PREMA

MagiCAD plugin for Revit – User guide

02/05/2025

MagiCAD

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1 General

About this document

This document contains instructions on using PREMA shunt plugin on MagiCAD for Revit.

PREMA MagiCAD plugin allows to insert, copy, update and view technical data of Premablock shunt units with MagiCAD.

Installing the software

Required software and third-party software

PREMA MagiCAD plugin works with the following MagiCAD for Revit versions:

MagiCAD for Revit 2025 with Revit versions 2023 - 2025.
MagiCAD for Revit 2026 with Revit versions 2023 - 2026.

Before installation

Workstation administrator privileges are recommended for installation.

Installation

Notice! Plugin installer will install the PREMA MagiCAD plugin to all supported Revit versions. User does not need to install the plugin again if Revit installation is done after the plugin installation.

1. Download the installer file *Prema Plugin for Revit and MagiCAD* from MagiCAD portal to your workstation:

   https://portal.magicad.com/Download/ProductSearch?searchStr=Prema&categoryId=3

2. Run the PREMA MagiCAD Plugin for Revit installer on your workstation.

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Starting the plugin application

The plugin is automatically loaded and is ready to be used once MagiCAD for Revit is started next time after the plugin is installed.

Before you start using the Prema MagiCAD plugin, (re)start the MagiCAD and open a Revit Mechanical, Heating and Cooling project.

Locate the MagiCAD Connect tab from the Revit ribbon. Once the Prema MagiCAD plugin is loaded its ribbon panel and button can be found from MagiCAD Connect tab. When the upper part of button is clicked the corresponding operation will be started. When the lower part of button is clicked, it opens the rest of the functions. On mouse over the button, the plugin gives some extra information about the functionality.

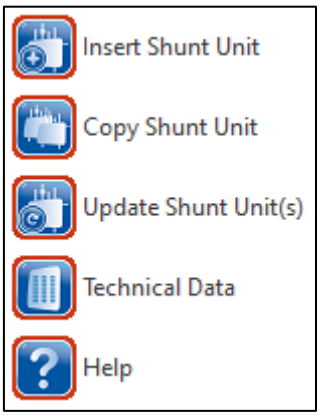

Figure 1 Prema plugin split button and functions

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2 Functions

2.1 Prema MagiCAD plugin UI overview

Prema plugin contains the following functions:

2.1.1 Insert Shunt Unit

This command inserts a new shunt unit into MagiCAD with ShuntLogik calculation application.

2.1.2 Copy Shunt Unit

This command copies the existing shunt unit and pastes it to the view.

2.1.3 Update Shunt Unit(s)

This command updates existing shunts with ShuntLogik calculation application.

2.1.4 Technical Data

This command presents technical data of selected shunt unit.

2.1.5 Help

This command launches this plugin user guide.

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2.2 Detailed Insert Shunt Unit function

Note that shunt instances should not be created and inserted from the Revit family tree. The reason for this is that each shunt unit includes individual shunt related parameters and by creating units from family tree causes the situation that multiple instances refers to one family symbol.

Follow these steps to insert Premablock shunt unit to Revit:

1. Before starting the insert operation, design all the needed secondary circuits and make sure that the MagiCAD balancing calculation for the circuits is done. This is important because PREMA MagiCAD plugin sends secondary circuit flow and pressure drop data to the shunt calculation application.

2. Click Insert Shunt Unit button from PREMA MagiCAD plugin.

3. Once operation is started, user is first prompted to select the MagiCAD supply and return systems for the shunt primary circuit. The selected systems will be set for the shunt unit that is exported to the MagiCAD via plugin.

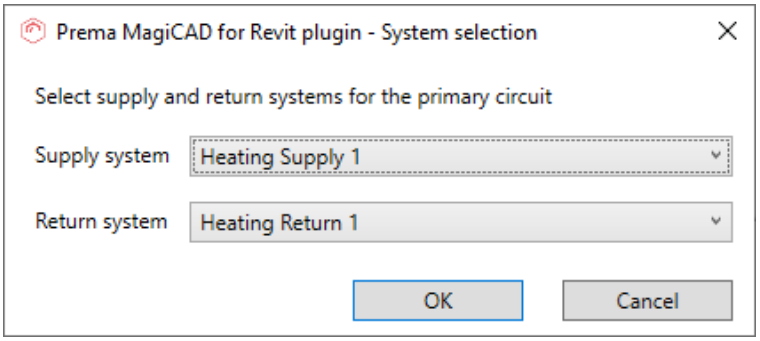

Figure 2 Primary system supply and return selection

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4. Next user is prompted to select part of the supply and return pipes of the secondary circuit. It is important to select the supply and return pipes that should be connected to the shunt unit. Reason for this is that plugin sends the flow and pressure drop information, read from the selected pipes to the shunt unit calculation.

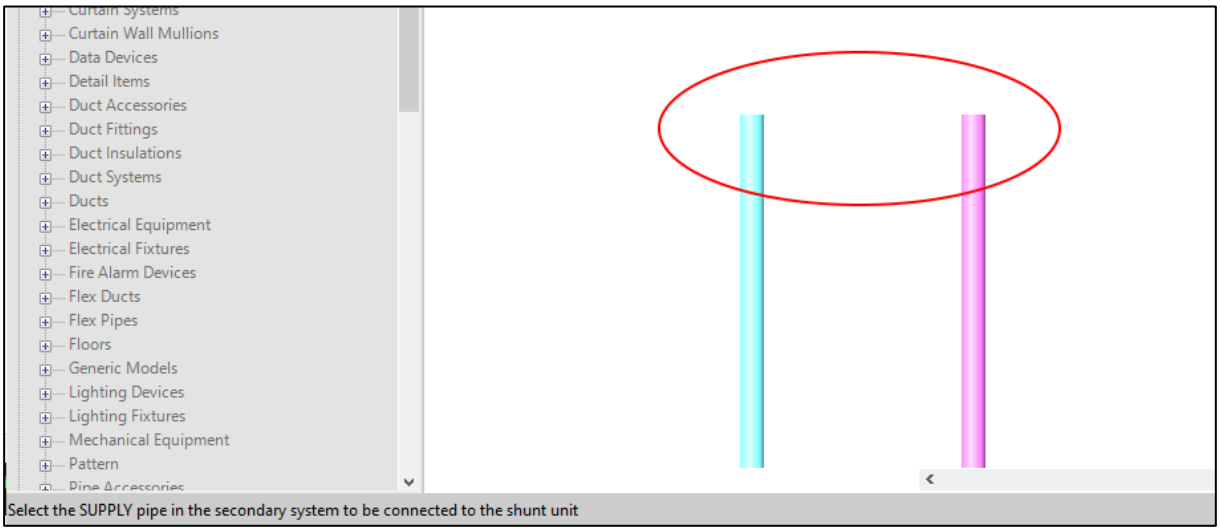

Figure 3 Secondary system pipes selection

5. After secondary circuit pipe selections ShuntLogik calculation application is started:

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Figure 4 PREMA shunt calculation application in plugin browser view

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6. After the user has selected the installation name and project number the Premablock product line is selected. Select first the product line and then the product type.

   For PR-2 shunts without main pump, see chapter 2.2.1 for more details.
   For air handling unit shunts (product type is VÅ), see chapter 2.2.2 for more details.

   Premablock® – Shunt units in high quality standard design with robust components and flexible options.

   Premablock® flex - Shunt units with automatic control of flow and differential pressure.

   Premablock® green - Environmentally rated shunt units with high quality components and material selection.

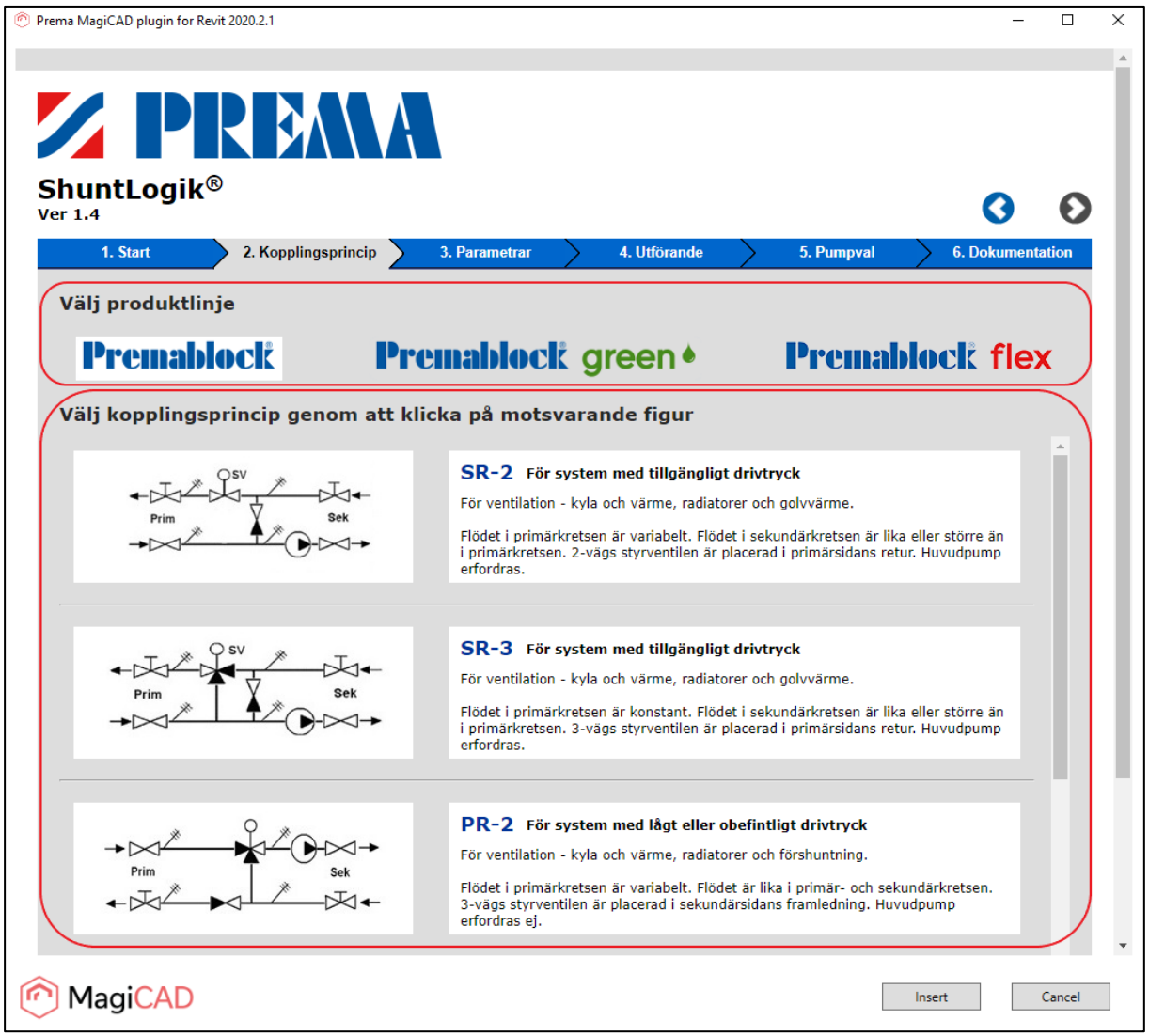

Figure 5 Premablock product selection in calculation application

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7. Calculation parameters are set based on selected MagiCAD system and selected secondary circuit pipes. The user has to input an estimation of the primary circuit minimum driving pressure and shunt designation (user code) in order to complete the shunt unit calculation by pushing the calculation button. Marked with red in the picture below.

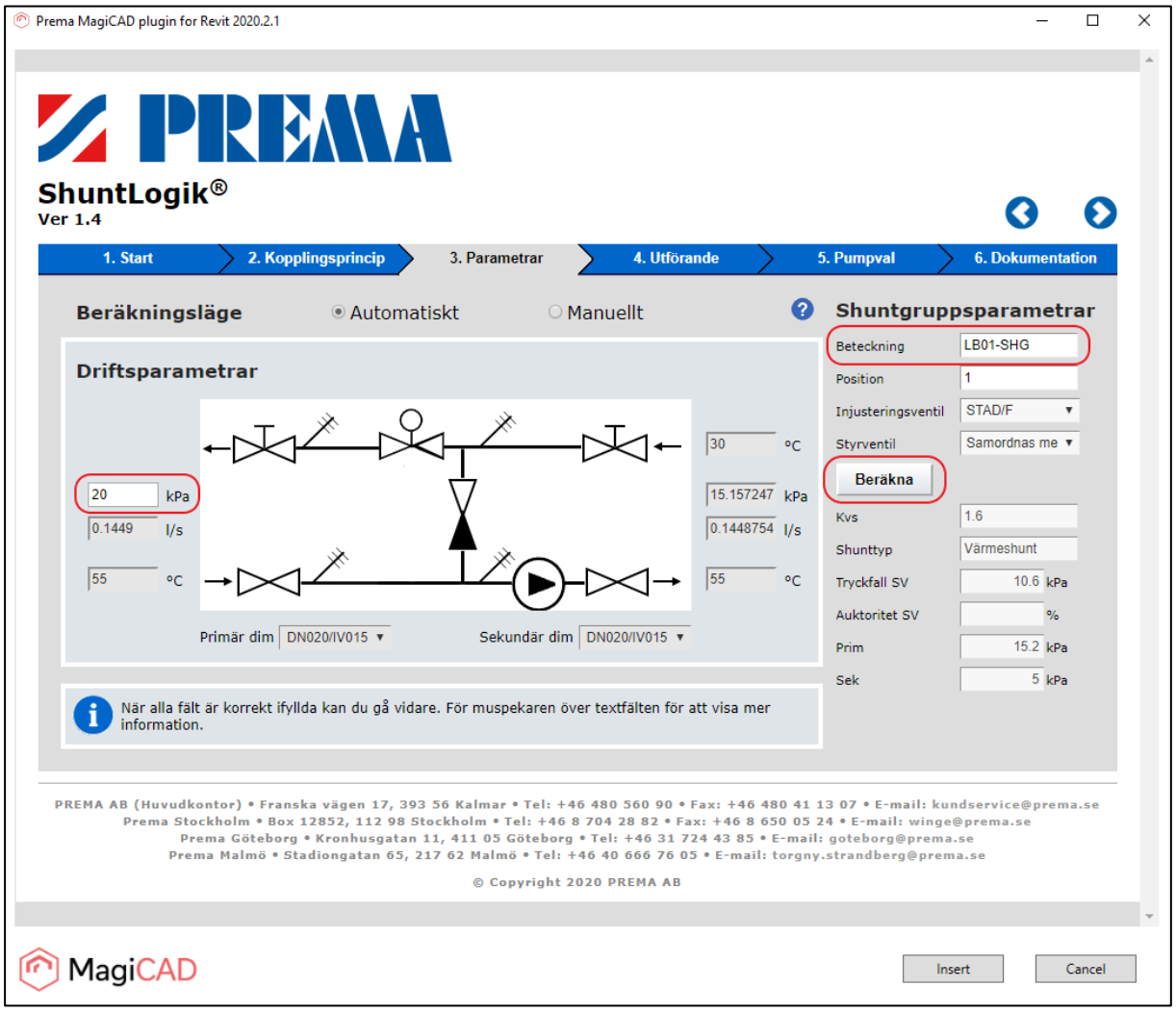

Figure 6 Premablock shunt parameters and calculation

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8. In the next steps user can change the shunt unit layout settings, accessories, handedness and pump. Selected product is inserted to MagiCAD from the final page of the calculation application. User clicks the insert button (highlighted with red) to insert the selected shunt unit to MagiCAD. Please note that insert operation is not functional before the last page of the calculation application is reached.

