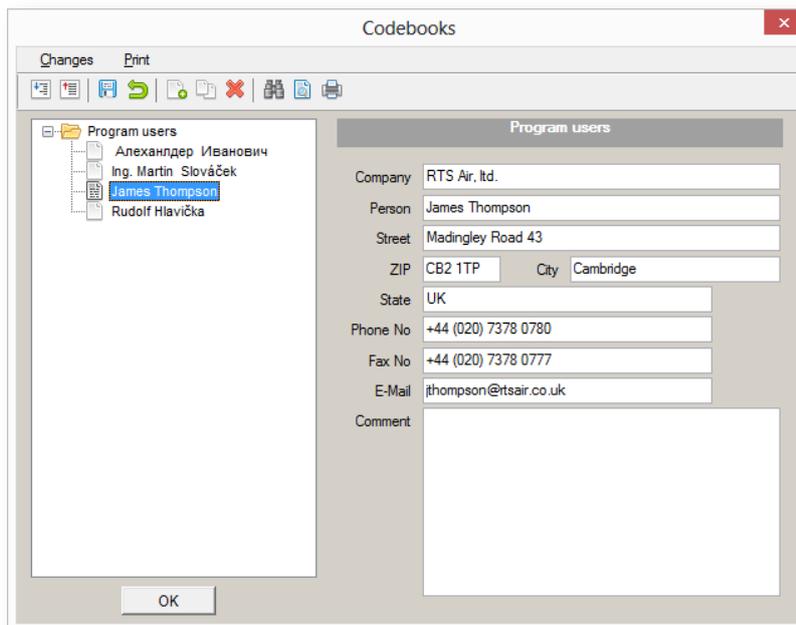
1. This program is intellectual property (know-how) of REMAK a.s.
2. By installing this program on Your computer the user accepts this licence agreement and binds himself to abide it in full extent. To get further mentioned agreements and opportunity to take advantage of service it is required to register every installation at company REMAK a.s.
3. The REMAK company gives You by this agreement a non-exclusive approval to install this program on any number of computers and to use it. Our requirement is, that each installment will be separately registered at the

**AeroCAD 32b for Win 9x, Win NT, Win 2000, WinXP, Win Vista, Win 7, Win 8**  
**Copyright © 2014, REMAK a.s., Zuberska 2601, 756 61 Roznov pod Radhostem**

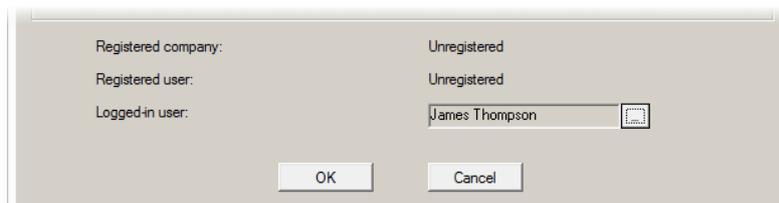
Registered company: Unregistered  
Registered user: Unregistered  
Logged-in user:

OK Cancel

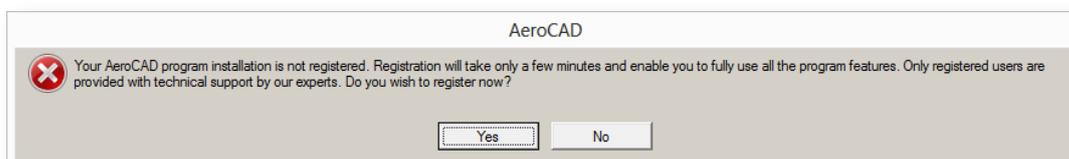
The local user code list window will open. Enter your data and press OK:



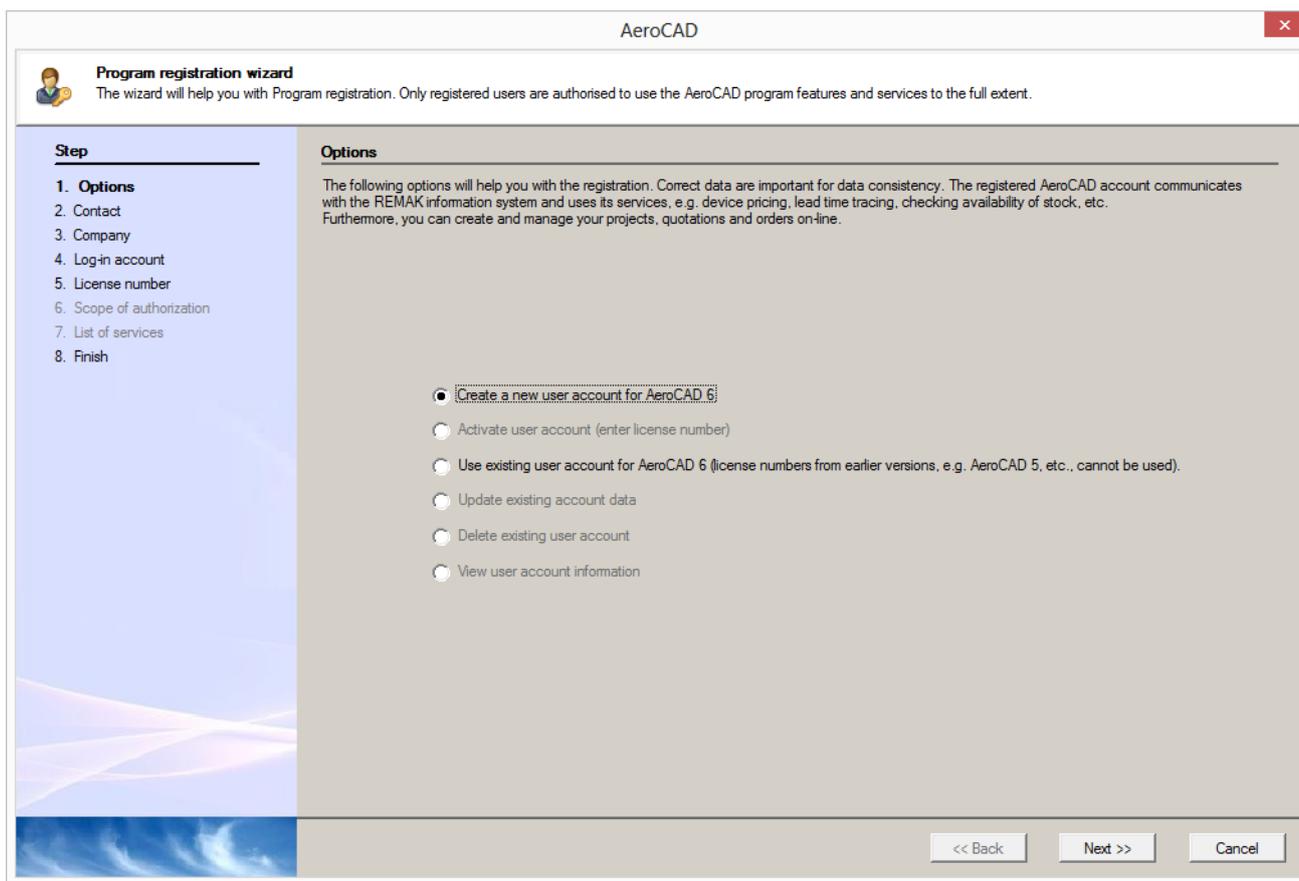
The entered user name will be displayed in the license window:



Confirm the following message by clicking *Yes* to open the *Registration wizard*.



There are two options available on the wizard start screen. If you have already registered, select the second option and press the "Next >>" button. Otherwise, leave the first option enabled.



Check and complete, if needed, data loaded from the local user account on the Contact screen. The items in red are compulsory and it is not possible to register the program without them being filled in:

**Contact**

AeroCAD user name and contact data. The name, surname and e-mail in the registered account cannot be changed. Here the entered e-mail also serves as a log-in name for the REMAK information system services.

Degree:	<input type="text"/>	Position:	<input type="text" value="Designer"/>
Name:	<input type="text" value="James"/>	Profession:	<input type="text"/>
Middle name:	<input type="text"/>	Department:	<input type="text"/>
Surname:	<input type="text" value="Thompson"/>		
Phone No:	<input type="text" value="+44 (020) 7378 0780"/>		
Phone:	<input type="text"/>		
Mobile phone:	<input type="text"/>		
Fax No:	<input type="text" value="+44 (020) 7378 0777"/>		
E-Mail:	<input type="text" value="jthompson@tsair.co.uk"/>		
Confirm e-mail:	<input type="text" value="jthompson@tsair.co.uk"/>		

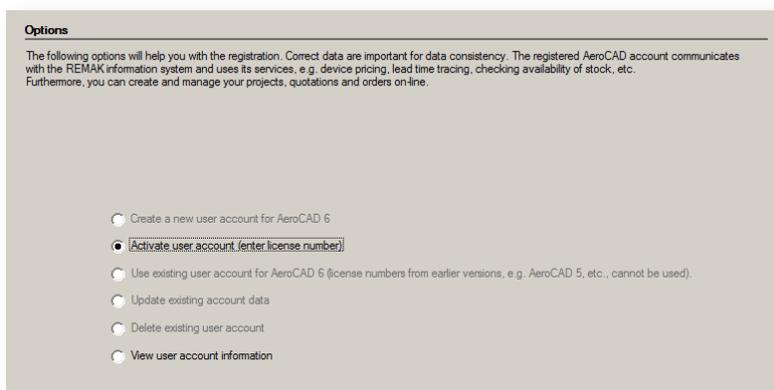
Perform the same on the *Company* screen:

The next step is to create and enter your user password, which must meet the following requirements:

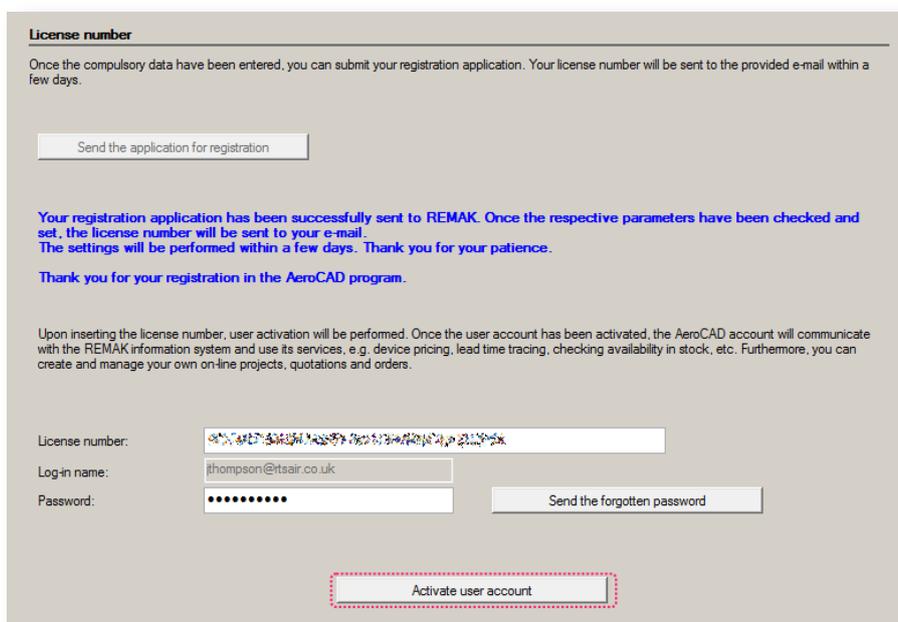
- It must be different from your user name (i.e. e-mail)
- It must contain at least 6 characters
- It must contain at least one digit
- It must contain at least one letter

Then just send the request to the server to finish the registration:

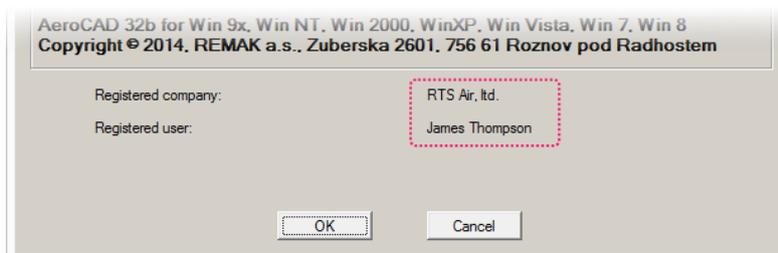
As soon as your request has been processed, the generated license number will be sent to your e-mail address. Use it again in the *Registration wizard*:



Enter the received license number, your password and confirm by pressing the *“Activate the user account”* button.



