MagiCAD for Revit

Release notes for version 2021 UR-2

03/02/2021

MagiCAD

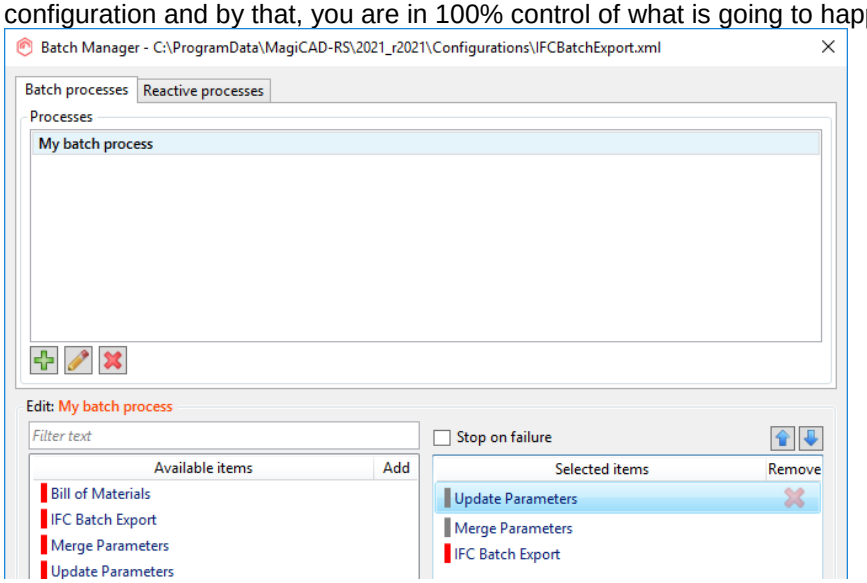
Content

1 New features 2021 UR-2

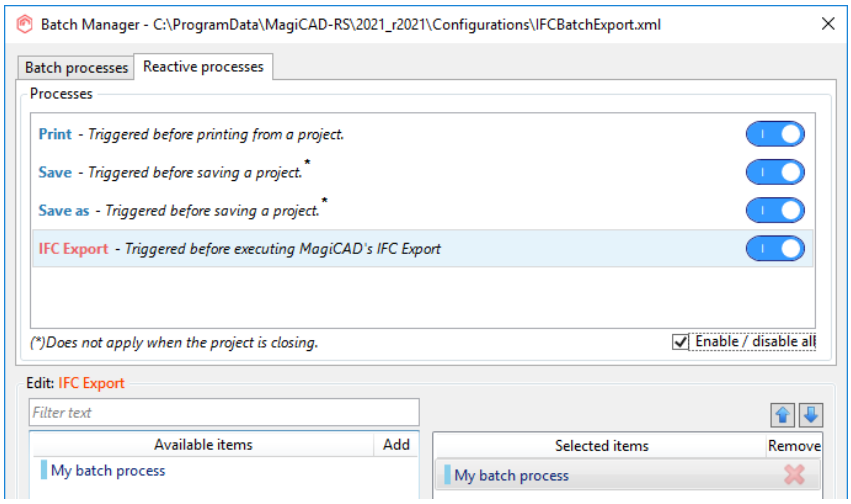
1.1 Common features

Batch processes and reactive processes
MagiCAD Batch Manager has two type of configurable processes. Batch processes and Reactive Processes.

You can configure a batch process by selecting one or more MagiCAD features to be executed. You just name the configuration and select the desired feature(s). Every feature can have a unique configuration and by that, you are in 100% control of what is going to happen in the batch process.



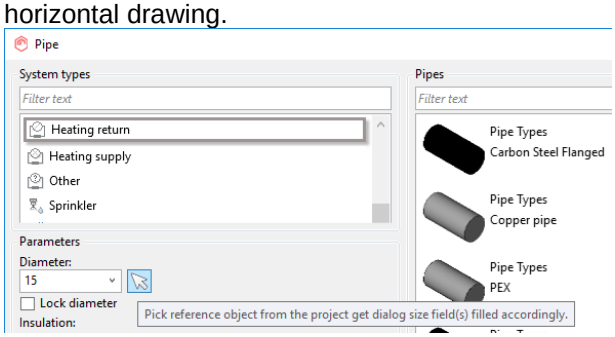
As an updated model is vital before save or any sort of export, the reactive process is an important supplementary feature – that helps you not to forget!
Add one or more batch processes to be triggered before print, save, save as or IFC export. In that way, MagiCAD will remember if you forget. Your saved models and exports will always be updated.



