



# MagiCAD for Revit

Release notes for version 2020 UR-1

08/11/2019

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## 1 New features 2020 UR-1

### 1.1 Common features

#### BCF manager now supports also linked models

The element search in BCF manager has been improved in cases the linked model is opened separately. Now the element is found correctly also in this case.

This improvement supports also the cases when a mechanical project has been linked to an electrical model and then an electrical model has been linked to a mechanical project.

In both cases the element is found if the element has been added to the BCF manager by using the clash checking.

#### Clean Up & Deliver improvements

Added a warning message in case the command is run in an unsaved project

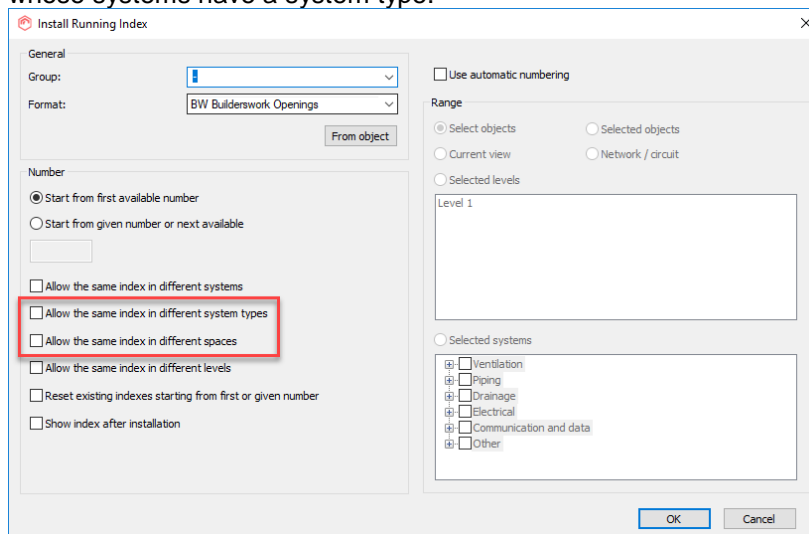
- URL data is removed
- Schneider electric Product data is removed
- Added "MC Frame Size" parameter value reset with "Remove Schneider electric product data (from all content)" option
- The electrical circuit category has been added

#### Improvements to running index

- *Running index range selection - by system:* The installation and removal of the running index dialogs allow to select one or more systems as the range. This works when the automatic mode is enabled.
- *Running index for Connection Nodes:* The running index supports connection nodes and circulation points and manage running index supports different formats for different disciplines.
- *New running index options for the systems types and spaces*

Running index installation now supports "Allow the same index in different system types" and "Allow the same index in different spaces" options.

Note that "Allow the same index in different system types" works only with the elements whose systems have a system type.



### New object types in Running Index Format

Added separate selection of the fittings in the running index formats.

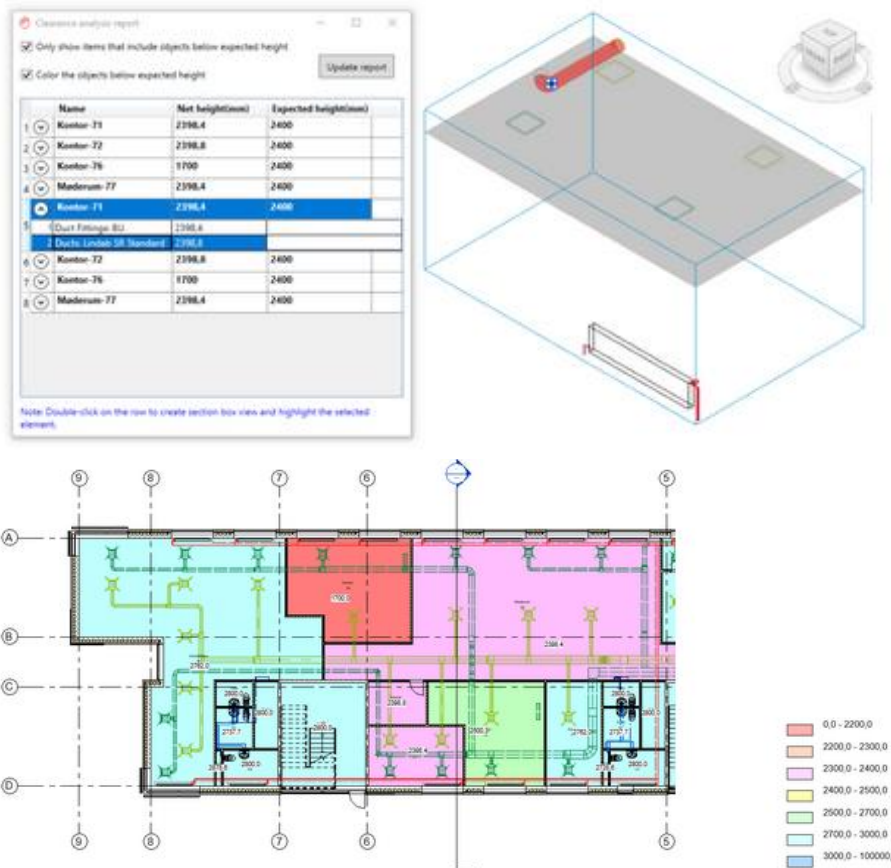
### New function for live and on-demand Clearance analyse of MEP, Supports & Hangers and Structural elements

To ensure the desired free height from floor to lowest MEP objects, MagiCAD 2010 UR-1 has a "Clearance Analysis" tool. You can set colours according to this free height – or even get feedback in real time when modelling.