Now registration is complete. It is possible to check the registered person's data in the license window:

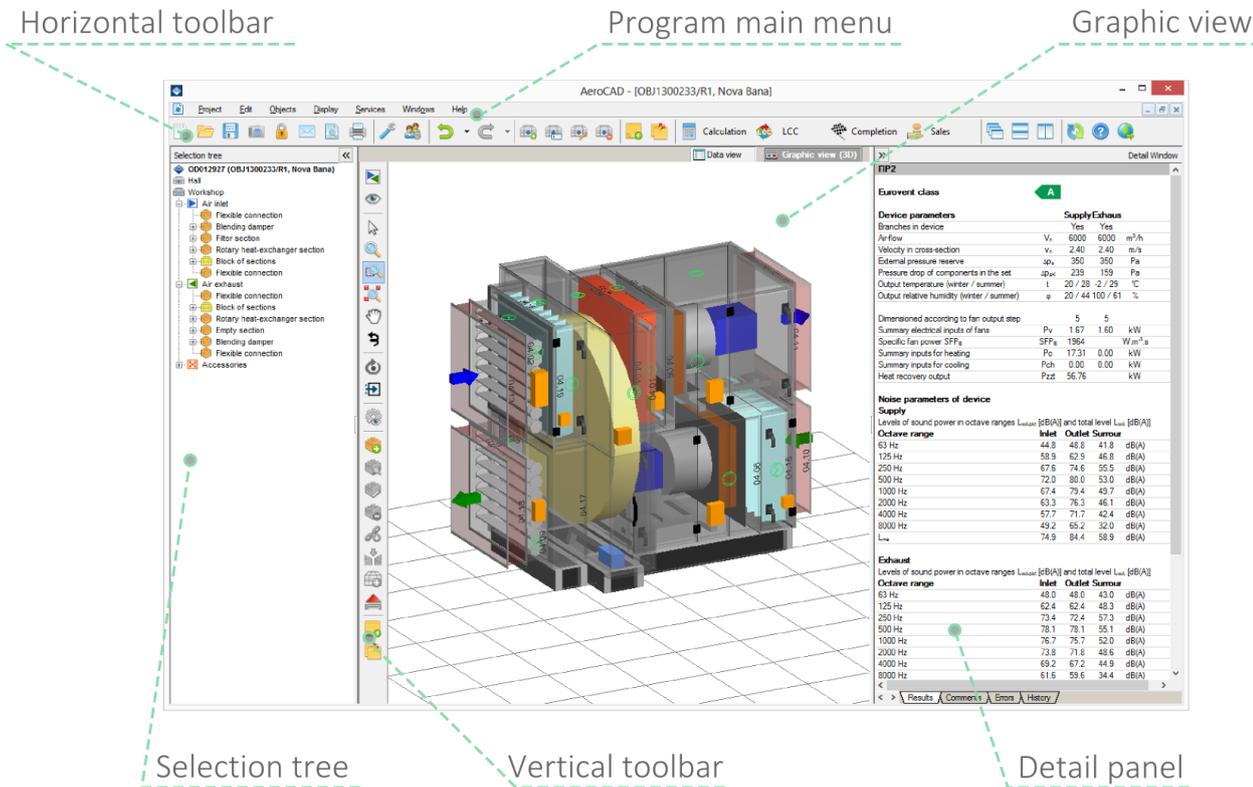


Once the OK button is pressed, the AeroCAD program will start with all functions enabled for the registered users.

# Program Environment

## User Interface Basic Parts

Parts of the user interface divided into logic groups according to their function are marked in the figure below:



**Horizontal toolbar** - includes frequently used commands for work on the program and project level.

**Graphic display** – displays a 3D model of the designed device.

**Selection tree** – contains the hierarchy of the project and displays it in the form of the drop-down tree.

**Vertical toolbar** - includes handling commands for display and particular device components.

**Detail panel** – contains information on the active object (depending on the selection, this could be a project, a device or a component).

## Display Types

There are two ways of how to represent the designed device: a graphic (3D model) display and a data display. It is always possible to display the device in the data display while the 3D model can be displayed only for the air-handling unit and fancoil-type devices.

**Note:** The *fCube!* fancoil design is only available to REMAK employees. If you have any inquiries, please contact your Commercial Representative or the company head office.

To switch between these two modes, you can use the "tabs" in the right upper part of the program window or shortcuts:



Data display

**F5**

Graphic display

**F6**

## Graphic Display



The 3D model is a natural way to display the device. As you will spend a lot of time working in this mode, it is advisable to become familiar with all the possibilities to handle this view. To do this, it is necessary to use **the buttons on the vertical toolbar, shortcuts and mouse**.

View rotate		<b>R</b>	
View move		<b>M</b>	<b>Shift +</b>
View zoom		<b>Z</b>	
Component highlighting		<b>Esc</b>	

## Data Display



The data display complements the graphic display, or is the main way of presenting devices comprised of individual components. It is a table containing a list of objects which shows either a summary of devices in the project or a summary of components in the device depending on the level selected in the selection tree. In this display, it is possible to enter a discount on the gross price when pricing the device, which will affect the net price:

Device											
Number	Device name	Component.	Accessor.	Gross price	Rebate	Net price	Weight	Calculation	Lead Time	Error	Note
01	XP28 EO	7	24	EUR	5%	EUR	1666.2 kg	✓	4	✗	

To enter the discount, click the cell of the corresponding device in the *Discount* column. Confirm the entered value by pressing the *Enter* key.

**Note:** This function is only available for users authorised to access the pricelist and prices.

## Side Panels

### Selection Tree

The left side panel includes the so-called selection tree. It displays an object hierarchy of the current project. From the highest to the lowest, the levels are as follows:

- Project
- Device
- Branch
- *Block of sections/Casing (if present)*
- Component
- Accessories

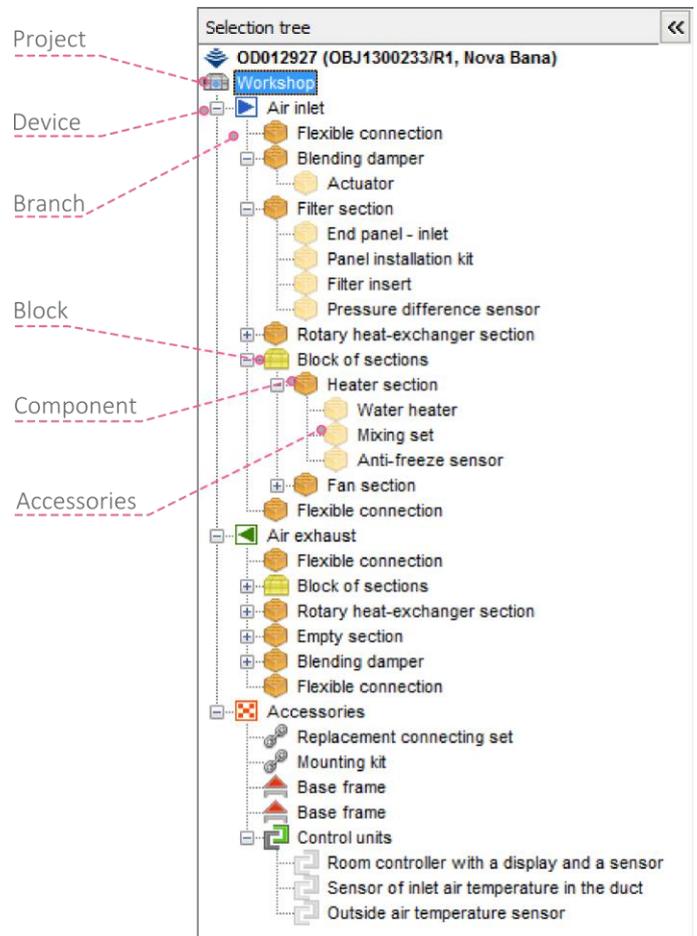
Only one active device can be expanded at one time. Its sublevels can be expanded or wrapped by clicking the + or – symbol next to the corresponding item.

If the project consists of several projects, it is possible to change their order in the tree by dragging your mouse.

1. Click and hold the device item you want to move.
2. Drag it above the device preceding the required (new) position.
3. Release the mouse button.

Some selection tree levels feature a context menu accessible by clicking the right mouse button:

- Device
- Component
- Block of sections
- Complement



## Detail Panel

The detail panel continuously displays information on project objects or the project itself. It includes four tabs:

- Results
- Notes
- Errors
- History

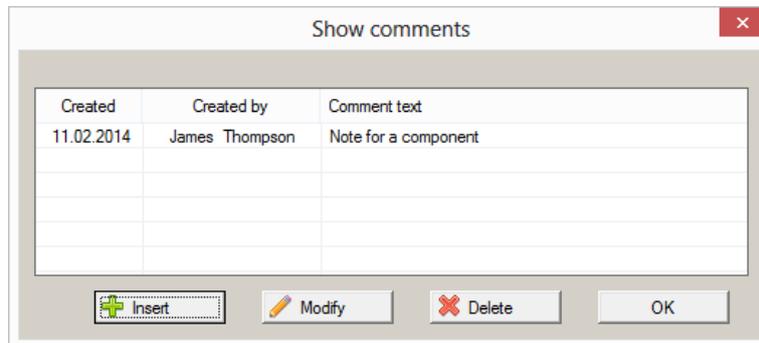
## Hiding Side Panels

Both side panels can be hidden to maximise the main desktop. To do this, use the button with the symbol of broken double quotes in the inner corner of each panel or a shortcut:

Show/hide selection tree	
Show/hide detail panel	

## Notes

Notes can be added to each of the three AeroCAD levels (project, device and component). The notes can be managed in the following window:



Depending on to which object you want to add a note to, use the following options:

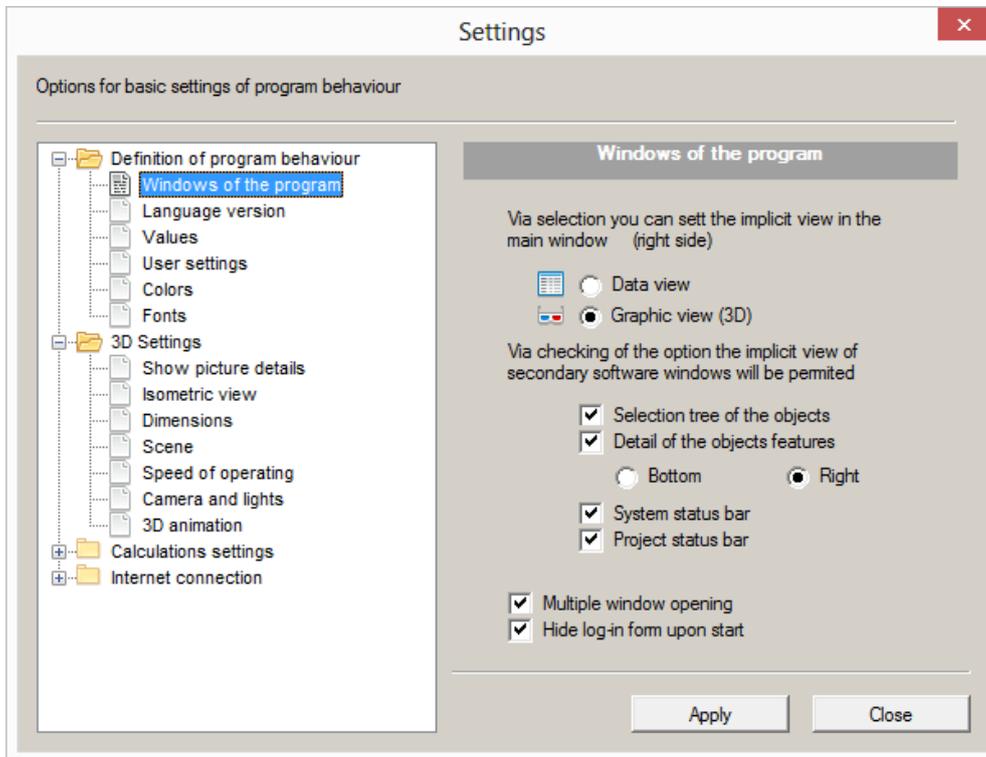
- Notes on the **project**: *Project – Notes* menu
- Notes on a device or component:
  - Button on the toolbar  

  - *Objects – Notes* menu

The *Notes* option in the *Objects* menu is context-dependent. If one component in a device is highlighted, the displayed and added notes are related to it. If no component is highlighted, the notes refer to an active device.