Object ID format has been added to the dataset
The purpose of the Object ID formats is to create parameter strings, similar to merge parameter strings. The difference is that the Object ID formats is targeting each individual product family while merge parameter strings targets the product category (e.g. supply air terminal). These Object ID´s are needed for multiple purposes in a project, e.g. for logistic and facility management reasons.
More information here

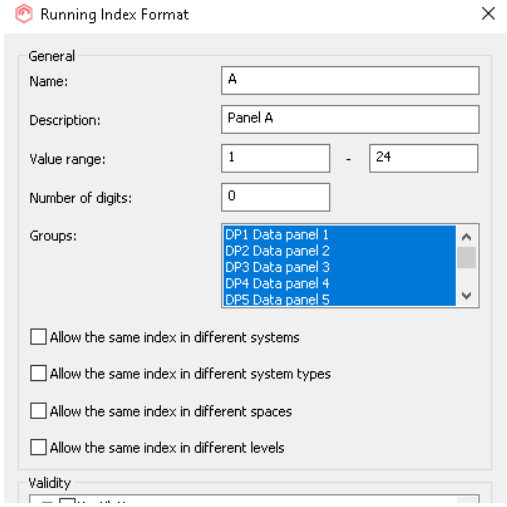
Sheet Manager - Edit Existing Sheet Configurations
It is now possible to use the sheet manager to edit the sheets after they've been created.
More information here

Pick size - drawing tools upgrade
Added "Pick size" feature for duct, pipe, cable tray, and conduit objects in normal, 3D, and Angle to horizontal drawing.



Performance improvement
Performance improvements in Running Index commands (related to the handling of text notes with running index information)

Using the same Running Index format in several groups
Now you can use a Running Index numbering rule in several Running Index Groups. This way you can avoid the need of defining several similar numbering formats for all the groups that need such.



Function preventing creation of provisions if a manual builderswork provision exist
We have added a new setting to the creation of the automatic builderswork openings.
"Do not create provisions if manual provision already exists"
This option controls whether provisions are automatically created in the areas which are enclosed by the existing manual provisions.

Provision for Builders works openings support for air terminals
MagiCAD now supports Provision for Builderswork Opening for the air terminals inside a wall.
For example the transfer air terminals in a wall between the office and the aisle (hallway, corridor...)

Builderswork openings and Owner information update
Automatic Builderswork openings method updates now MC Owner parameter to the existing provisions. If the same owner text is specified for more than one discipline in BWO settings, it is included only once in the final owner text parameter.
Earlier if there was the same owner of multiple segments, e.g. the Ventilation contractor owns all segment types, MagiCAD created V+V+..

1.2 IFC

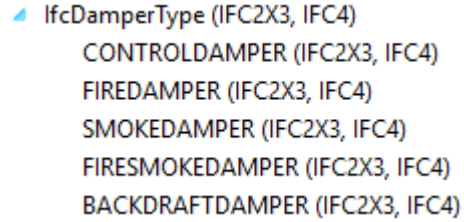
Support for materials
Renewed material handling to meet IFC4 RV requirements. Material is read from MC Material Code parameter.

Support for IfcDistributionSystem in IFC4
Added support for IfcDistributionSystem which is a new entity in IFC4.
IfcDistributionSystem replaces IfcSystem usage in IFC4.

IFC distribution ports support/System Type and Name
Added SystemType, PredefinedType and Port name for IfcDistributionPorts in IFC4 RV 1.2

Added a possibility to select which property type to use in property set properties.
Enumeration, Bounded and Table property value types are added. Single type was used in previous versions.