Based on clearance settings, colour can be set to plan drawings according to minimum height from floor to lowest hanging MEP objects. This can be done in active view or in a separate view. The basis for this analysis are rooms, spaces or regions. Alternatively, the colouring can be done based on a user defined grid.

The result can be presented in a report or as a coloured plan. If objects are hanging too low, they can be highlighted and found in a 3D section box.

Users can define the minimum height and the object types which can be ignored from the analysis, like radiators and switches.



### **Parameters that are not user modifiable or which have storage type Element ID can now be added to parameters lists of BOM and IFC property set manager**

New parameter types can be added to BOM and IFC property set manager

- MC user code parameter
- parameters that are not user modifiable (e.g. The MC Sound Level... parameters)
- which have storage type Element ID (e.g Image parameters like MC Company logo)

However, they cannot be selected for

- parameters for schematic symbols (Modify dataset -> Schematics -> Edit parameters)
- additional parameters for products (Modify dataset -> Select some product -> Additional properties -> Configure for Shared parameters)

## **1.2 Heating, piping and ventilation**

### **Component insertion with "Smart" has been implemented to 3D view**

The "Smart" installation of the components in 3D-view has been taken into use. Earlier the smart installation was changed to "Auto size" mode in 3D-view.

Installation to the vertical segment in 3D, section and elevation views is changed so that instead of showing a height level dialog, the component is installed at the clicked point.

An error message is shown if the view is changed during the product installation.

### **Improved calculations of reducers in the ventilation systems**

Changed "Default calculation" or reducers according to Cibse C standard. This change affects to rectangular/rectangular and rectangular/round reducers.

### **Multiple selection of fire hydrant of calculation area assignation**

Multiple fire hydrants can be assigned to fire hydrant design areas at the same time. This can be done either by area selection or clicking the fire hydrants separately. Deselection can be done by clicking a selected fire hydrant.

again. Also the process is repeated as long as the user presses ESC. Earlier the user needed to restart the command for each fire hydrant separately.

### **Unable to calculate sprinkler network when there are over 100 degree elbows**

When sprinklers are placed to oblique pipe, the elbow angle can often be over 100° which caused the sprinkler calculation to fail. This was due to the reason that if the elbow angle was > 100 degrees, MagiCAD handled that as an unknown object. Now the upper limit has now been increased to 130 degrees and elbows  $67.5 < \text{Angle} \leq 130$  are handled as 90 degree elbows in the sprinkler calculation.

### **Support for alignment and sizing method selection added to Pipe connection tool + UI enhancements**

- Added new alignment buttons for the branch offset. These are enabled only in case when the horizontal distance difference of the pipes is bigger than vertical.
- Added possibilities to add the branch offset only for one pipe.
- When the pipes are on top of each others, then a new dX button images in shown.
- The sizing method has been added
- Progress bar has been added when the pipes are created and connected to the radiator. This prevents the dialog becoming hidden when UI goes to not responding state while the pipe connections are done.

### Support for the booster pump in domestic water networks

Support for the booster pumps has been added to domestic water systems.

The pressure rise at the booster pumps is calculated as if the pump works with full power. ie, the pressure rise is the value at the pump curve with the calculated flow.

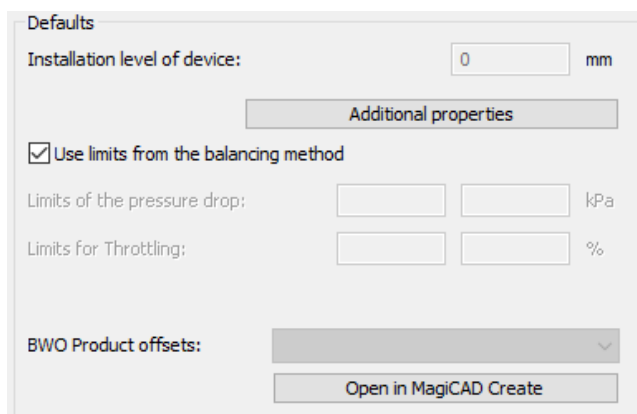
### Using 3rd party RFA with balancing and sound data

It is possible to use MagiCAD Create to insert pressure drop and sound data to 3rd party RFA families. At the moment data can be entered to

Ventilation: Air terminals, flow dampers, fire dampers, silencer, other air components

Piping: Radiator valves, zone valves, stop valves, other valves and other pipe components

In the dataset click the "Open in MagiCAD Create" to enter the data to the 3rd party product. Note that it is not possible to change data of objects retrieved from MagiCAD's own database.