## Program Settings

 Program Settings options can be set either from the main menu (*Edit – Program Settings*) or horizontal toolbar. A window will be displayed in which the program setting category tree is displayed on the left side and the options are displayed on the right side.



### Saving the Changes

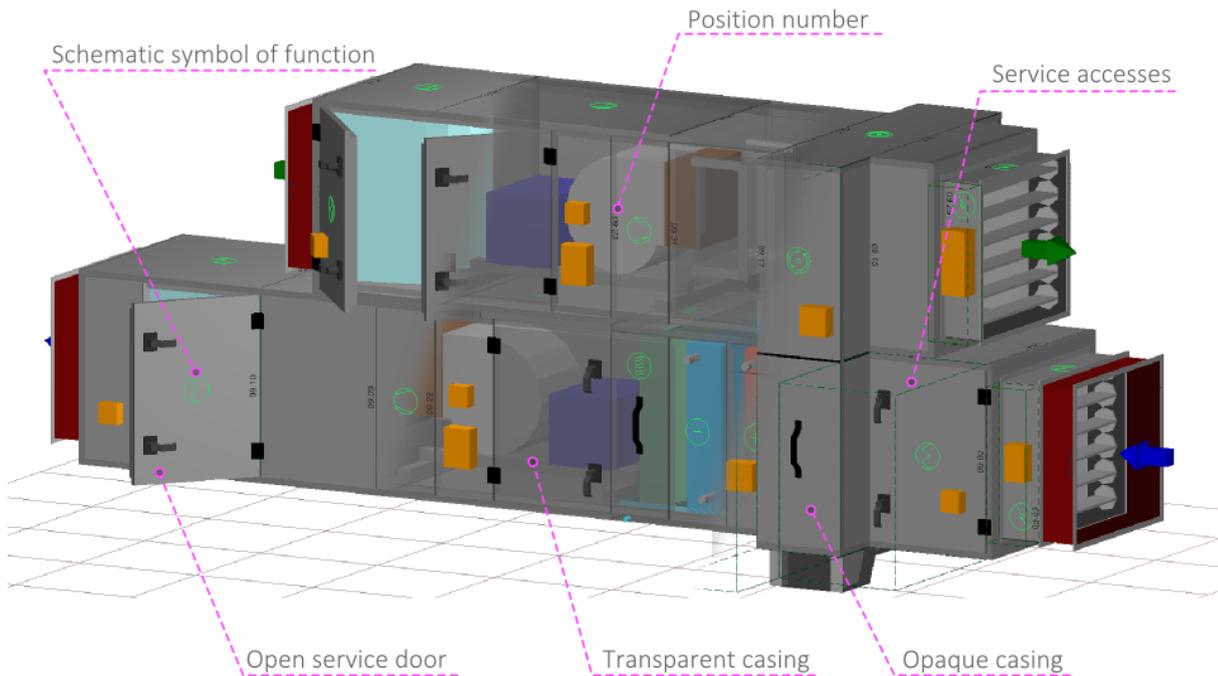
Most changes take effect immediately in the open project but some are not effective until the next project is created. As long as you are satisfied with the changes to the program settings, press the *Use* button. A message informing you when the changes made take effect will be displayed. Upon confirming it, press the *Close* button.

### Program Behaviour Definition

In this part, you can set the basic program properties – language, fonts, colours and units. Further, desktop display options can be set here too.

## 3D Graphic Settings

This section focuses on the 3D scene and model of the designed model. The model details can be set in the *Show Picture Details* section. As an illustration, see the following figure:



## Calculation Settings

Methods and parameters for the fan and heat exchanger calculation can be adjusted, if necessary, in the Calculation Settings section.

## Internet Connection

In case of problems, you can change the default internet connection.

## News On-line



The program also includes a website (so-called *miniweb*) on which we publish mainly information on new versions. Here you can also find tips and tricks for working with the AeroCAD program.

The miniweb browser is directly integrated into the program. You can display it from the *Help – News On-line* menu or by clicking the button with the globe icon, which you can find in the horizontal toolbar.

# Work with Projects

## Creation of New Project

Once the program has been started, an empty desktop will be displayed. Here, you can create a new project using the following methods:

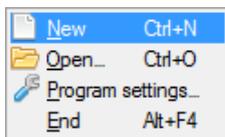
- The shortcut:



- The toolbar button:

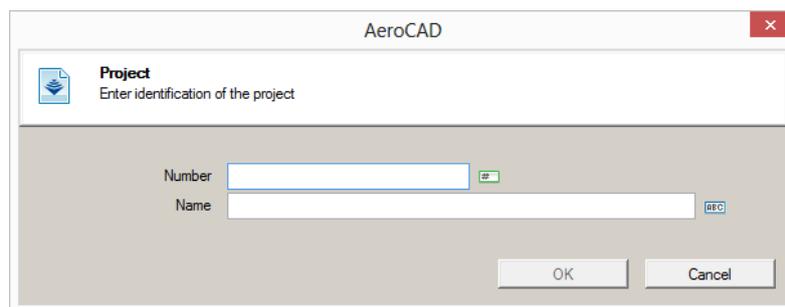


- The item in the desktop context menu:



- The item in the main menu: *Project – New*

A window will appear. Enter the project name and number (identification) in it and confirm using the OK button.



An empty desktop for the new project with a form for adding a new device will appear.

## Opening a Project

To open a project, use one of the following options similarly as in the previous step:

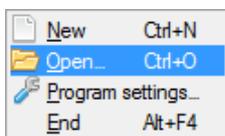
- The shortcut:



- The toolbar button:



- The item in the desktop context menu:



- The item in the main menu: *Project – New*

To close the file, use:

- The shortcut:



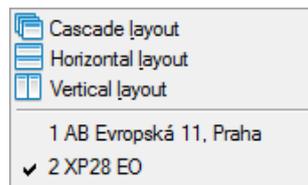
- Click the cross in the upper right corner of the project window:



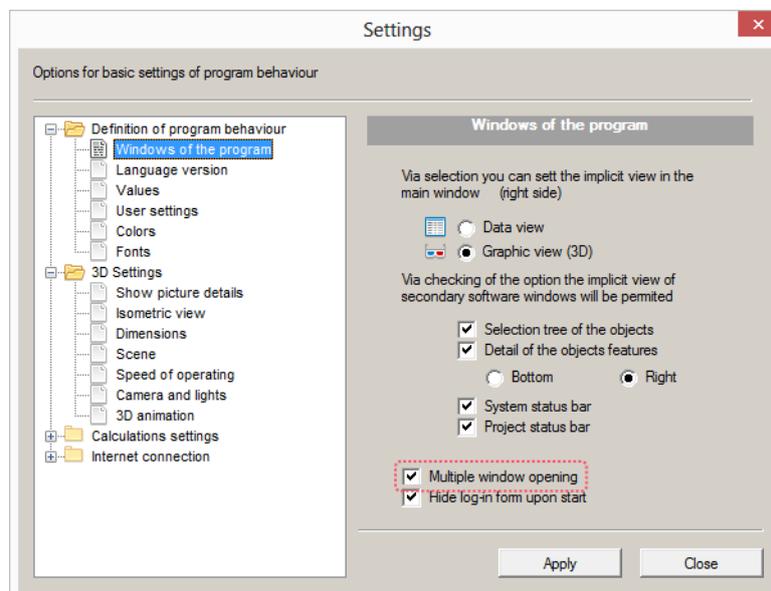
- The main menu item: *Project – Close Project*

## Project Window Management

The AeroCAD program allows you to open and work with multiple files (projects) in individual windows. In addition to the manual size and position settings, there are three options for the program window arrangement available under the *Window* main menu item.



This program behaviour must be enabled by the *Multiple Window Opening* option in the Program Settings.



# Work with Devices

## Creation of Device

A device can be added to a project using the new device dialogue, which can be accessed through the following options:

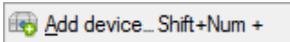
- The shortcut:



- The horizontal toolbar button:



- The item in the selection tree context menu:



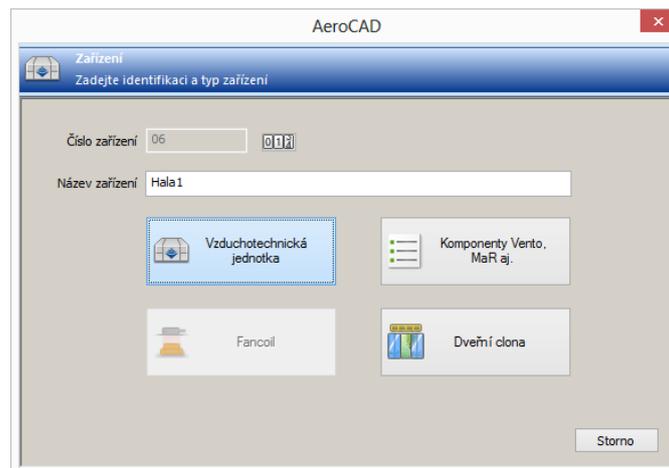
- The main menu: *Objects – Add Device*

Here first enter the device name and then select the device type you wish to put in by clicking one of the four buttons.

You can choose from the following options:

- Air-handling unit
- VENTO, M&C components, etc. (corresponds to a device without the design or graphics)
- Fancoil
- Door air curtain

**Note:** The fCube! design is only available to REMAK employees. If you have any inquiries, please contact the company head office.

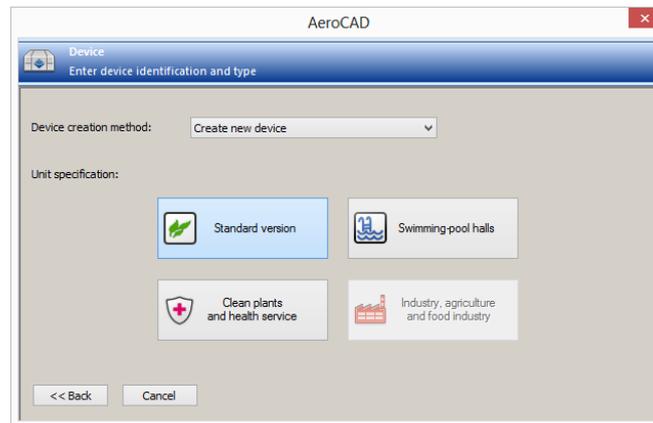


Make your selection by clicking one of these four buttons, and a window for the next step will display immediately.