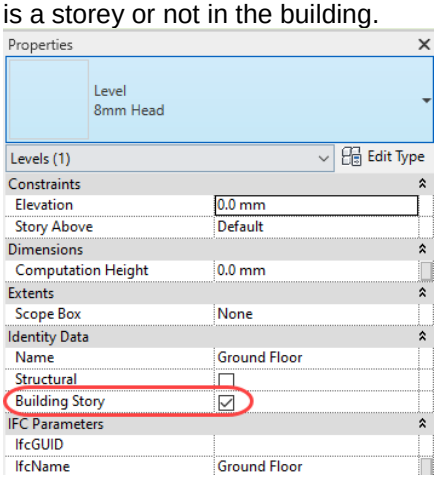
IFCType is in capital letters
Now IFC sub-type strings are in upper case.



Adding missing IFC types for IFC4
Added IFC types:

- IfcCondenserType
- IfcEvaporatorType
- IfcAirToAirHeatRecoveryType
- IfcMedicalDeviceType
- IfcBoilerType
- IfcBurnerType
- IfcChillerType
- IfcEngineType
- IfcEvaporativeCoolerType
- IfcTubeBundleType
- IfcFlowInstrumentType
- IfcCompressorType.

IFC Export doesn't use levels that are not marked as "building story"
All levels have a checkbox "Building Story" in the level's Revit properties that defines if the level really is a storey or not in the building.



The objects belonging to a level that is NOT a "building story" are now exported belonging to the first found "building story" below it.

IfcSite has now address
Added postal data to IfcSite. It is read from parameters "MC IFC Building Address ..."

File header setting ExchangeRequirement to IFC4 files
ExhangeRequirementView is set to
IfcFile::View::IFC4ReferenceViewWithBuildingServiceExhangeRequirement.

MagiCAD can now separate nested families into their own entities in IFC Export
In earlier version of MagiCAD, the nested became only large blocks in the IFC file instead of multiple individual objects/entities.
We added the option to export shared nested family into separate instances.

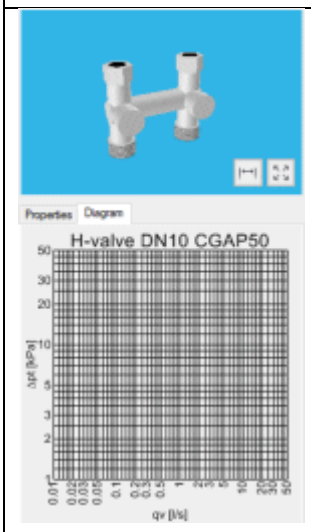
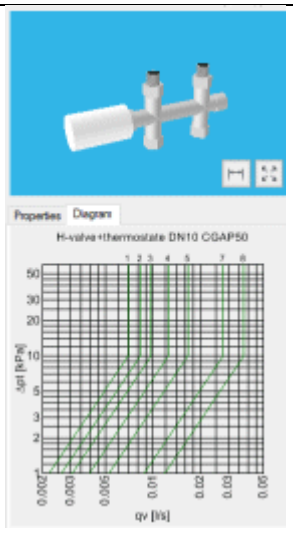
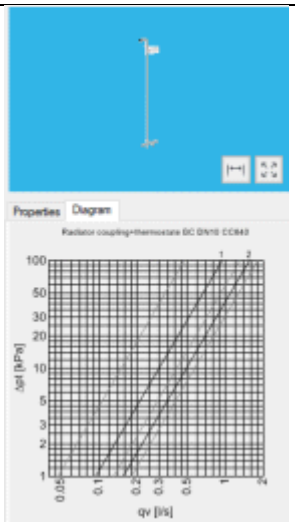
Exporting of cables is now selectable
Earlier versions always exported cables. Now they can be excluded from the export if they are not needed which decreases overall export time.

Export clearance zone geometry can be exported separately or combined to the object
Earlier versions always exported object's clearance zone geometry separately. Now they can be exported as combined to object which decreases overall export time.