Defaults

Installation level of device:  mm

Use limits from the balancing method

Limits of the pressure drop:   kPa

Limits for Throttling:   %

BWO Product offsets:

If the 3rd party RFA family contains information about several sizes, you can enter separate data to all the sizes. Also MagiCAD's smart installation finds the correct object size according to the pipe/duct size to which the object is installed. MagiCAD sizing does not yet support sizing of 3rd party objects.

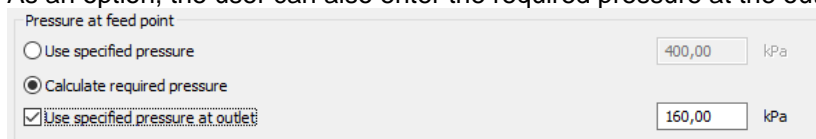
### Constant flow valves

Now a warning is shown in cases the flow is below minimum or above maximum

### Calculation of needed system pressure for DWS

New option to calculate the needed system pressure for the domestic water systems. This option calculates the needed pressure at the root of the system allowing the possibility to check if a booster pump is needed.

As an option, the user can also enter the required pressure at the outlets.



Pressure at feed point

Use specified pressure  kPa

Calculate required pressure

Use specified pressure at outlet  kPa

### Swiss SES sprinkler standard is now supported

Added support for Swiss SES sprinkler calculation standard.

Changed the report of the equivalent lengths in the report. Earlier when there were reducers with the other size the same and the other size different like 80/50 or 80/40, only the size 80 was shown. Now all sizes are shown on separate lines. This is important with the Swiss standard since Leqv is taken from the bigger size and multiplied with 3 or 9 depending in the size difference.

### Possibility to enter the separate zone valve size to the pipe series

The zone valve size has been added for the pipe series. This gives a possibility to use e.g a smaller zone valve size for certain pipe sizes.

The given zone valve size is used when the zone valve is installed (if using smart option) and when sizing is run on the piping systems.

Size	Din	Dout	Valve size	Zone valve size
10	13.6	17.2	10	10
15	17.3	21.3	15	10
20	22.3	26.7	20	15
25	28.5	33.7	25	20

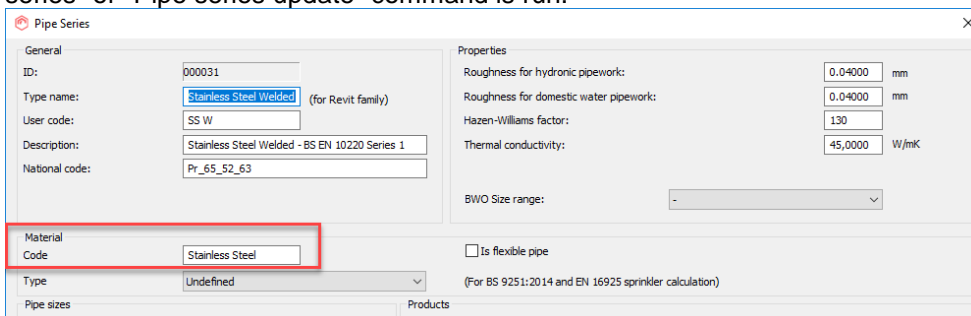
### Improvement of the calculation of the differential pressure valves

There are two new features in the calculation of the differential pressure valves.

1. The user doesn't need to enter the differential pressure anymore. Instead MagiCAD calculates the needed pressure and sets it to the minimum value. The minimum value can be either the minimum set value of the valve or the dp of the loop.
2. The partner valve can be now either inside or outside of the loop. Inside the loop is a new option and means that the pressure drop of the partner valve is added to the loop pressure.

### Material parameter for pipe segments has been created

Material code value is set to the parameter "MC material code" for the pipe segments when "Pipe series" or "Pipe series update" command is run.



The screenshot shows the 'Pipe Series' dialog box with the following fields:

- General: ID: 000031, Type name: Stainless Steel Welded (for Revit family), User code: SS W, Description: Stainless Steel Welded - BS EN 10220 Series 1, National code: Pr\_65\_52\_63
- Properties: Roughness for hydronic pipework: 0,04000 mm, Roughness for domestic water pipework: 0,04000 mm, Hazen-Williams factor: 130, Thermal conductivity: 45,0000 W/mK, BWO Size range: -
- Material Code: Stainless Steel (highlighted with a red box)
- Type: Undefined
- Is flexible pipe:
- Products: (For BS 9251:2014 and EN 16925 sprinkler calculation)

### Pressure drop calculation of the piping network without balancing

It is now possible to calculate only the pressure losses of the piping networks without balancing. This calculation has also option to do a simplified calculation without any MagiCAD product data.