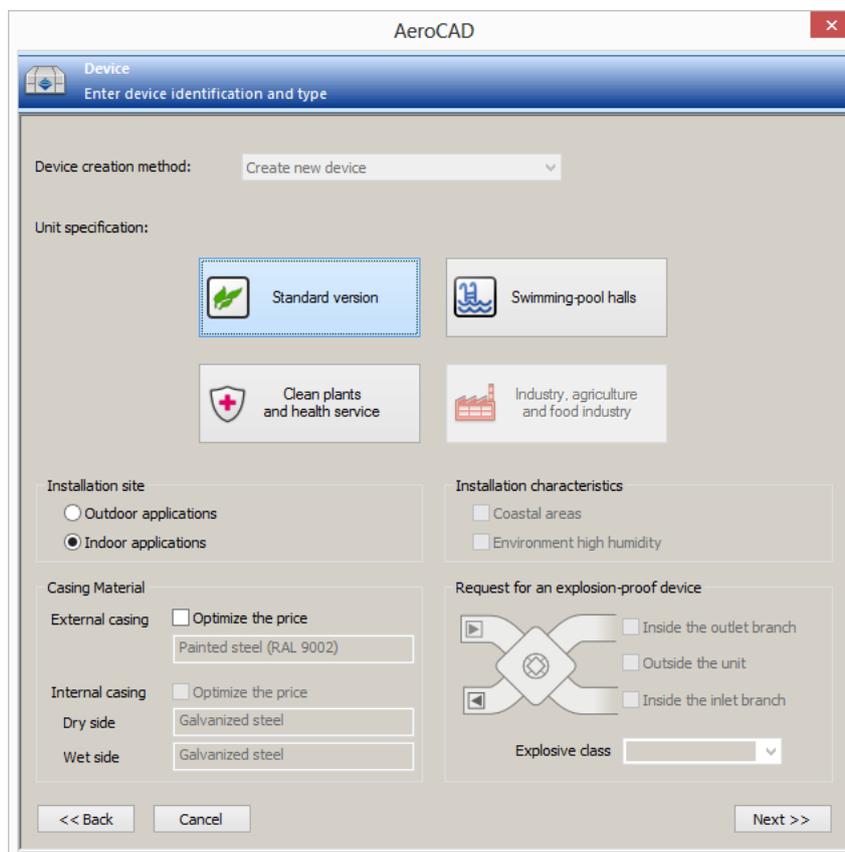
## Creation of an Air-handling Unit

The dialog box for air-handling unit insertion is displayed in the picture below. There is a *Device creation method* drop-down list situated directly below the window header, in which you can select how the air-handling unit will be added to the device. The *New device* assembly is the default option. The remaining two options will be described in further text.

Similarly as in the previous step, large buttons with icons dominate this window as well. Here they serve for selection of the *unit determination* (application type) option according to the environment.



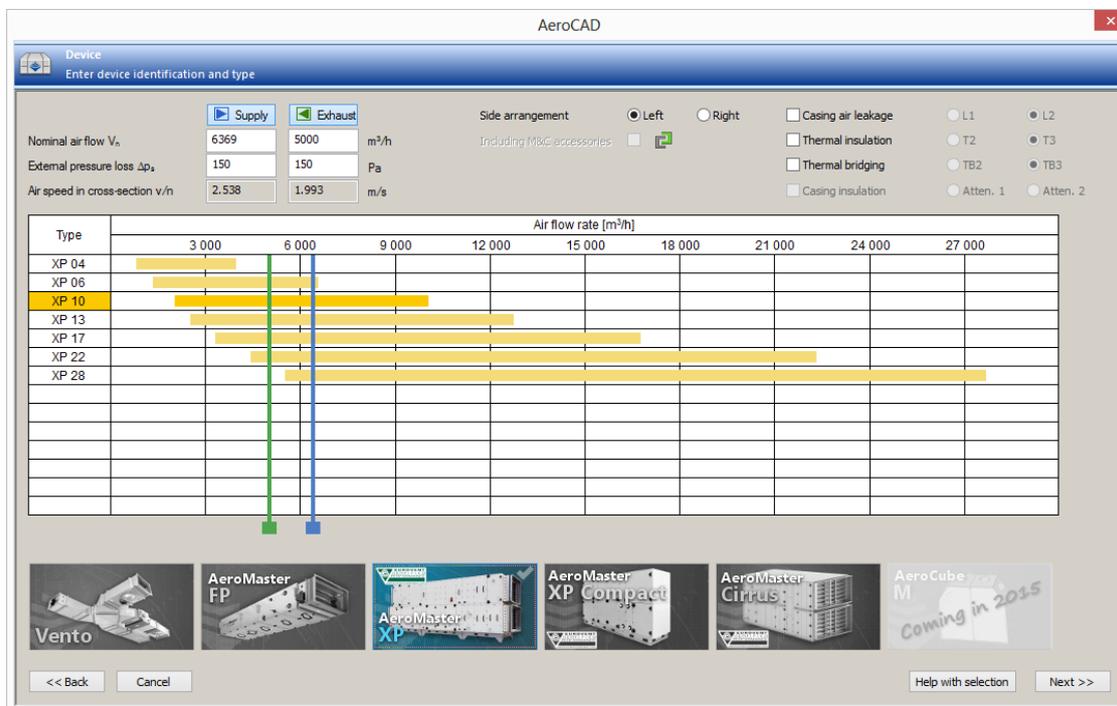
Upon clicking one of the *unit determination* options, the dialogue will switch to the extended view, in which the boxes for the air-handling unit specifications are added in the bottom of the window:



The availability of options depends on the selected type of unit determination. Therefore, it is possible that some of boxes will be inactive – grey.

**Note:** Inactive options can also mean that the option or option combination has not been standardized yet. If you have any inquiries, please contact the company head office.

By clicking the *Next* » button, move to the last but one part of the device definition form in which you select the product and dimension range of the unit according to the entered unit's parameters and some additional unit parameters.



Here by clicking the buttons in the upper left part, select whether the air-handling unit will contain both inlet and outlet lines or only one of them, and enter the required air-flow rate and external pressure loss. Optionally, it is also possible to enter the air flow rate by dragging the pair of drag links situated above the table (the blue one matches the inlet line and the green one the outlet line).

The rows in this table represent dimension ranges of the offered air-handling unit types. The interval of available flows is graphically represented in each row. On the basis of the algorithm and entered air-flow, the program selects one dimension range and highlights it, changing the colour of the row and also the button of the product range in a group below the table.

In the default state, all product ranges as well as the dimension ranges available for the selected application type and options specified in the previous step are displayed in the table (e.g. the *Vento* product range is only available for standard environments while the *AeroMaster XP* product range can only be designed for hygiene applications). Furthermore, it is possible to limit the view using the buttons with pictures so that only selected product ranges will be displayed. This selection is indicated by the check mark ("tick") in the upper right corner of each affected button. If any of the buttons is marked with the check mark, the table view is not filtered (default state). The air-flow rate in the unit cross-section is calculated according to the selected product and dimension range. The value of this parameter is displayed in non-editable boxes in the upper left part. You can get detailed information on each product range by holding the mouse cursor over the product range button.

In the middle column of parameters above the table, select the side arrangement of the unit connections and whether you require the standard M&C accessories (e.g. filter sensors) to be automatically included in the unit. Then you can specify your requirements for the unit version in the column in the upper right part. The options available vary according to the currently selected product range.

The last step in the device definition is to enter the required temperature-humidity parameters of air conditioning. To do so, use the following form:

The screenshot shows a dialog box titled "Add / adjust device" with a close button (X) in the top right corner. The "Entry data for device:" field contains "sd".

**Entry data form**

- Selection from climatic regions: Climatic area: London (UK) [dropdown menu]
- Direct setting of entry parameters

**Display calculations for given season**

- Summer
- Winter

External air temperature	28.0	-6.0	°C
Relative humidity of outside air	44	90	%
Return air temperature	0.0	0.0	°C
Relative humidity of air in room	65	0	%

**Equipment design**

- Designed for wet conditions
- Designed for dry conditions

**Heat Exchanger Calculation**

- Using actual inlet air density
- Using air density of 1.2 kg/m<sup>3</sup>
- standard

**Thermodynamic calculations according to**

- selected characteristics of ductwork
- selected air flow (recommended)
- enable calculation to real working point (option available for plug fans only)

**Dimensions and scene character**

- Floor: Dimension [m] X 5.000 [m]
- Ceiling: Dimension [m] Y 5.000 [m]

Buttons at the bottom: << Back, ↑ Details, OK

In the first step, only the upper part (highlighted in the figure) is visible. Tick the Summer or Winter check box for the season you want to display the results for later.

Outdoor air parameters can be entered either directly (Direct Input Parameter Entry) or by selecting the pre-defined climatic zone (Climatic Zone Selection).

Possible further specification of the calculation method and 3D scene character can be performed in the expanded part of the dialog window (not highlighted in the figure) which can be displayed by the Details button.

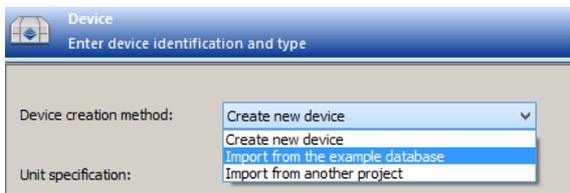
## Air-handling Unit Imported from Pattern Database

An air-handling unit can also be imported to the project from the pattern database. This can be found on the internet server and includes hundreds of devices in various arrangements. On the basis of the required parameters, the AeroCAD program will search the database and return the results found. In case

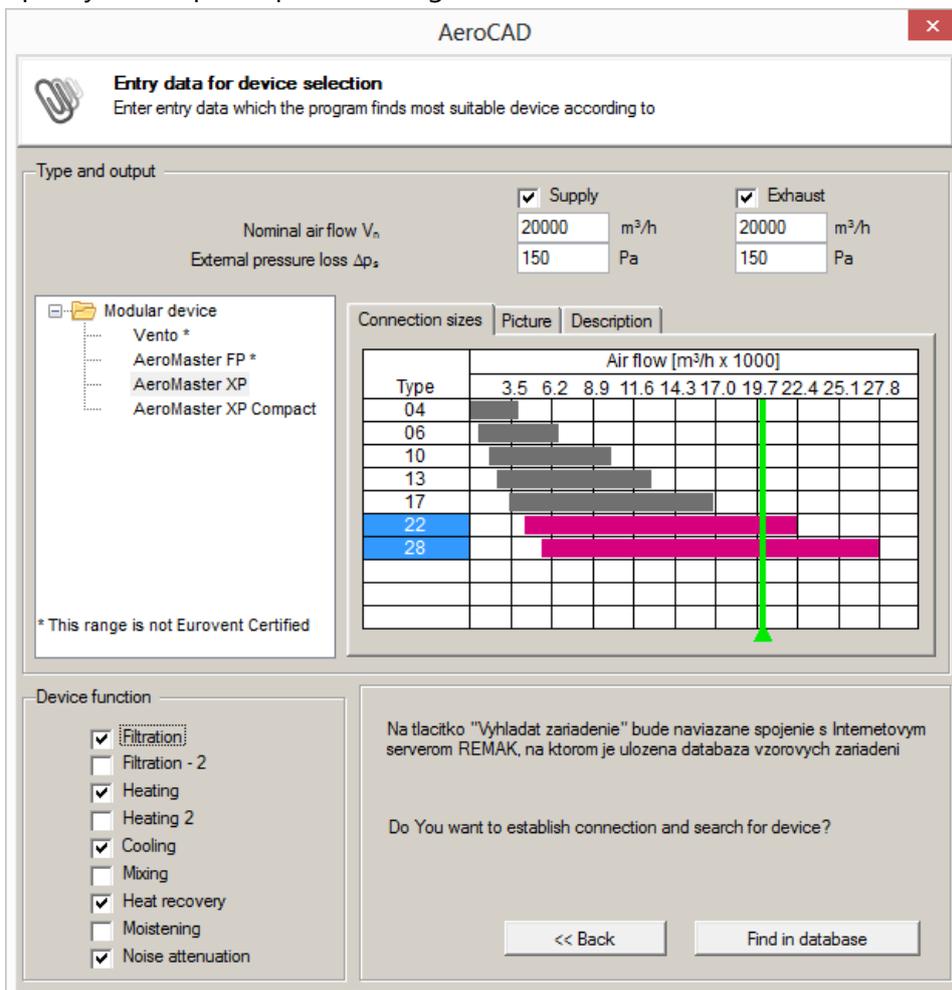
a unit suiting your requirements cannot be found, you have the option of sending your request to the R&D department for them to complete the database.

To import a device from the pattern database:

1. From the new device configuration dialog, select the Import from the example database option and then press the *Next* » button.



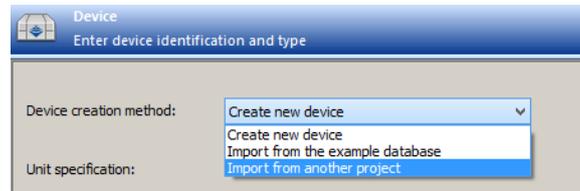
2. Specify the required product range, air-flow values rate and features of the imported unit.