1.3 Heating, piping and ventilation

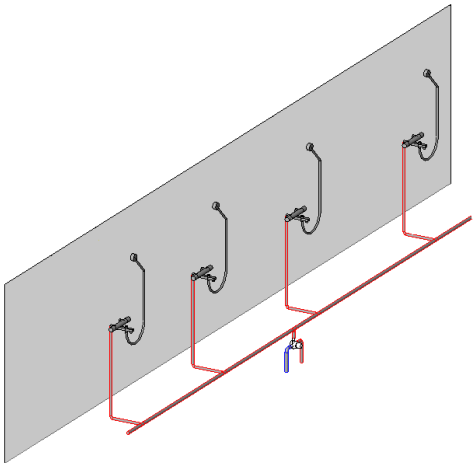
Support for the radiator connection set
Radiator connection sets consists of of pipes with valve sets that can be mounted on any radiator. The connection sets serve partly as a connection point for the supply and the return pipes and partly as regulating-, return- and stop- valve function. Radiator valve with thermostat is either pre-attached or needs to be attached by the user to the connection set to be used for the adjustment. A separate product category "Radiator connection set" is added to the dataset to support radiator connection sets.

MagiCAD supports tree types of connection sets.

A) Bottom connection set without a radiator valve	B) Bottom connection set with an integrated radiator valve	C) Side connection set with an external radiator valve
Requires an external separate radiator valve with a thermostat	Has an integrated radiator valve and a thermostat	Has an external radiator valve and a thermostat
		

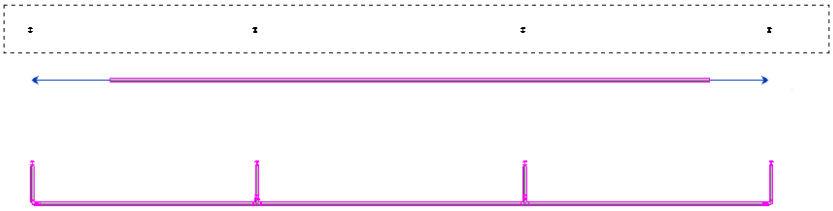
Support for the mixing valve for domestic water networks

In domestic water networks, mixing valves are devices used for pre-mixing hot and cold water for the domestic water devices e.g. showers, electronic taps. Mixing valves usually serve multiple water devices in larger bathrooms like in sports or swimming halls.
MagiCAD now supports mixing valves.



Support for extending the pipe length in the sprinkler connection tool

Earlier version of MagiCAD could not extend the main pipe in the sprinkler connection tool.
Now a support for extending the main pipe length has been added to the inline and the grid connections.



Sprinkler Calculation recalculates the required pressure at the sprinklers when the area of coverage or flow density is changed

Sprinkler pressure level requirement has now separate parameters for the manually given and the calculated values. In case the uses changes the area of coverage or the required flow density, MagiCAD updates the "MC Calculated Pressure Level" parameter when the sprinkler system is calculated.

The bigger of the two values: "MC Calculated Pressure Level" or "MC Required Pressure Level" (manually given) is used when the sprinkler system is calculated.

MC Area of Coverage	14.000 m^2
MC Required Flow Density	10.000000
MC Calculated Pressure L...	49000.00 Pa
MC Required Pressure Level	0.00 Pa

Better error handling in MCREV sizing and product model updater
Sizing and production model updater of pipes and ducts has been improved so they don't end to "duct/pipe has been modified to opposite direction" error message if there is not enough space for a fitting. In those cases the parts are disconnected and all the parts sizes are updated. Also the product selection is done before the error report is shown to user.
BCF manager is used to show the error report in cases there is not enough space for a fitting.