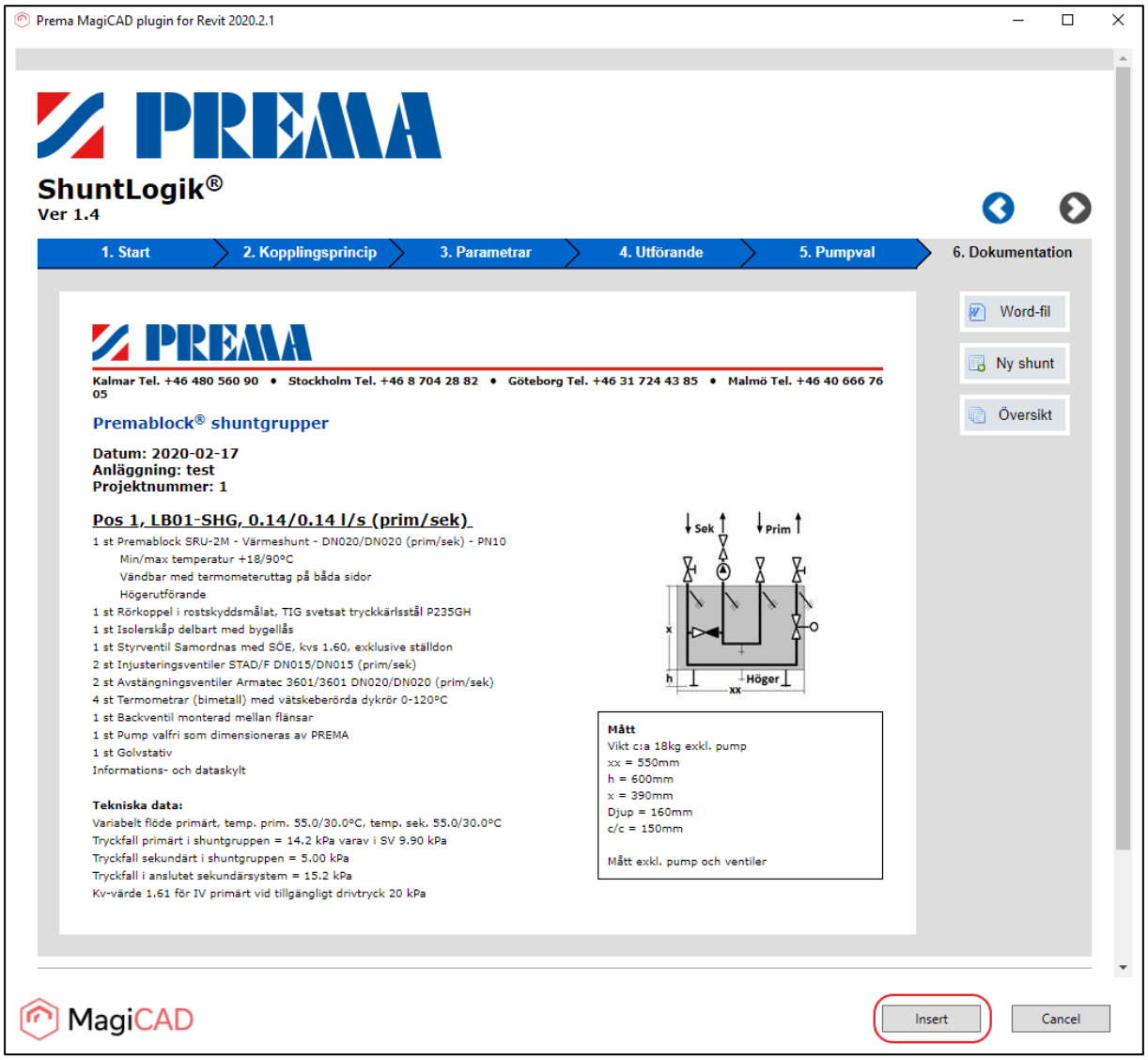

Figure 7 Shunt calculation final step and Insert button

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9. After user clicks the insert button plugin will start to generate the Revit family symbol of the shunt unit and after it's finished the user can insert the instance in to the project. Once the unit instance is inserted into MagiCAD it should be connected to primary and secondary circuits.

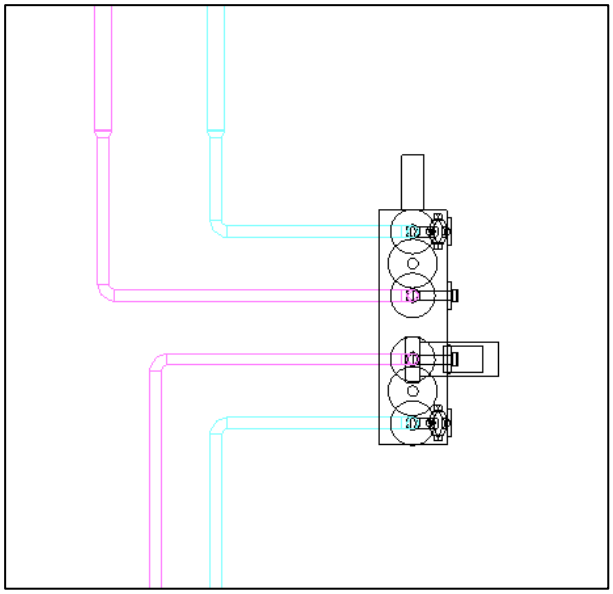

Figure 8 Shunt unit instance inserted and connected to MagiCAD pipes in 2D view

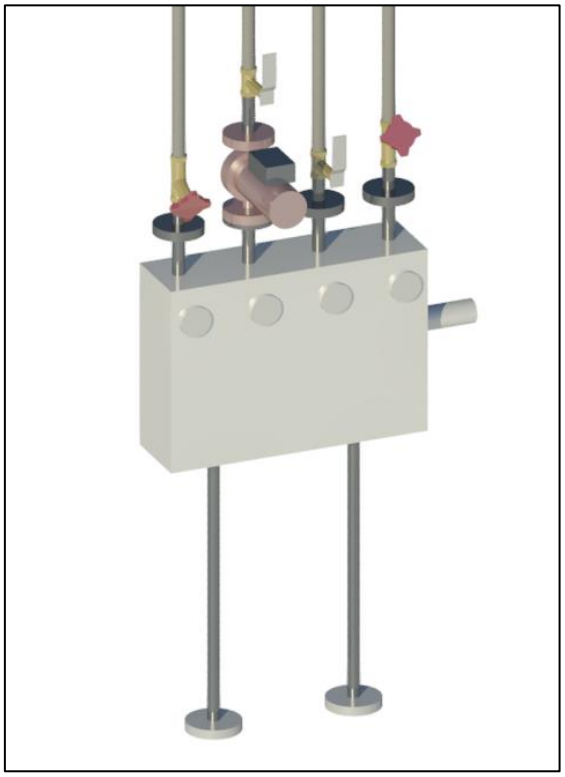

Figure 9 Shunt unit inserted to MagiCAD in 3D view

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10. After the shunt unit is inserted to Revit and connected to MagiCAD pipes, user needs to run the MagiCAD balancing calculation. See chapter 3 for more details.

2.2.1 PR-2 shunts

PRU-2, PRL-2 and PRH-2 type shunts are for variable flow primary circuits and includes a 3-way valve in the secondary circuit. There is option that this type of shunt can be installed into project with option that there is no main pump on the primary circuit. In this case the pump on the shunt secondary side will handle the liquid circulation in the primary and secondary circuits.

The workflow is different in this case.

6. After the secondary system pipes are selected user selects the PR-2 shunt from the calculation tool.

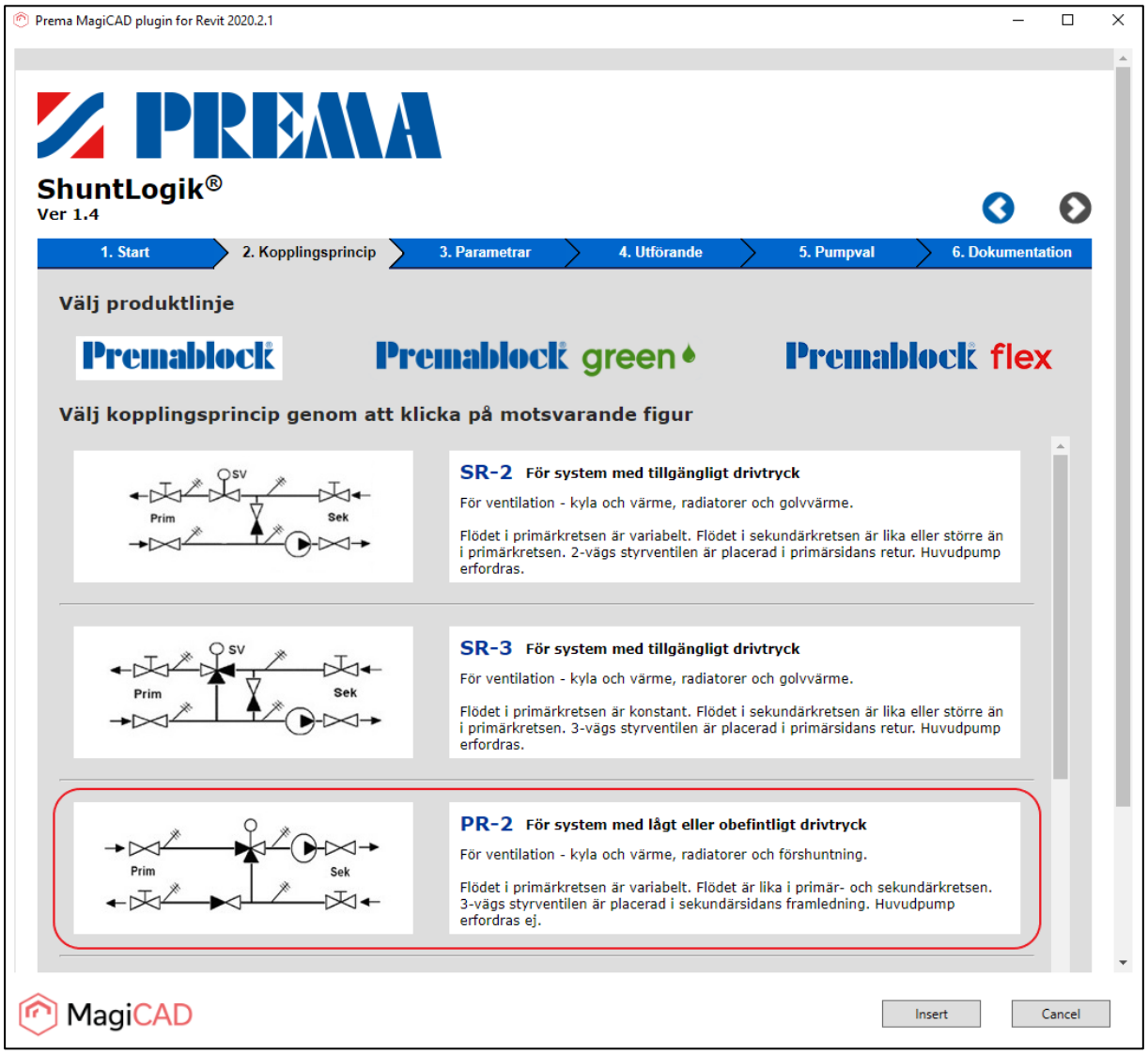

Figure 10 PR-2 shunt selection in ShuntLogik calculation application

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7. In step 3 the user has to input, instead of the minimum driving pressure, **the estimated value for the pressure drop in the primary circuit** which the pump of the shunt should handle. Give also the shunt designation (user code) and select the “without main pump” selection.

   In order to complete the shunt unit calculation user pushes the calculation button. All marked with red in the picture below.