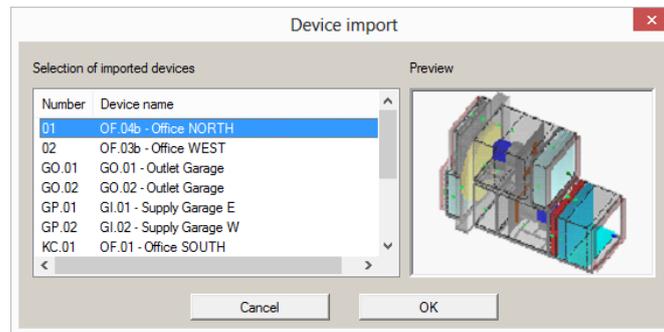
3. If more than one corresponding device is found, select from the list the one which best corresponds to your requirements.

## Air-handling Unit Imported from Another Project

An air-handling unit can also be imported to the project from an already existing project. To do so, use the second option in the *Device creation method* list:



In the window which will open immediately once this option is selected, select the unit you want to import. Confirm your selection and a window with the following list of selected project devices will appear:

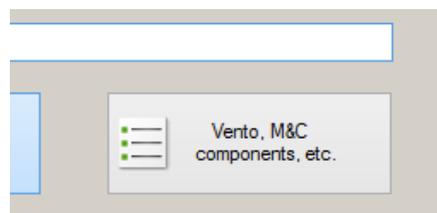


Press the *OK* button to finish import of the device from another project.

## Creating a Device from Individual Components

A device created from individual components is another type of device. Although this is not a device in the real sense of the word, we will use this term to make things simpler. It is a kind of auxiliary object which is not presented graphically, and consists of individual items of complements which are usually inserted as accessories for the air-handling unit (e.g. auxiliary sensors, replacement filter, etc.). Apart from these, individual components of the VENTO product range can also be inserted into the project in this way.

Open the dialog for adding the device and using the "VENTO, M&C components, etc." select this type of device.

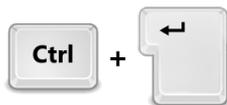


As there is no need to enter air or other parameters at this moment, the configuration window closes immediately once the name and type have been confirmed, and the program main window will appear in the data display.

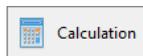
Above we said that this type of device consists of accessory items. With a standard device, these items are added in the calculation section so this section is also used in this part of the program (even though the calculation is not performed).

- Open the Calculation window:

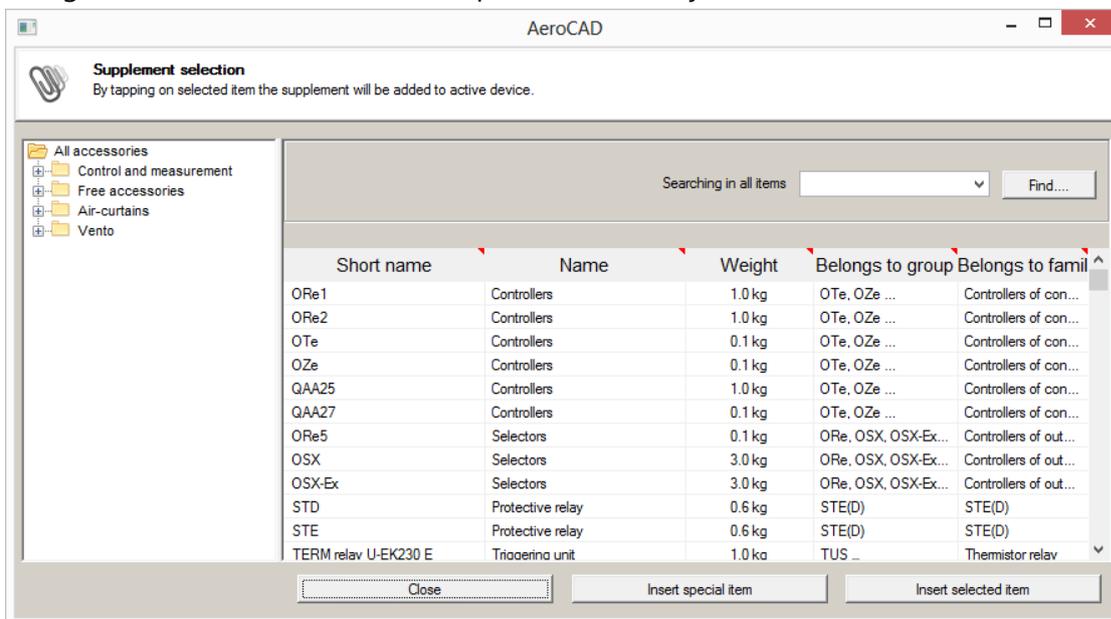
- The shortcut:



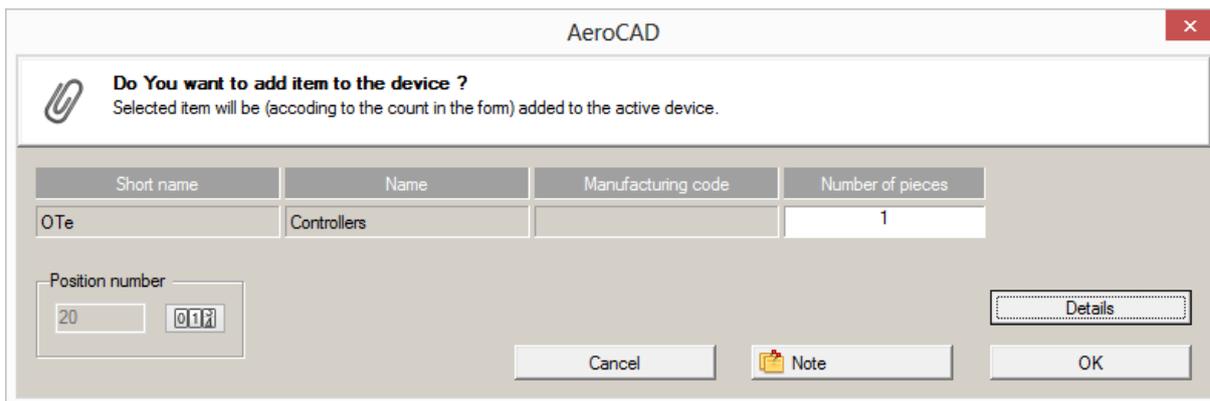
- The toolbar button:



- Using the *Inset Accessories* button, open the *Accessory selection*.



- Select an accessory category in the tree on the left-hand side.
- Select the required item in the list of accessories of the selected accessory category.
- Press the *Insert Selected Item* to confirm your selection.
- Enter the number of pieces of this accessory, optionally add a note to this item and press the *OK* button to confirm.



The procedure for non-standard item insertion is similar. However, it is necessary to use "*Insert Non-Standard Item*". The following window is a little bit different and apart from the number of pieces it is also necessary to enter the name, price and category of the inserted item, respectively its weight.



## Creation of Door Air Curtain-Type Device

The door air curtain is the last type of device:



The procedure for adding this device is almost the same as with a device created from individual components. The only difference is the limited display of the accessory category.

## Removing the Device

There are several ways of how to remove a device from a project:

- The horizontal toolbar button:



- The shortcut:



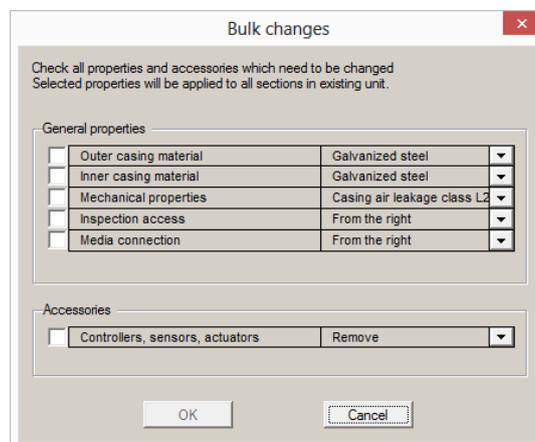
- The item in the selection tree context menu:



- The main menu item: Objects – Remove device

## Multiple Changes

If you decide to make changes to the properties of all the device components in a more or less advanced state of design, you do not need to make them one by one. For these purposes, a form is available which can be accessed from the *Edit –Multiple Changes* menu or using the **Ctrl+H** shortcut.



General properties	
<input type="checkbox"/> Outer casing material	Galvanized steel
<input type="checkbox"/> Inner casing material	Galvanized steel
<input type="checkbox"/> Mechanical properties	Casing air leakage class L2
<input type="checkbox"/> Inspection access	From the right
<input type="checkbox"/> Media connection	From the right

Accessories	
<input type="checkbox"/> Controllers, sensors, actuators	Remove

For each property you wish to change, tick the corresponding option on the left-hand side of the form and then set how this property will be changed on the right-hand side of the form.

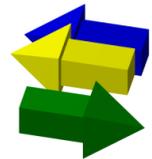
# Work with Components

## Correlations between Components

As an air-handling unit is built from logically related components, the AeroCAD program must also take into account their mutual correlations. These correlations are defined using so-called *connection areas*. Each component inserted into the device must be connected to the *connection area* of specific, already connected components.

## Adding a New Component

To enable the program to recognise to which component an object is to be connected, it is first necessary to click this component to highlight it. Connection areas are marked with blue or green arrows depending on the branch to which they belong. If more connection areas are selected (e.g. heat exchanger), the selection must be specified by directly clicking the arrow marking the connection area. The arrow's colour will change (to yellow as default).



The selection of the component added to the device is performed in the *Component Group Selection* which can be displayed using one of the following options:

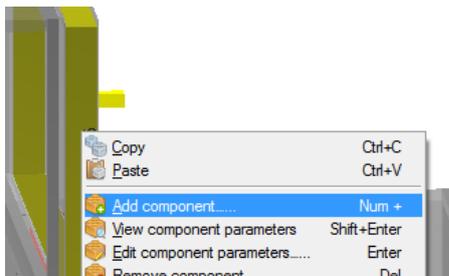
- The vertical toolbar button:



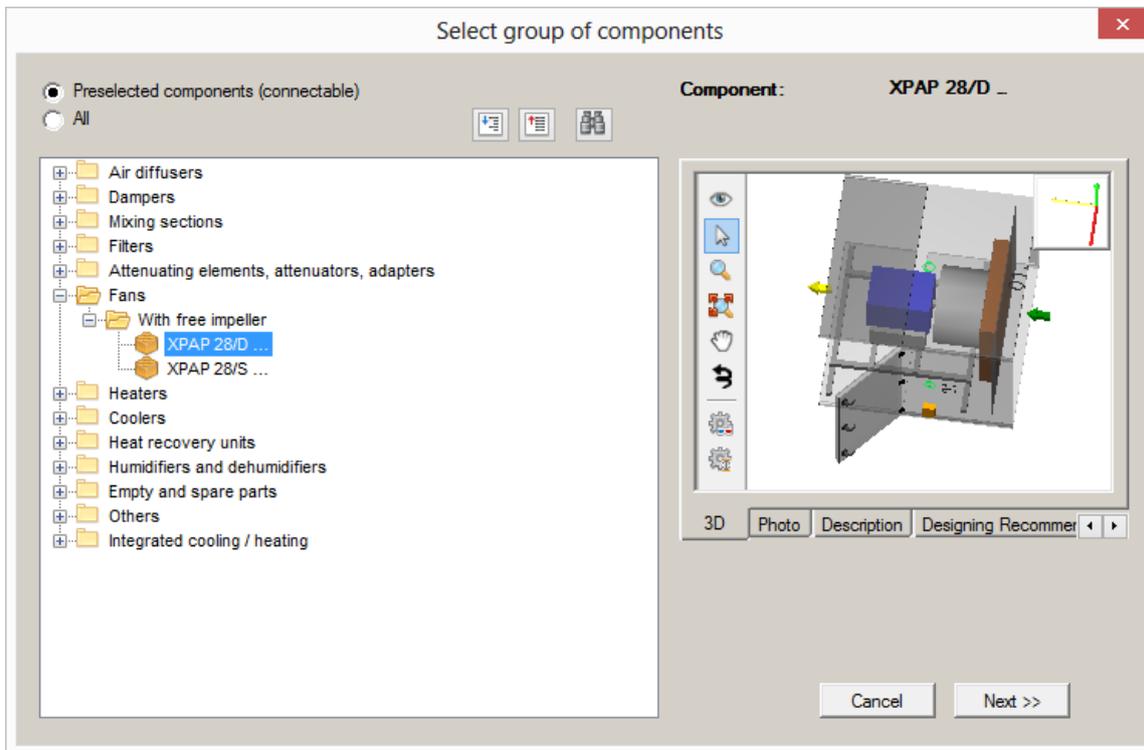
- The shortcut:



- The item in the device context menu (if the connection area is highlighted):



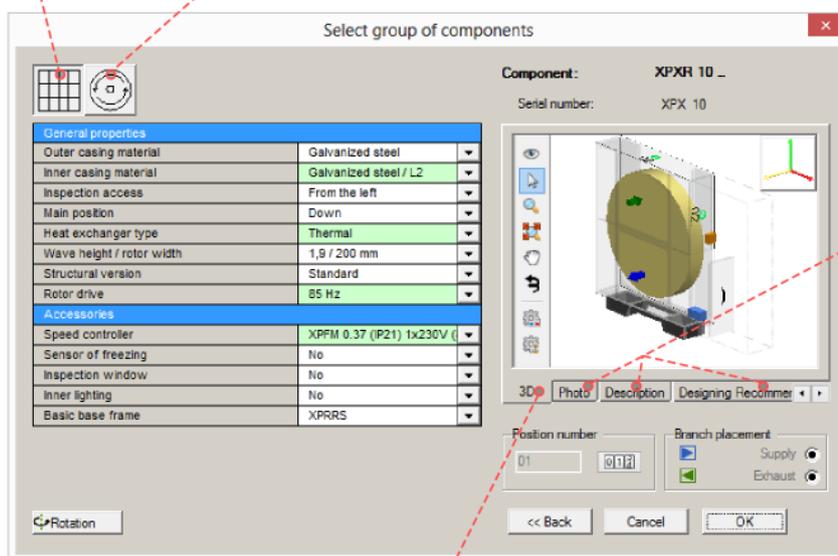
- The application main menu item: *Object – Add Component*



Once the required component group has been selected and confirmed by the *Next »* button, the next part of the form, in which the parameters can be specified, will be displayed – see the figure below. If the component includes an assembly, the parameters are divided into several "pages" with button tabs in the upper left corner.

Component parameters

Assembly parameters



Additional information

3D model preview

The first tab always includes general component parameters (casing material, etc.), the second tab (respectively all the others) includes assembly parameters. These tabs are not used for simpler items and all the information is included in one view.

## Correlation between Properties and Accessories

A correlation between some properties and accessory items can exist. In practice, this means that the values of some rows can be affected by the selection of a different property (accessories).

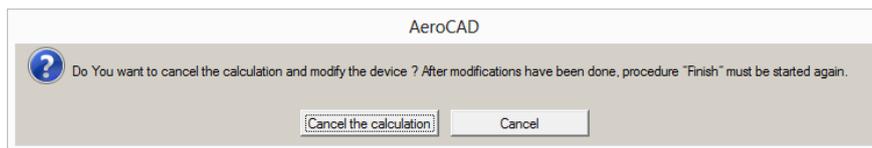
Such attributes are marked in green in the configuration form.

## Editing Component Parameters

Existing component parameters are edited in the same window. However, the calling methods are different:

- Double click the component whose parameters you want to edit.
- By clicking, highlight the component and press the *Enter* button.
- In the selection tree, right click the required component node and select the *Edit Component Parameters* item.

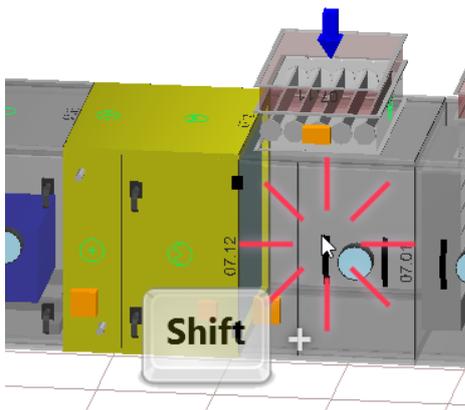
If you have already performed the calculation of the active device, it will be cancelled by opening the edit window and you will have to perform it again. However, you will be informed of this fact and provided with the option to return.



## Insertion between Two Components

Sometimes, it is necessary to insert a component between another two connected components. Proceed as follows:

- Highlight the first component and holding the Shift key highlight the second component.



- The Component Group Selection dialog will open.
  - Use the vertical toolbar button:  

  - Right click the highlighted component and select the *Insert Between Components* option:
  - Select the *Object – Add Component* item in the application main menu:

## Delete Component

To delete one component, proceed as follows:

- Highlight the component to be deleted:
- Remove the component:

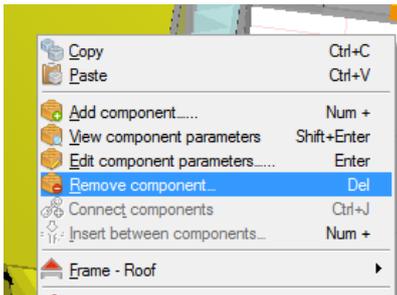
- Press the key:



- Use the vertical toolbar button:



- Use the item in the component context menu:



- Use the main menu item: *Object – Remove Component.*

If you highlight more than one component, all these components will be removed simultaneously.

If you want to "clear" the device, use the *Objects – Remove all components* option. This command is assigned via the *Shift+Del* shortcut.

## Blocks of Sections

At the beginning of the manual, we indicated that individual components can be grouped in a block. The main purpose of this operation is to define the assembly groups in which the unit will be dispatched after production.

### Block Creation

- Highlight the components (sections) to be grouped in the block.
- Create a block of sections:

- Use the toolbar button:



- Use the shortcut:



- Use the menu item: *Objects – Group Components in Block.*

## Highlighting all the Components in a Block

- By clicking, select a component in the block.
- Use the shortcut and highlight all components in the given block:



## Removing a Block

- By clicking, select the component in the block to be deleted.
- Remove the block:

- Use the vertical toolbar button:



- Use the shortcut:



- Use the menu item: *Object – Remove Block*.
- Delete the Block node in the selection tree.

*Note: Removing the block will not remove the components included in it.*

## Roof and Base Frames



The air-handling unit must usually be situated on a base frame which serves not only to change the height and separate the unit from the floor, but also to eliminate ground unevenness. The second purpose of the frame is to reinforce the mechanical strength of the installed unit.

If the unit is intended for outdoor use, it is necessary to protect it against the weather. The roof serves this purpose. Both the frame and roof are included under one command, *Frame – Roof*.

When working with base frames and roofs, use the following sequence of steps:

1. Select the operation (adding or deleting).
2. Select the accessory type (frame or roof).
3. Select the parameters and confirm.

The frame or roof can be added/removed depending on the highlighted object. If no component in the device is highlighted, the entire device will be removed. If any component is highlighted, only the frame or roof of the respective component will be modified.

Create frame or roof



Remove frame or roof



## Performed Steps Memory

The AeroCAD program features a memory of performed steps. If you make a mistake during your work, you can go up to ten steps back (respectively forward). To do so, use common shortcuts, **Ctrl+Z** and **Ctrl+Y** or the corresponding toolbar buttons:



## Device Calculation



Once the air-handling device has been assembled, it is necessary to perform its calculation. The purpose of this operation is to select particular components (especially the fan and heat exchangers) and to calculate individual air parameters in the device.

The device calculation and selection of components is performed within a single sequence which comprises several operations leading to device completion. The calculation sequence runs in four steps:

1. Calculation
2. Accessory selection
3. Device control (control unit) configuration
4. Device pricing

An additional fifth step displays a device summary which includes information on the calculation performed, price, weight, etc.

To move between steps, use the *Next* » and « *Back* buttons which are displayed at the bottom of the form. The steps are clearly displayed in the navigation panel of the calculation sequence window. They can be clicked to move freely between the steps.

Each step of the calculation sequence will be explained in detail in the following text:

## Fan Calculation and Selection

Sometimes, the same air-flow rate can be achieved using different fans. The differences consist in speed and related parameters, and the output reserve the fan is able to provide.

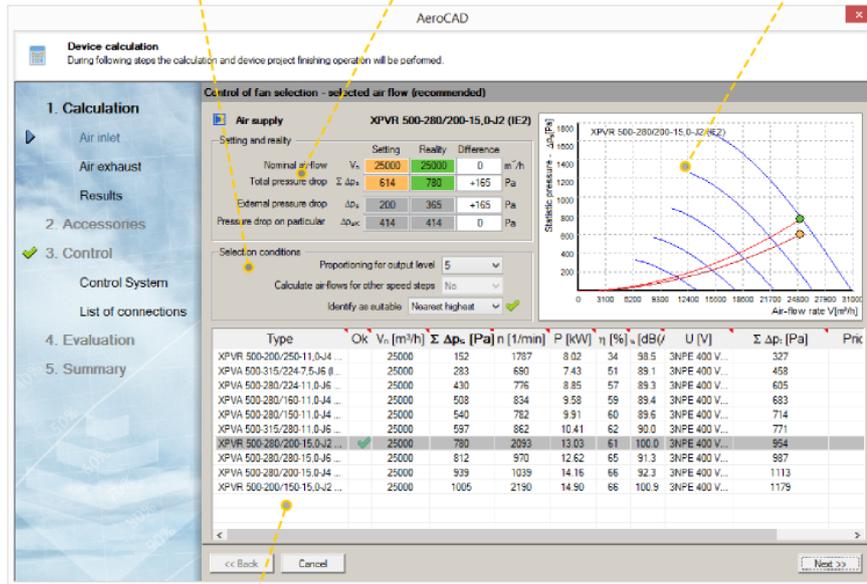
The fan type is mostly selected automatically by the program. Under certain circumstances, it is however necessary to select a different fan. To do so, use the first step in the calculation sequence.

If the device has not been calculated yet, the calculation will start as soon as the window is opened. This can take some time due to the calculation complexity, number of interaction cycles performed, etc. Then the fan selection (resp. specification) will appear:

Conditions of selection

Comparison of real and required parameters

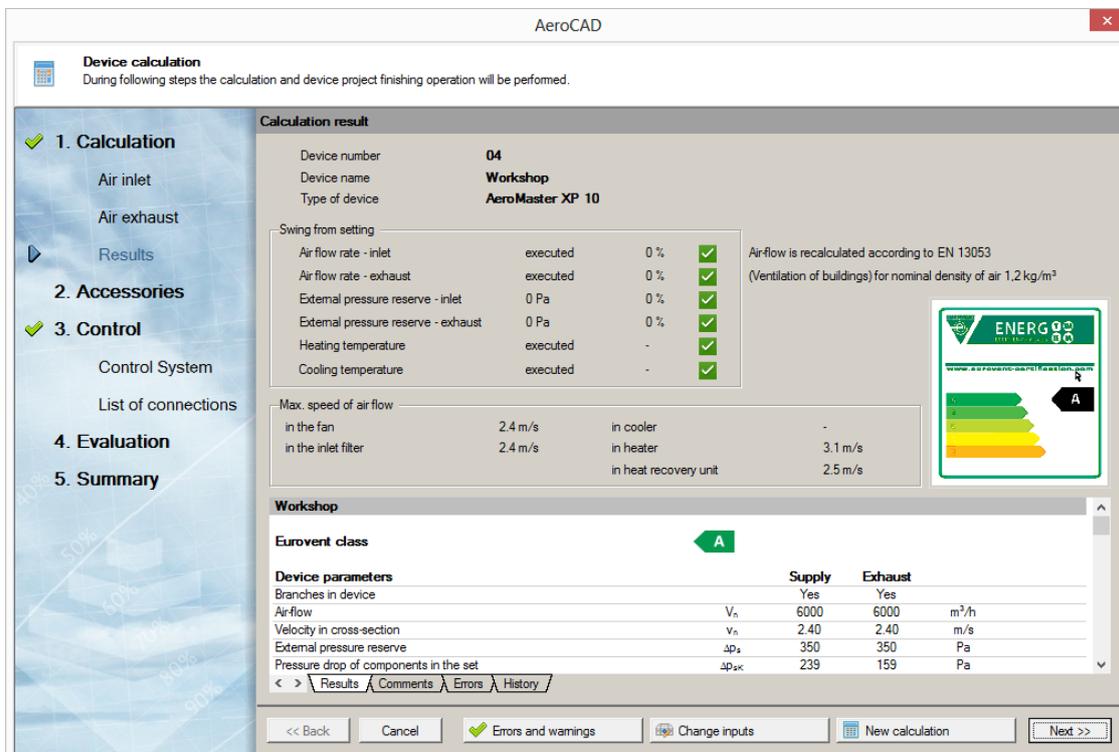
Fan performance diagram



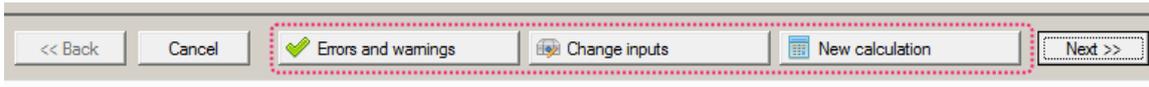
Fan alternatives list

If the device includes both inlet and outlet branches, it is necessary to perform two confirmations – separately for each branch.