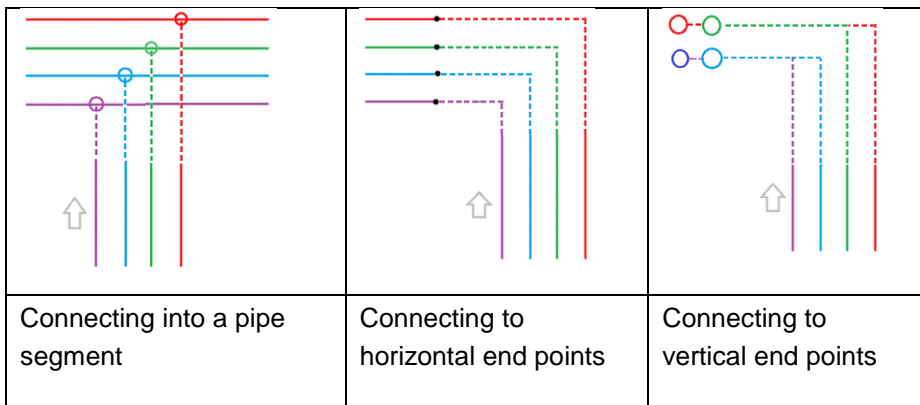


**Access panels can now be used with merge parameter**

The access panels have been added to merge parameter configuration. They can be found under Ventilation/Duct Accessories.

**Multiple segment selection support - Standard Connection Tool**

Standard connection supports now connections of several pipes at the same time. The angles are according to single standard connection tool. The first segment connection selection is used for all other segment connections

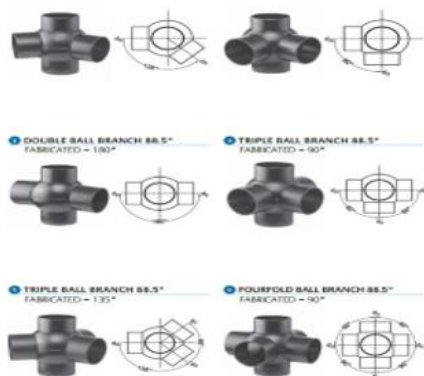


**Supporting taps in pipe connection tools**

A support for taps is added to pipe connection, standard connection, drainage and sprinkler connection routines. The taps can also be used in the multi radiator connection, while earlier the tees or X-branches were the only choices. Corrected some errors in the routing. For example multi radiator connection works now better in case the main pipe is below the radiators

**Support for N-branch categories in drainage calculations**

Added possibility to select N-branch to the drainage pipe series. N-branches are supported in the flow calculation of the drainage systems. A consequence of this, the buttons in the pipe, duct and cable series dialogs have been re-arranged. Some examples of multiport families are below



### 1.3 Electrical

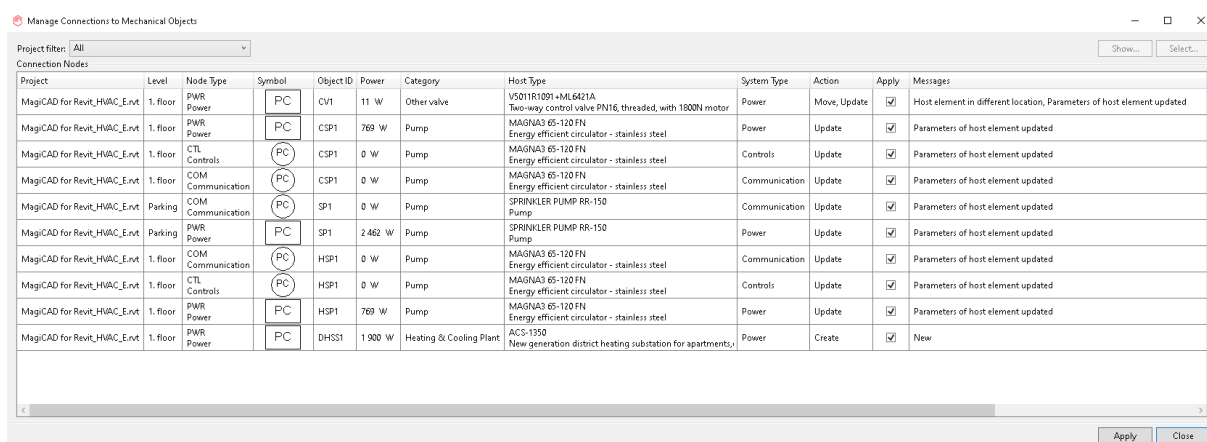
#### Connections to Mechanical

Now it is possible to create connection nodes for the possible electrical connectors that exist in mechanical families in the current project or in any linked project.

When using the function, it will show a report from every connection node that can be created or exists already in the current project.

Default symbols for new nodes will become selected based on the definitions made in the dataset.

Symbols can be changed manually by using the "Select..." button when one or more rows have been selected active.