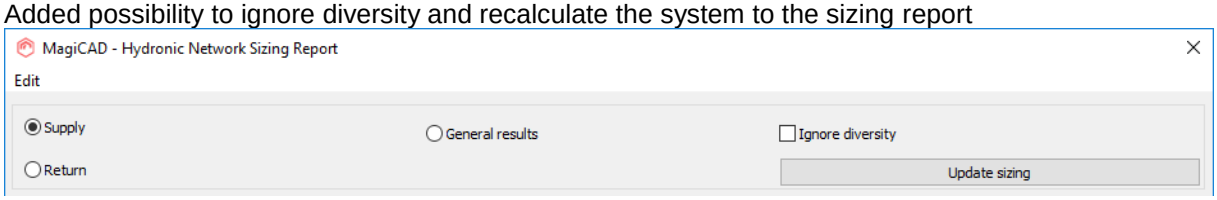
"Pick power from space" option has been added to Radiator Sizing dialog
It is now easier to install a single radiator, or many similar radiators in the same space by picking the space design heating load from the space and split the load on multiple radiators.

Power value for the pipe segments is saved to parameter
MagiCAD now updates the total power from the terminals (radiators, mixing units, fan coils etc) to the parameter "MC Piping power" of the pipes
The total power is also visible in the report.

Node number reference of the highest sound level has been added in the general sound report
The node number of the loudest air terminal is added to the sound report.

Total flow:	2973 l/s
Total pressure:	326.2 Pa
Highest LpA (10 m2 sab) / Node number: 23	40.9 dB

"Ignore diversity" option has been added to the Heating/Cooling sizing report
Added possibility to ignore diversity and recalculate the system to the sizing report

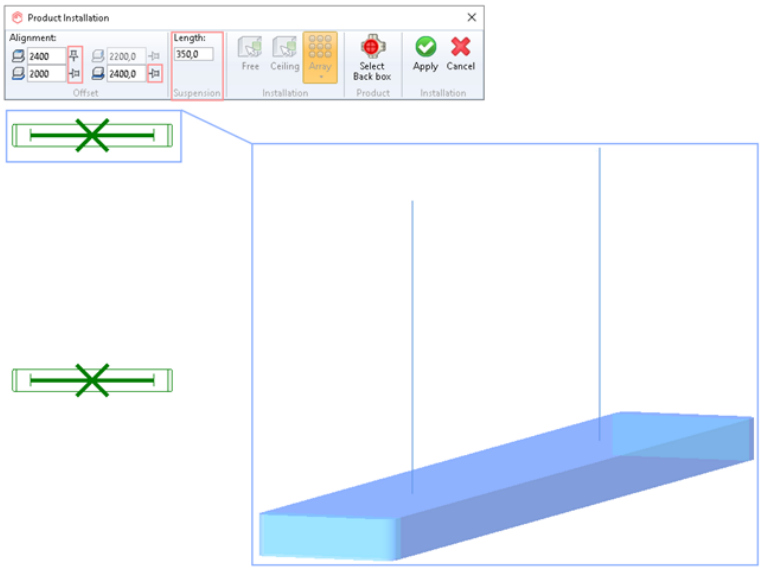


"MC Collar Length" shared parameter has been added
A shared parameter "MC Collar Length" has been added to the air terminal families.
The old "Collar_Length" parameter is still driving the geometry, but its value is assigned to "MC Collar Length" shared parameter. This way we were able to maintain the backward compitibility.

Improved warning text for too high dp/L in the gas sizing
The new warning texts is: "The friction pressure loss exceeds optimal value. Pipe size is locked or pipe series doesn’t contain a larger size."

1.4 Electrical

Suspension lengths for pendant luminaires.
MagiCAD now supports pendant luminaires with adjustable suspension lengths.
NOTE! It is recommended to install these as level based families.



Updating wire data
Updating tick marks to wire instances has been improved. Now a wire instance with the tick mark setting set to "off" will no longer get its tick marks forced to "on" or "automatic" nor the tick mark amounts updated from the wire type. Only when "on" or "calculated" is active, the wire type is checked and tick marks updated accordingly for the instance.