The following window will appear. It includes a summary of the calculated parameters and energy class Eurovent label (if available for the selected product range):



Please also pay attention to the bottom row in this window:



**Errors and Warnings** – opens a window with an overview of the problem (for more information, refer to the next chapter).

**Change Input** – opens the device configuration dialogue, in which the input device parameters can be edited.

**New Calculation** – will repeat the device calculation. This option is useful when selecting another fan type.

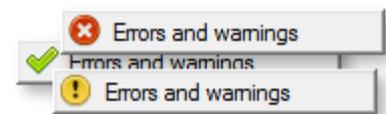
## Device Errors

Detected device errors are divided into three categories:

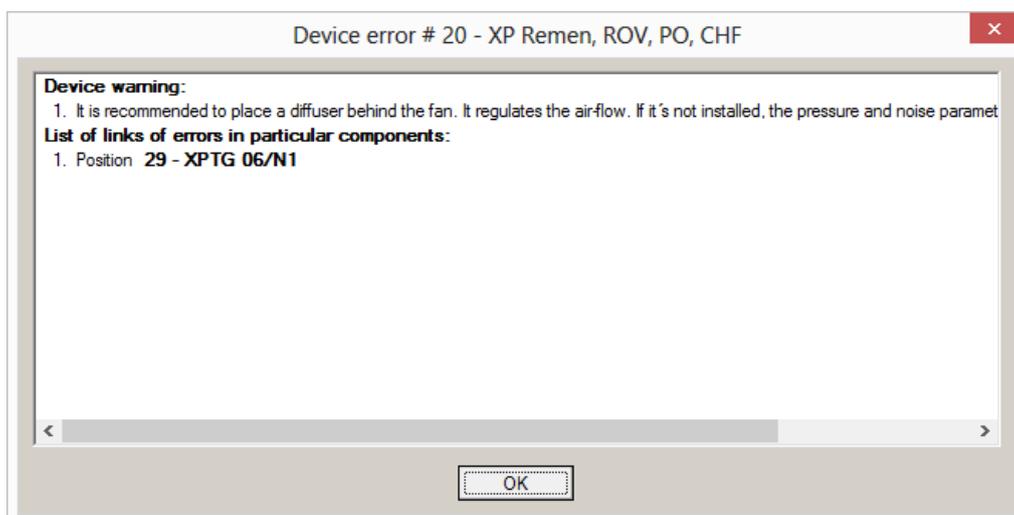
- Non-forward errors
- Forward errors
- Warnings

The first category errors block the calculation. To enable the calculation, it is first necessary to change the input conditions (e.g. required temperature behind the heater).

The device problem state is indicated by the above-mentioned *Errors and Warnings* button. If the device is error-free, a green tick is displayed. If warnings are detected in the device, the button is marked with an exclamation mark. The presence of (forward) errors is indicated by a cross on a red background.



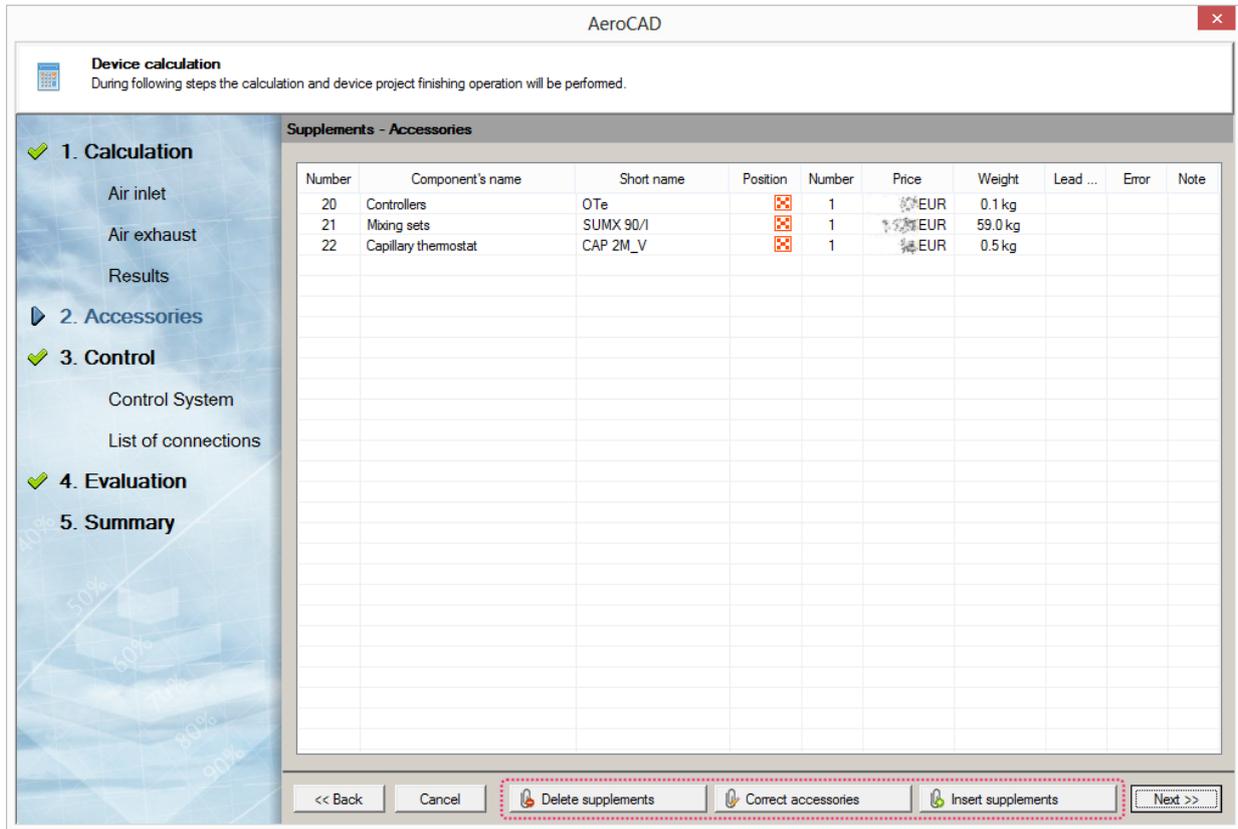
By clicking this button, a window with an overview of all errors will appear:



## Device Accessories

In the second step of the calculation sequence, device accessories are added. *This step is optional depending on your actual requirements.*

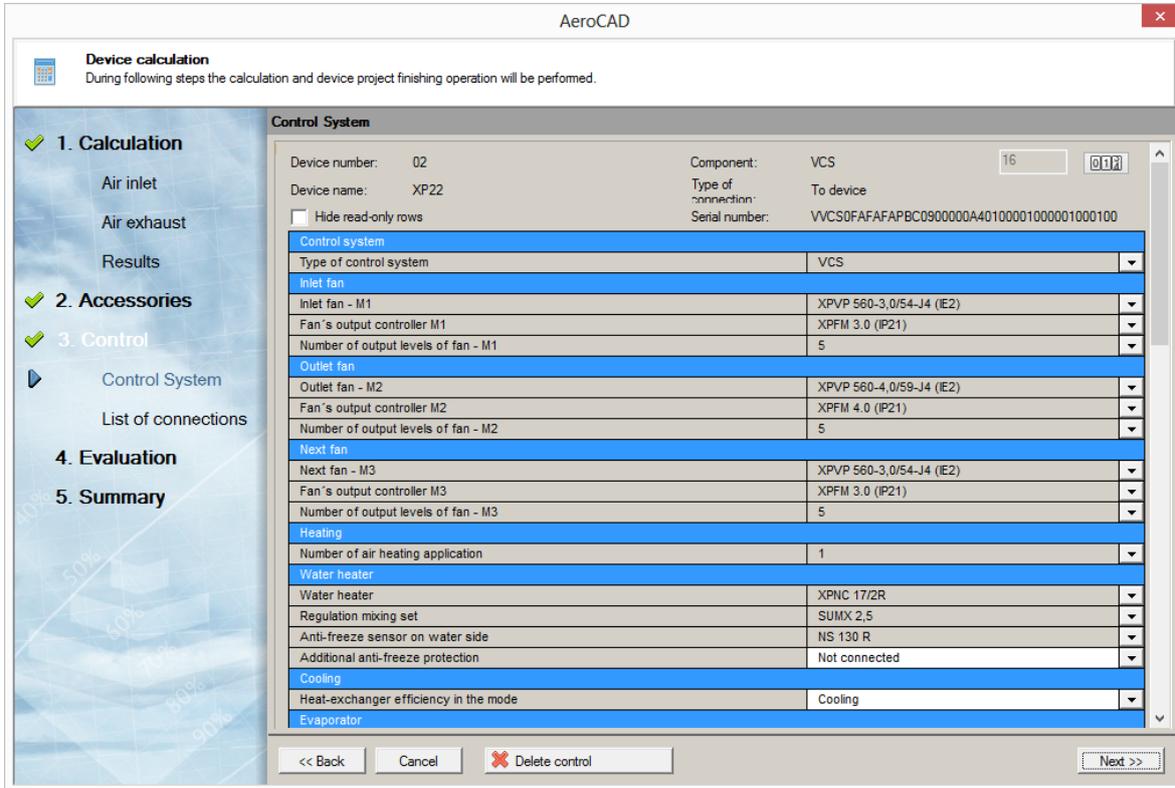
A table with a list of inserted accessories is displayed in the main section of the window. This window can be edited using the buttons situated in its lower part.



The procedure for adding and removing accessories is described [earlier in this manual](#).

# Control Unit Configuration

In the third step of the calculation sequence, control of the designed unit is defined. The default state is a unit without control. To create control for the unit, use the *Create Control* button. The program will offer available control unit types and display the default control configuration once the type has been selected.



The control unit configuration is represented by a table divided into several parts. The configuration of some parameters can be modified by selecting from several values. These rows have a white background.

Number of output levels of fan - M2	5
Next fan	
Next fan - M3	Not connected
Rotary heat exchanger	
Type of rotary heat exchanger	XPXR 10/3

Click the arrow button to open the option selection pane. To confirm your selection, double click the option row or highlight it and press the *OK* button.

Control unit configuration errors are displayed at the bottom of the configuration table:

Protection of control unit case	IP 55
Configuration error of control unit	
The NS 120 freezing sensor (P33 N or CAP 3M at VENTO) at the plate heat exchanger is m	ERROR

## Pricing



If a pricelist is available, you can assign each component of the designed device with a price based on this pricelist in this step. To perform pricing, use the *Calculate Prices* button at the bottom of the window. A window will appear containing information on the pricelist used, respectively a pricelist selection drop-down list (if more pricelists are available). Another press of the *Calculate Prices* button will start the pricing command.