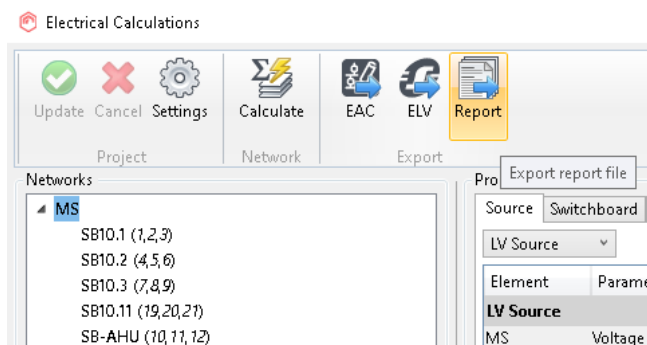
Project	Level	Node Type	Symbol	Object ID	Power	Category	Host Type	System Type	Action	Apply	Messages
MagiCAD for Revit_HVAC_E.rvt	1. floor	PWR Power	PC	CV1	11 W	Other valve	V5011R1021+ML6421A Two-way control valve PN16, threaded, with 1800N motor	Power	Move, Update	<input checked="" type="checkbox"/>	Host element in different location, Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	1. floor	PWR Power	PC	CSP1	769 W	Pump	MAGNA3 65-120 FN Energy efficient circulator - stainless steel	Power	Update	<input checked="" type="checkbox"/>	Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	1. floor	CTL Controls	PC	CSP1	0 W	Pump	MAGNA3 65-120 FN Energy efficient circulator - stainless steel	Controls	Update	<input checked="" type="checkbox"/>	Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	1. floor	COM Communication	PC	CSP1	0 W	Pump	MAGNA3 65-120 FN Energy efficient circulator - stainless steel	Communication	Update	<input checked="" type="checkbox"/>	Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	Parking	COM Communication	PC	SP1	0 W	Pump	SPRINKLER PUMP RR-150 Pump	Communication	Update	<input checked="" type="checkbox"/>	Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	Parking	PWR Power	PC	SP1	2.462 W	Pump	SPRINKLER PUMP RR-150 Pump	Power	Update	<input checked="" type="checkbox"/>	Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	1. floor	COM Communication	PC	HSP1	0 W	Pump	MAGNA3 65-120 FN Energy efficient circulator - stainless steel	Communication	Update	<input checked="" type="checkbox"/>	Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	1. floor	CTL Controls	PC	HSP1	0 W	Pump	MAGNA3 65-120 FN Energy efficient circulator - stainless steel	Controls	Update	<input checked="" type="checkbox"/>	Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	1. floor	PWR Power	PC	HSP1	769 W	Pump	MAGNA3 65-120 FN Energy efficient circulator - stainless steel	Power	Update	<input checked="" type="checkbox"/>	Parameters of host element updated
MagiCAD for Revit_HVAC_E.rvt	1. floor	PWR Power	PC	DHSS1	1.900 W	Heating & Cooling Plant	ACS-1350 New generation district heating substation for apartment...	Power	Create	<input checked="" type="checkbox"/>	New

From the dialogue it is also possible to show where a mechanical device is located by using the "Show..." button. This will open a new window with a 3D section box showing the surroundings of the mechanical object and an arrow pointing to the location of the connector.

Messages show where new nodes are needed and what kind of changes have been done to the mechanical devices that already have connection nodes created for their electrical connectors. Together with the "Apply" checkboxes and the "Apply" button you can apply the changes to the nodes. This means whenever creating, updating, moving or removing connection nodes.

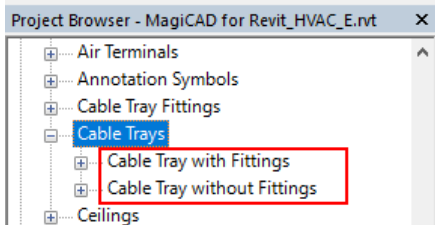
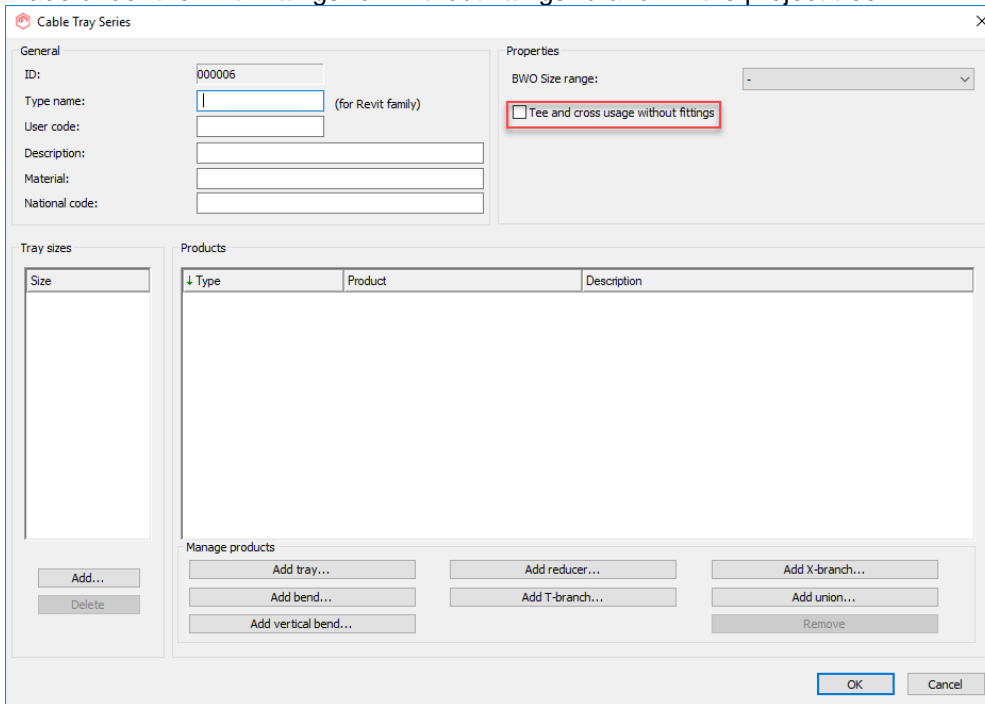
#### Exporting an electrical report from the calculation dialogue