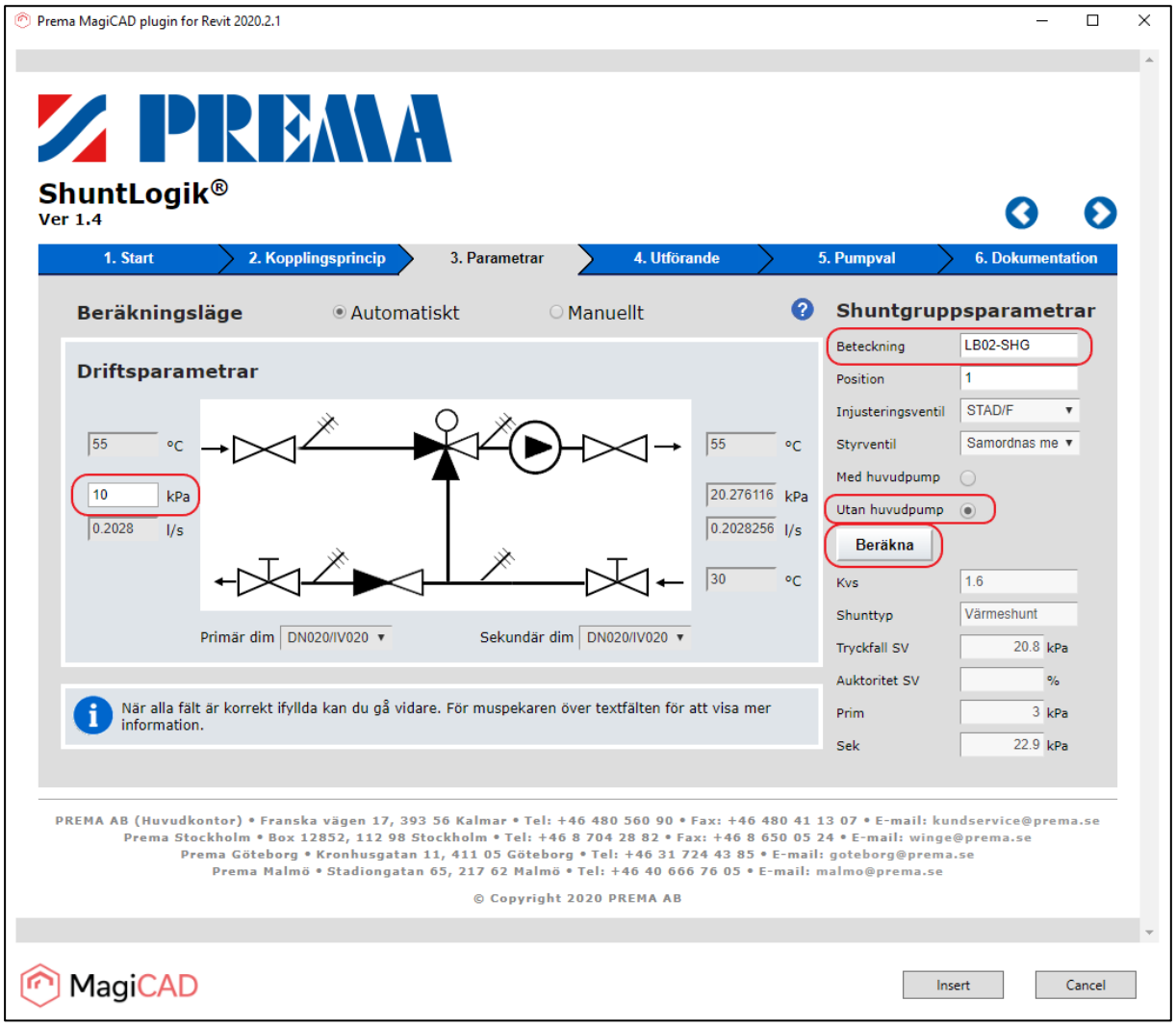

Figure 11 Premablock PR-2 shunt without main pump parameters and calculation

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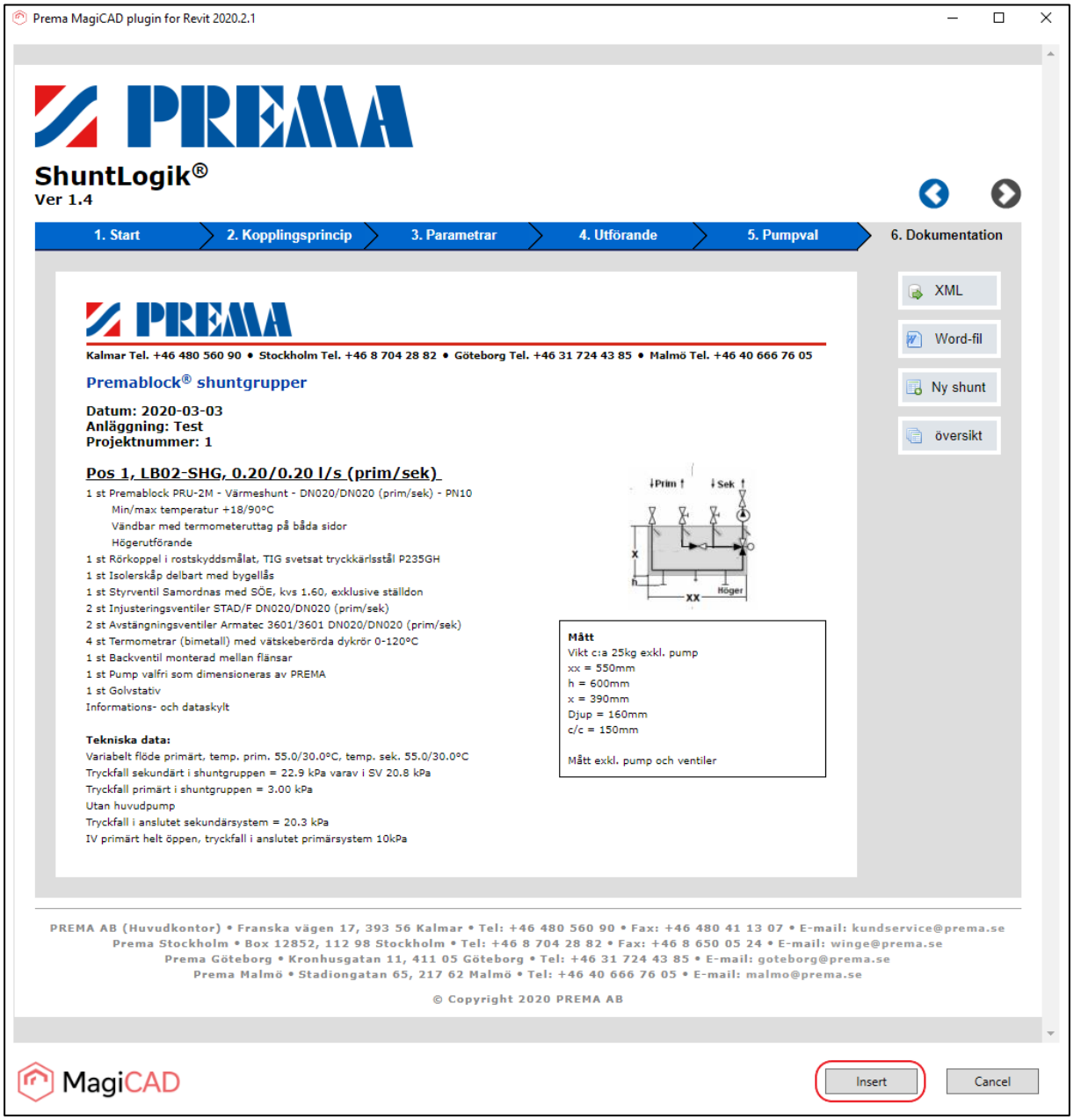
8. In the next steps user can change the shunt unit layout settings, accessories, handedness and pump. Selected product is inserted to MagiCAD from the final page of the calculation application. User clicks the insert button (highlighted with red) to insert the selected shunt unit to MagiCAD. Please note that insert operation is not functional before the last page of the calculation application is reached.



9. After user clicks the insert button plugin will start to generate the Revit family symbol of the shunt unit and after it's finished the user can insert the instance in to the project. Once the unit instance is inserted into MagiCAD it should be connected to primary and secondary circuits.

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After the shunt unit is inserted to Revit and connected to MagiCAD pipes, user needs to run the MagiCAD balancing calculation. See chapter 3 for more details.

2.2.2 VÅ shunts

Shunt groups VÅU, VÅL and VÅH are for heat recovery between exhaust and supply air coils in air handling unit. The pump on the shunt group circulates the liquid between the coils and pump is sized for the pressure drop throughout the circuit (including two coils, pipes and the shunt group with control valve). No other systems are connected to the heat recovery circuit.

Workflow with this shunt unit is same like with the other shunt units except the ShuntLogik calculation application will not use the plugin input data anyhow. This means that user needs to inputs all the necessary data before unit can be inserted into Revit.

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6. After the secondary system pipes are selected user selects the VÅ shunt from the calculation tool.

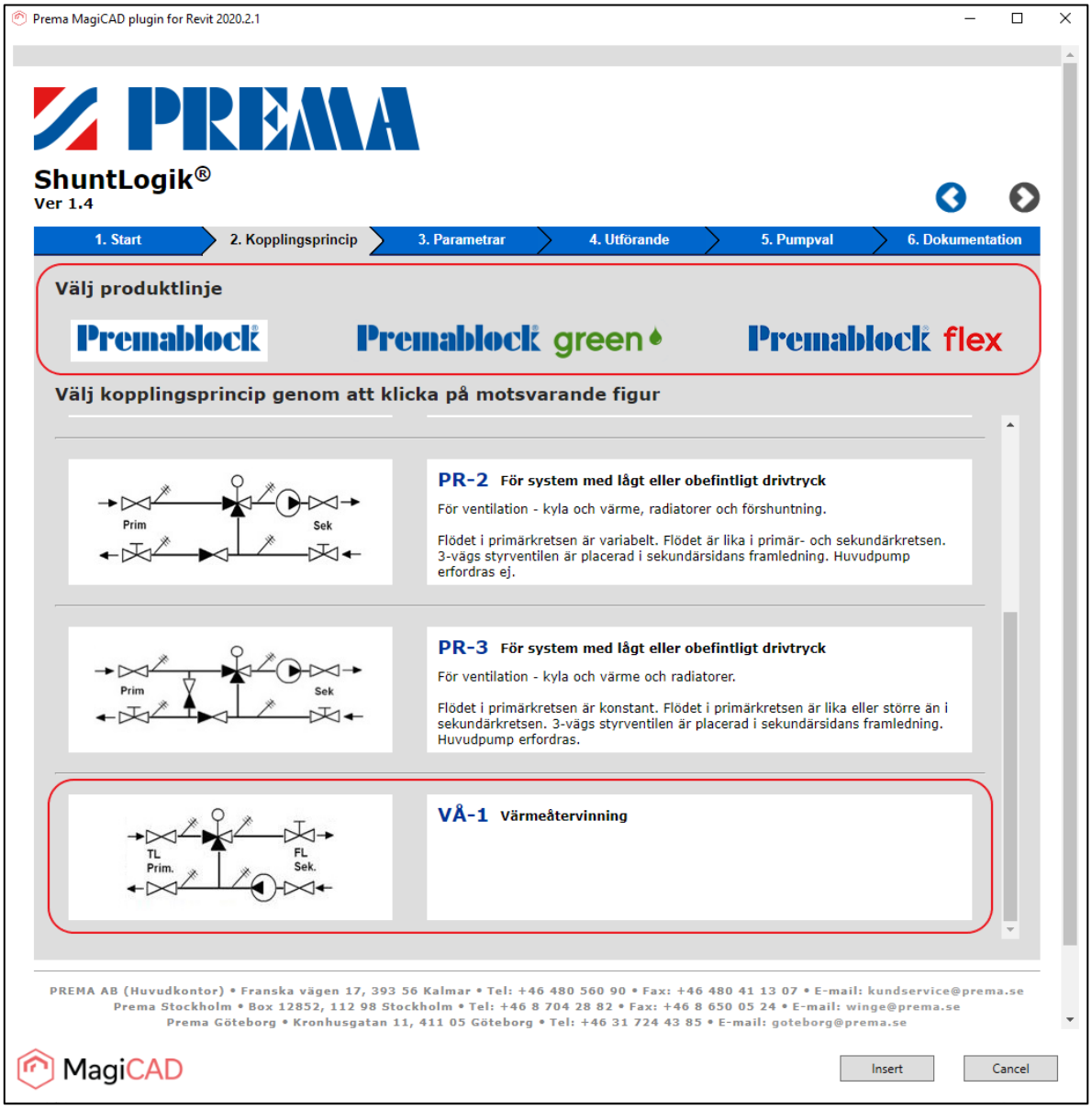

Figure 12 VÅ shunt selection in ShuntLogik calculation application

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7. In step 3 the user has to input:
   - The liquid pressure drop in supply and exhaust sides.
   - Supply and return temperatures for exhaust side.
   - Circulation liquid flow value in exhaust side.
   - Shunt designation (user code).

   In order to complete the shunt unit calculation user pushes the calculation button. All marked with red in the picture below.

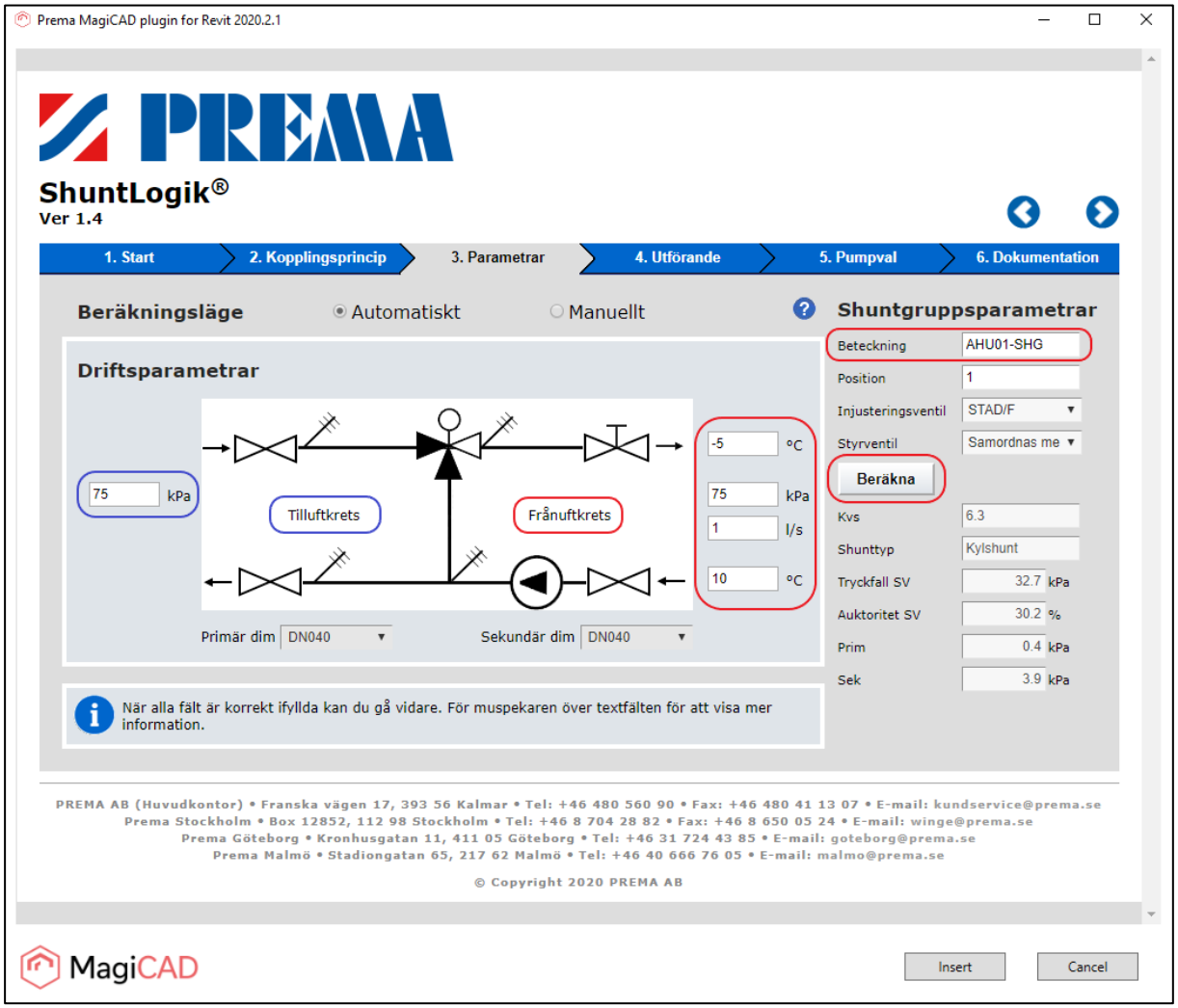

Figure 13 Premablock VÅ shunt parameters and calculation

8. In the next steps user can change the shunt unit layout settings, accessories, handedness and pump. Selected product is inserted to MagiCAD from the final page of the calculation application. User clicks the insert button (highlighted with red) to insert the selected shunt unit to MagiCAD. Please note that insert operation is not functional before the last page of the calculation application is reached.

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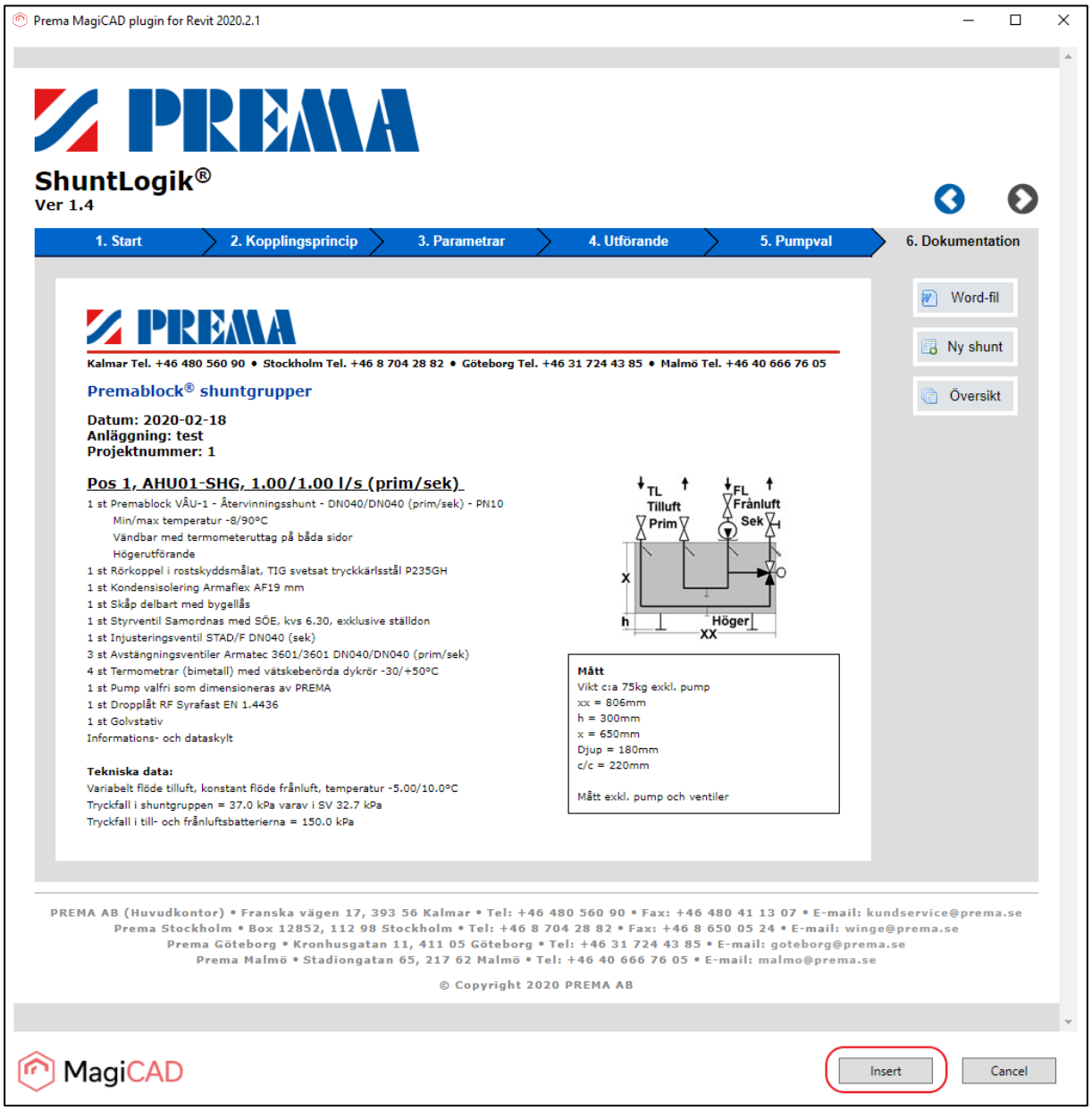