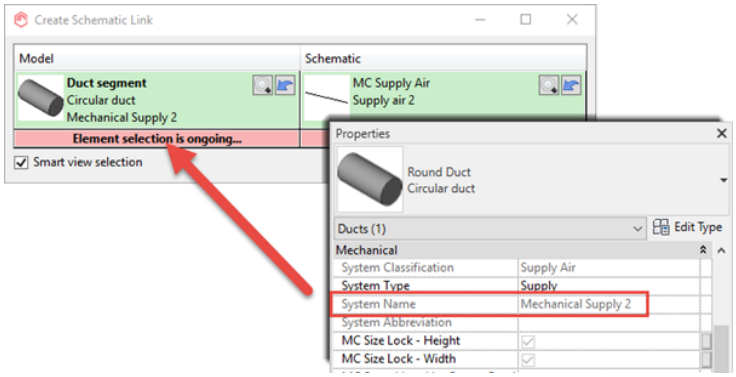
Bigger switchboards
Previously, the maximum width of switchboards was 10m. Now it is increased as much as possible within the internal attribute restrictions. The new maximum is a little over 32m. However, after a switchboard is placed to the model, its size can be freely adjusted.

DIALux Export and Import
Previously, the base offsets of spaces were not taken into account when exporting/importing between MagiCAD and DIALux. It is now handled both in export and import.

1.5 Schematics

Show pipe or duct systems in the schematic link dialogue

Duct and pipe segment system name is now visible when establishing link between line in the schematic view and pipe or duct segment in the model. Since parameter value for MC System Name is visible for the schematic objects, it's now with the latest improvement convenient to check that systems are matching both in schematic view and in the model.



Match properties for detail items in schematics

The new Match Properties tool allows you to easily copy the parameter values of an object to other objects. Entering a parameter value manually to multiple objects is a highly time-consuming and error-prone task. With the Match Properties tool, you can simply select a source object and target objects, and the tool will automatically copy all parameter values with a matching parameter name from the source object to the target objects.

Copying parameters is particularly useful when you have defined a specific value for a line segment or a symbol in a network and the value needs to then be added to other locations in the network, for example, for tagging purposes.

2 Resolved issues

2.1 Common issues

Corrected and changed some texts

- Corrected UNI 1982-2014 => UNI 9182-2014
- Calculation settings for hydronic systems => Calculation settings for hydronic, DWS and Gas systems.
- There was mixed usage of "Zeta values" or "K factors". All these have been changed to "K factors" in the English texts.
- "D-max (mm)" has been changed to "Size" in duct and pipe series dialog

Unexpected error with BPS update function

An unexpected error was displayed each time the function BPS update is used with an an IFC file created with the BPS Export function.
This was caused by the missing room name in the project and is now corrected.

Revit error after clicking on the Synchronize Parameters (Schematics module)

When an electrical circuit was linked to a schematic object and later the linked schematic object was removed, an error occurred when the parameters were synchronised.

Family creation fails because of additional parameters

The reason for the failure was that the additional parameters and IFC parameters are added as family parameters to the product. But parameter addition fails if a parameter with the same name already exists in the family. The following changes have been hade to prevent this to happen:

- When choosing additional parameters for a product (additional properties dialog):
  Two parameters with the same name cannot be added as an additional parameter for one product.
- When updating additional parameters for a product (additional properties dialog):
  Now the error message says that the update fails because there is already a parameter with the same name in the family. Previously it was only said that the update failed.
- Family creation/IFC parameter:
  If there are IFC parameters within the additional parameters that have the same name but different GUID what is used in MagiCAD and it is tried to be added to the family, a more clear error message is shown for the user.
- Shared parameter file must be returned as the original value
  Shared parameter file is changed temporarily to MagiCAD shared parameter file when shared parameters are added to a family.
  In the error cases, the file was not always returned back to its original value. E.g. when a parameter with the same name had already been added to the family

Exception from settings, in case piping tab was disabled

Electrical designers usually disable the ventilation and piping tabs as they don't need those. Once user went to settings and clicks OK, MagiCAD showed an exception. This error is corrected by not updating the tools tabs which are not in use.

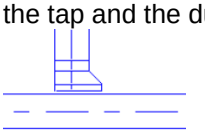
Components with electrical connectors, wrong installation user interface
Component with electrical connector could not be installed in the middle of the duct with MagiCAD product installation. MagiCAD showed an incorrect user interface dialog for the inline components which have the electrical connectors.
This error is corrected.