Now you can export an electrical report from the electrical calculations dialogue. The file is saved as a Microsoft Word document



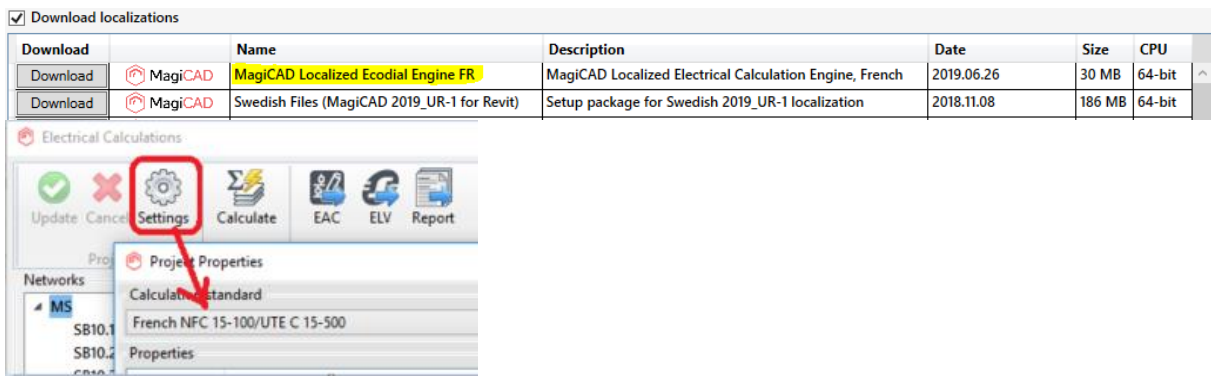
**Selection in the dataset for trays and conduits to be used with or without tees and crosses**

When creating cable tray or conduit series, a checkbox has been added whether the series will be made under the "with fittings" or "without fittings" branch in the project tree.



**Support for localized calculation engines**

Localized calculation engine support has been added into "Electrical Calculations". Under "Download localizations" in "Check for Updates" you can get e.g. the French calculation engine by downloading the corresponding calculation engine installer from the update server. Once the engine is installed, it can be selected to be used from "Settings" in the "Electrical Calculations" dialogue.



**Support labels and texts of 2D symbols in existing functionalities (Symbol Organiser and Legend Tool)**

Texts and labels of converted 2D symbols are now supported in the Symbol Organiser and the Legend Tool. The size they take up is taken into account when calculating the bounding boxes of the 2D symbols.

**Supporting conduit connectors in e/c/d/ba products (MCREV)**

Whenever there are conduit connectors modeled into products in MagiCAD's databases, they will be created as conduit connectors into the generated families in Revit.

**1.4 Schematics****Line splitting tool**

Line splitting tool enables splitting of the ducts/pipes. This makes it possible e.g. to tag each segment when the flow changes at each t-branch.

## 2 Resolved issues

### 2.1 Common issues

#### Performance of the product installation has been improved

The command performance has been improved so that the dialog opens much faster than earlier.