Nu...	Component's name	Short name	Position	Co...	Nu...	Price	Weight	Le...	Error	Not...
12	Flexible connection	DV 810-760			1	?	4.0 kg			
							15.0 kg			
							44.3 kg			
							330.0 kg	4		
							50.2 kg			
							149.4 kg			
								4		
10	Flexible connection	DV 810-760			1	?	4.0 kg			
16	Filter section	XPHO 10/K			1	?	4.0 kg			
	End panel - inlet	XPk 10/P			1	?	44.3 kg			
	Panel installation kit	XPk 10/P (MSP)			1	?				
	Filter insert	XPNV 10/3			1	?				

## Multiple Pricing

The AeroCAD program enables all the project devices to be priced in one pass. To do so, use the main menu *Services – Multiple Pricing* item.

## LCC Calculation



Selected users possessing the suitable access rights have access to the LCC (Life-Cycle Cost) value calculation. Apart from the button in the toolbar, this function is also available via:

- Shortcut
- *Services – LCC Calculation* item from the main menu

Help for this service is available directly in the calculation module.

# Program Outputs

## Print

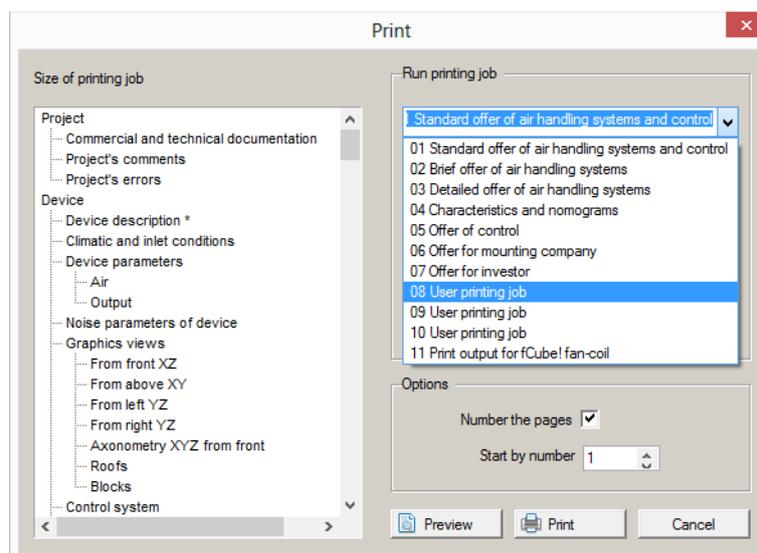


AeroCAD printouts are carried out based on the print jobs which determine what information on the given device will be printed. This selection can be made in the *Print-out Settings* dialogue (*Project* menu).

The number of print jobs is limited to 11, where the first eight are pre-defined and the remaining three are customizable.

### To print out device documentation:

1. Create and calculate the device.
2. Open the print dialogue (menu *Project – Print*) or print icon button in the horizontal toolbar.
3. Select the printout in accordance with the documentation to be printed.
4. If you wish, you can check the output using print preview.
5. Use the *Print* button to continue to the printer selection and to print the document.



## Data Export



Data on each device can be exported from the AeroCAD program to a file. The following formats are supported:

- **Image (bitmap)** – Current device view is stored as an image in the file.
- **Three-dimensional model (3D DXF)** – A three-dimensional model of the current device is stored as a DXF file.
- **Two-dimensional drawing (2D DXF)** – Six basic views of the current device are exported as DXF drawings.
- **ZIP Archive (3D DXF and 2D DXF)** – All views of all devices are exported into a ZIP archive.
- **Excel** – A summary of all device components, including additional information, is exported as an MS Excel table.

The export command is available via:

- Horizontal toolbar
- Shortcut
- Main menu: *Project – Export*

## Sending the Project by E-mail



Providing your e-mail client is properly installed and configured, it is possible to include the current project into an e-mail message and send it. This function can be accessed via the *Send by E-mail* item from the *File* menu of the current project.

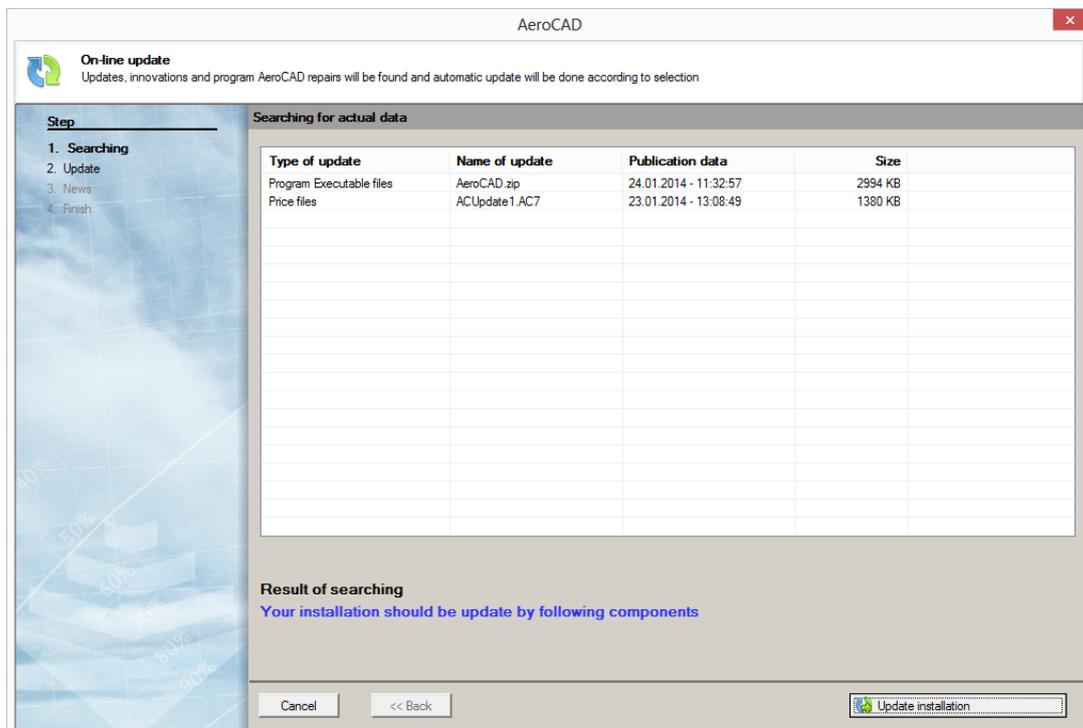
## Support

### Program Update

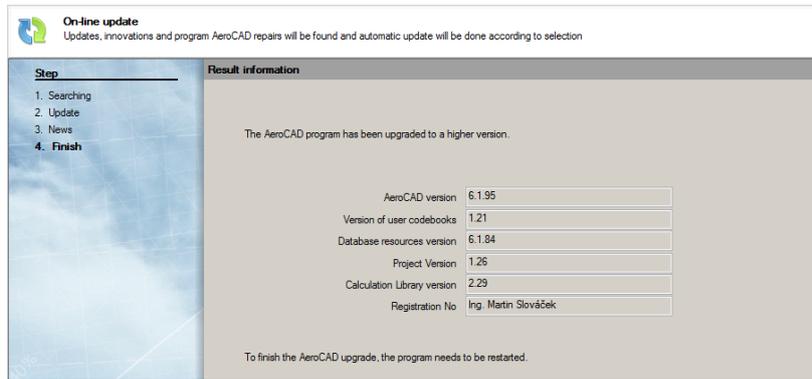


As proper program functionality directly depends on up-to-date input source data, updates are checked whenever the program is started. It is also possible to start this check using the *Help - Check available updates* option from the main menu.

In case new data are available, a request for update start will be displayed. Once confirmed, the update wizard will be opened. First a blank update list will be displayed. Press the *Update look up* button and the update list will be loaded and the update items will be displayed:



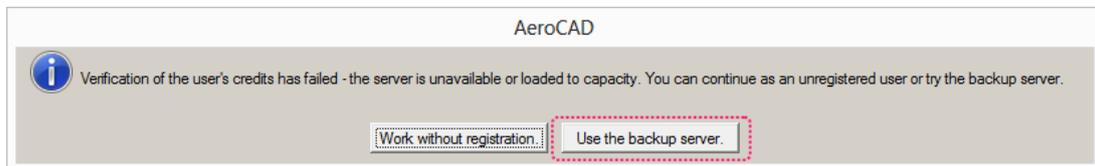
Start the update by clicking the *Update installation* button. This process can take several seconds depending on the amount of updated data and your internet connection speed. As soon as the update has finished, the wizard will take you to the final review.:



It is necessary to restart the program to finish this process. After that, the update is complete.

## Verifying User Access Rights

Upon each start-up, current user rights are verified. In case of main server failure due to overloading, an independent backup server is available. If the AeroCAD program detects unavailability of the primary server, the following query will be displayed:



Click the *Use Backup Server* button to select alternate verification of user rights. If this backup also fails, please check your PC internet connection, especially firewall settings.

# Program Shortcuts

## Shortcuts for work with mouse

Selection	<b>Esc</b>
View Rotation	<b>R</b> / middle mouse button
View-Move	<b>M</b> / <i>Shift + middle mouse button</i>
Zoom	<b>Z</b> / mouse wheel

## Project

Create new project	<b>Ctrl + N</b>
Open project	<b>Ctrl + O</b>
Close project	<b>Ctrl + W</b>
Save project	<b>Ctrl + S</b>
Save project as...	<b>Ctrl + Shift + S</b>
Export project	<b>Ctrl + Shift + E</b>
Project information	<b>Ctrl + I</b>
Project lock	<b>Ctrl + L</b>
Print preview	<b>Ctrl + Shift + P</b>
Print	<b>Ctrl + P</b>

## Edit

Undo	<b>Ctrl + Z</b>
Redo	<b>Ctrl + Y</b>
Copy object to the clipboard	<b>Ctrl + C</b>
Paste	<b>Ctrl + V</b>
Multiple changes	<b>Ctrl + H</b>

## Work with objects

Add device to the project	<b>Shift + Num +</b>
Rename the device	<b>F2</b>
Edit device parameters	<b>Alt + Enter</b>
Remove device	<b>Ctrl + Shift + Del</b>
Move to another device in the tree	<b>Ctrl + Tab</b>
Add component to device	<b>Num +</b>
View highlighted component parameters	<b>Shift + Enter</b>
Edit component parameters	<b>Enter</b>
Remove highlighted component	<b>Del</b>
Remove all components	<b>Shift + Del</b>
Join highlighted components	<b>Ctrl + J</b>
Insert between selected components	<b>Num +</b>
Group highlighted components in block	<b>Shift + B</b>
Highlight all components in active block	<b>Ctrl + B</b>
Highlight all components in device	<b>Ctrl + A</b>

Remove block	<b>Ctrl + Shift + B</b>
Insert frame or roof	<b>F</b>
Remove frame or roof	<b>Shift + F</b>
Change to left-hand device arrangement	<b>Shift + L</b>
Change to right-hand device arrangement	<b>Shift + P</b>

## Display Layout

Show data	<b>F5</b>
Show 3D model	<b>F6</b>
Switch display of selection tree	<b>Ctrl + Shift + T</b>
Switch display of detail panel	<b>Ctrl + Shift + D</b>
Switch view: left side	<b>1</b>
Switch view: right side	<b>2</b>
Switch view: front	<b>3</b>
Switch view: rear	<b>4</b>
Switch view: top	<b>5</b>
Switch view: bottom	<b>6</b>
Switch view: rear axonometric XZ	<b>7</b>
Switch view: front axonometric XZ	<b>8</b>
Search selection tree	<b>Ctrl + F</b>

## Services

Device calculation	<b>Ctrl + Enter</b>
Device completion	<b>D</b>
Sales	<b>S</b>
Component verification	<b>V</b>
LCC calculation	<b>L</b>
Swimming-pool unit	<b>B</b>
Production section	<b>Ctrl + E</b>
Dealer section	<b>Ctrl + D</b>

## General

Program help	<b>F1</b>
Registration wizard	<b>Ctrl + R</b>
Exit program	<b>Alt + F4</b>