Exception in automatic Builderswork openings if provision is too short
An exception occurred in automatic BWO when MagiCAD attempted to combine a round provision whose length was smaller than 0.3 mm. As a result, automatic BWO didn't complete successfully. This situation arose, if a circular MEP element penetrated an architectural element at straight angle and to a very small depth (less than 0.3 mm).
This works correctly now.

2.2 Heating, piping and ventilation

Improvements to the sizing

- The progress bar has been changed and improved. Earlier the product selection did not have progress bar. This meant that the progress bar was removed before the sizing ended.
- The node number of a tap is now updated always in sizing
- Gaps between taps and duct has been corrected. Earlier there could be a small gap between the tap and the duct.



- Sometimes Revit automatically changed a tap to an elbow when the duct size changed. This works correctly now.
- Corrected the split functionality which is used for example when a tee is created in the standard connection. Now this method always creates the same tap when the duct is split. Earlier an active tap from the duct routing preferences was used.
- Corrected the component sizing which caused unexpected error in cases there was not enough space for a reducer.
- Corrected the sizing in cases that there was a wrong reducer in network. The normal reducer could have been changed to a multi shape transition.

Parameter "MC Insulation Code" was not always updated
Parameter "MC Insulation Code" was not always updated to empty when the insulation was removed with Revit's own method.
This works correctly now and parameter "MC Insulation Code" is cleared when "Update parameters" is run.

It was not possible to add the air handling unit into the bill of materials.
When the air handling units were imported with the PlugIn to MagiCAD they were not shown in the bill of materials.
This is now corrected and the air handling units are shown in the bill of materials.

Sizing has been improved when a plug is connected directly to a branch
Changed the duct sizing so that the plug which is connected directly to a branch is also sized. This prevents MagiCAD to add reducers between the plug and the branch.

Guide vanes were handled incorrectly in calculation
When MagiCAD read the number of guide vanes from the database, it used the number of vanes incorrectly in some cases. The error caused small inaccuracies in the friction factor of the bend. This is now corrected. E.g. According to standard PN-EN 1505, the guide vanes are defined as follow

Elbow width	Number of vanes
> 400 ≤ 800	1
> 800 ≤ 1600	2
> 1600 ≤ 2000	3

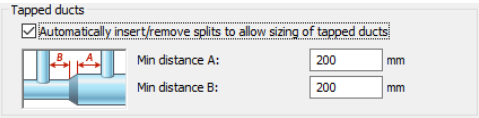
But MagiCAD handled these as

Elbow width	Number of vanes
> 400 < 800	1
≥ 800 < 1600	2
≥ 1600 < 2000	3

It was impossible to install T-branch at the end of duct from the toolbar
When drawing the duct and installing a T-branch at end of the duct from the toolbar, MagiCAD crashed. This works now correctly.

Tap was not sized correctly when its neighbour part is flange
In some cases the tap was not sized correctly when tap neighbour part is a flange. This problem occurred randomly and is now corrected.

Some reducers in the tapped ducts and pipes were not insulated after sizing
This could have happened in case the user had checked the "Automatically insert/remove splits.." check box and a reducer was added to the network by the sizing.



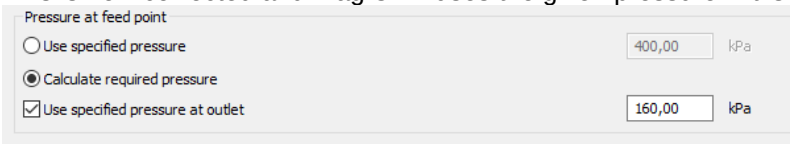
In case the duct/pipe was insulated, the insulation was not inherited to the reducer. This situation works correctly now.

The picture of the component was not always visible in Find&Replace user interface dialog
This happened in cases when the component type (size) exist in the Revit family tree, but it doesn't have any instances in the project.
This error, which occurs only in version MagiCAD 2021 UR-1, has been corrected.