#### Corrections to product installation

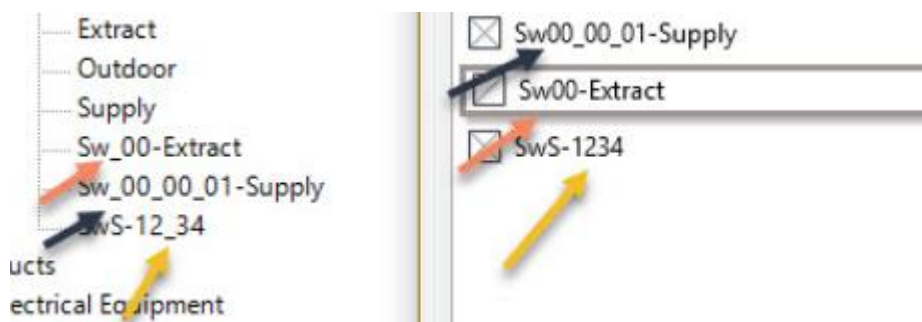
The following errors have been corrected

- Corrected a crash when dataset was changed between two consecutive climate beam installation.
- Corrected a crash when create similar was used for the switchboard.
- Corrected an error where changing the part type to the switchboard didn't reset the properties and the preview image.

#### The first underline character was missing from the system name

The first underline character was missing from the following dialogs

- Test duct, pipe, conduit and cable tray drawing dialog system and curve type list.
- Wire drawing tool: installation code list, select tag dialog (tag name)
- Set circuit properties- dialog: installation code list. Fixed also alignment for installation code and rating combo box text.
- Sheet manager settings: Parameter list. Sheet manager parameter column header.
- Spread sheet export: level list.
- Legend tool: level list
- Split segment: All curve type list.
- Install Y-fitting in curve drawing: Fitting list
- Install S-fitting in curve drawing: Fitting list
- Install N-fitting in curve drawing: Fitting list



This error is corrected

#### RFA filename in the portal supports unicode

Family loading is now possible for the RFA files containing Chinese characters.

#### MagiCAD Create disabled for generic product in windows 7

This works correctly now

### **Number of similar isn't found when filtering for it for a report template**

Now also "Number of similar" parameter can be filtered correctly in the parameter tree.

### **Clash detection was not working in certain environments**

Clash detection was using some Windows dll files, which were not always present at the computers. The dependencies to these dll files has been removed and clash detection works correctly now on all the environments.

### **BCFmanager did not always create a report file**

It error occurred in cases BCF manager contains categories which the clash functionality doesn't support.

This error is now corrected.

## **2.2 Heating, piping and ventilation**

### **Elevation was not updated with "Update parameters" for 3rd party mechanical equipments**

This happened if a 3rd party mechanical equipment was inserted to a project directly with Revit command without first inserting it to the dataset.

Elevation is now updated also to those families.

### **Vertical crossing doesn't work for a duct which has been connected to a flexible duct/pipe**

Corrected an error which has occurred when an analytical connection support has been done. Vertical crossing command stopped without any warning or error message.

This happened when a duct/pipe was directly connected to a flexible duct/pipe without a fitting.

Now vertical crossing works correctly in those cases.

### **Demolished products gave an "Unexpected error" message with some MagiCAD functions.**

Corrected the functions that use space/room information in projects with multiple phases and demolished objects.

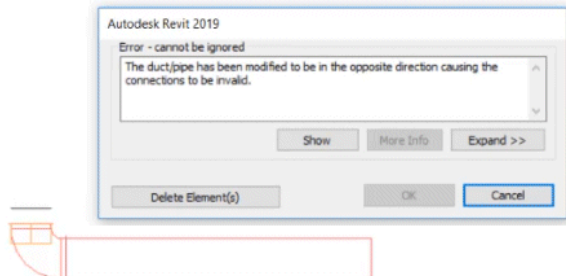
An example of such function is MagiCAD's "Space Sound Calculation".

### **Standard connection created an incorrect duct/pipe size**

When a duct/pipe is created with a standard connection between two T-branches or a T-branch and a bend, MagiCAD sometimes created a duct/pipe which had an incorrect size. This happened because MagiCAD used the random size of the fitting. This is corrected and now MagiCAD uses the size of the connector where the connection is made to. Also if the connectors are not of the same size a reducer is created. Earlier the connections were made without reducers.



**Unexpected error happened when a duct segment before the connection node is very short.**  
Corrected the setting of the duct size for the ventilation connection node. This corrects the problem with a very short duct segment where a reduction is needed.

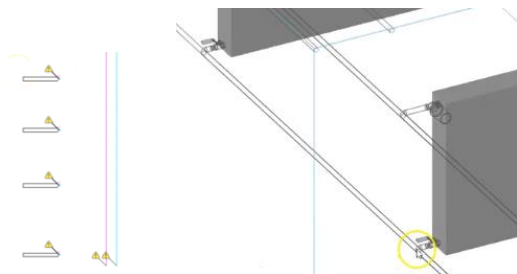


### **Branch selection is no more possible in the Extended Flow Analysis**

Although "Extended Flow Analysis" is intended for calculating the whole network, it was possible to select a branch if the user had used the branch selection in some other ventilation calculation options. Now the flow analysis is always done to whole network.

### **Pipe connection tool failed to connect**

Pipe connection tool failed to connect correctly when the radiators are perpendicular to the main pipes. It connects every radiator at the same location of the main pipe, not individually. Thus there were multiple pipes on top of each other and each radiator was connected with an elbow instead of tee.