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9. After user clicks the insert button plugin will start to generate the Revit family symbol of the shunt unit and after it's finished the user can insert the instance in to the project. Once the unit instance is inserted into MagiCAD user can draw pipes for the supply and exhaust sides. **Note that this shunt unit can't be calculated with MagiCAD Heating/Cooling Balancing calculation, even it's connected to some circuits.**

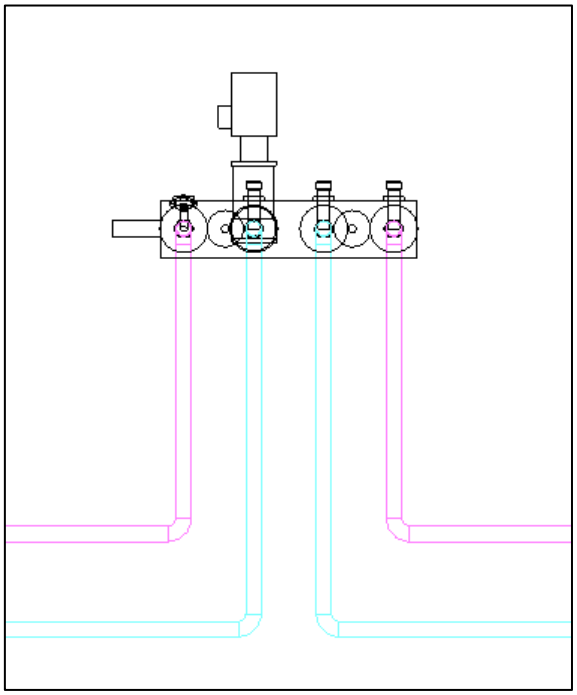

Figure 14 VÅ shunt unit instance inserted and connected to MagiCAD pipes in 2D view

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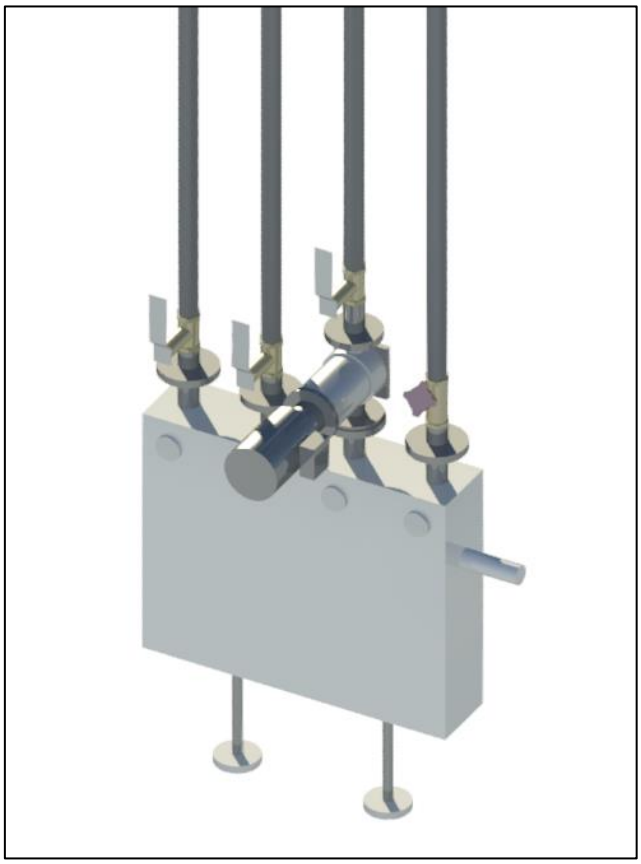

Figure 15 VÅ shunt unit inserted to MagiCAD in 3D view

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2.3 Detailed Copy Shunt Unit function

This feature allows user to copy an existing shunt unit within the drawing. The copied shunt unit can be pasted single or multiple times into the drawing.

1. The feature is initialized by clicking on the “Copy Shunt Unit” button on the PREMA MagiCAD plugin.

2. User is then asked to select a shunt unit to be copied. The selected shunt should be updated beforehand and be connected to pipework.

3. After selecting an existing valid shunt unit instance from the drawing user is prompted with a dialog asking user to select secondary supply and return system for the new shunt unit, from a dropdown selection box. Prefilled values in the dialog box are from the original copied shunt unit. User may change the values for the copy in this phase before continuing.

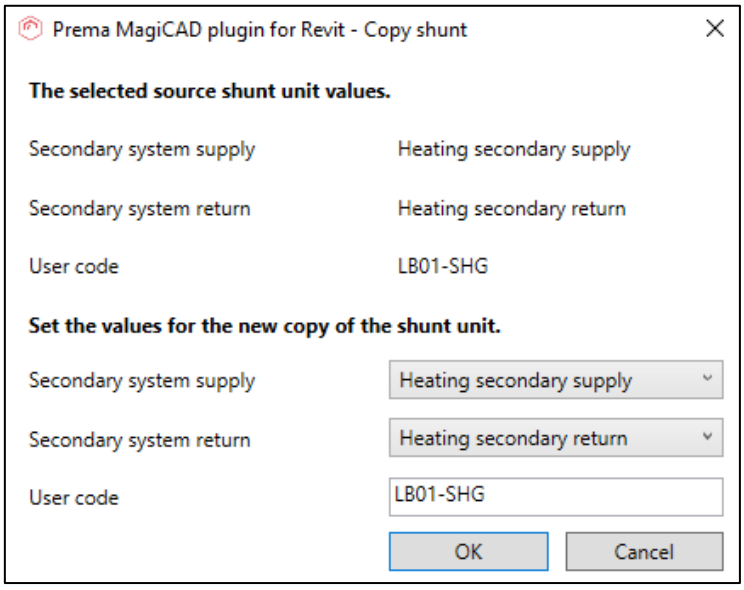

Figure 16 Plugin Copy Shunt dialog

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4. After pressing OK the plugin starts to create a new family symbol and user can then place a new shunt unit into the drawing.

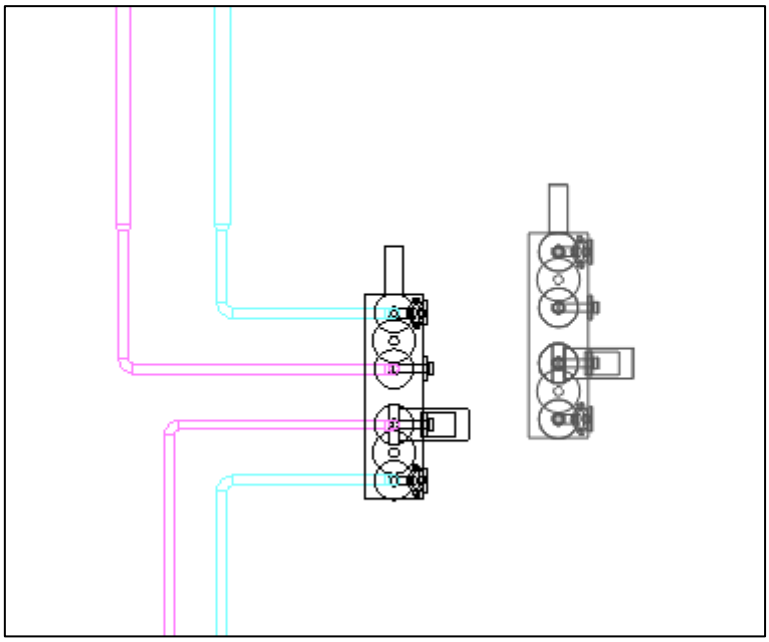

Figure 17 A new copy of shunt unit inserted beside to the orginal shunt unit

5. When user has positioned the shunt unit into the drawing, the same dialog as before is opened again asking if the user wants to paste another copy of the selected shunt unit. User can add a new copy of the original shunt by filling the required information and pressing OK. This can be repeated multiple times.

6. After inserting the last copy. User will press cancel from the dialog and connect all the inserted shunt copies to the pipework. After the shunt units are connected and the balancing calculations have been completed they should be updated using the plugins update feature.

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2.4 Detailed Update Shunt Unit(s) function

Shunt(s) should be updated after the primary circuit is finished. The reason for this is that the ShuntLogik calculation application will now get the accurate driving pressure value straight from MagiCAD instead of an estimation from the user. **If parameters for the shunt unit such as flow, temperatures or pressure drop in secondary circuit has changed, the shunt unit must be replaced by a new shunt unit via Insert Shunt Unit operation (see chapter 2.2).**

Before updating the shunts, make sure that the shunts are connected to the pipework and that the MagiCAD balancing calculation has been done for the systems to which the updated shunts are connected to.

When Update Shunt Units operation is started, user first selects shunt unit(s) to be updated. User can select a single shunt unit or multiple shunt units for the update.

After the selection is done, depending on how many shunts where selected, the calculation application is opened in either single shunt unit update mode or in batch update mode.

NOTICE: The update function shouldn't be used for shunts which have changes on the secondary circuit's temperatures or flow. Also shunts with changes on primary system temperatures should be handled differently. In these cases the shunt should be deleted and replaced with a completely new shunt unit, because there might be changes to the shunt's pipe dimensions, configuration and also price, which user should be aware of. For handling the changes in the circuits as above, delete the shunt unit that is no longer correct and add a new unit with Insert Shunt Unit operation.

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2.4.1 Single Shunt Update

1. The update feature is initialized by clicking on the “Update Shunt Units” button on the PREMA MagiCAD plugin. Plugin asks user to select the shunt unit which needs to be updated.

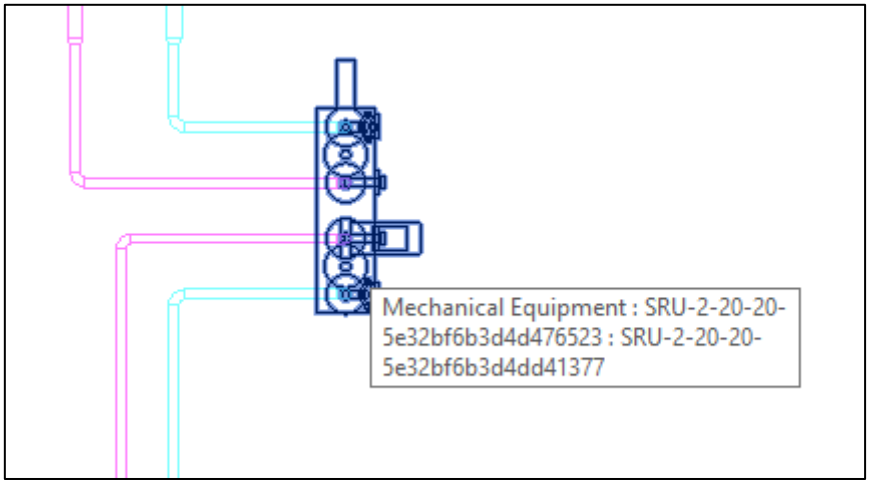

Figure 18 Shunt unit instance selected from the drawing for update

2. Accept the unit instance selection from Revit ribbon panel finish button. Plugin will show a dialog that one unit was selected for update.

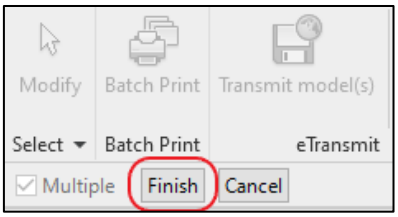

Figure 19 Selection acceptance in the Revit ribbon

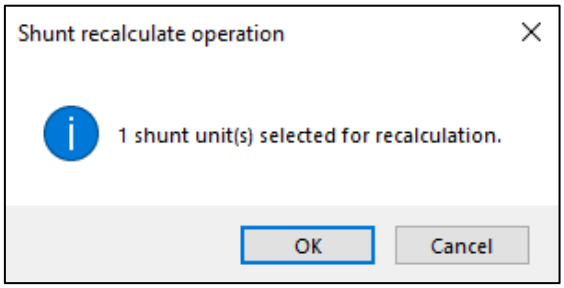

Figure 20 Plugin shunt selection information dialog

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3. When only a single shunt unit is selected for the update then the single shunt update mode is chosen. After the OK button selection the single shunt update will bring the user directly to the step 3 of the calculation application where all the previous values are prefilled into the fields. User selects the calculate button from calculation application and goes through the next steps to update the shunt configuration, handedness, accessories and pump. Pre-selections on configuration pages are made based on the original shunt unit configuration.