The second decimal in pipe diameter was lost when reopening the size dialogue
MagiCAD now uses two decimals for the pipe diameters. Earlier MagiCAD rounded the given value to one decimal.

Error when updating sizing after calculations
In some rare cases the supply and return pipe of the connection node could be of different size. In these cases the connectors of the connection node got their sizes randomly from one of the pipes. In practise this meant that in consecutive sizing their sizes could change. Now the bigger size is used for both connectors of the connection node and a reducer is added if needed.

Specified pressure at outlet was not set for 3rd party domestic water devices
In case the user defines "Use specified pressure at outlet" in domestic water balancing, MagiCAD is supposed to use the given pressure at the outlets.
However, in case the user has defined a specific pressure in the family, MagiCAD used that instead of the value given in the "Use specific pressure at outlet" field.
This is now corrected and MagiCAD uses the given pressure if it is defined.



Valve Tool Error
An unexpected error was shown when a L shaped valve being was used to a connected radiator. Now the L shaped valves are skipped if the radiator is already connected, and the user is notified that the installation failed.

Revit warning message during device connection
When the connection tool was used to connect a side duct to the main duct which was smaller than the connecting side duct, Revit showed an error message.
Now the connection can be made without Revit errors.

Unexpected error when installing radiators into the space
The unexpected error was shown in cases there was no 3D view in the project.
Now the installation dialog opens now even though the project does not contain any 3D views.

Radiator 'install to space' upper limit needs to be on same level
Install radiator to a space did not work if the upper limit of the space is on next level and limit offset is smaller than ~950mm.
This works correctly now

Pipe series updater does not handle DirectShapeType elements of Pipe Curves category correctly
The pipe series updater showed an unexpected error because the project contains DirectShapeType elements of the Pipe Curves category.
This works correctly now.

3D duct doesn't draw the duct
This was caused, because MagiCAD could not correctly handle different duct size format string like: "150 mmx100 mm","150x100".
This is now corrected and MagiCAD supports more format strings.

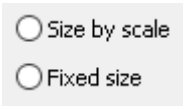
2.3 Electrical

Update Parameters crashed Revit
Previously, if there were looped wiring done and you ran Update Parameters, Revit crashed.

Cable ladders were exported as boxes
The fix from 2021 UR-1.1 has naturally been added to 2021 UR-2 as well.

Unhandled exception in DIALux import
An error was fixed where an imported luminaire already existed in the project but not in the dataset. Previously this failed the import.

Symbol size setting reset in the dataset
In some cases the size behaviour setting of the 2D symbol on product data sheets was reset. The issue has now been fixed.



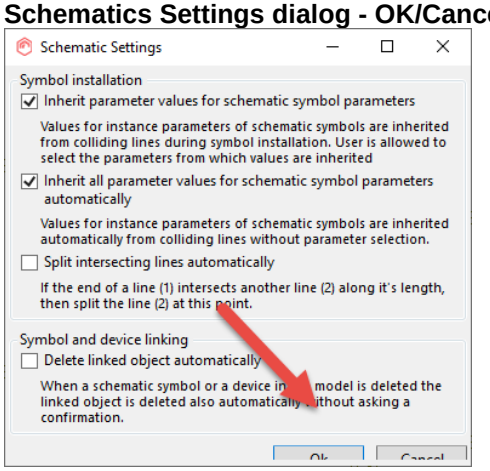
Generic model symbols in face based families
Previously, converted generic model symbols in face based families had problems in their orientations when placing the families on different faces.

Problem when creating cable tray series
Previously there were problems when the same vertical bend was tried to be used both as the inside and the outside bend type in a series.

2.4 Schematics

The fonts of schematic symbols changed to Consolas unintentionally
All the texts and fonts in the schematic symbols were converted to use the font "Consolas", like in the plan drawing symbols.
This is corrected.

Schematics Settings dialog - OK/Cancel buttons were hidden when the dialog is resized



This is now corrected.

Unexpected error when trying to draw short schematic line
When very short schematic lines were drawn, an "unexpected error" was shown.
The unexpected errors are no more shown to the user.