The connection works correctly now.

Other minor improvements have also been done to the pipe connection tool.

- Angled valve usage improved
- Improved reliability of the multi routing floor connection
- Connection to fan coils and climate beams have been improved in cases they have four connectors of which two connectors belong to the same system type.

### **Calculation doesn't write total flow for manifold**

The total flow of the manifold is written to the "MC Piping Flow" parameter (main port flow)

### **Placeholders in the network caused unexpected errors with some functions**

Placeholders are not supported in MagiCAD command when "network" range is selected. An error message is shown and the command is ended.

Affected commands were: All calculations, change property, change system, split segments.

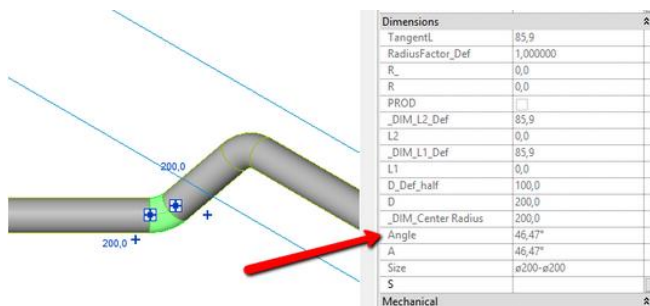
### Angle to horizontal with a flexible pipe caused an unexpected error

If the user starts to draw a branch with a flexible pipe from the main pipe and uses angle to horizontal, MagiCAD caused an unexpected error.

This is corrected by removing the flexible pipe series from the pipe series selection dialog.

### Standard connection didn't use standard bends

Quite often the angle of the elbows were not standard angles, but with small deviations like 1-3 degrees. This is now corrected.



### Flow/LU is not updated to the default value of the appliance type when the appliance type is changed for the first time/Domestic water and sewer device installation dialogs

This occurred only when the appliance type was changed for the first time. When the appliance type was changed for the second time everything worked correctly.

Now the flow/LU is updated correctly also when the appliance type is changed for the first time.

### In some cases MagiCAD gave an error when cap is created

This problem is corrected.

### 2D-symbol was not attached to the product when it was added to the dataset via "Family from disk"

The 2D-symbol is now attached correctly to air terminals, air handling units and water points. This correction applies also to the air flow arrows of the air terminals and climate beams.

Note: If only one symbol is selected to the 3rd party water point, the second symbol cannot be added to RFA after the product is installed for the first time. The symbol replacement does not work, even though 2nd symbol can be added to the dataset.

### Air flow arrow was drawn incorrectly

In some cases the air flow arrow was drawn to an incorrect direction.

### Sizing created sometimes an empty space between the reduction and the fitting



This is corrected

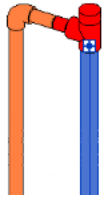


### **Sprinkler connection does not work when the sprinklers are directly under/above main pipe**

This error is corrected. The error has appeared after 2018 UR-3 where it worked correctly.

### **Error message in domestic water calculation**

The calculation of the circulation system failed if a plug was attached directly to a t-branch. The error occurred French, German and UK circulation standards, but not when the user entered the flow at the circulation point.



## **2.3 Electrical**

### **Manage Circuits slow in some projects**

Performance has been improved for all switchboard schematic functionalities.

### **Apparent load in luminaires handled incorrectly**

Previously the apparent load in lighting fixture families was set incorrectly when the UI language was something else than English.

### **Update Cable Packet caused unexpected error if a wire type for a circuit was not selected**

Previously, if Revit's wire type was set to <none> and you tried to do a cable packet connection either with "Create cable packet connection" or drawing a wire to a cable packet, a warning was given that no wire type was selected and no cable packet connection was made.

### **Cable packet start point was reset when connecting to the start segment**

If you connected a wire or made a logical cable packet connection to a cable packet's first segment, which was defined as the start point with the "MC is Cable route start point" checkbox, it was splitted and the start point setting could have been reset. Now the setting will be left active to the part which has an open end.

### **Conduit fittings didn't get property sets in IFC Export**

The property set configuration file delivered with MagiCAD did not have property sets selected for conduit fittings. This has been corrected.

### **Errors in switchboard schematics**

Previously you got an unexpected error if a data block family's type name did not contain the text "DATA" or "FEEDER". Also, when moving circuits in the schematic sheets with the Manage Circuits function, parameter values were not maintained for custom parameters. Both issues have been fixed.

### **Cannot use Actual load values in spaces with Link spaces to switchboard function**

Loads were not calculated correctly from spaces to switchboard if user had selected "Actual loads" from "Electrical Loads" dialog of spaces. Now all loads are calculated correctly from spaces.

## 2.4 Schematics

### **Parameters set for symbols of the schematics module works strangely**

The parameter definitions for schematic symbols has been changed so that all the parameters are not automatically added to project.

Earlier there were also a lot of "useless" parameters concerning the ventilation properties, which was annoying when an electrical symbol was handled.