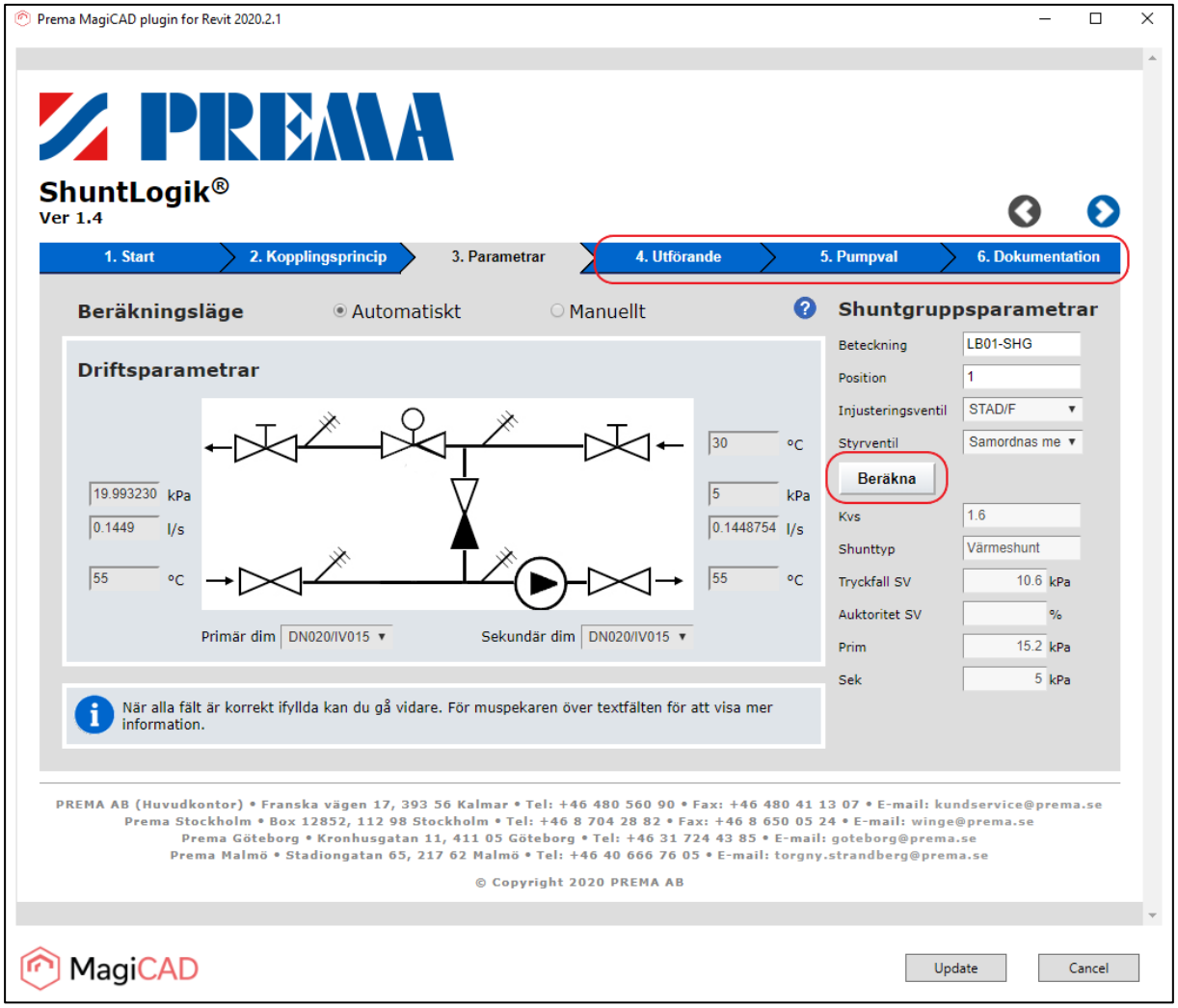

Figure 21 Single shunt unit update in PREMA calculation application

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4. Update to MagiCAD is done from final page of the calculation application like in the insert operation:

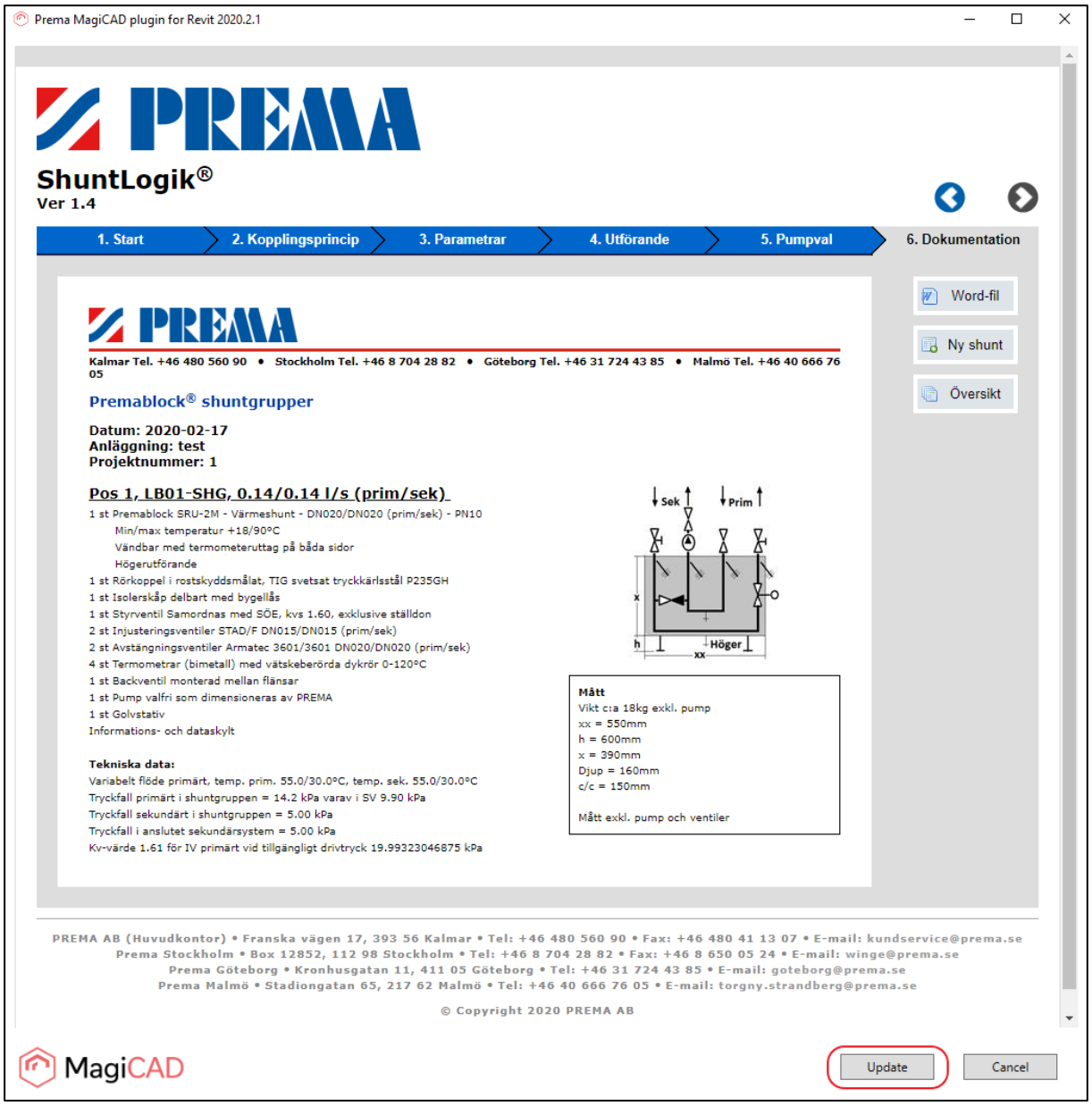

Figure 22 Shunt update final step and Update button

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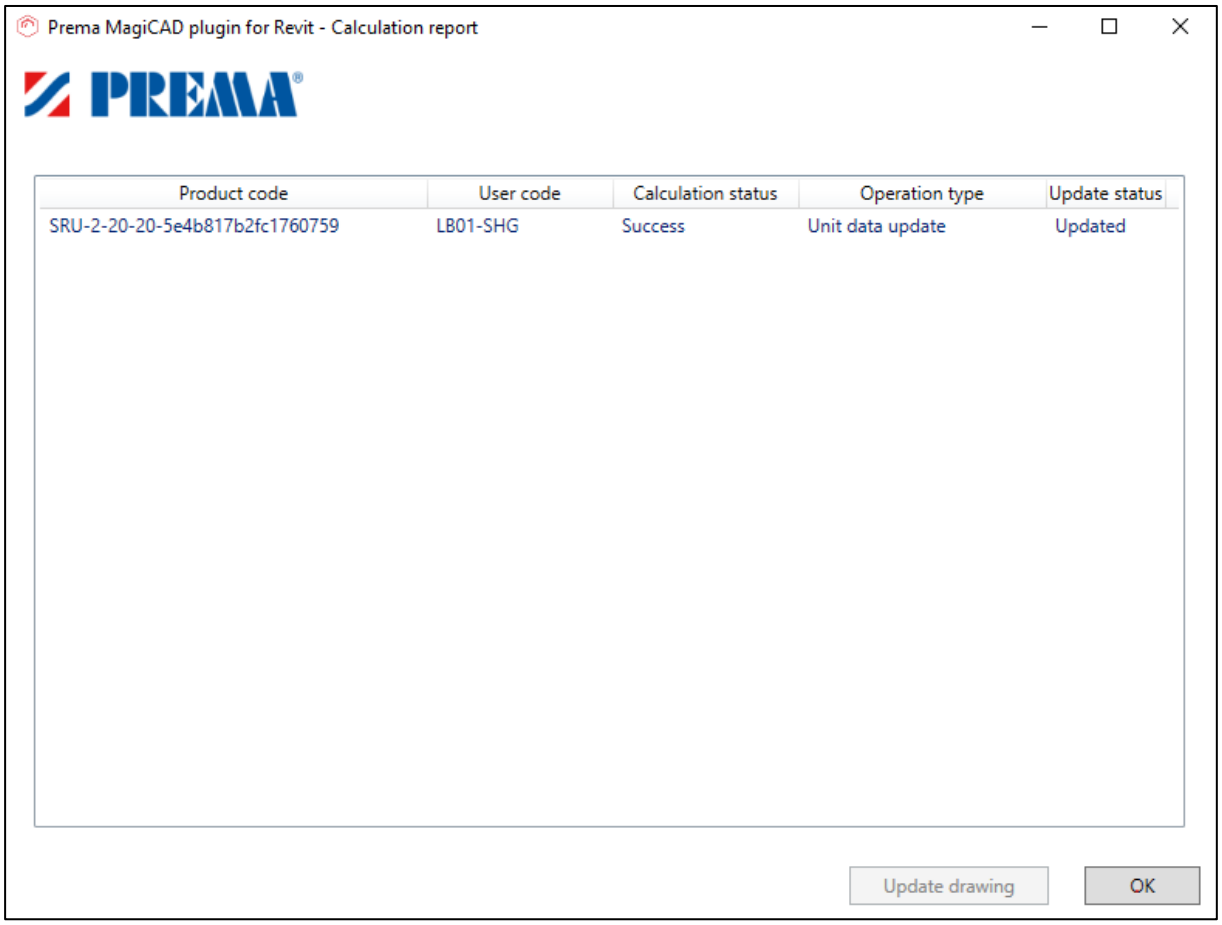
5. After the Update button click, plugin will open the Calculation report dialog. Dialog shows the unit product code, user code, calculation status, operation type and update status.

   When user clicks the Update drawing button plugin will do the operation which is defined in the Operation type column.
   - In case of unit data update, the existing unit parameters will be updated to new parameters. There is no need to make any changes to the piping of the unit instance.
   - In case of unit replacement, the new unit instance will be created to the project. User needs to reattach the unit instance to the pipework.

   Update status column will show the status of the operation after it is done. Finally user clicks OK to close the dialog.



6. After the unit is updated user needs to run the MagiCAD balancing calculation. See chapter 3 for more details.

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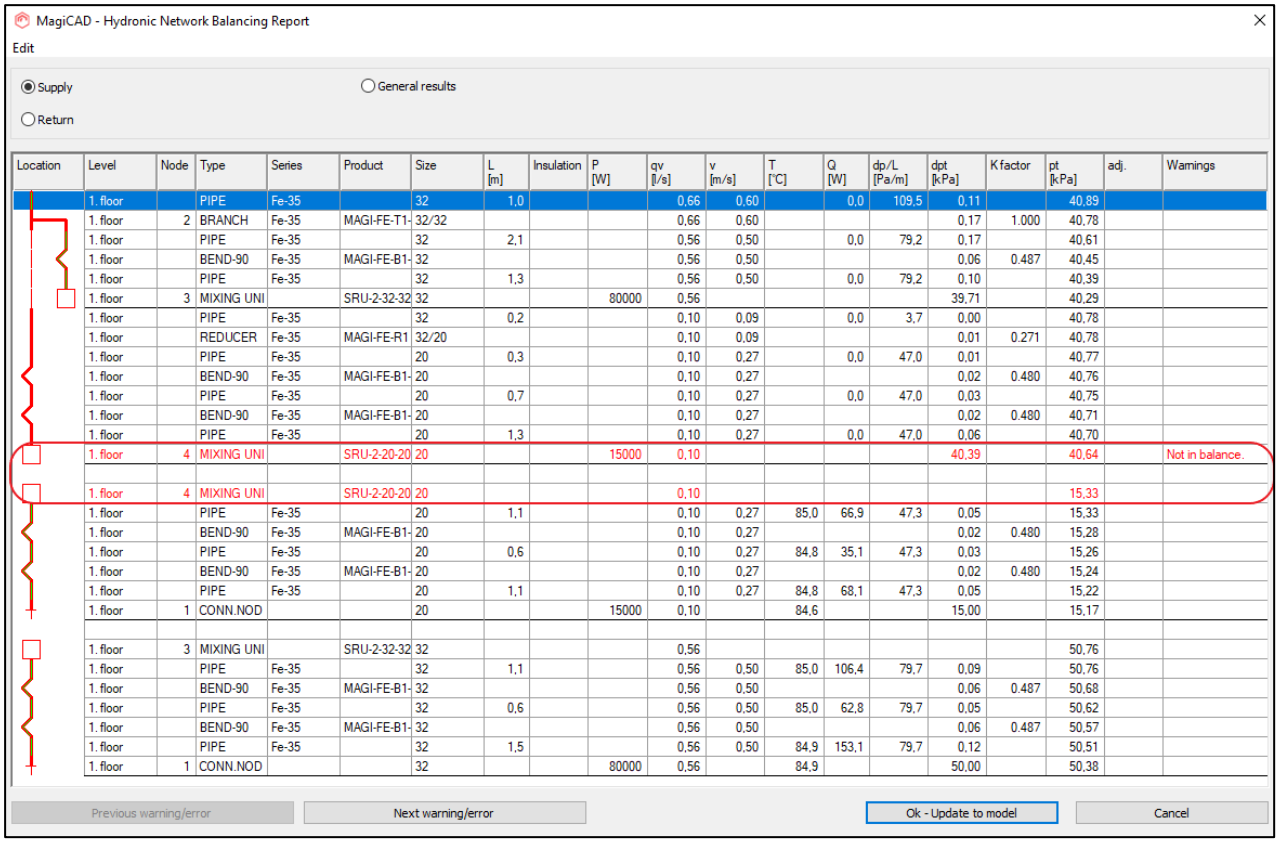
2.4.2 Multiple Shunts Update i.e. Batch Update

When all the shunt units are connected between the secondary circuits and primary circuit, it may be necessary to run the update command for multiple shunts. This is indicated in MagiCAD Hydronic Network Balancing report after the balancing calculation.



Location	Level	Node	Type	Series	Product	Size	L [m]	Insulation	P [W]	qv [l/s]	v [m/s]	T [°C]	Q [W]	dp/L [Pa/m]	dpt [kPa]	K factor	pt [kPa]	adj.	Warnings
	1. floor		PIPE	Fe-35		32	1,0			0,66	0,60		0,0	109,5	0,11		40,89		
	1. floor	2	BRANCH	Fe-35	MAGI-FE-T1-	32/32				0,66	0,60				0,17	1.000	40,78		
	1. floor		PIPE	Fe-35		32	2,1			0,56	0,50		0,0	79,2	0,17		40,61		
	1. floor		BEND-90	Fe-35	MAGI-FE-B1-	32				0,56	0,50				0,06	0.487	40,45		
	1. floor		PIPE	Fe-35		32	1,3			0,56	0,50		0,0	79,2	0,10		40,39		
	1. floor	3	MIXING UNI		SRU-2-32-32	32			80000	0,56					39,71		40,29		
	1. floor		PIPE	Fe-35		32	0,2			0,10	0,09		0,0	3,7	0,00		40,78		
	1. floor		REDUCER	Fe-35	MAGI-FE-R1	32/20				0,10	0,09				0,01	0.271	40,78		
	1. floor		PIPE	Fe-35		20	0,3			0,10	0,27		0,0	47,0	0,01		40,77		
	1. floor		BEND-90	Fe-35	MAGI-FE-B1-	20				0,10	0,27				0,02	0.480	40,76		
	1. floor		PIPE	Fe-35		20	0,7			0,10	0,27		0,0	47,0	0,03		40,75		
	1. floor		BEND-90	Fe-35	MAGI-FE-B1-	20				0,10	0,27				0,02	0.480	40,71		
	1. floor		PIPE	Fe-35		20	1,3			0,10	0,27		0,0	47,0	0,06		40,70		
	1. floor	4	MIXING UNI		SRU-2-20-20	20			15000	0,10					40,39		40,64		Not in balance.
	1. floor	4	MIXING UNI		SRU-2-20-20	20				0,10							15,33		
	1. floor		PIPE	Fe-35		20	1,1			0,10	0,27	85,0	66,9	47,3	0,05		15,33		
	1. floor		BEND-90	Fe-35	MAGI-FE-B1-	20				0,10	0,27				0,02	0.480	15,28		
	1. floor		PIPE	Fe-35		20	0,6			0,10	0,27	84,8	35,1	47,3	0,03		15,26		
	1. floor		BEND-90	Fe-35	MAGI-FE-B1-	20				0,10	0,27				0,02	0.480	15,24		
	1. floor		PIPE	Fe-35		20	1,1			0,10	0,27	84,8	68,1	47,3	0,05		15,22		
	1. floor	1	CONN.NOD			20			15000	0,10		84,6			15,00		15,17		
	1. floor	3	MIXING UNI		SRU-2-32-32	32				0,56							50,76		
	1. floor		PIPE	Fe-35		32	1,1			0,56	0,50	85,0	106,4	79,7	0,09		50,76		
	1. floor		BEND-90	Fe-35	MAGI-FE-B1-	32				0,56	0,50				0,06	0.487	50,68		
	1. floor		PIPE	Fe-35		32	0,6			0,56	0,50	85,0	62,8	79,7	0,05		50,62		
	1. floor		BEND-90	Fe-35	MAGI-FE-B1-	32				0,56	0,50				0,06	0.487	50,57		
	1. floor		PIPE	Fe-35		32	1,5			0,56	0,50	84,9	153,1	79,7	0,12		50,51		
	1. floor	1	CONN.NOD			32			80000	0,56		84,9			50,00		50,38		

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1. The update feature is initialized by clicking on the “Update shunt units” button on the PREMA MagiCAD plugin. Plugin asks user to select the shunt units which needs to be updated.

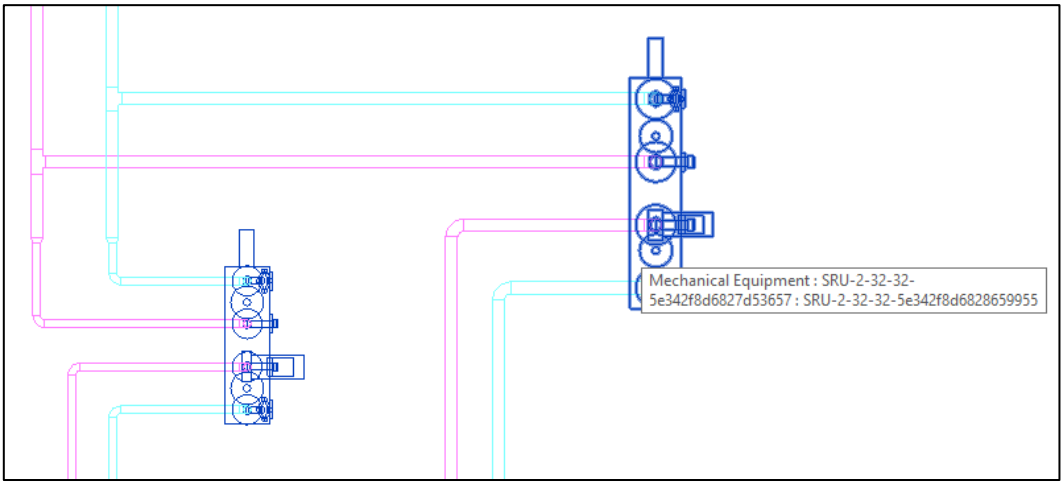

Figure 23 Two shunt unit instances selected from the drawing for update

2. Accept the unit instance selection from Revit ribbon panel finish button. Plugin will show a dialog that two units were selected for update.

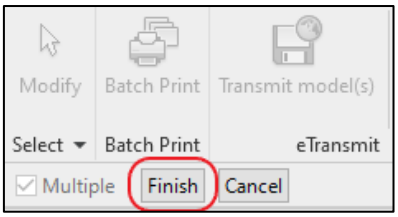

Figure 24 Selection acceptance in the Revit ribbon

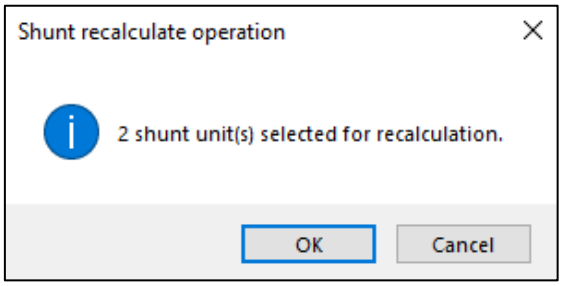

Figure 25 Plugin shunt selection information dialog

3. The batch update will bring the user to the overview page. The user can either:
   - Update all the selected shunt units one-by-one by selecting the step 3 button and go through the steps 3 – 6 for each of the shunt units.
   - Update all shunt units at once by clicking on the recalculate button.

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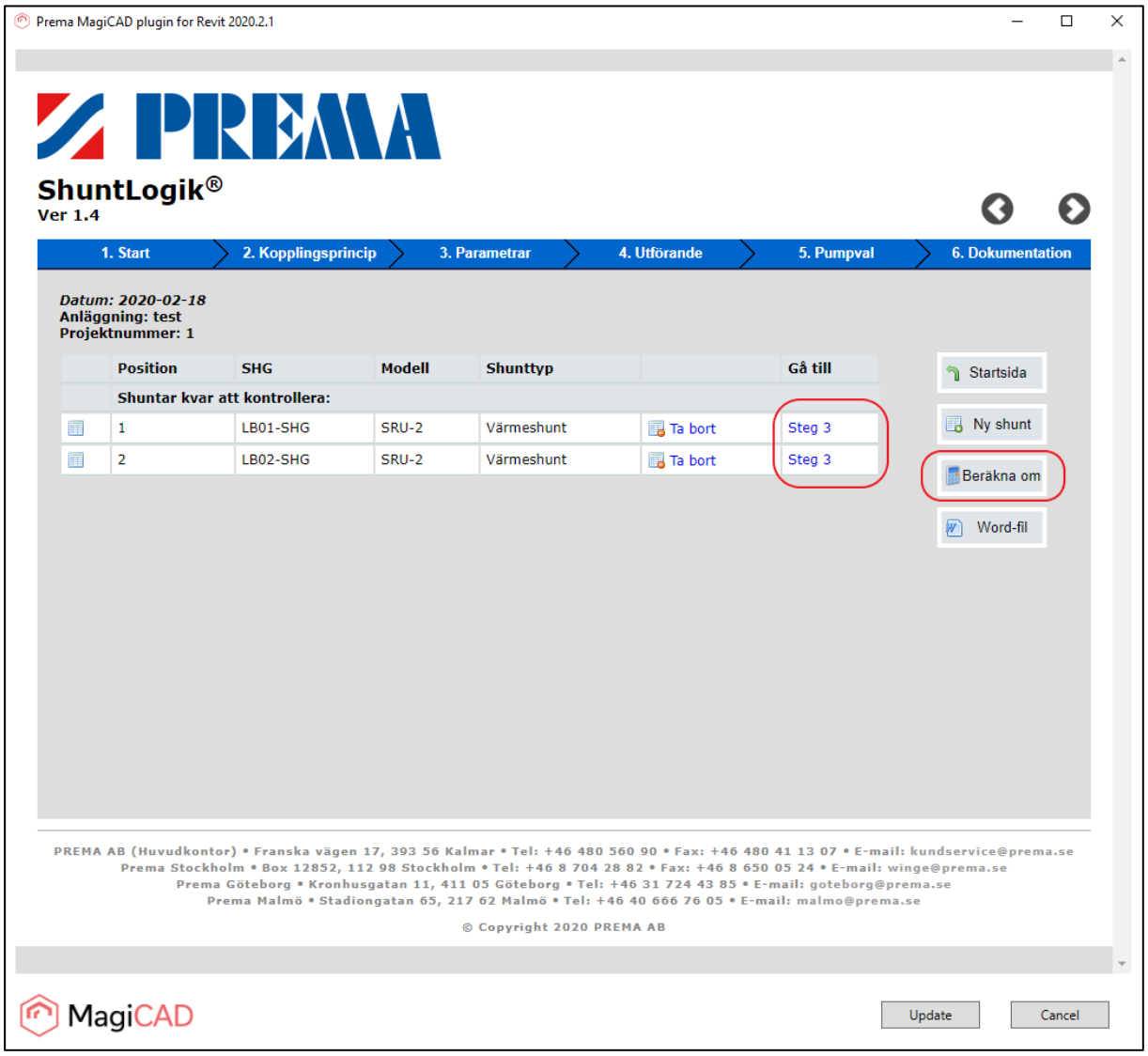

Figure 26 Update multiple shunt units in shunt calculation application

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4. If user decides to update the shunt units one-by-one, after each unit update user must return to the overview page by clicking on the overview button and go to the next unit.

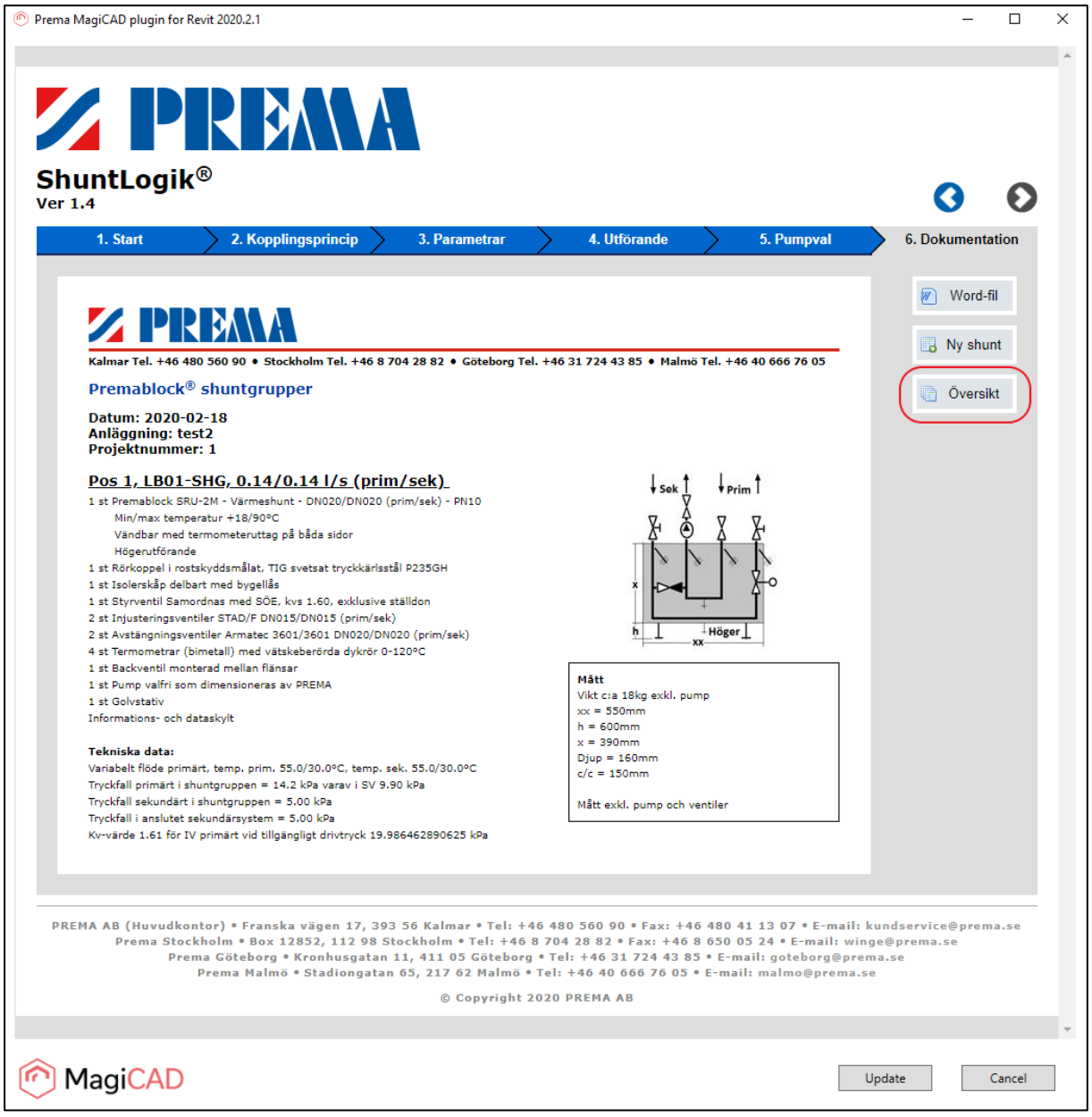

Figure 27 From last step to overview page

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5. After all the shunt units are updated, the update button can be clicked in order to return the updated shunt units into MagiCAD.

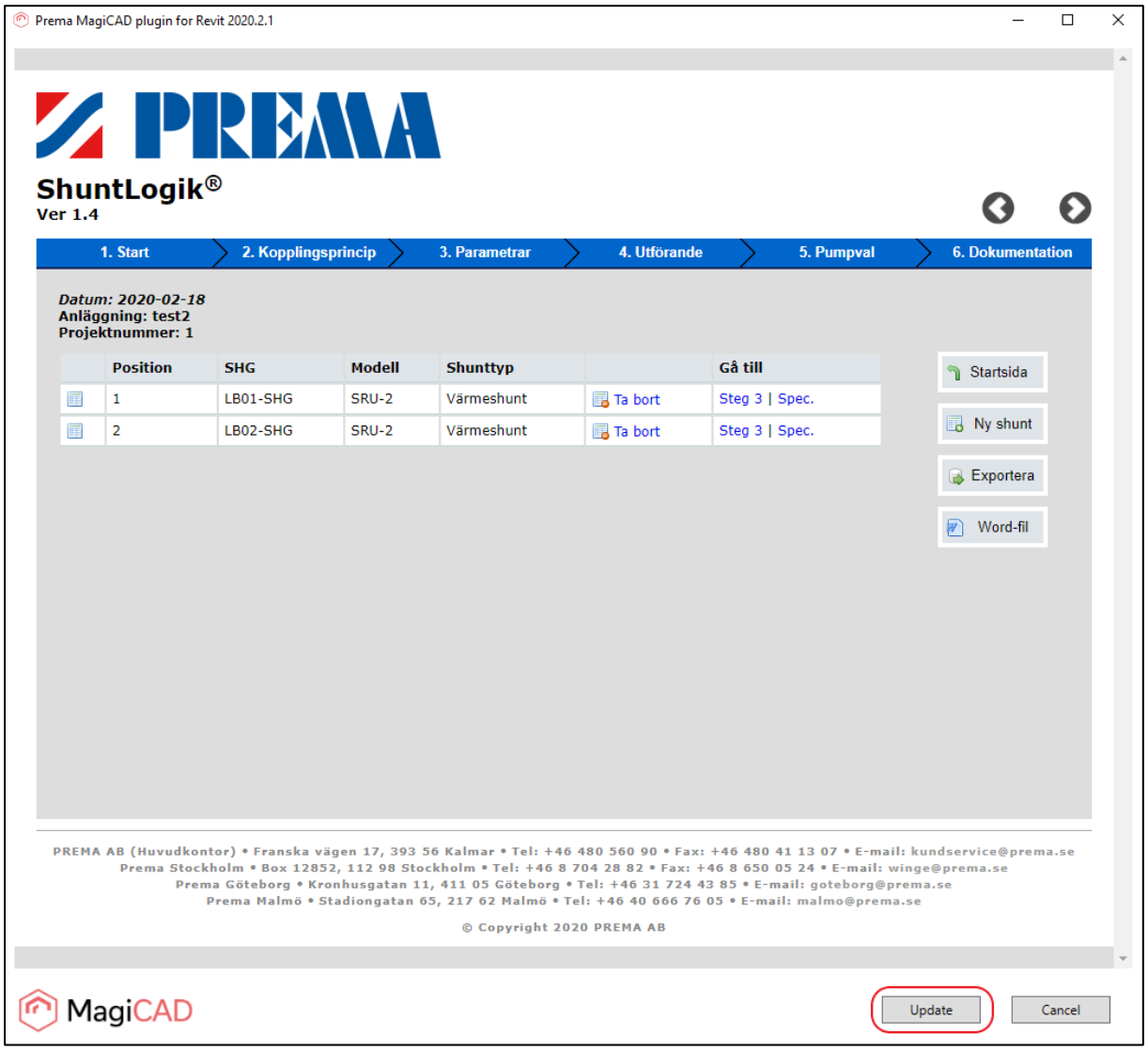

Figure 28 Update multiple shunt units from calculation application to MagiCAD

7. After the Update button click, plugin will open the Calculation report dialog. Dialog shows for each unit the product code, user code, calculation status, operation type and update status.

   When user clicks the Update drawing button plugin will do the operation which is defined in the Operation type column.
   - In case of unit data update, the existing unit parameters will be updated to new parameters. There is no need to make any changes to the piping of the unit instances.
   - In case of unit replacement the new unit instance will be created to the project. User needs to reattach the unit instance to the pipework.

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Update status column will show the status of the operation after it is done. Finally user clicks OK to close the dialog.

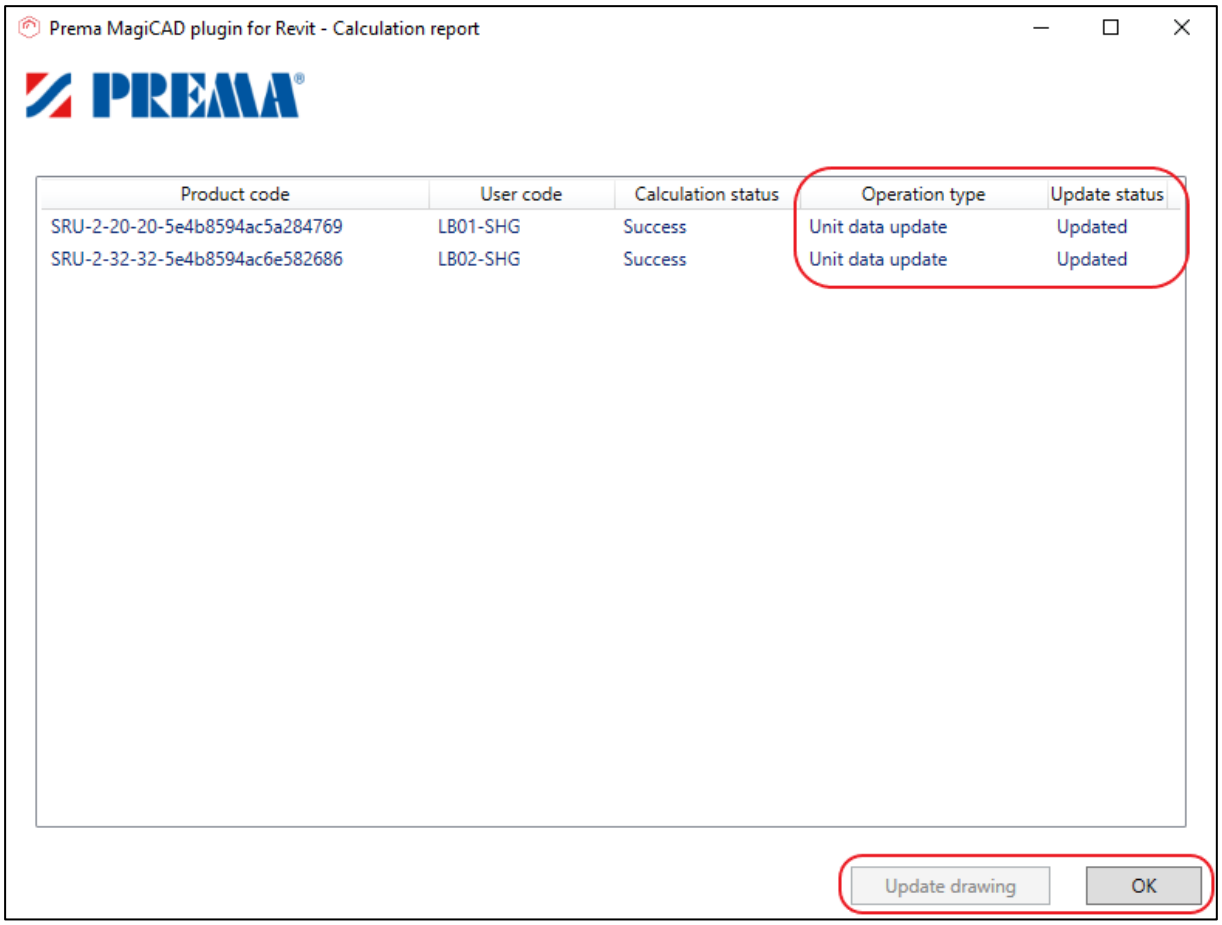

Figure 29 Calculation report dialog after the units are updated in the drawing

8. After the shunt units are updated, user needs to run the MagiCAD balancing calculation. See chapter 3 for more details.

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2.4.3 Updating PR-2 shunt unit

1. The update feature is initialized by clicking on the “Update Shunt Units” button on the PREMA MagiCAD plugin. Plugin asks user to select the shunt unit which needs to be updated.

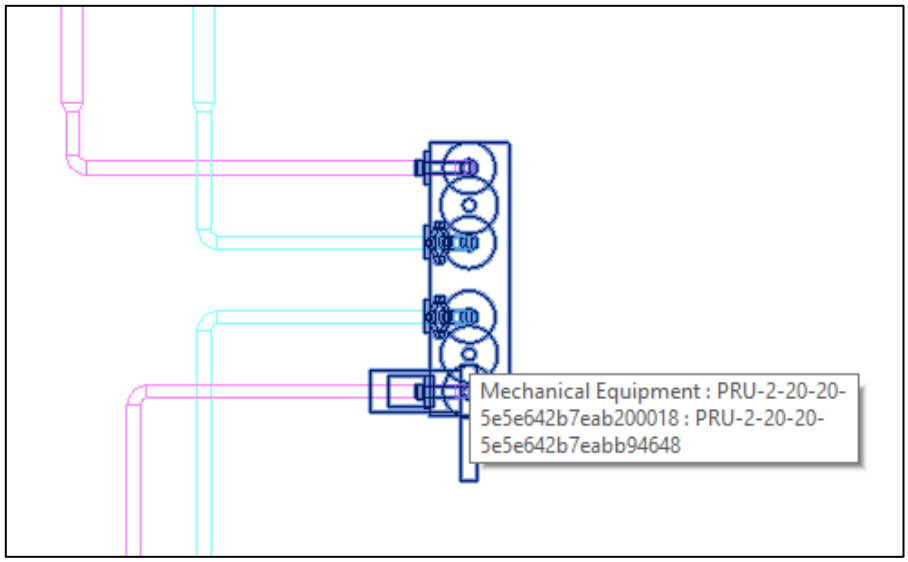

Figure 30 Shunt unit instance selected from the drawing for update

2. Accept the unit instance selection from Revit ribbon panel finish button. Plugin will show a dialog that one PR-2 unit was selected for update. In this phase plugin asks from user to select the outermost pipes of primary circuit from shunt unit.

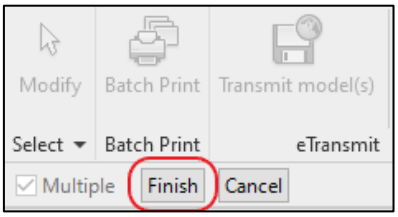

Figure 31 Selection acceptance in the Revit ribbon

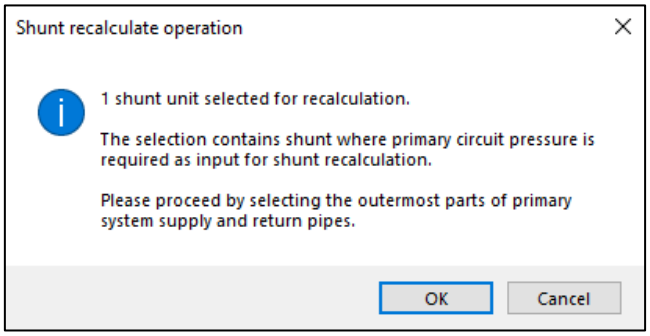

Figure 32 Plugin shunt selection information dialog

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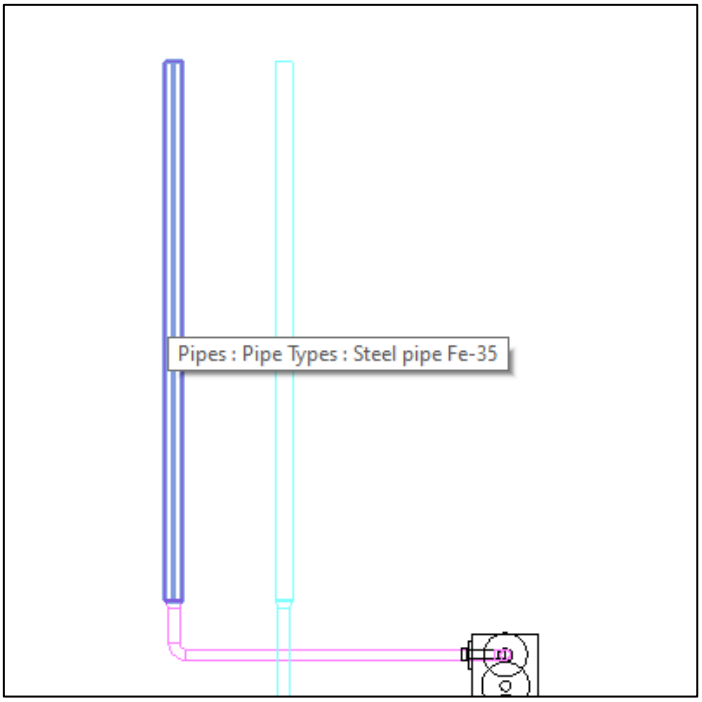
3. User selects the outermost parts of the primary circuit supply and return pipes. Plugin will get the pressure data from the pipes. Pressure data from primary circuit is needed in shunt unit calculation for sizing the pump in shunt unit.



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4. After the pipes selection the update procedure continues just like with the other shunt units. Shunt calculation application shows the pressure drop in the primary circuit which the pump in the shunt unit should handle.

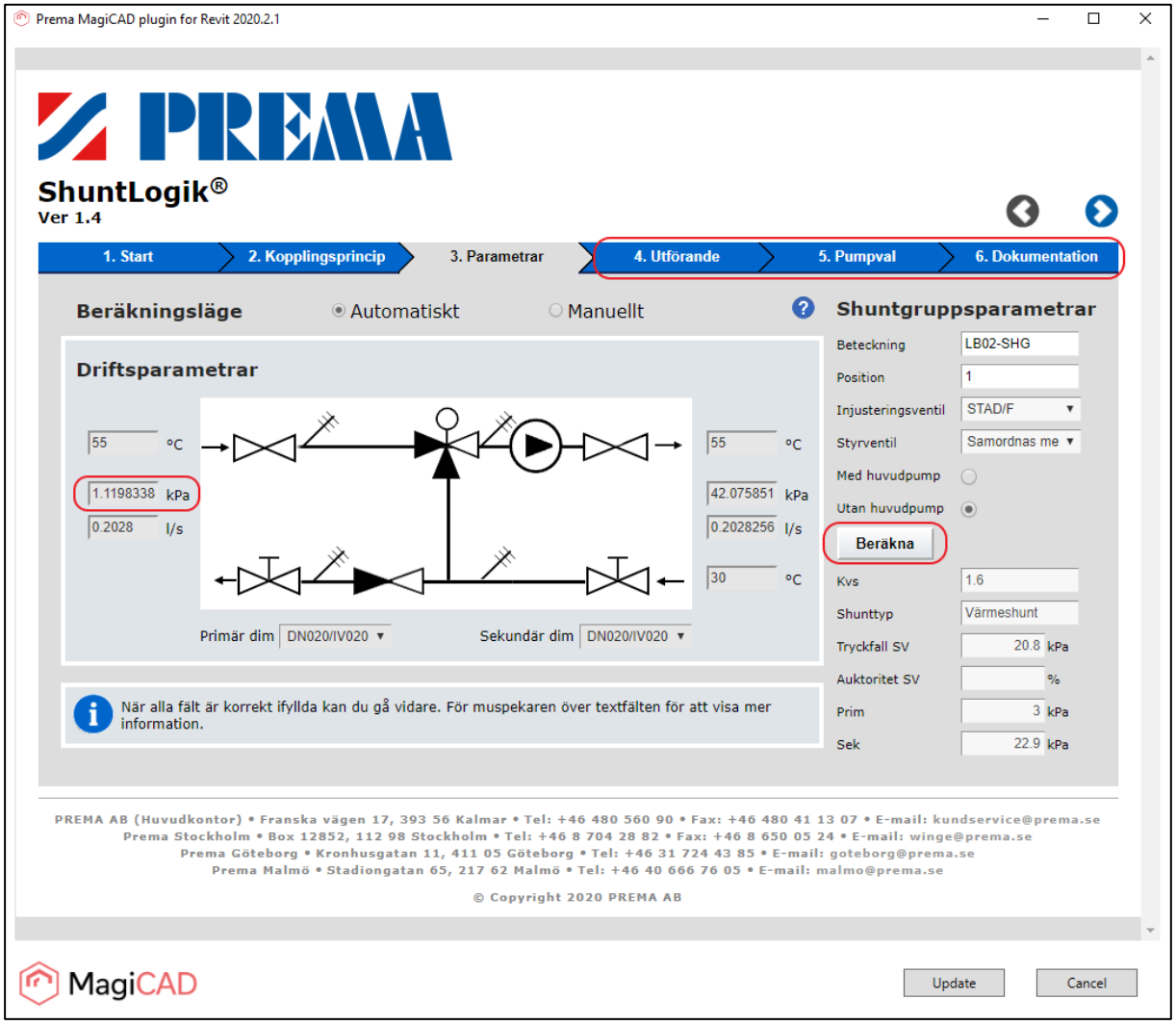

Figure 33 Single shunt unit update in PREMA calculation application

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2.5 Detailed Technical Data function

When technical data operation is started, user is prompted to select the shunt unit which technical data user wants to view. After the shunt instance selection the shunt's Technical Data dialog will be shown.

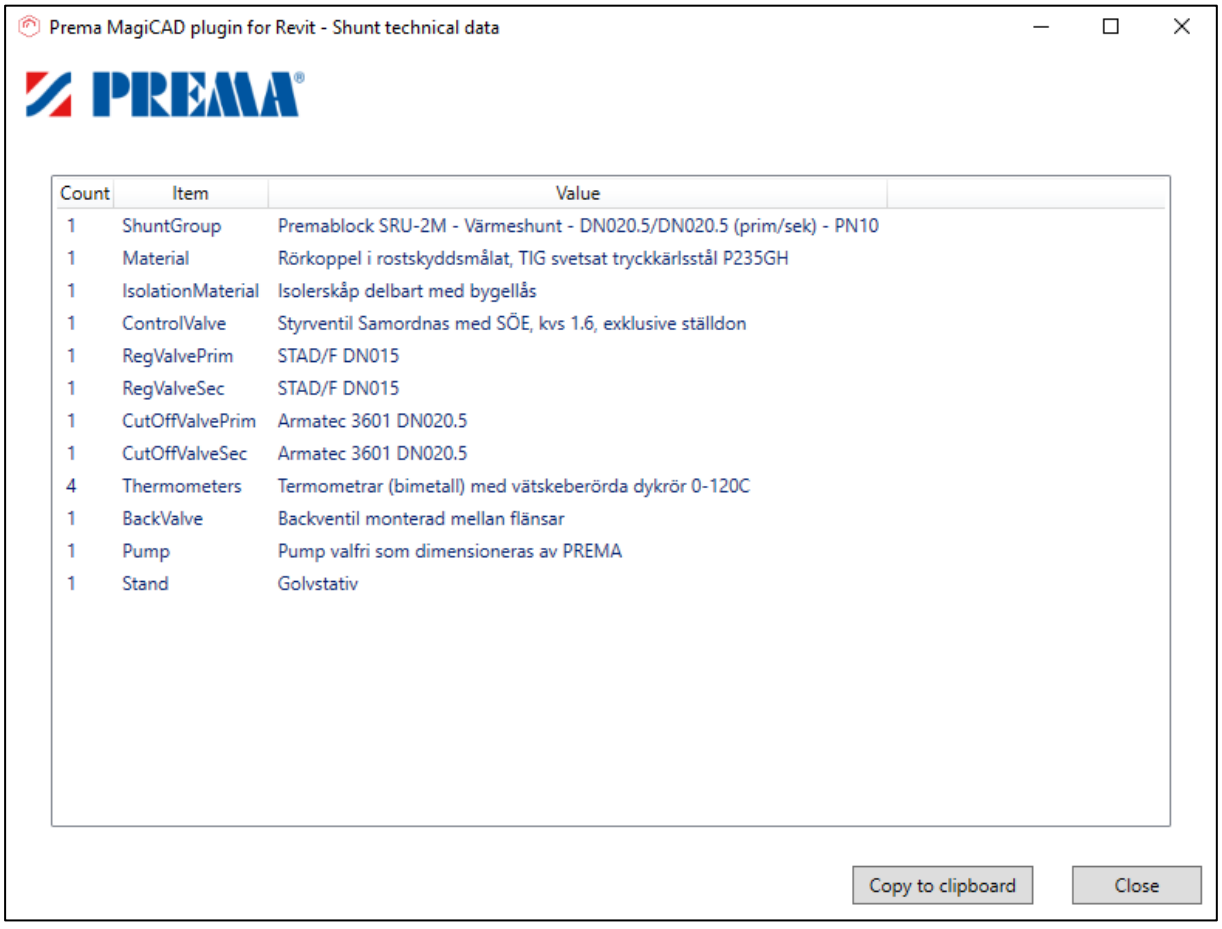

Figure 34 Shunt Technical Data dialog

Dialog shows the item name and the count of each item. It shows also the description of the item in the value field.

Copy to cliboard functionality copies the contents of the list view to clipboard allowing the user to copy and paste the bill of materials of shunt unit to users own documentation.

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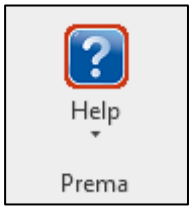
2.6 Detailed Help function



The plugin will open the *Prema MagiCAD plugin for Revit - User guide.pdf* which is located by default at folder *C:\ProgramData\Prema\Prema MagiCAD plugin for Revit*. User needs to have a PDF compatible reader installed.

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3 MagiCAD heating and cooling balancing calculation

MagiCAD Heating and cooling balancing calculation is found from the Revit ribbon panel under the MagiCAD Piping tab and Calculation button.

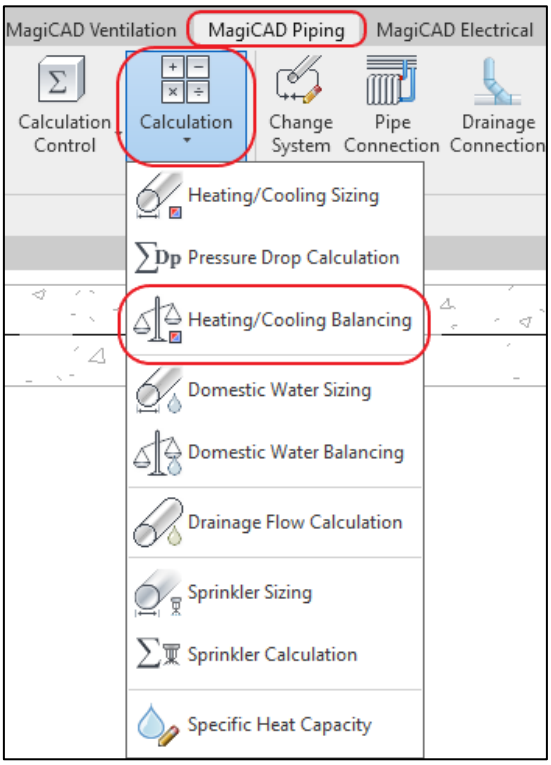

Figure 35 MagiCAD Piping tab with Calculation button and its functions in Revit ribbon panel

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1. Heating/Cooling Balancing button opens the Balancing options dialog where user can select the balancing options. Select the whole network balancing as a range and balance to minimum pressure.

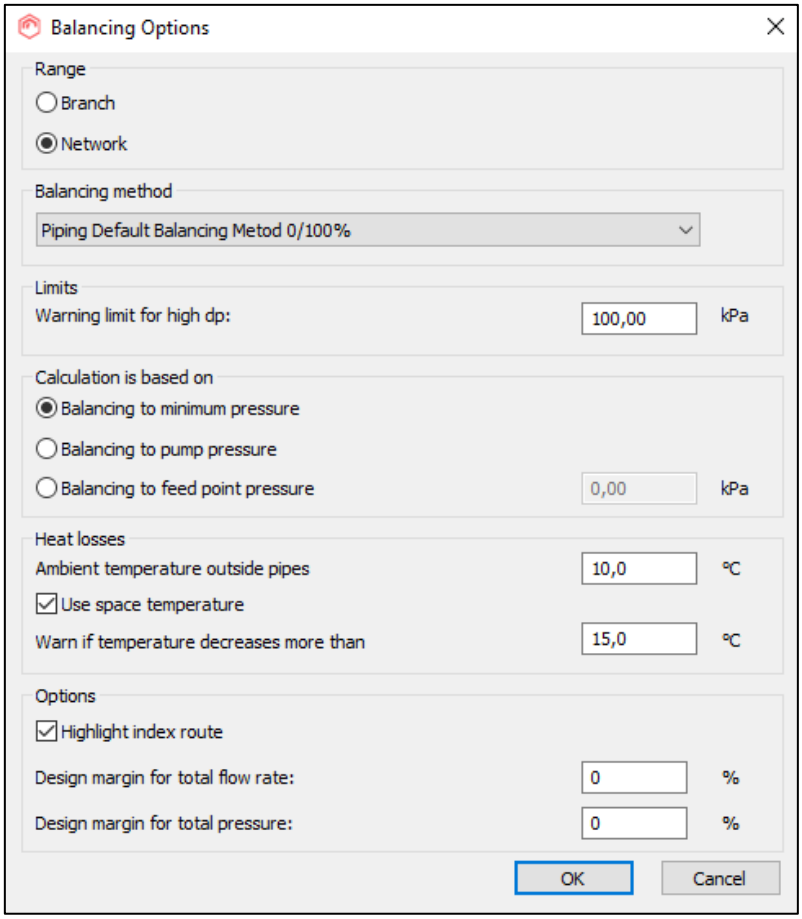

Figure 36 MagiCAD Heating/Cooling Balancing options dialog

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2. After the balancing options selection user clicks the OK button and then selects one pipe from the pipework to be balanced.

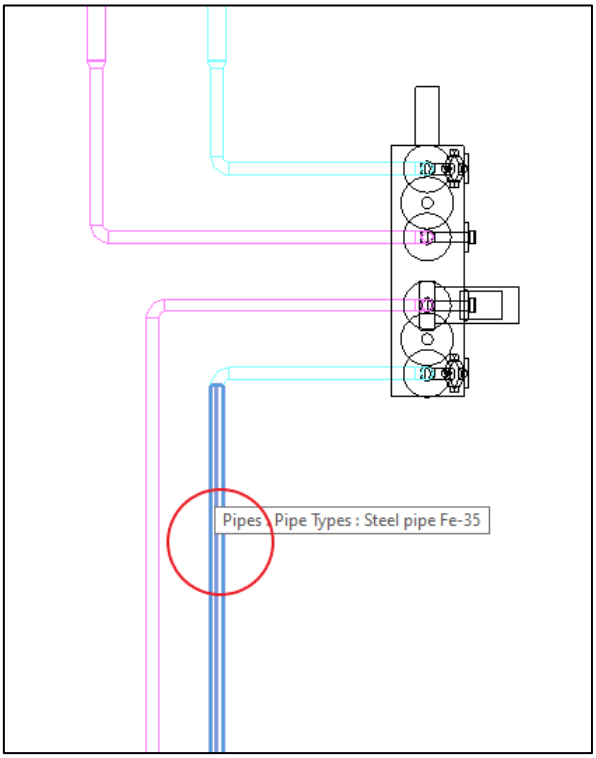

Figure 37 Shunt unit secondary circuit return pipe selected

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3. After the network pipe selection, MagiCAD will run the calculation and shows the Hydronic Network Balancing Report dialog. User can view the calculation results and then update the results to project with OK – Update to model button. MagiCAD updates the results to model and then user can view the calculation results also from the instance properties dialog.

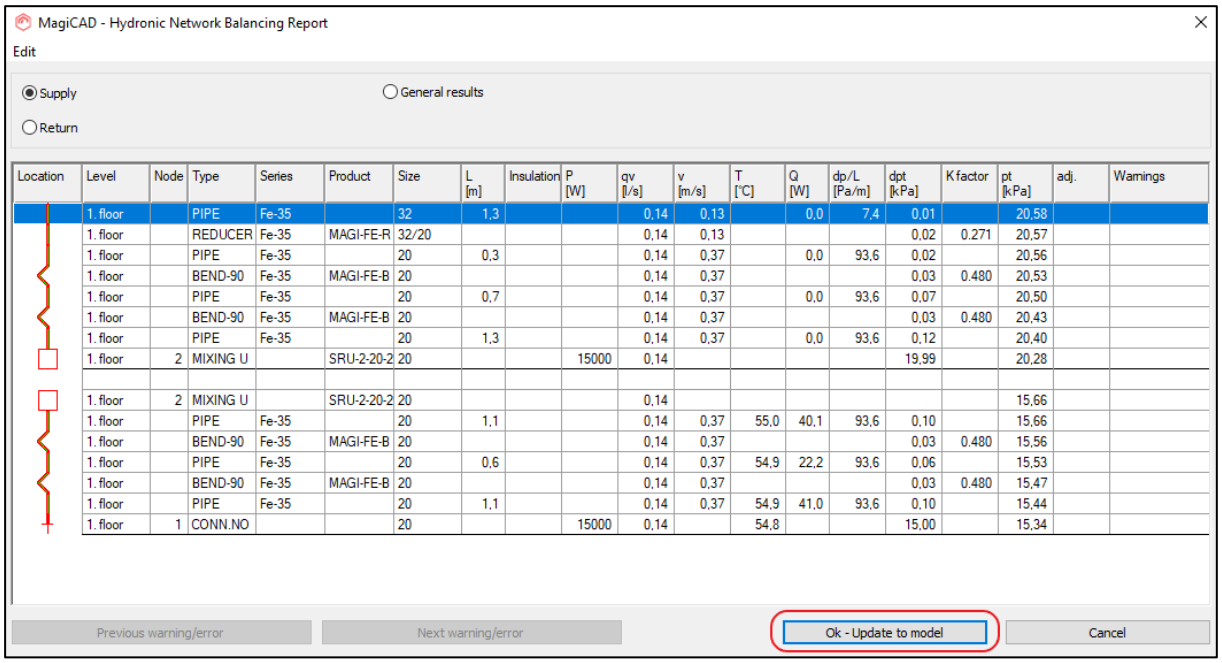

Figure 38 MagiCAD Hydronic Network Balancing Report dialog

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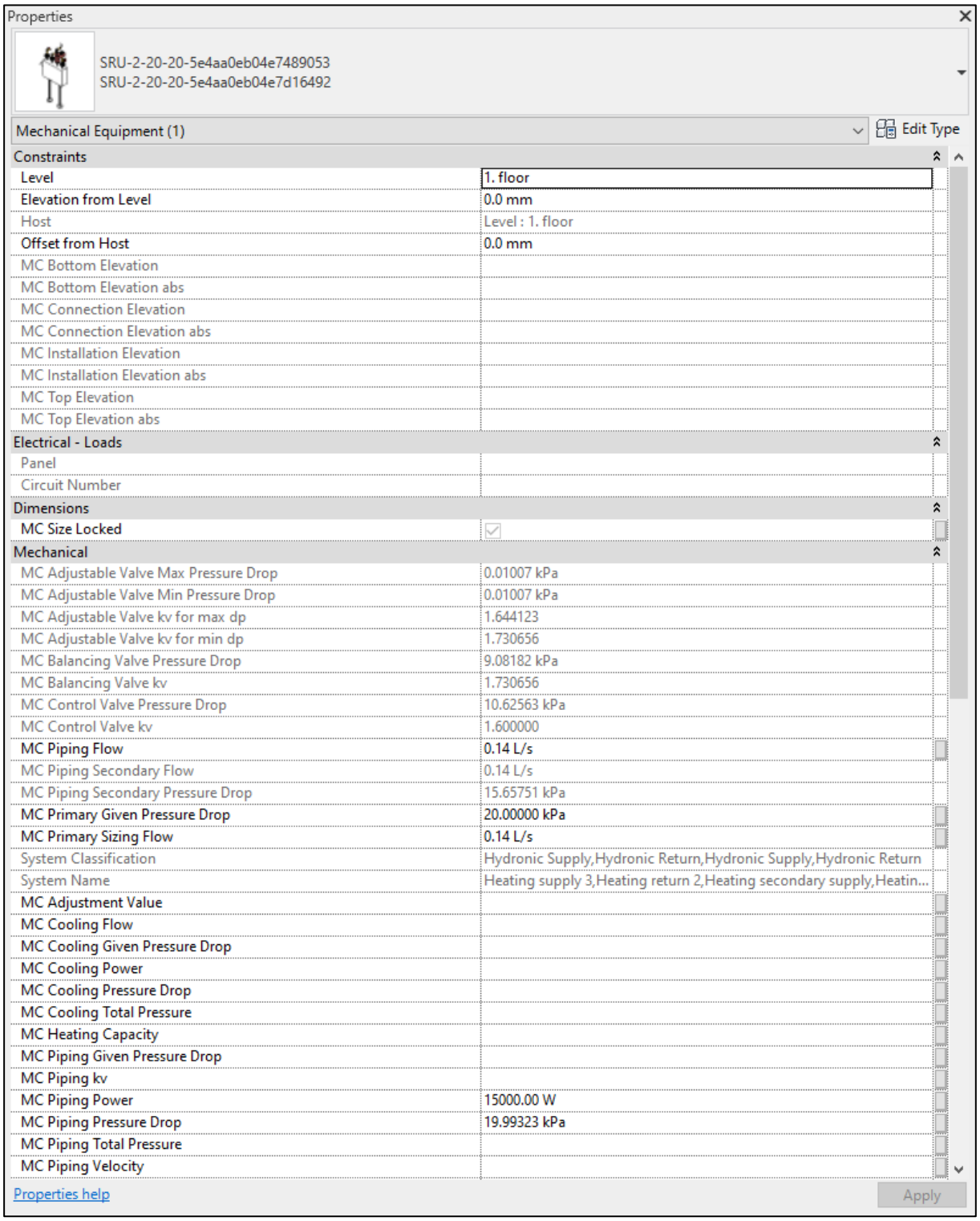

Figure 39 Shunt instance properties dialog in Revit

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