TOSHIBA

Leading Innovation

VRF Selection Tool Software

v1.2.19

Better Air Solutions

Toshiba Carrier Corporation
TCEU Pre-Sales Division
October 26, 2018

Scope of Disclosure	Distributions
Owner	Toshiba Carrier Corporation

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1. Introduction

- VRF System Design
  - Indoor Units
  - Outdoor Units
  - Accessories
  - Controls
- Capacities, pipes… calculation
- Equipment list
- System check according to the specifications
- PDF, CAD and Excel Outputs

1. Introduction

Item	Description
OS	Microsoft Windows 7 Microsoft Windows 8.1 Microsoft Windows 10 * Windows 10, only while devices are supported
CPU	As recommended by your OS, or better
Memory	As recommended by your OS, or better
Display	Selection Tool mode: FWXGA (1366 x 768) resolution Floor Plan Mode: UXGA (1600 x 1200) resolution High Color or better
Hard disk	* Microsoft .NET, Framework 4.6 are separate
Required components	**Microsoft .NET, Framework 4.6 (will be installed if you don't have it)**
Required software	Microsoft Excel 2010 / 2013 / 2015 Reader or browser that can view and print PDF files
Internet	Online connection required in order to register the license

Current Status:

- Released on 26/10/2018
- Selection Tool goes Global
- Software is ready
  - Already beta tested on the field
  - Similar to AIRS for a smooth transition
  - Translations and Sales Data are pending
  - Same features and more
- Server is working
  - Registrations and activations are online
- GPDR compliance

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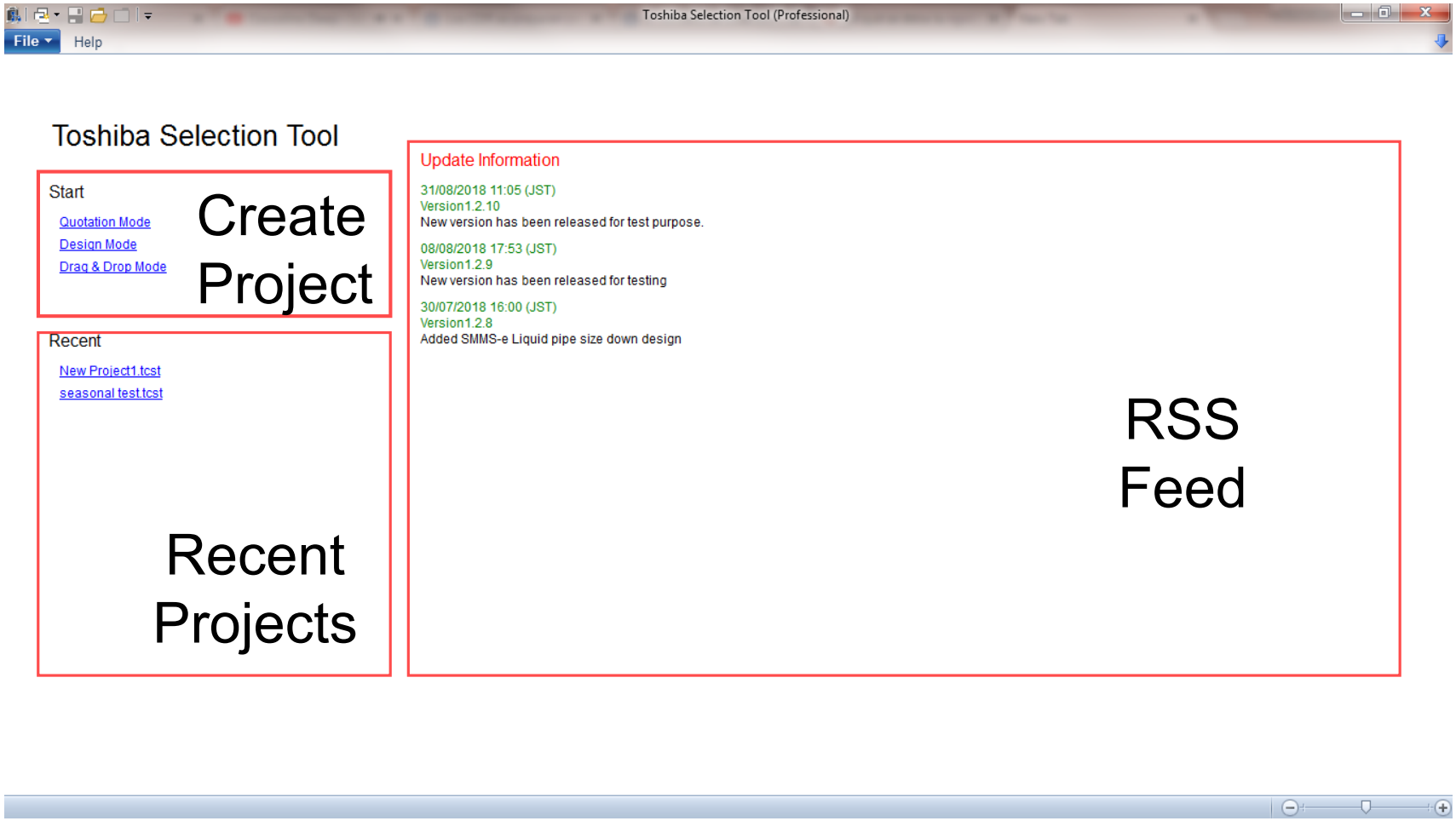
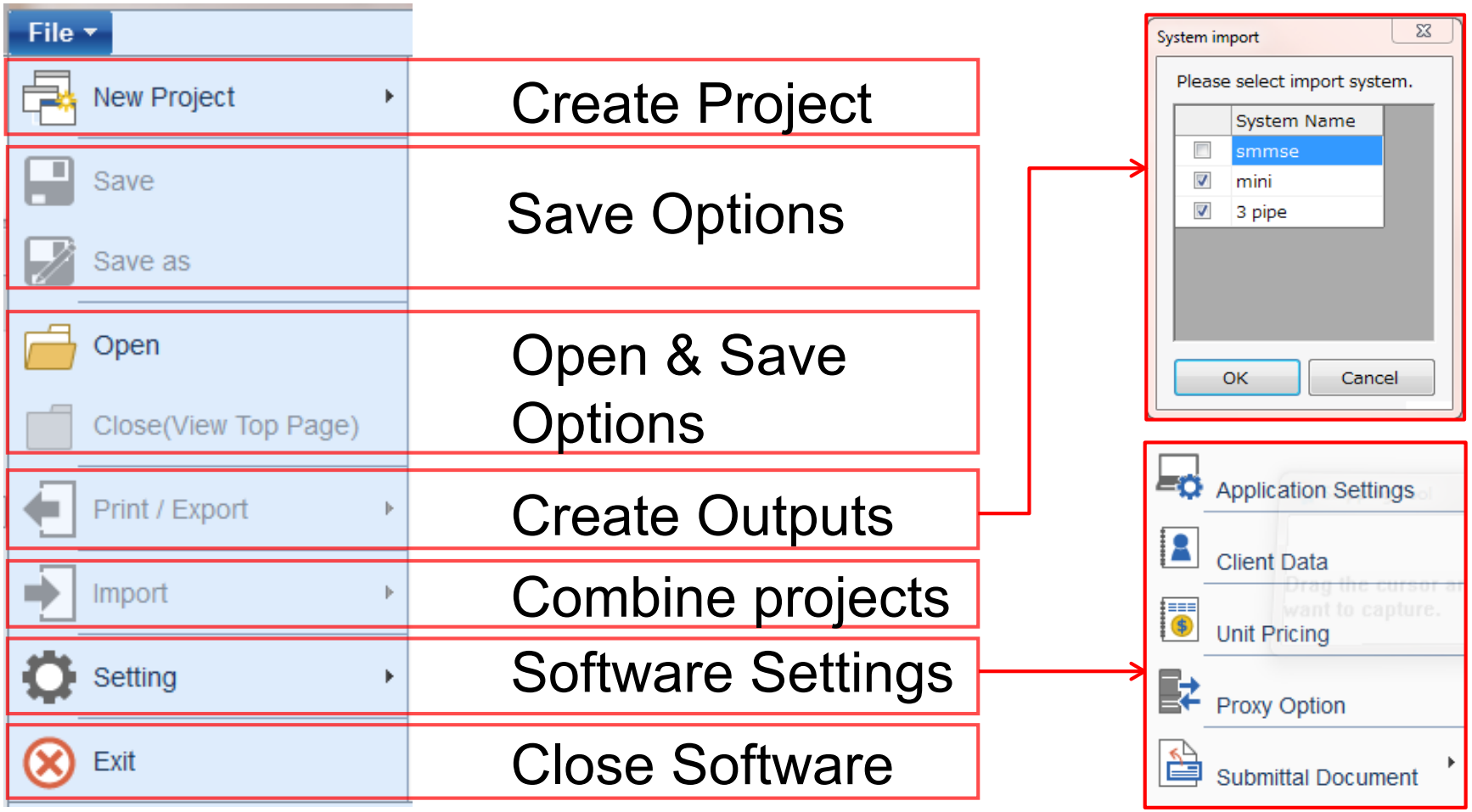
Start up page:

The following window displays when you start the software



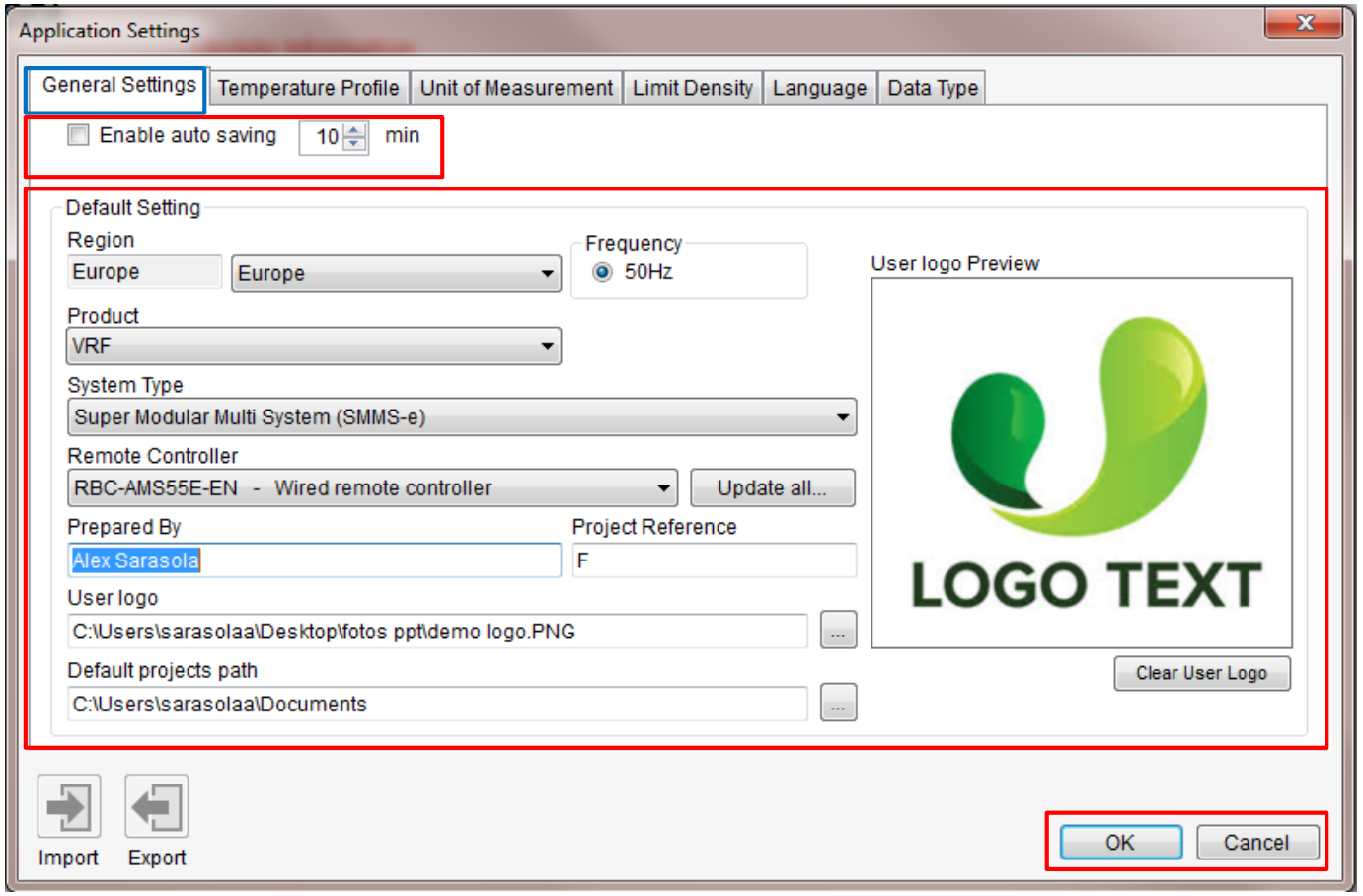
File menu:

The following window displays when clicking on File menu:



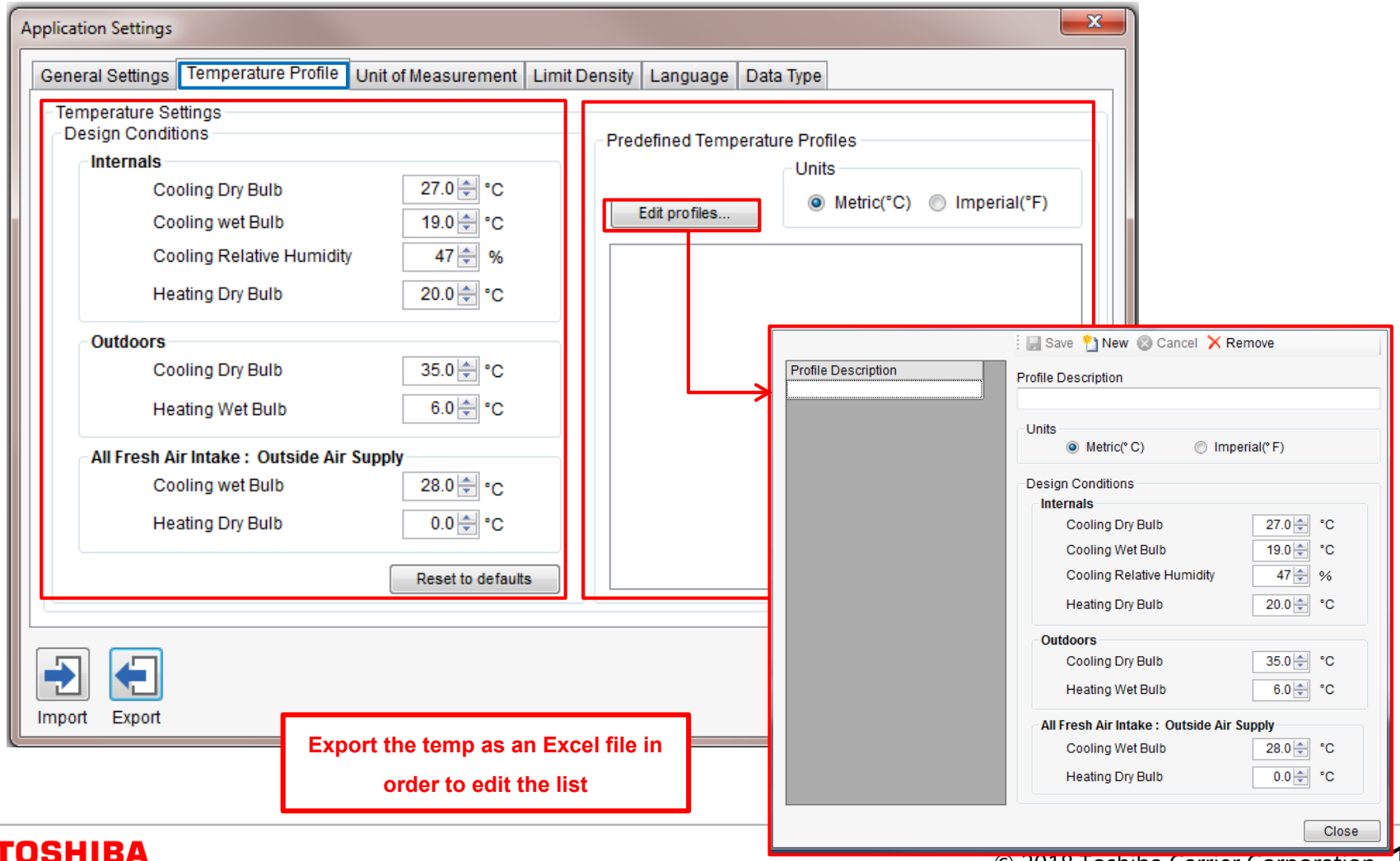
Application Settings:

Open applications settings to configure the software and set default settings:



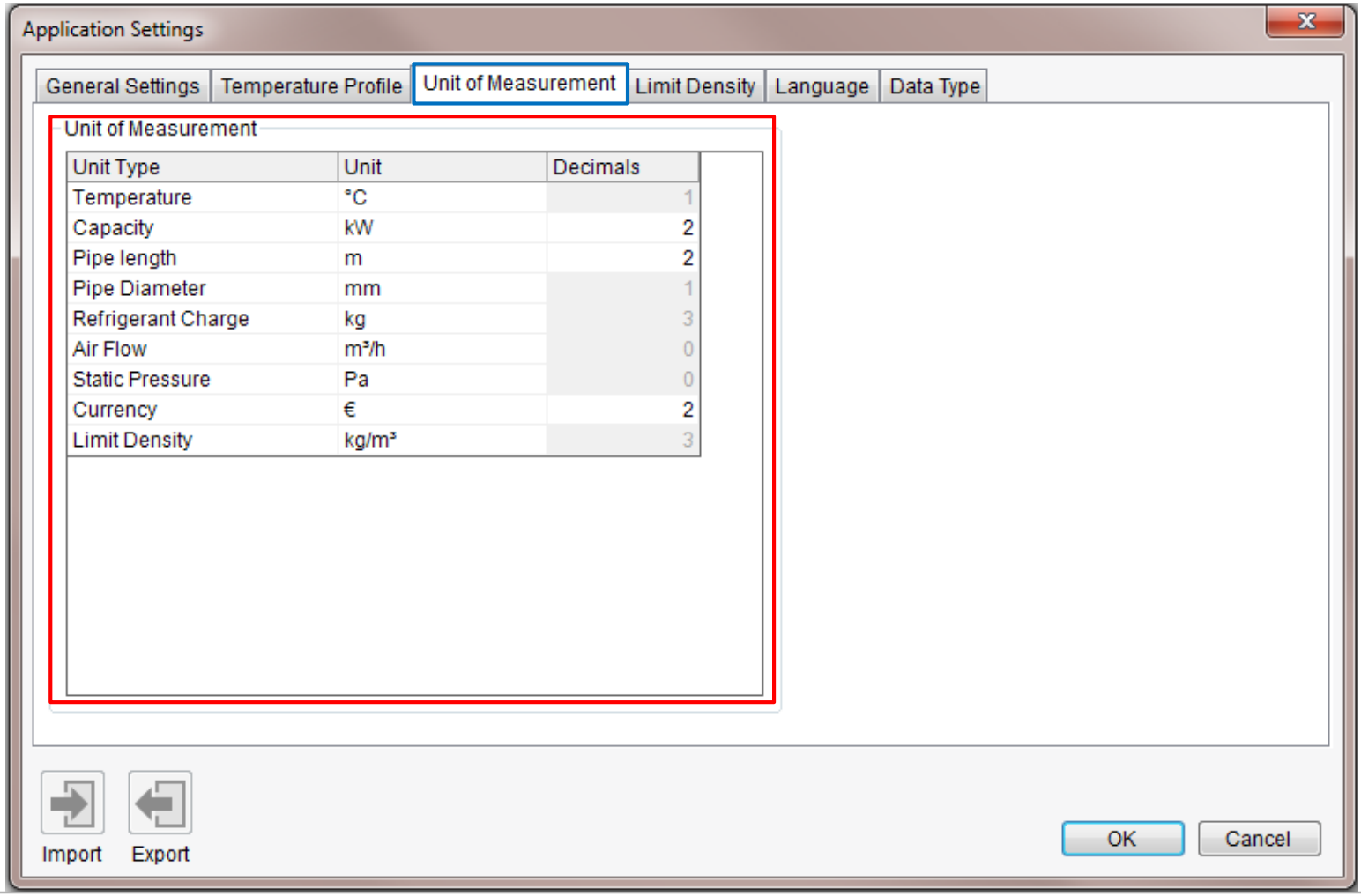
Application Settings:

Set the default temperature conditions for new projects:



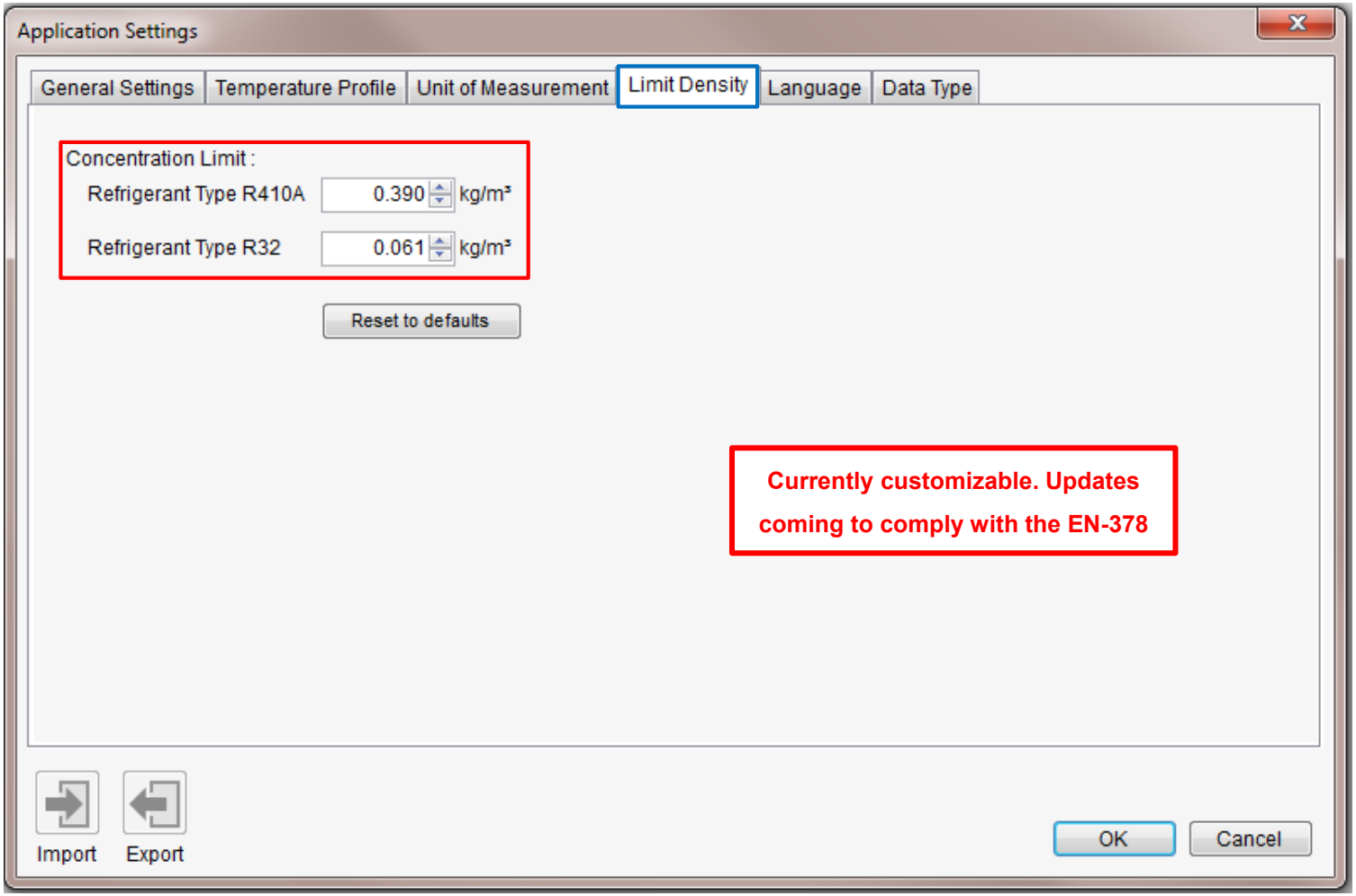
Application Settings:

Select the default units the software will use:



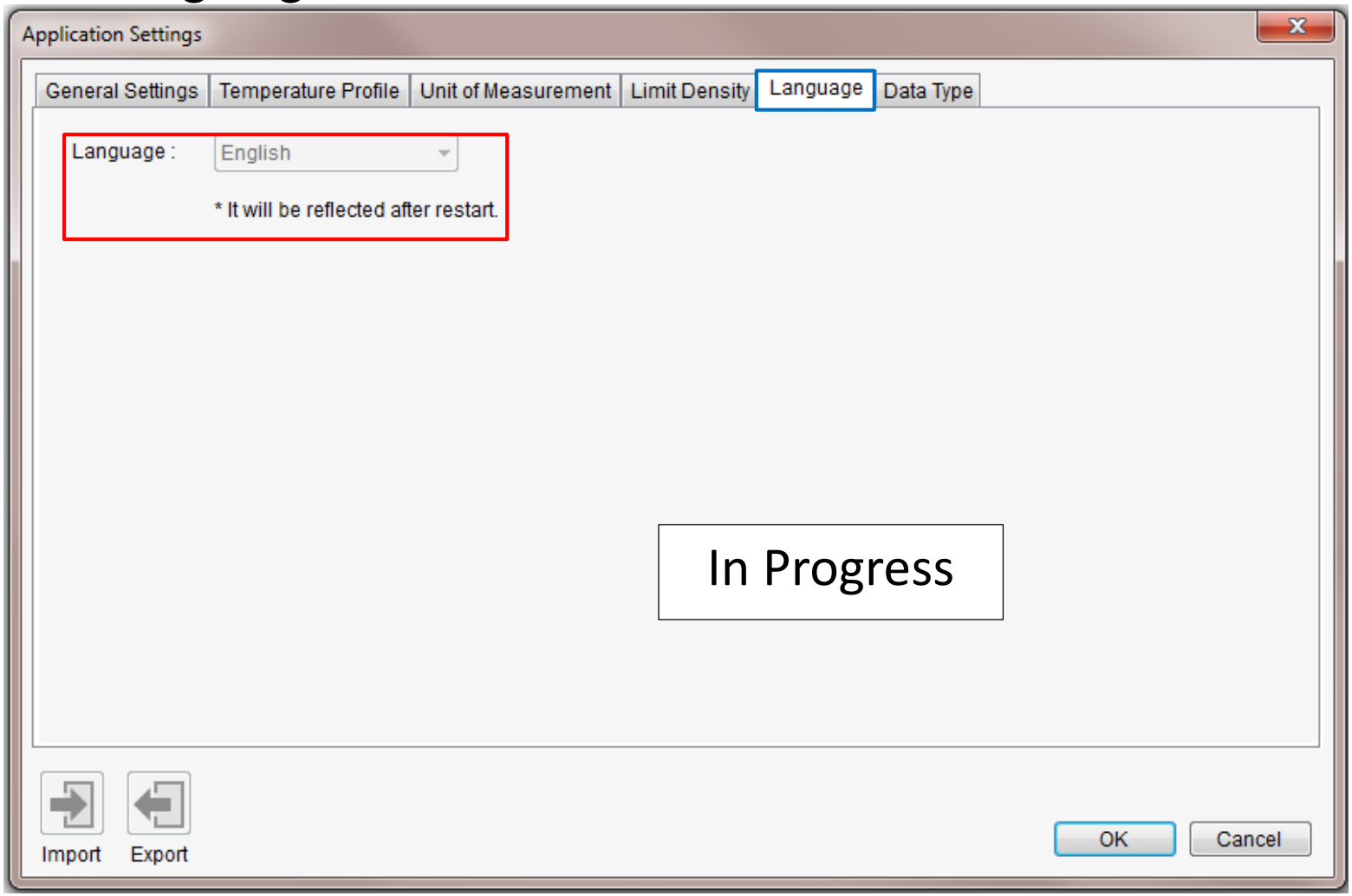
Application Settings:

Set the limit density values for the software



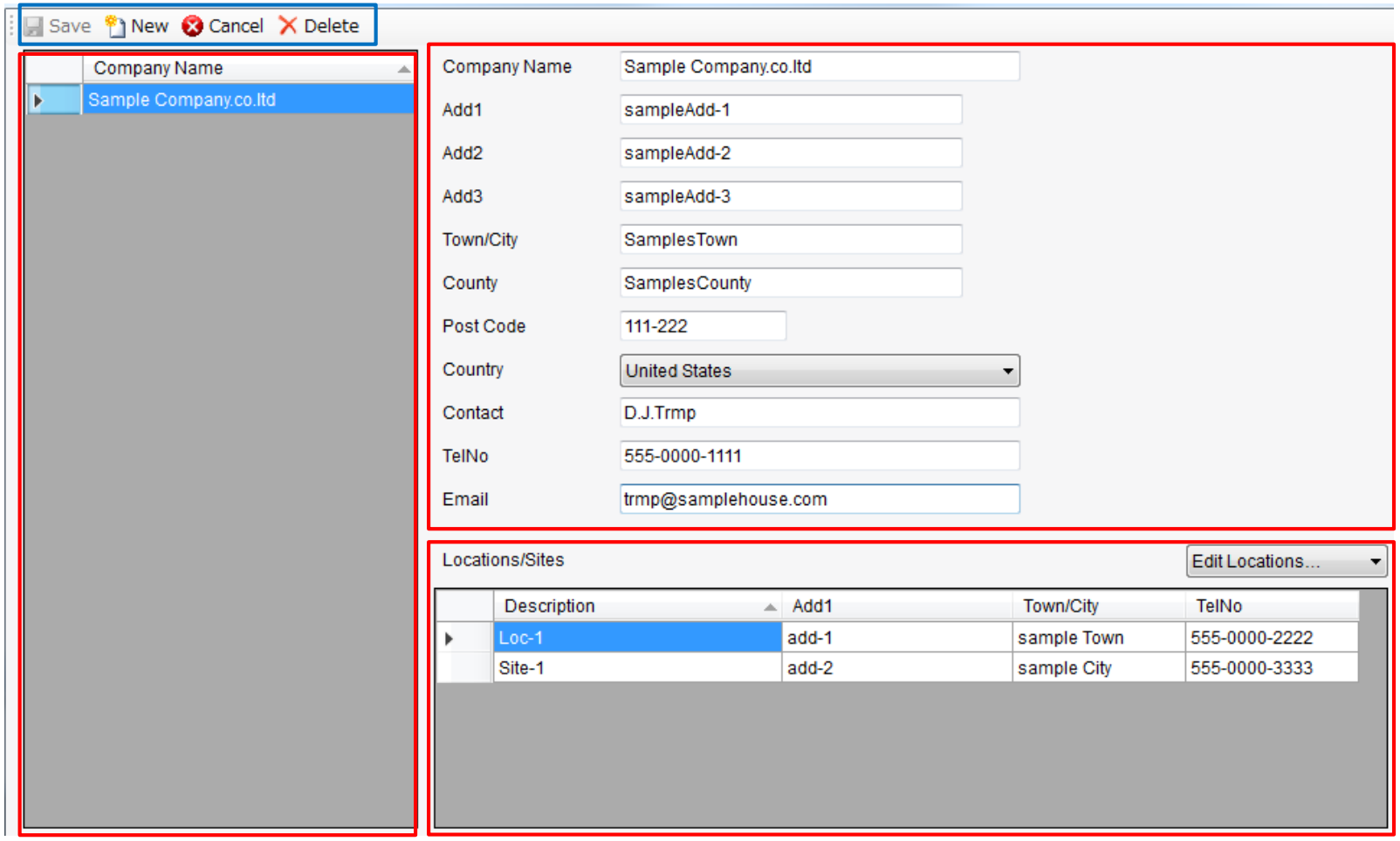
Application Settings:

Set the language for the software



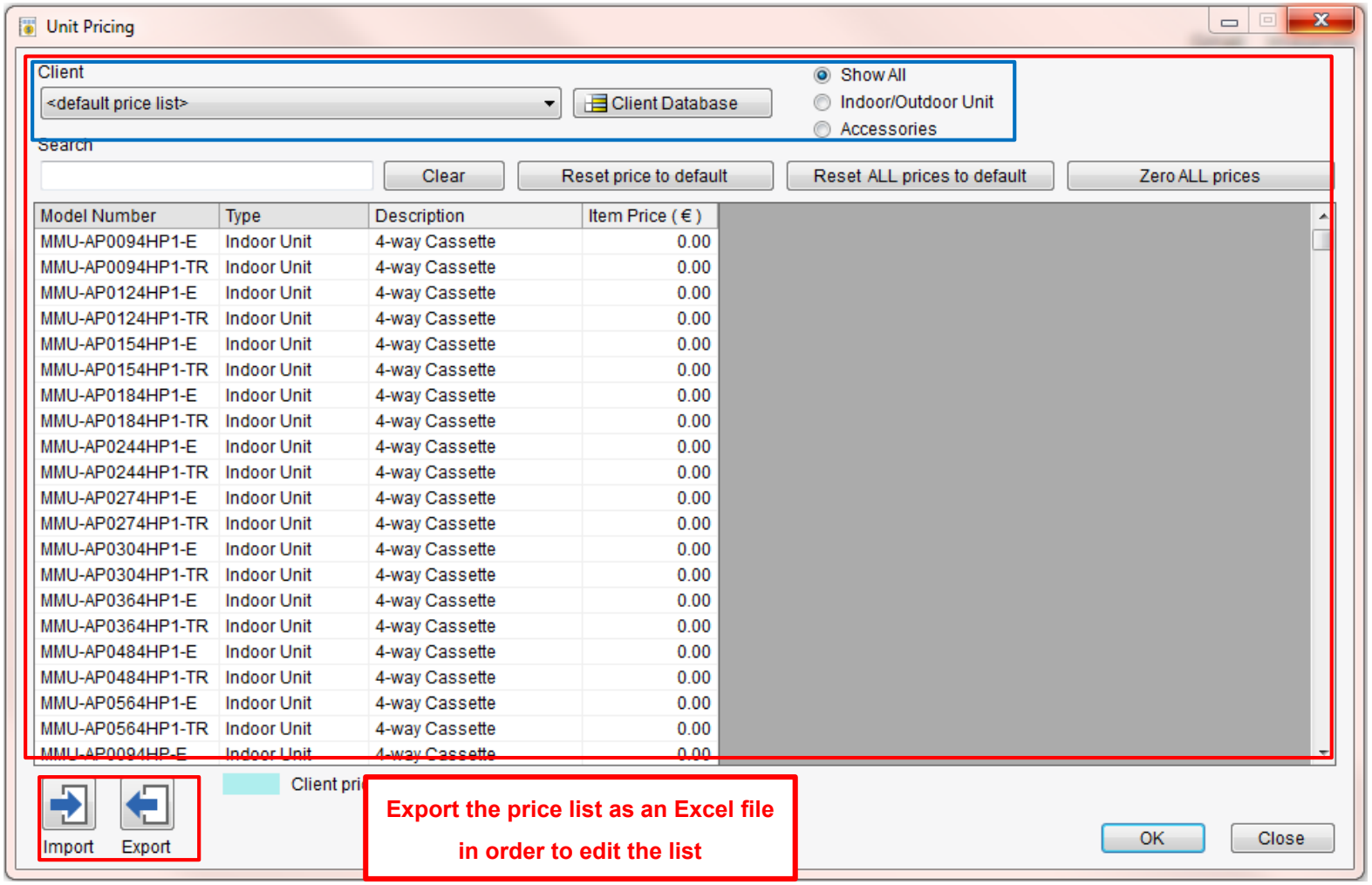
Client data:

Save the clients data profiles to be used on the output:



Unit pricing:

Edit the price list for al the Carrier units and accessories



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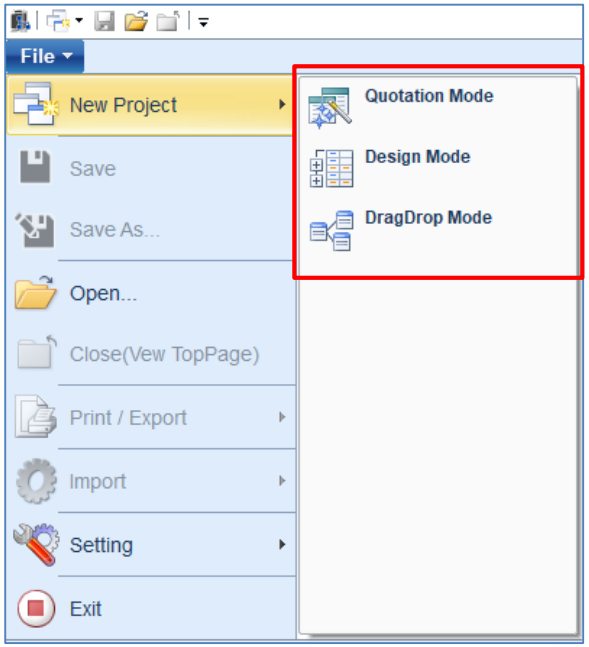
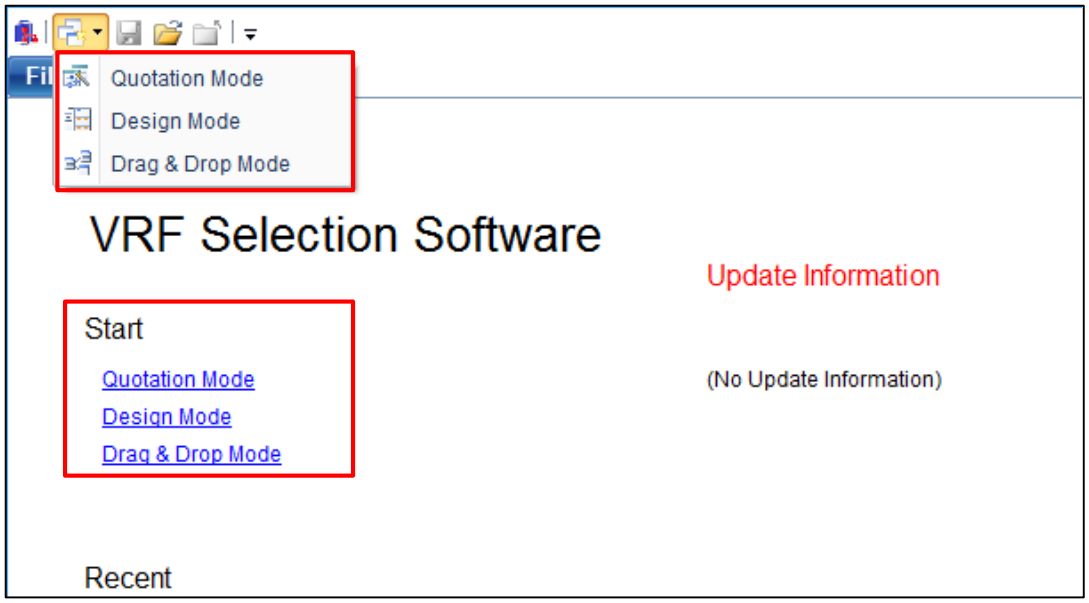
3. New Project



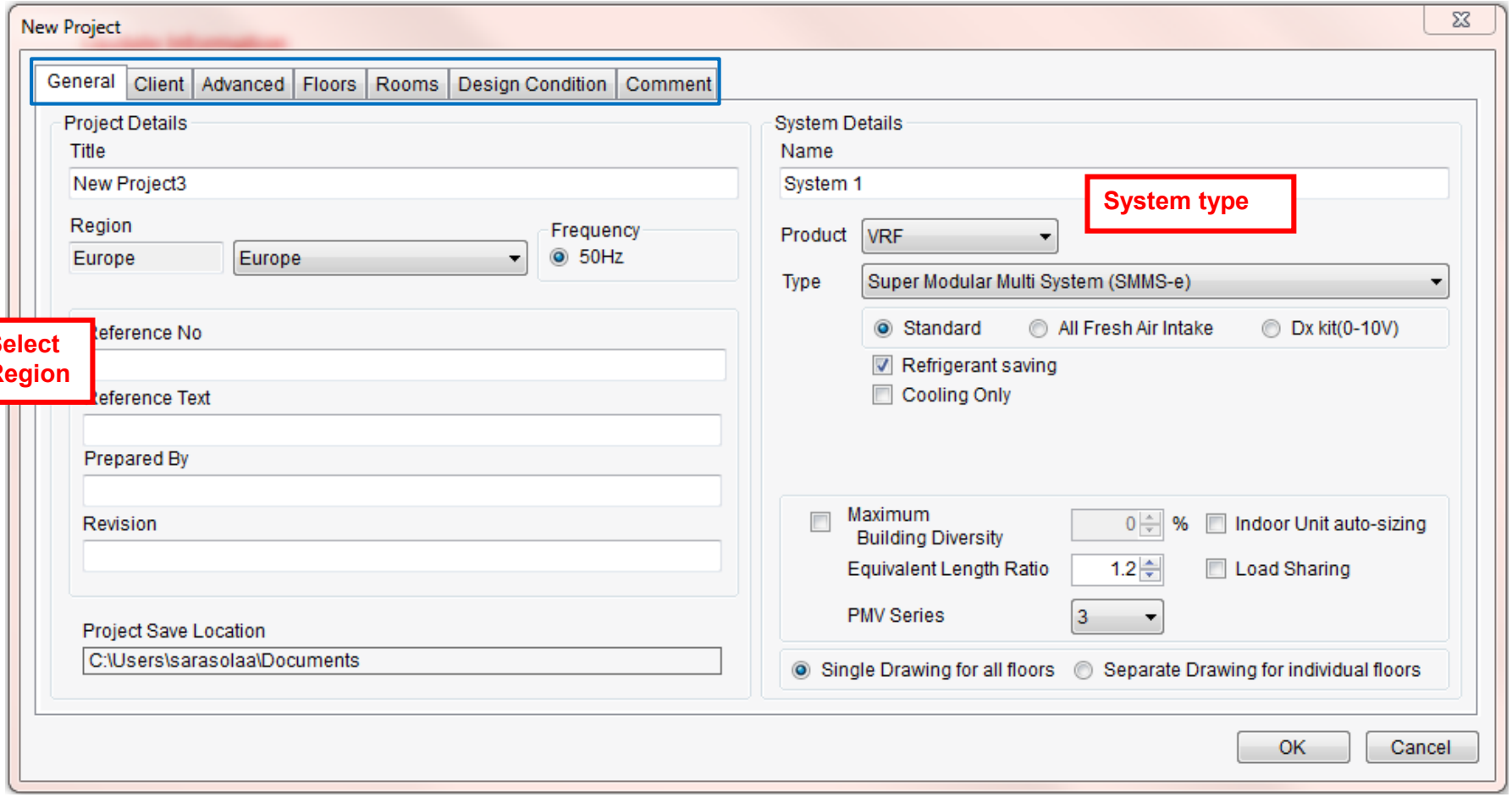


3 different ways to start a project:

- Quotation mode: quick design with automatic piping for quick quotations
- Design mode: A more advanced quotation mode
- Drag & Drop mode: Will create a blank canvas with most options

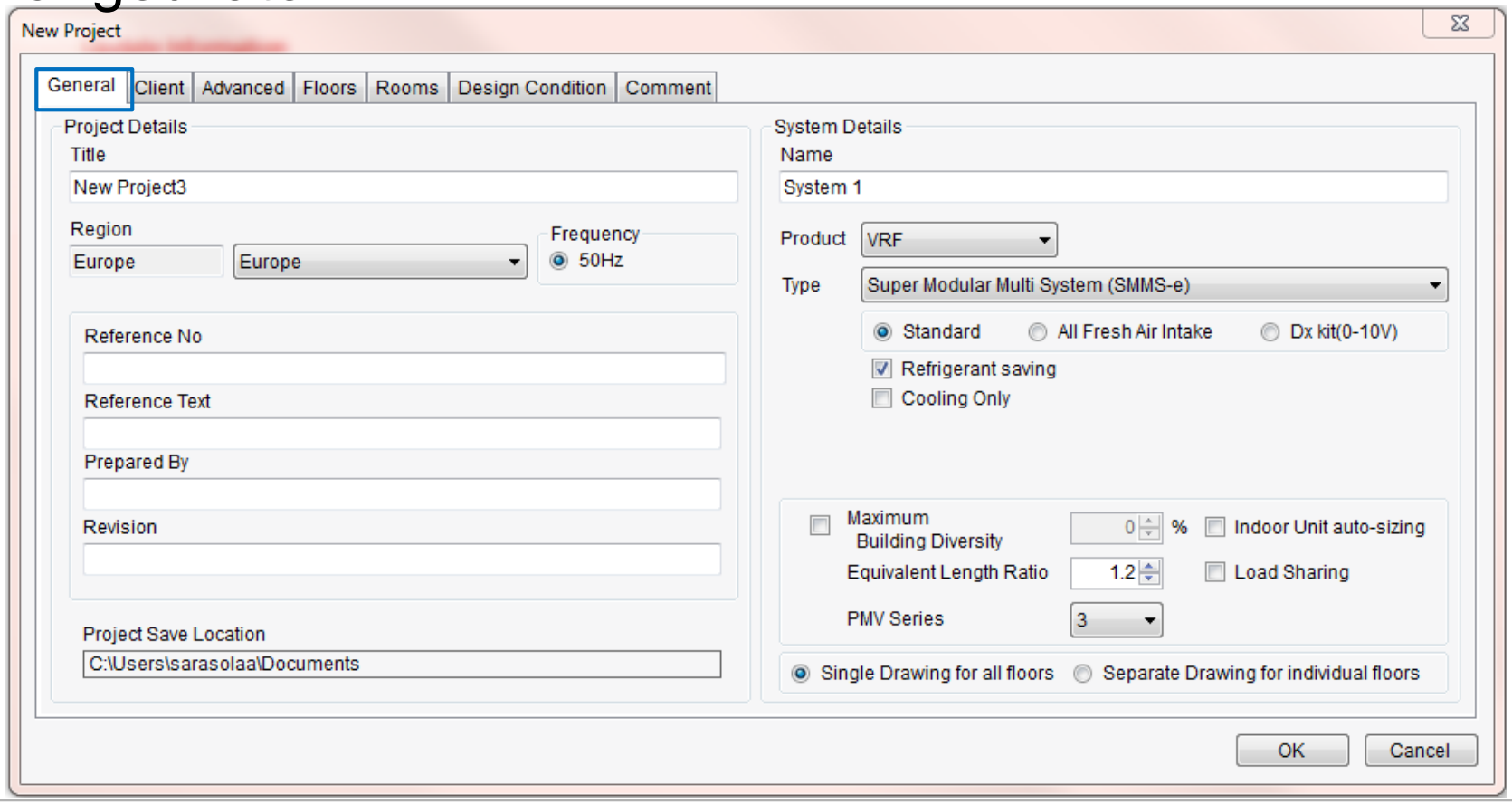
New Project:

Before creating a project, the New Project window will be displayed



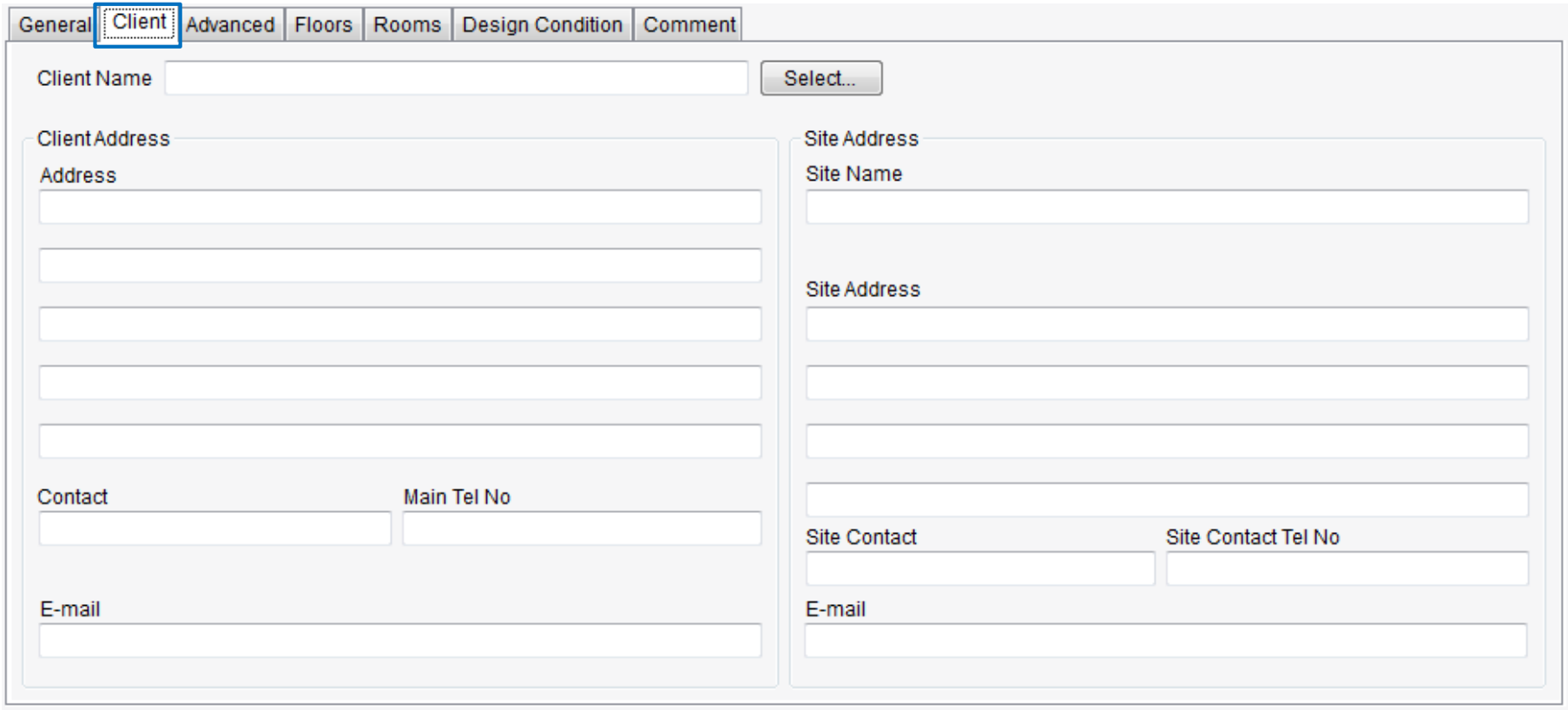
Drag and Drop mode:

Select the System type and fill the required information (just the Project Title is mandatory). Beware, the region can't be changed later:



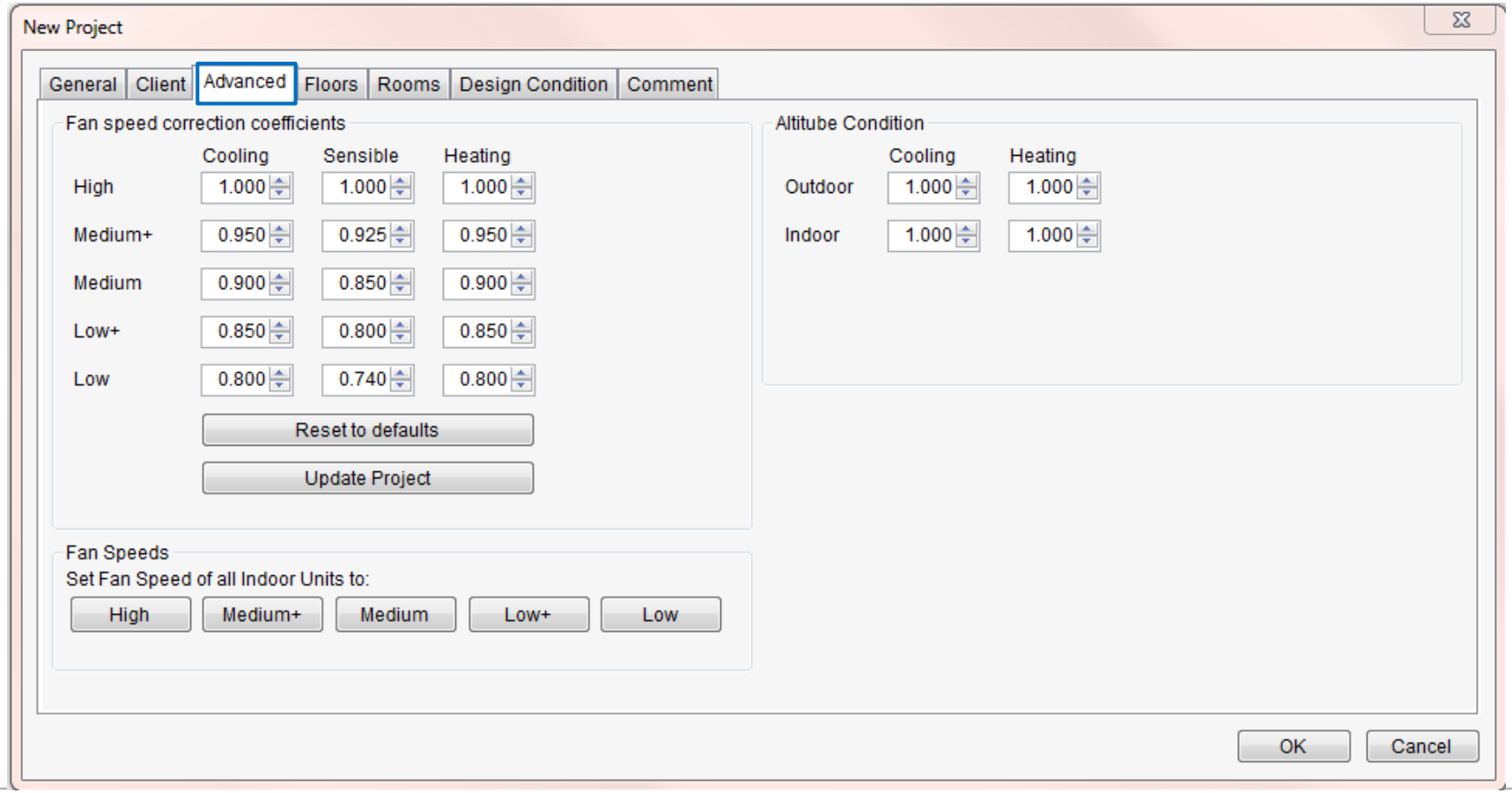
Drag and Drop mode:

Client company data and project address can be set for the output:



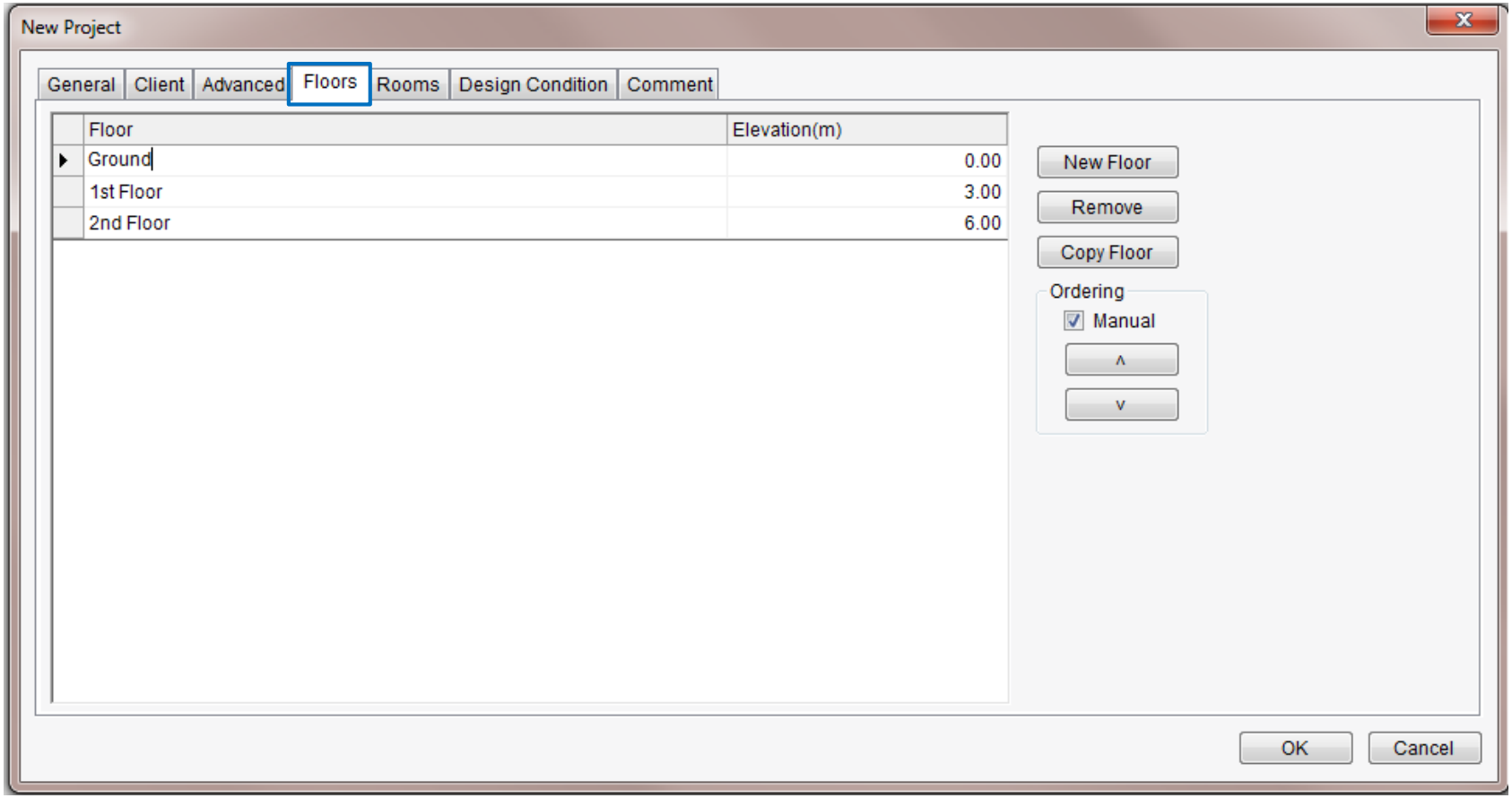
Drag and Drop mode:

Fan Speed correction factors and the altitude correction factors can be set:



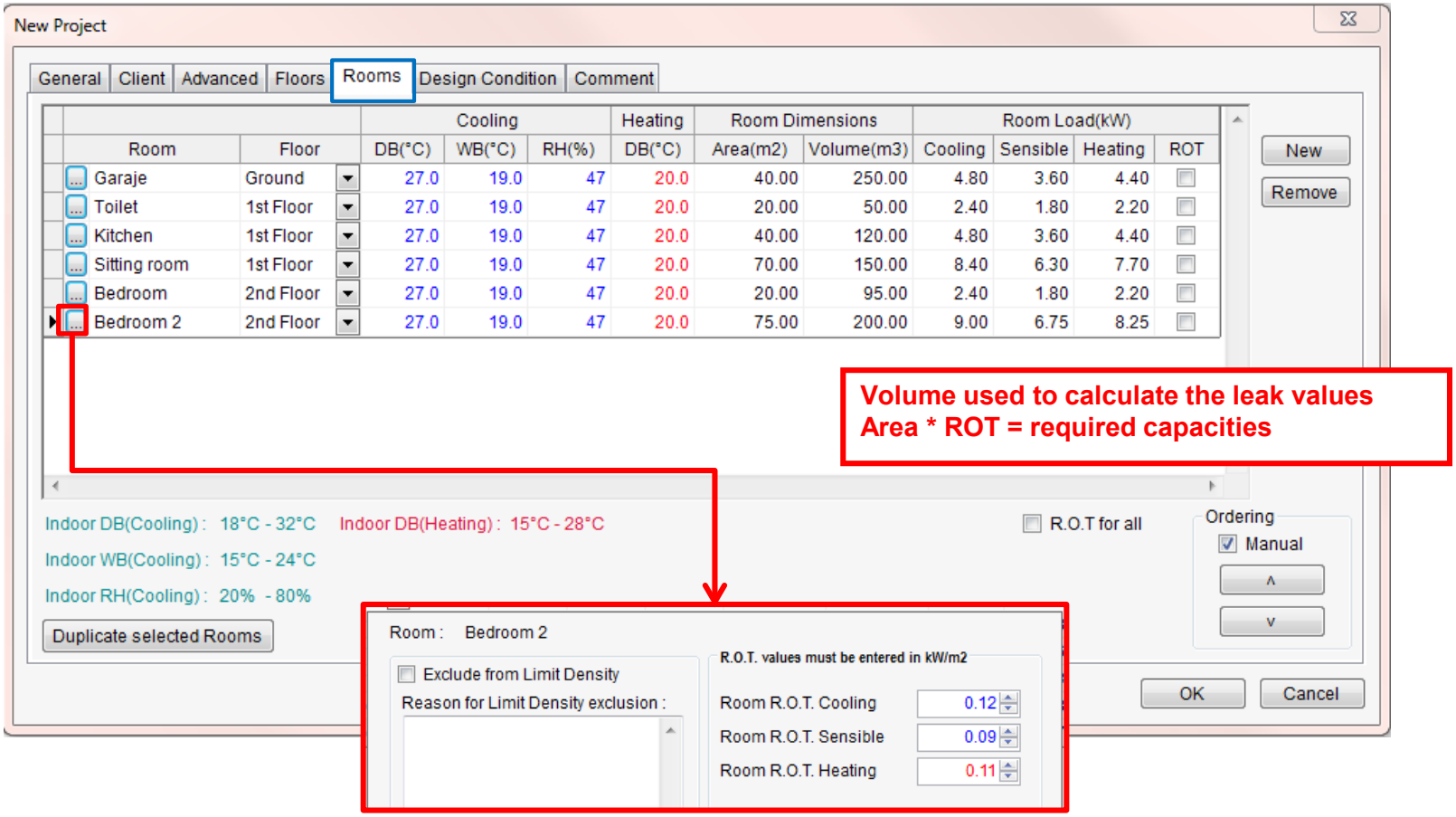
Drag and Drop mode:

Floors for the system can be set. It will set the height automatically to the units on the floor



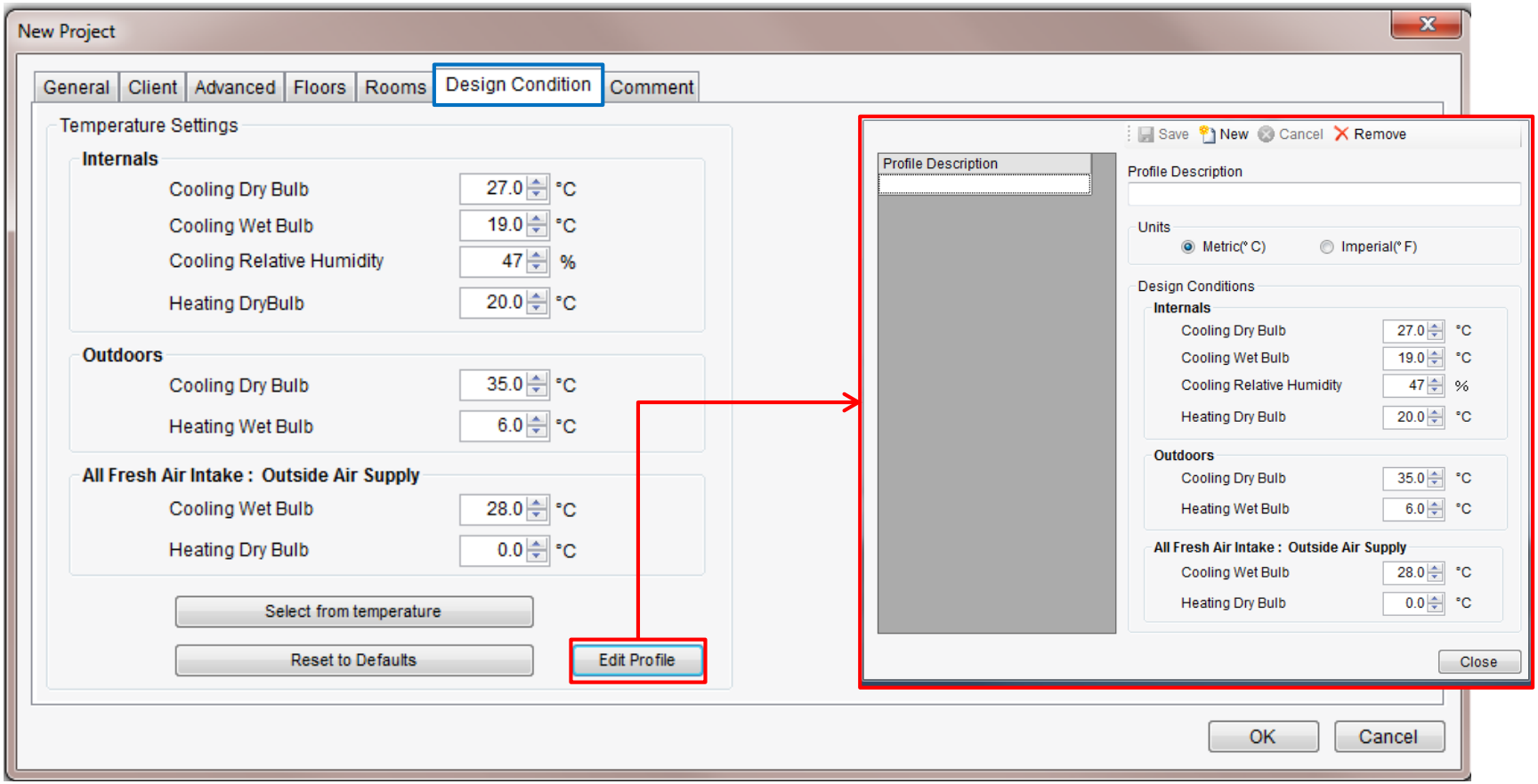
Drag and Drop mode:

Configure the virtual rooms and the room specifications:



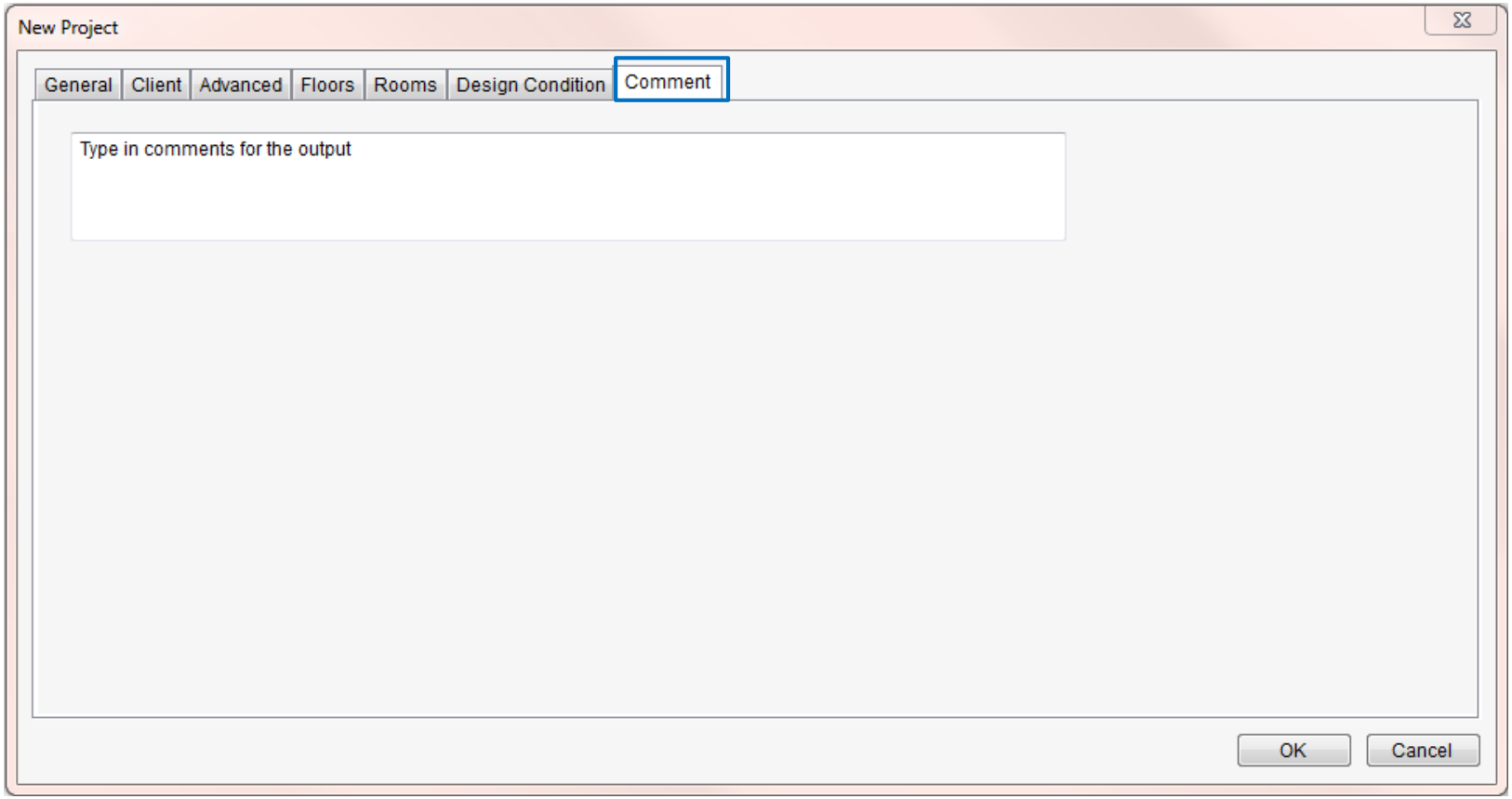
Drag and Drop mode:

Set the default temperatures for the project:

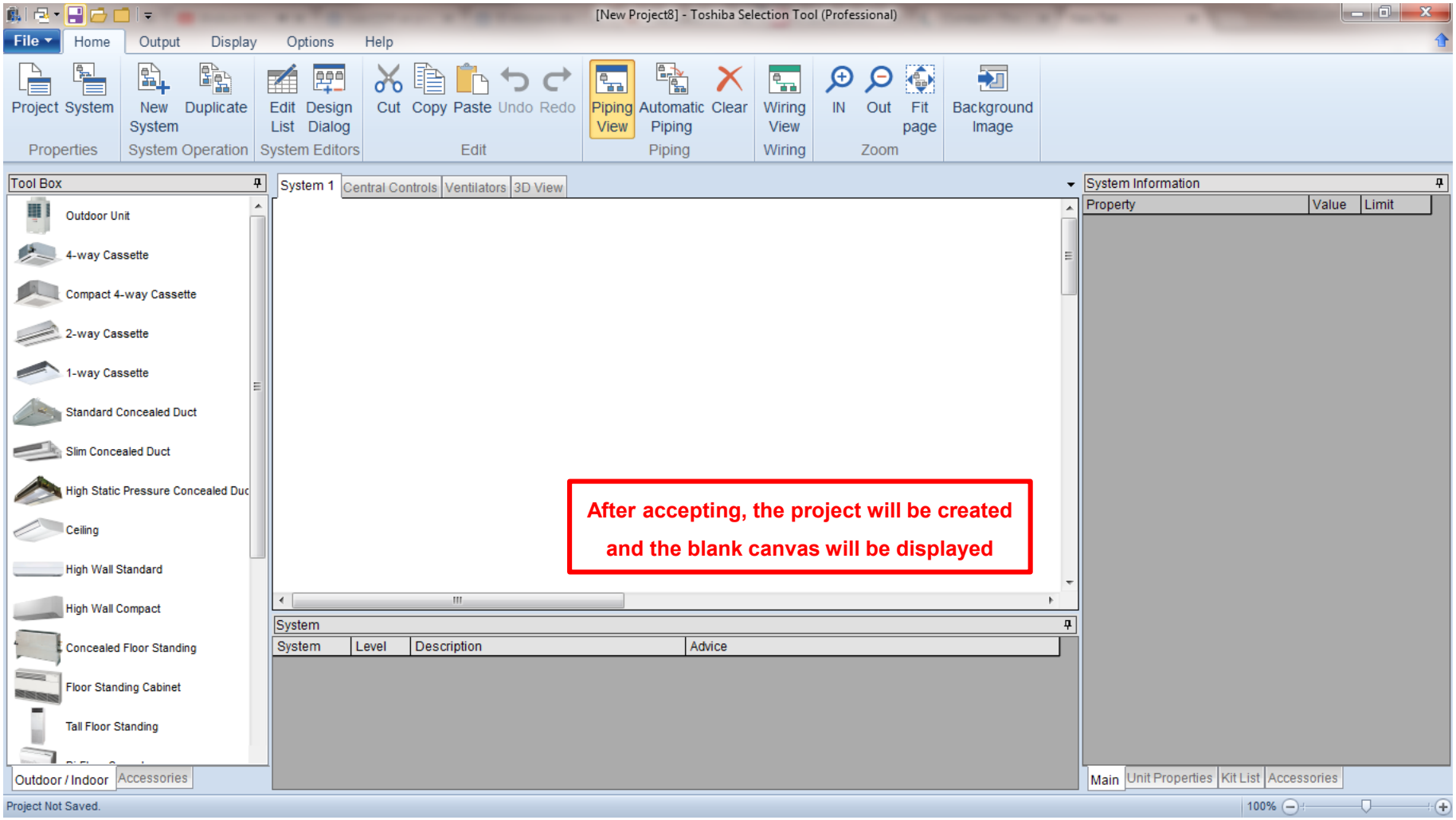


Drag and Drop mode:

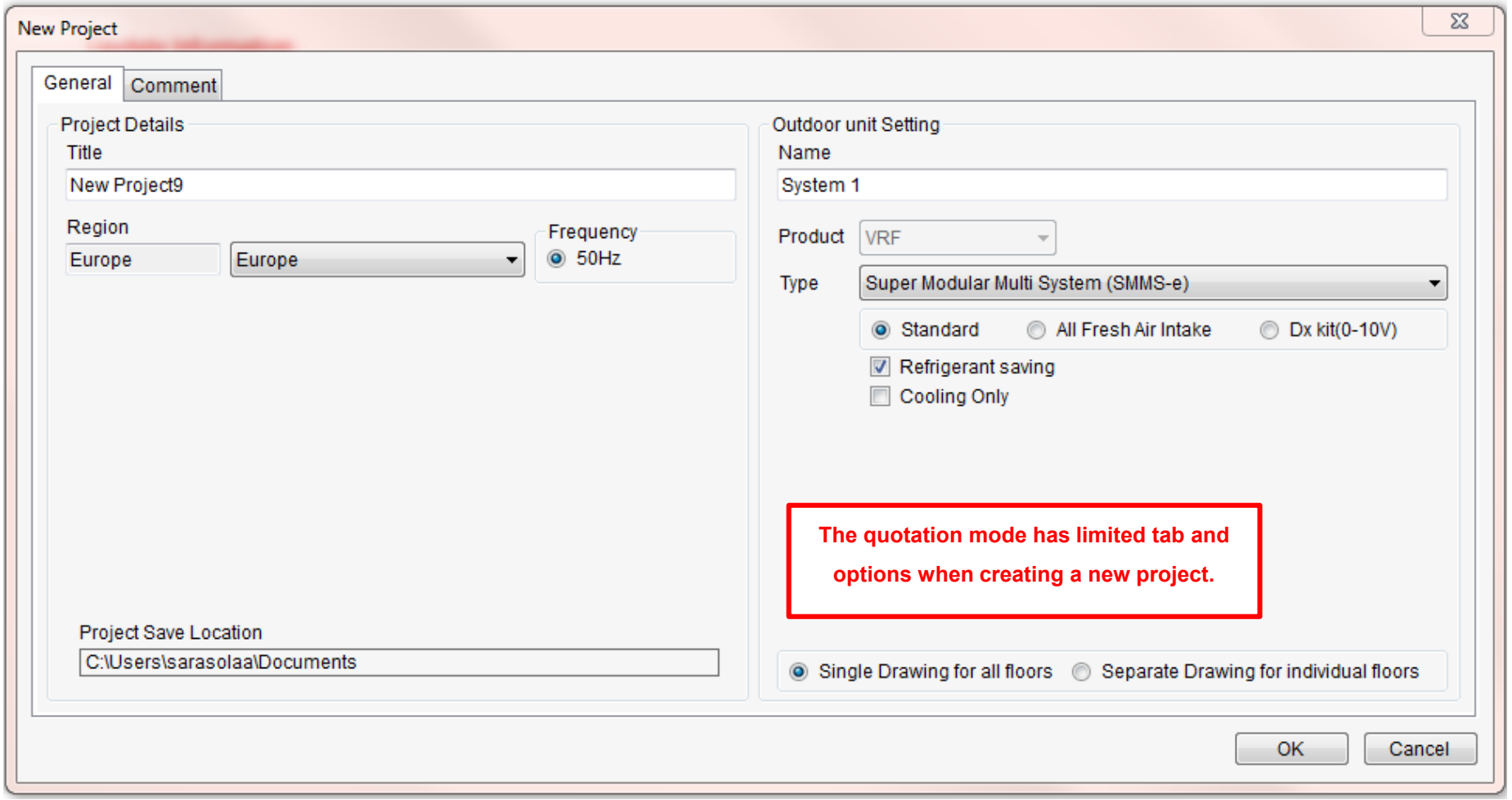
Type in comments to be displayed on the output



3. New Project

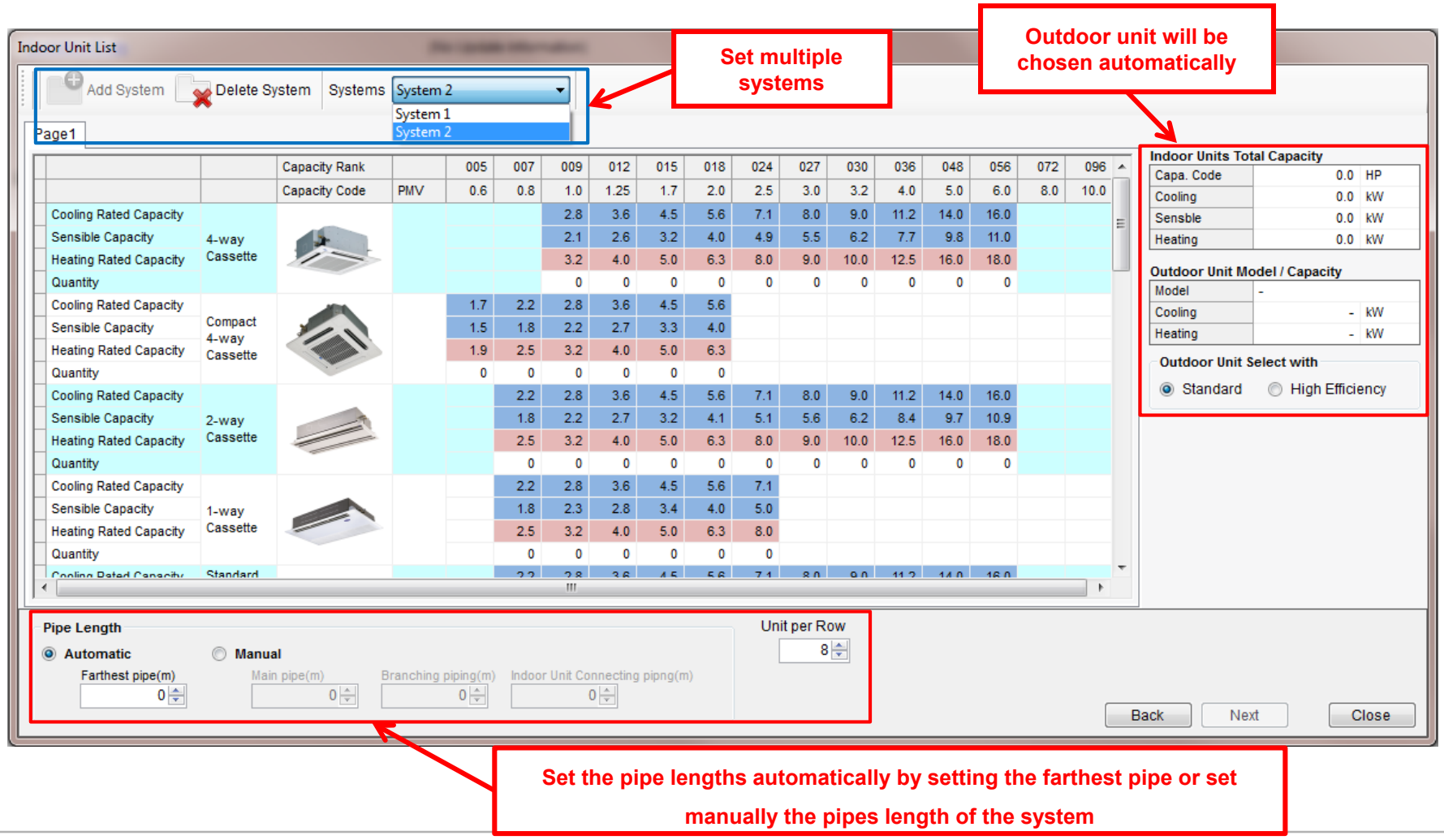


Quotation mode:
Set the basic settings



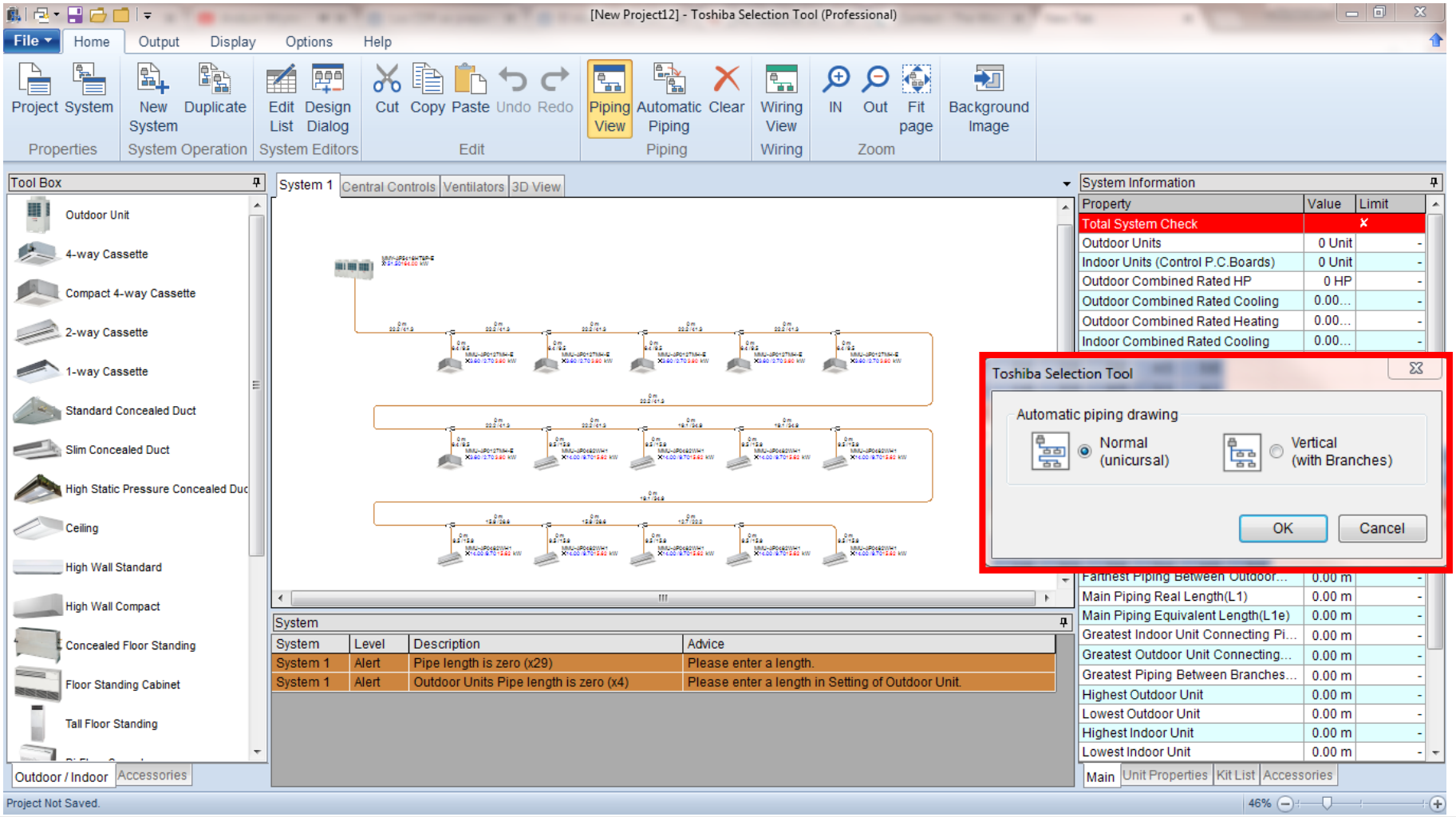
Quotation mode:

Chose the units for the quotation:



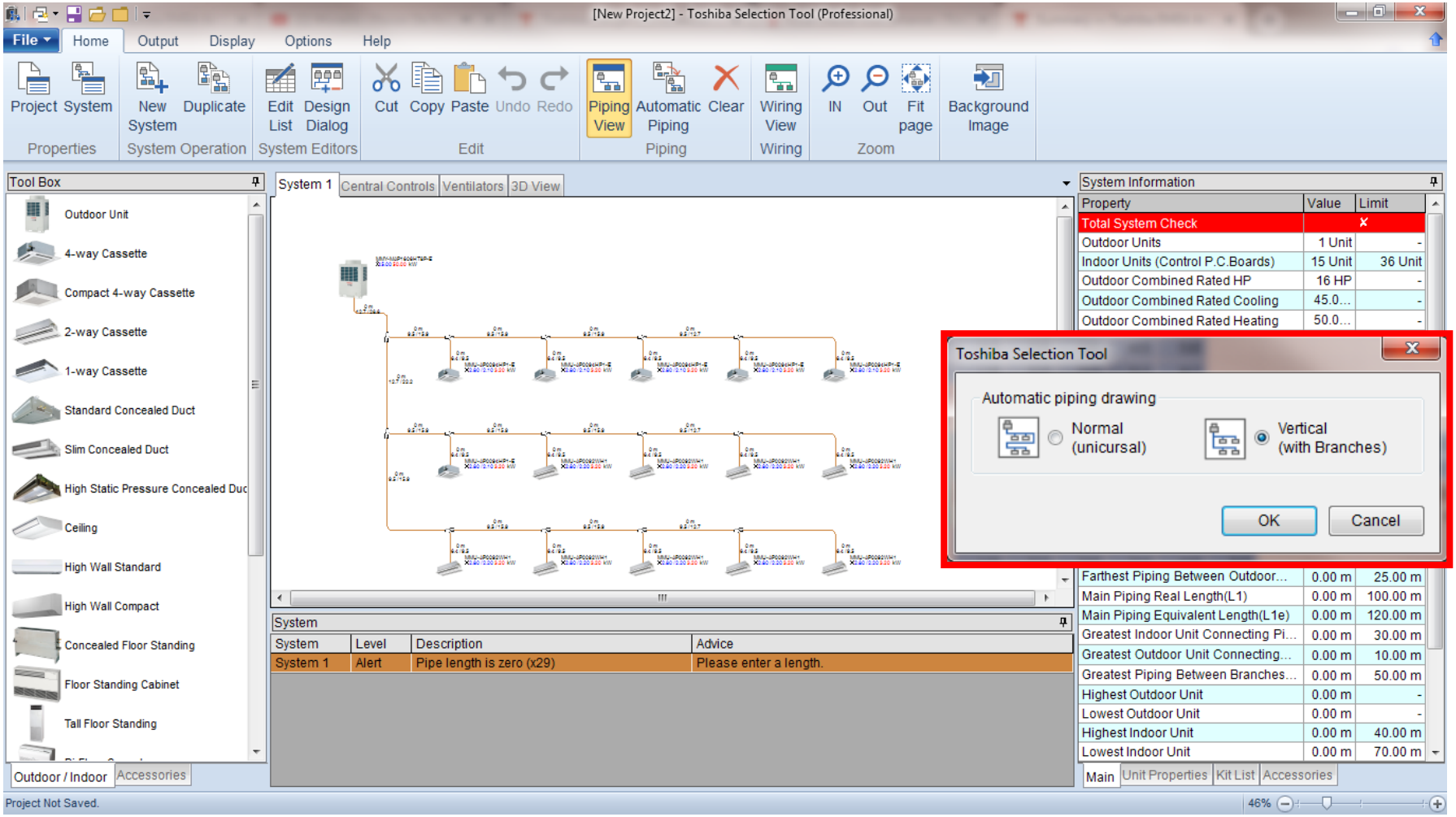
Quotation mode:

The design will be created:



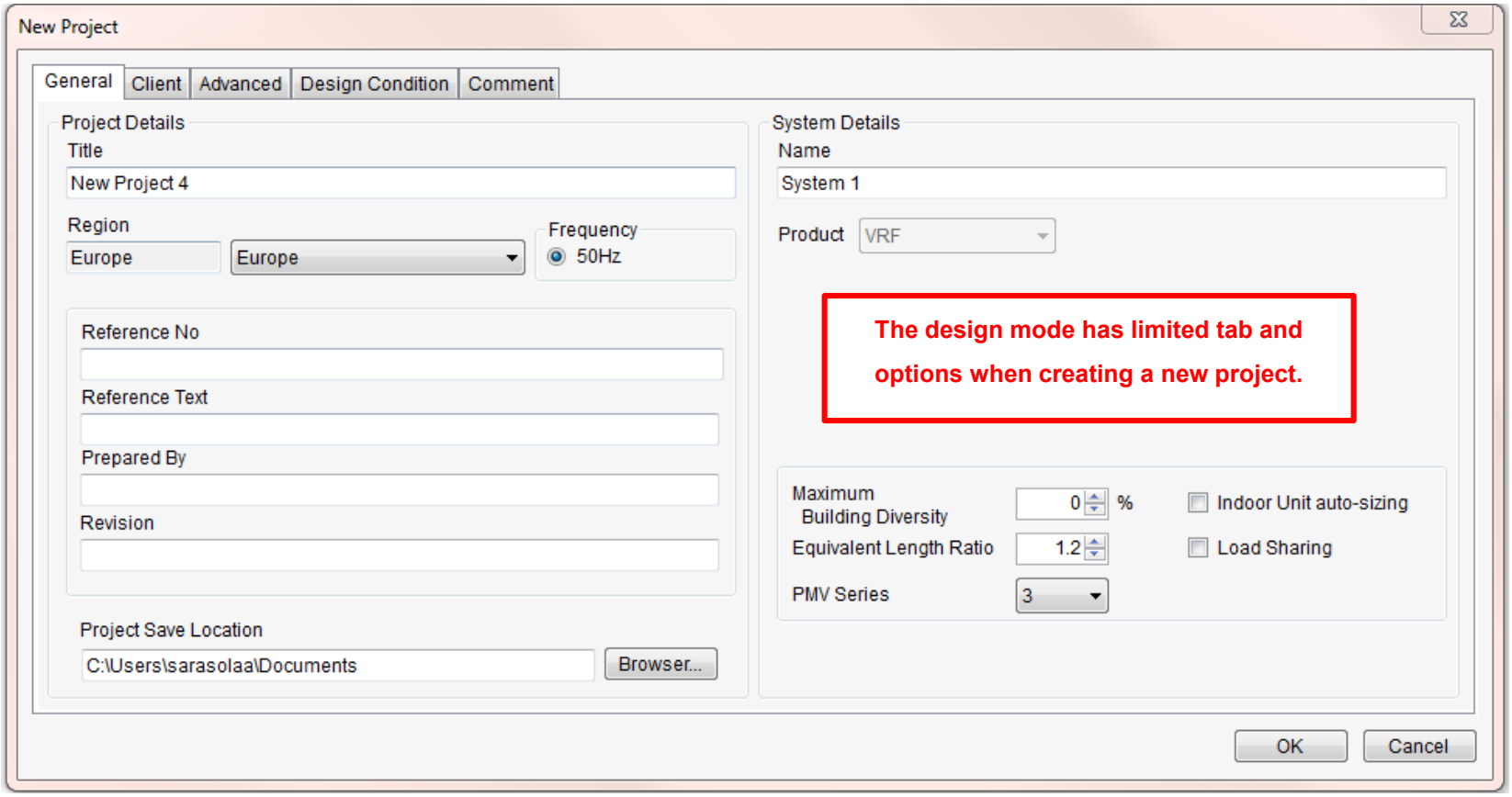
Quotation mode:

The design will be created:



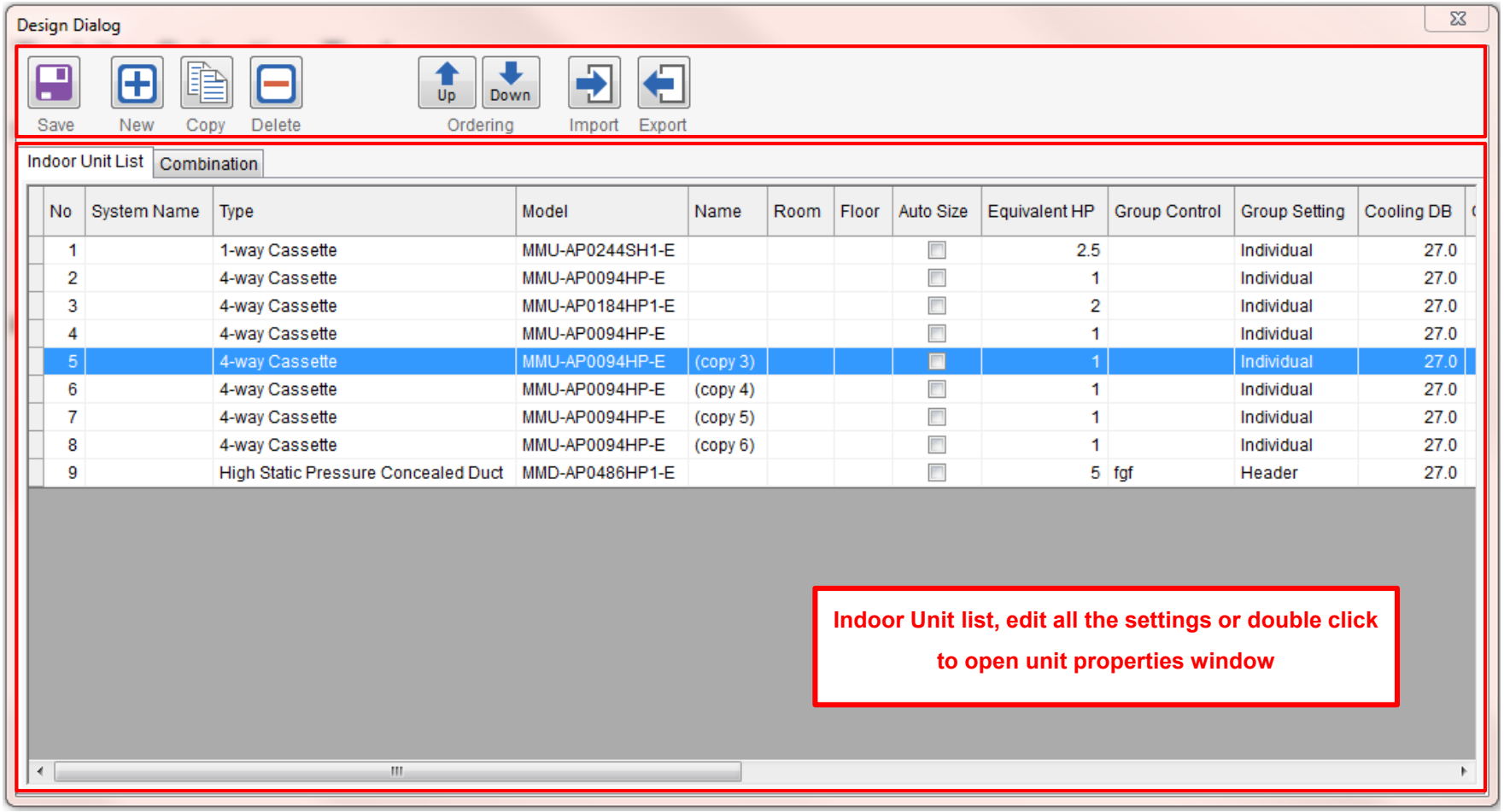
Design mode:

Set the basic settings:



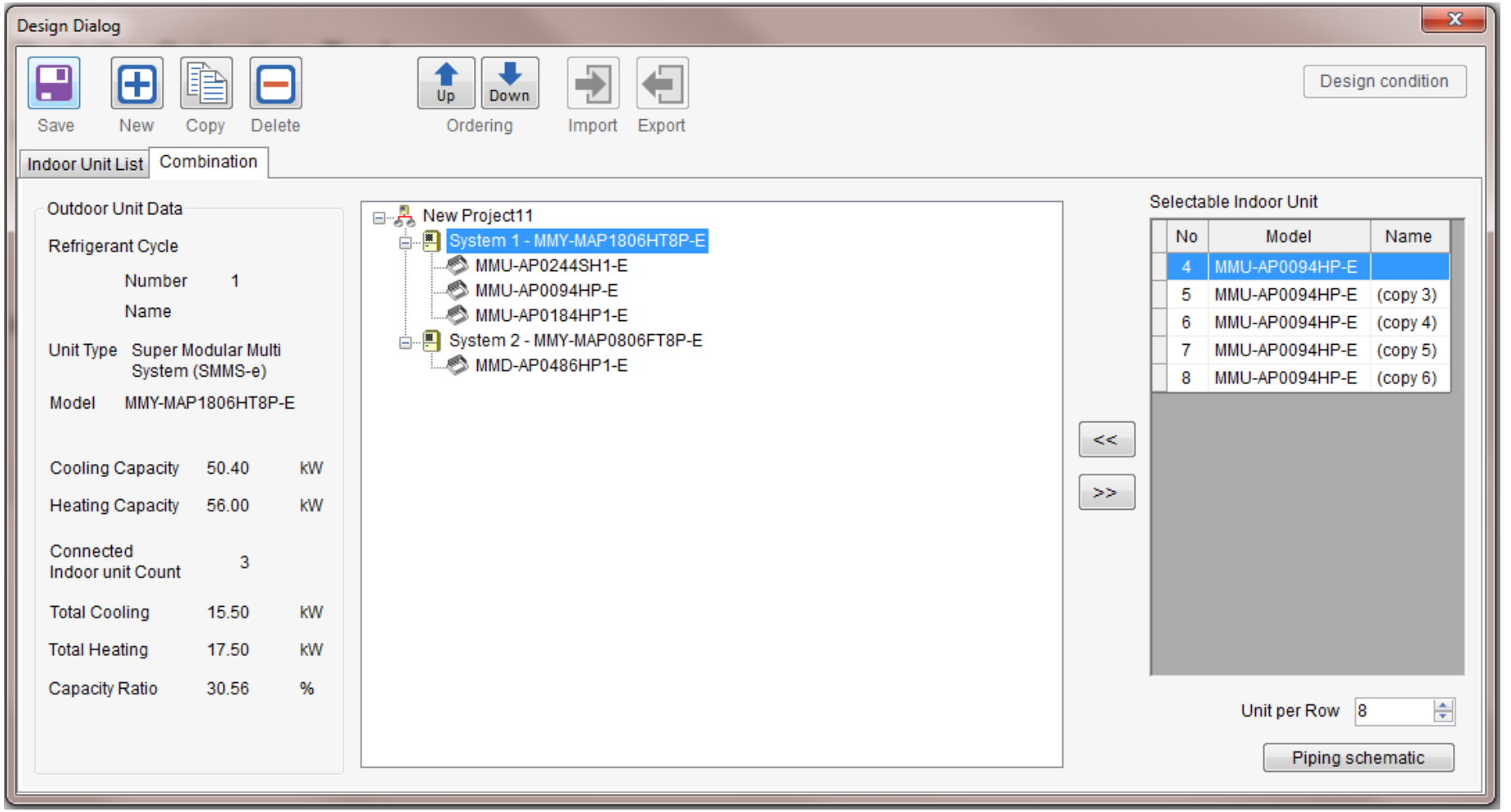
Design mode:

A more advanced quotation mode:

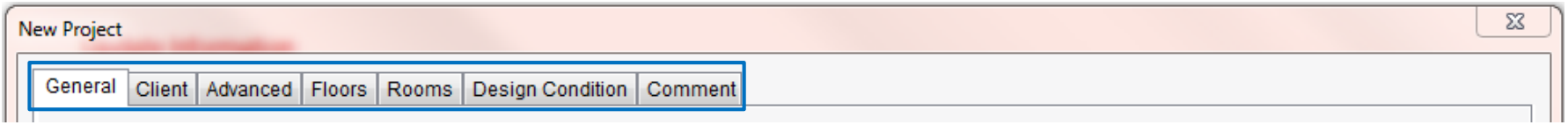


Design mode:

A more advanced quotation mode:

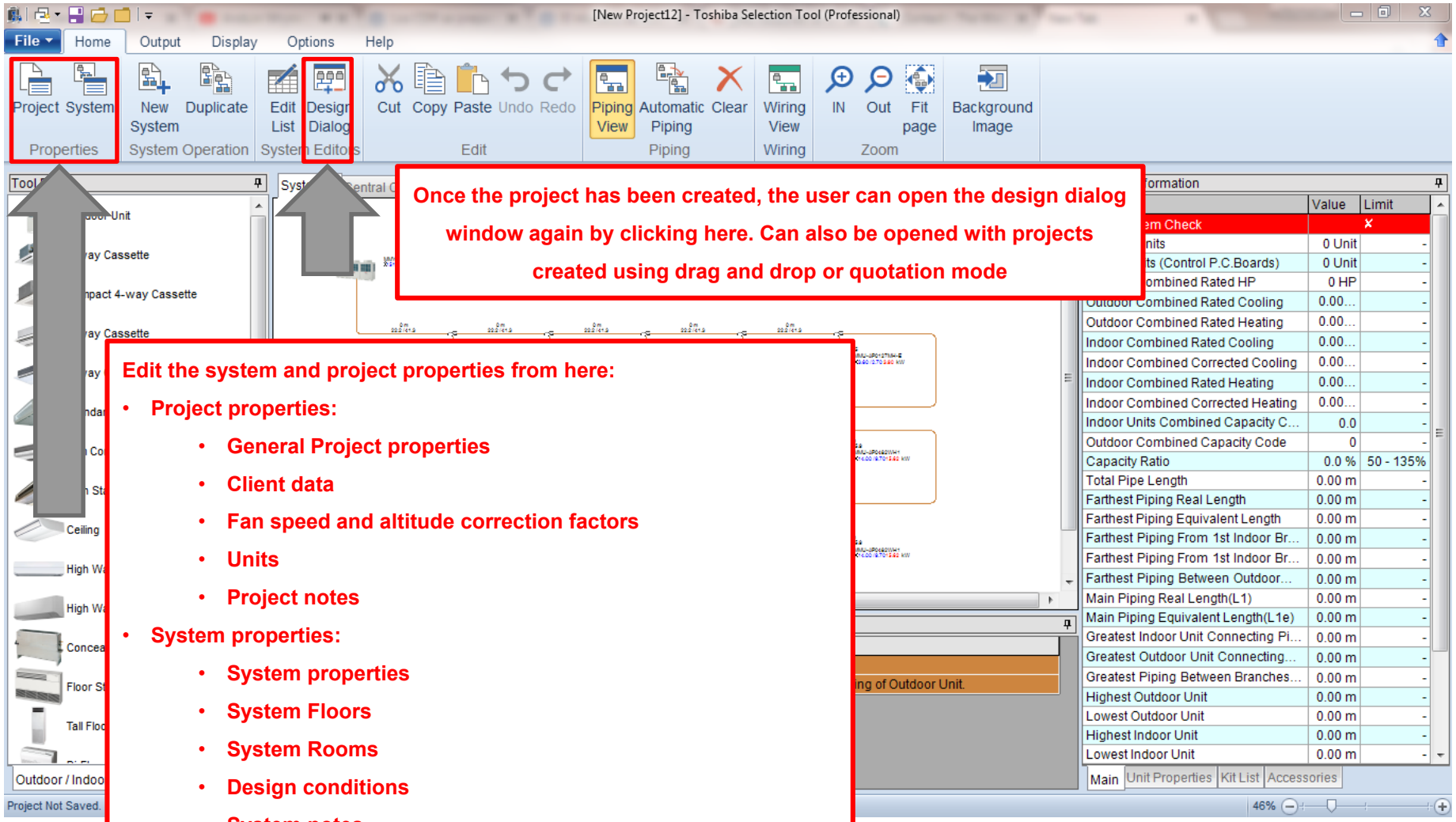


3. New Project



	Mode			Tab	
Mode / Tab	**Quotation Mode**	**Design Mode**	**Drag & Drop Mode**	**Project Property**	**System Property**
General	Displayed	Displayed	Displayed	Displayed	Displayed
Client	-	Displayed	Displayed	Displayed	-
Advanced	-	Displayed	Displayed	Displayed	-
Floors	-	-	Displayed	-	Displayed
Rooms	-	-	Displayed	-	Displayed
Design Condition	-	Displayed	Displayed	-	Displayed
Unit of Measurement				Displayed	
Comment	Displayed	Displayed	Displayed	Displayed	Displayed

Project created:



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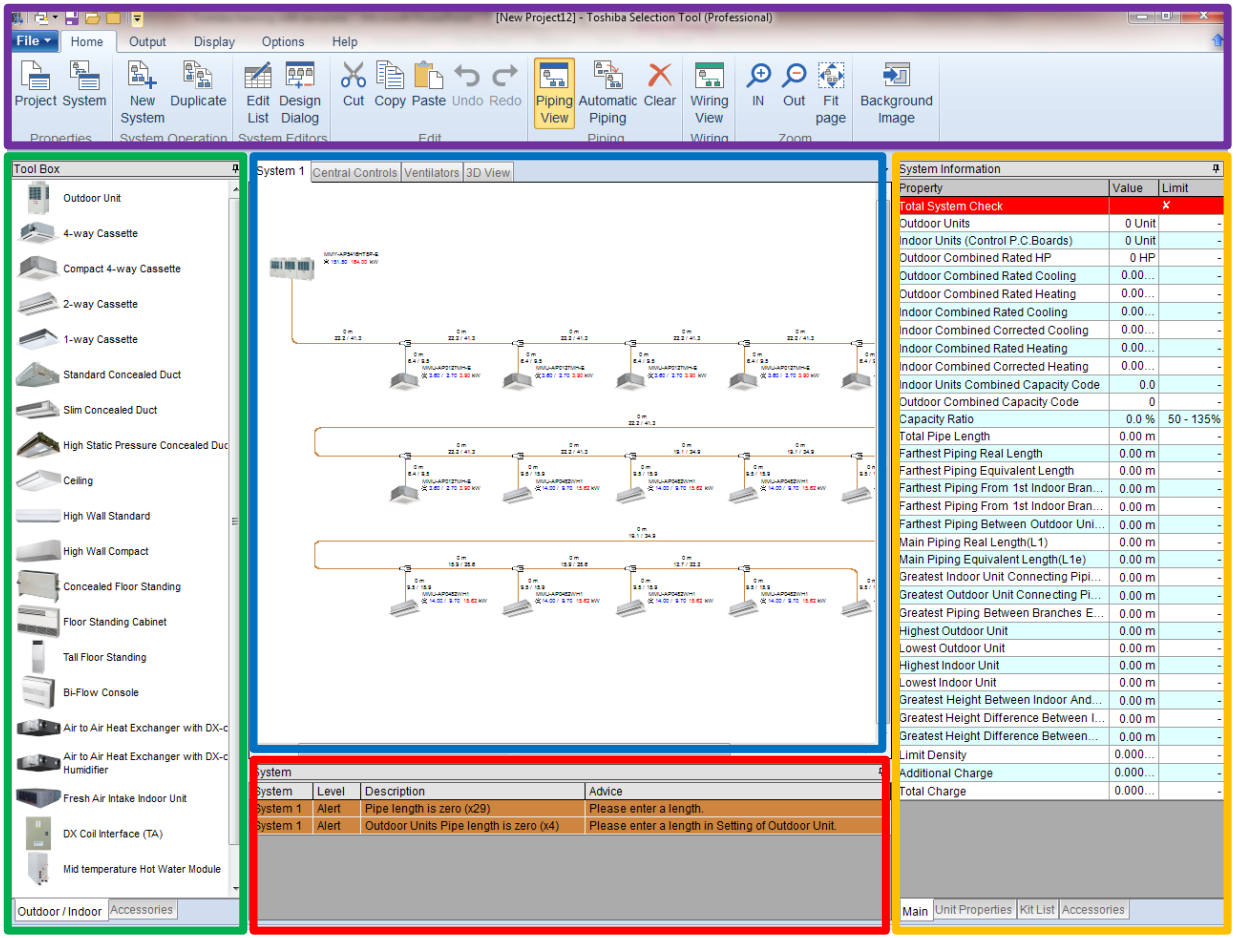
Design window:

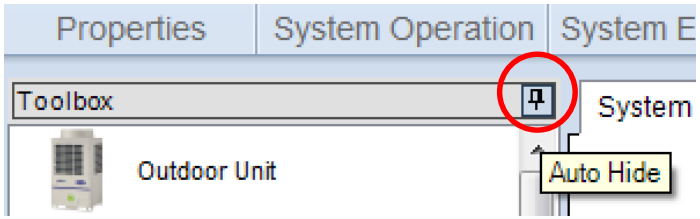
After creating a project, the design window appears. The design window has the following areas:

- Main functions
- Toolbox
- Canvas
- Error list
- System info

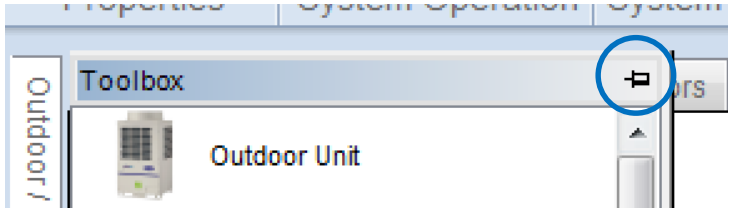


Design window:

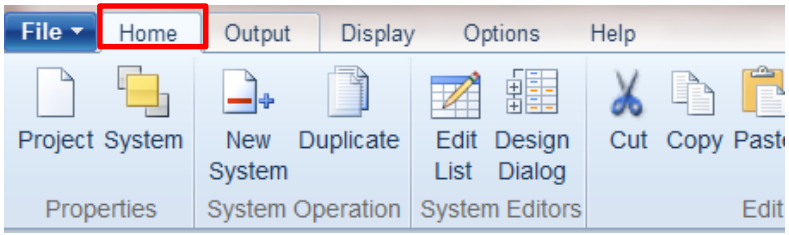
The different windows can be customized to increase the canvas area:



Auto-Hide pin



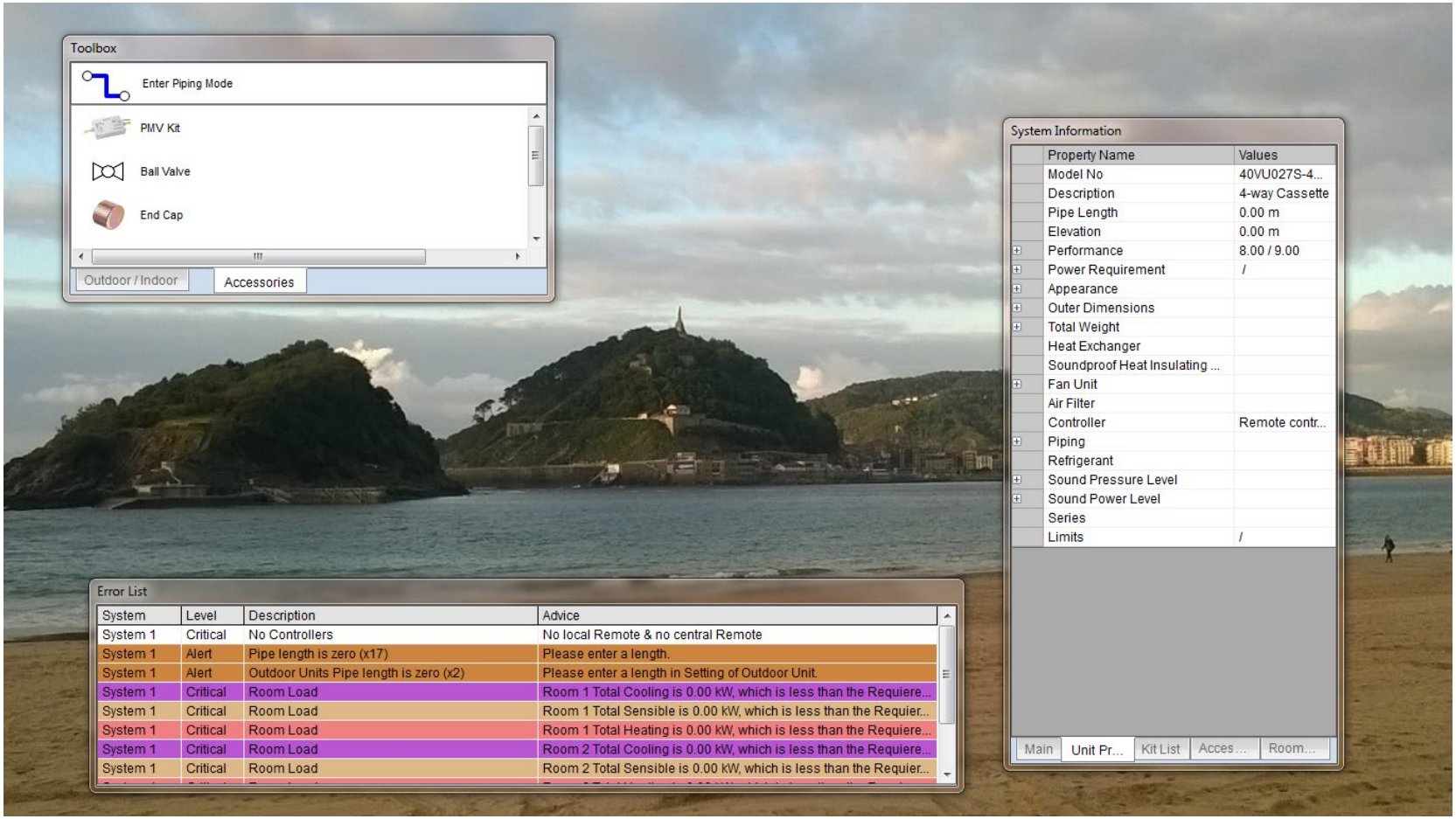
Re-dock pin



Double click to automatically hide

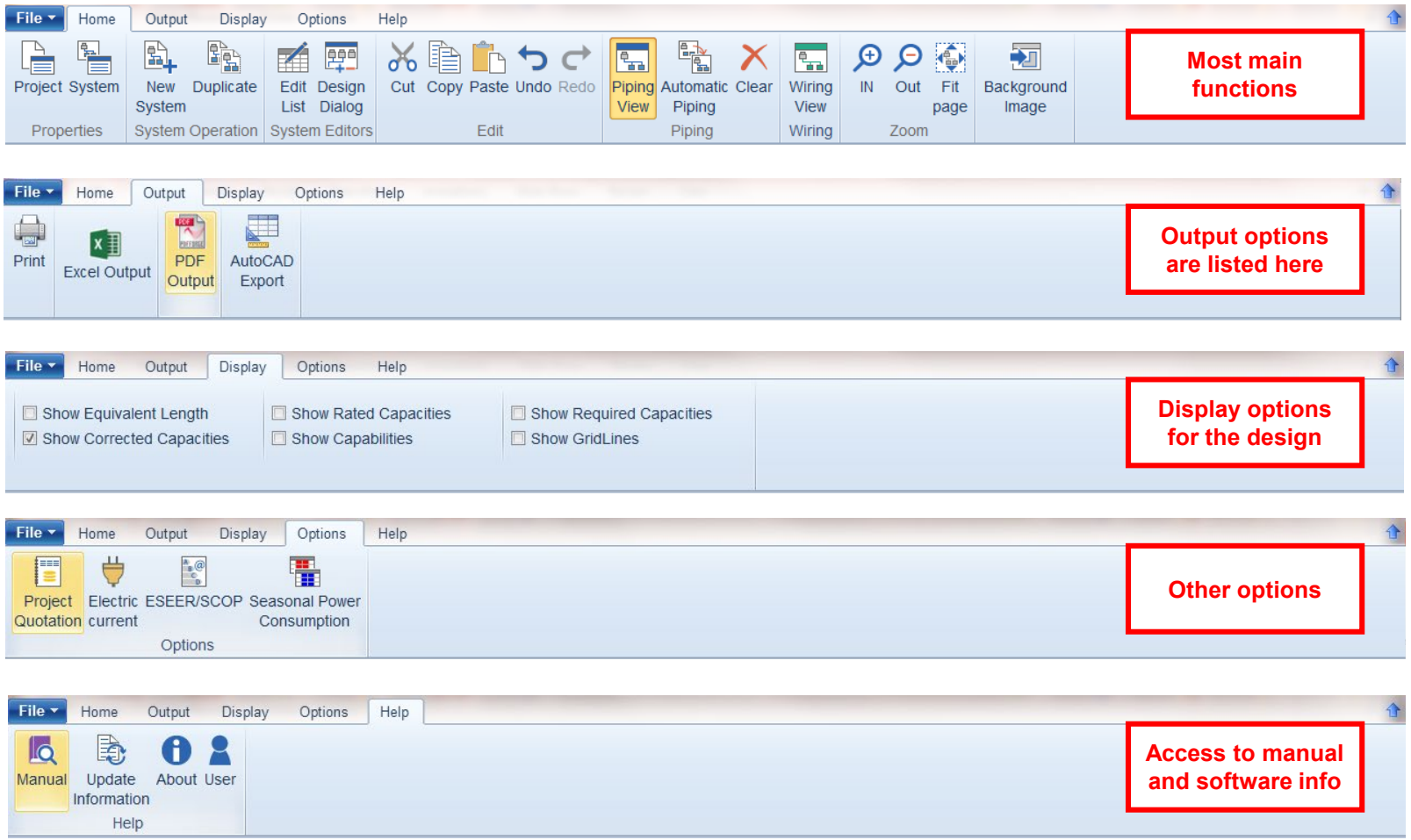
Design window:

Boxes can also be set outside the software frame:



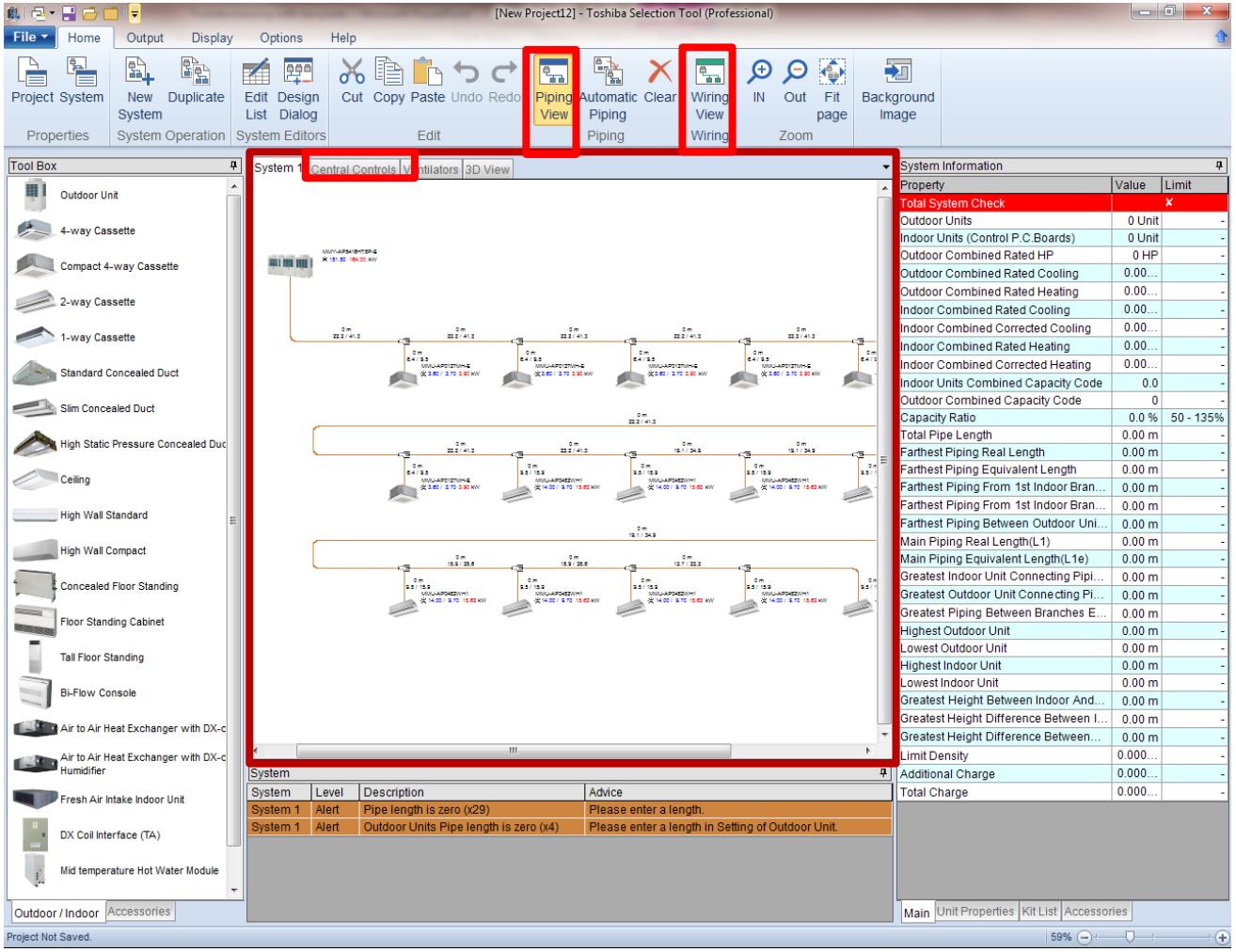
Main functions menu:

There are 5 tabs in the top with the main functions:



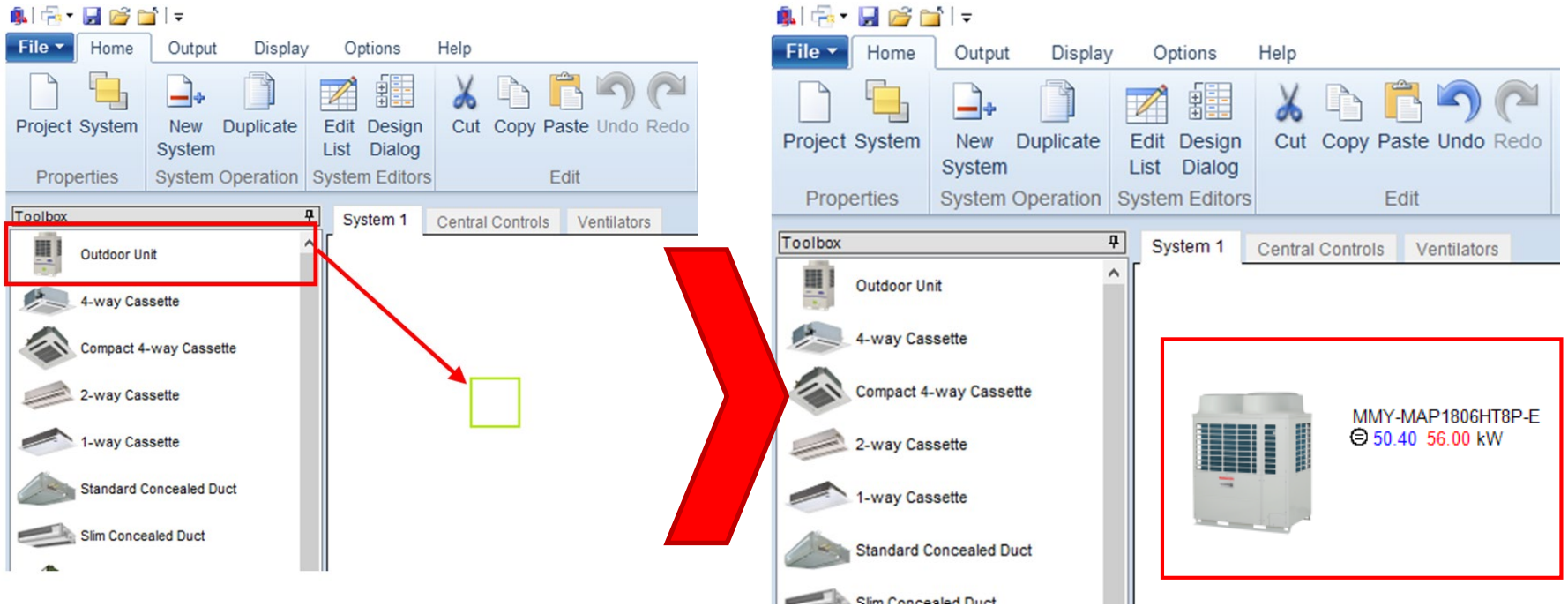
Canvas:

Displays the design and it's pipework. Can also display the wiring view or the central Controls.



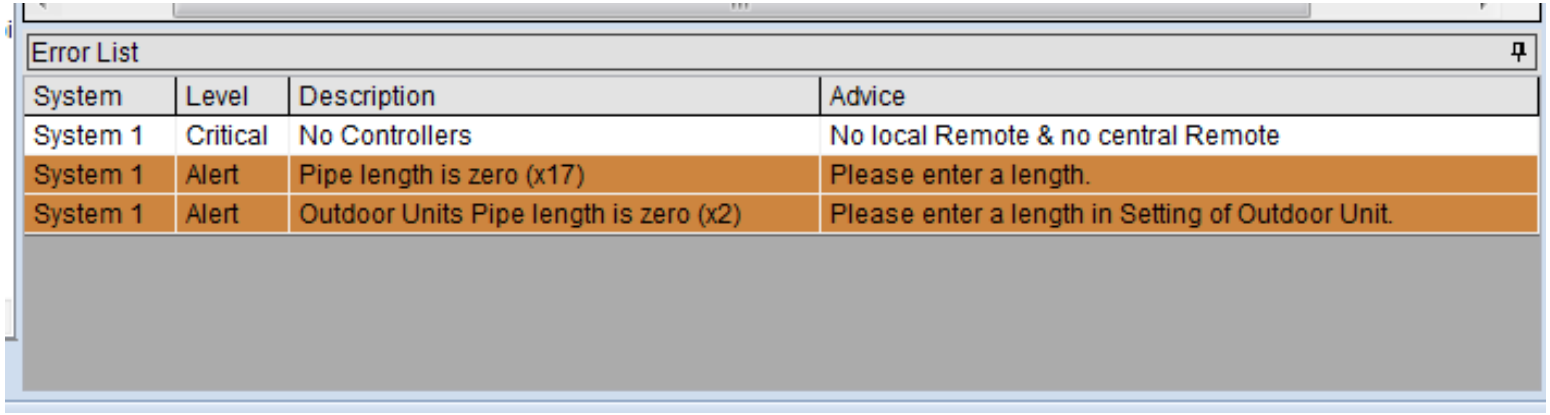
Toolbox:

Drag and drop Indoor units, Outdoor Units and Accessories from the toolbox to the canvas



Error list:

The errors of the design will be displayed here. The user must fix the critical errors or the system will be out of specification.

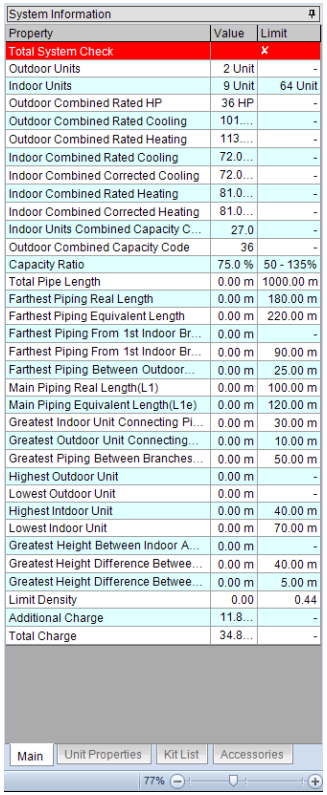


Error List

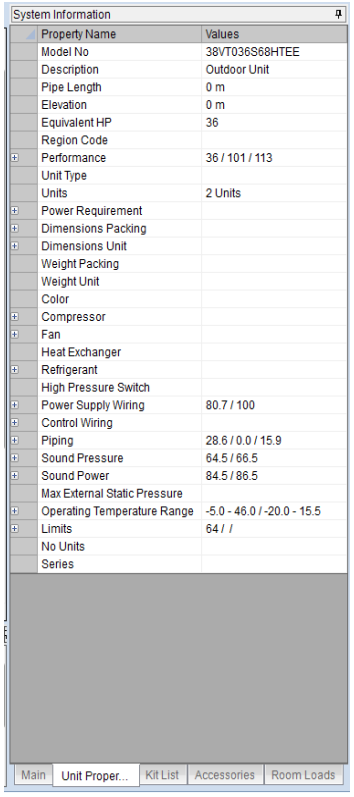
System	Level	Description	Advice
System 1	Critical	No Controllers	No local Remote & no central Remote
System 1	Alert	Pipe length is zero (x17)	Please enter a length.
System 1	Alert	Outdoor Units Pipe length is zero (x2)	Please enter a length in Setting of Outdoor Unit.

System information:

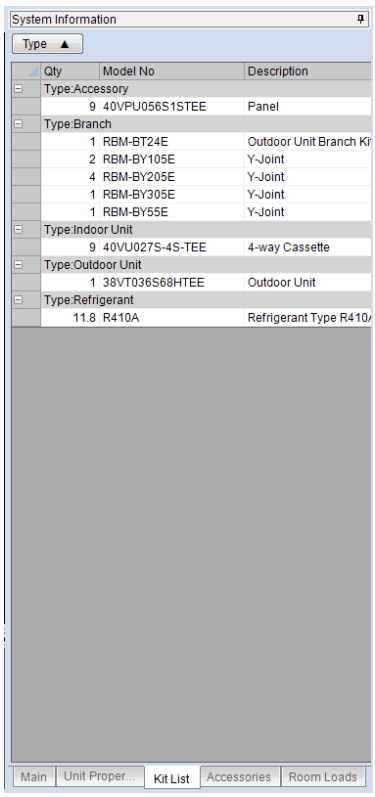
There are different tabs displaying



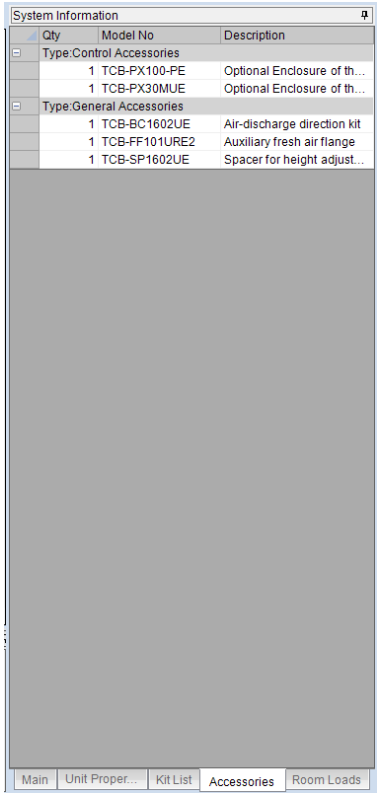
Displays the properties of the system



Displays the properties of the selected unit



Displays the equipment list of the system



Accessories of the selected unit

Room loads info

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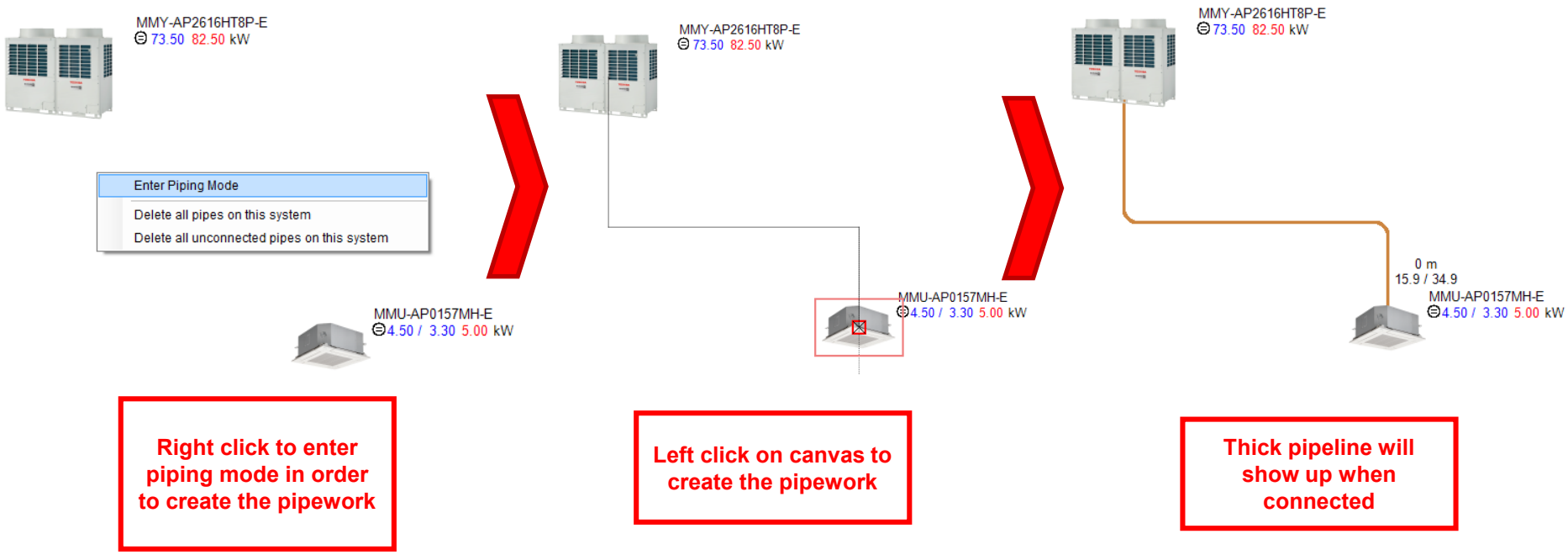
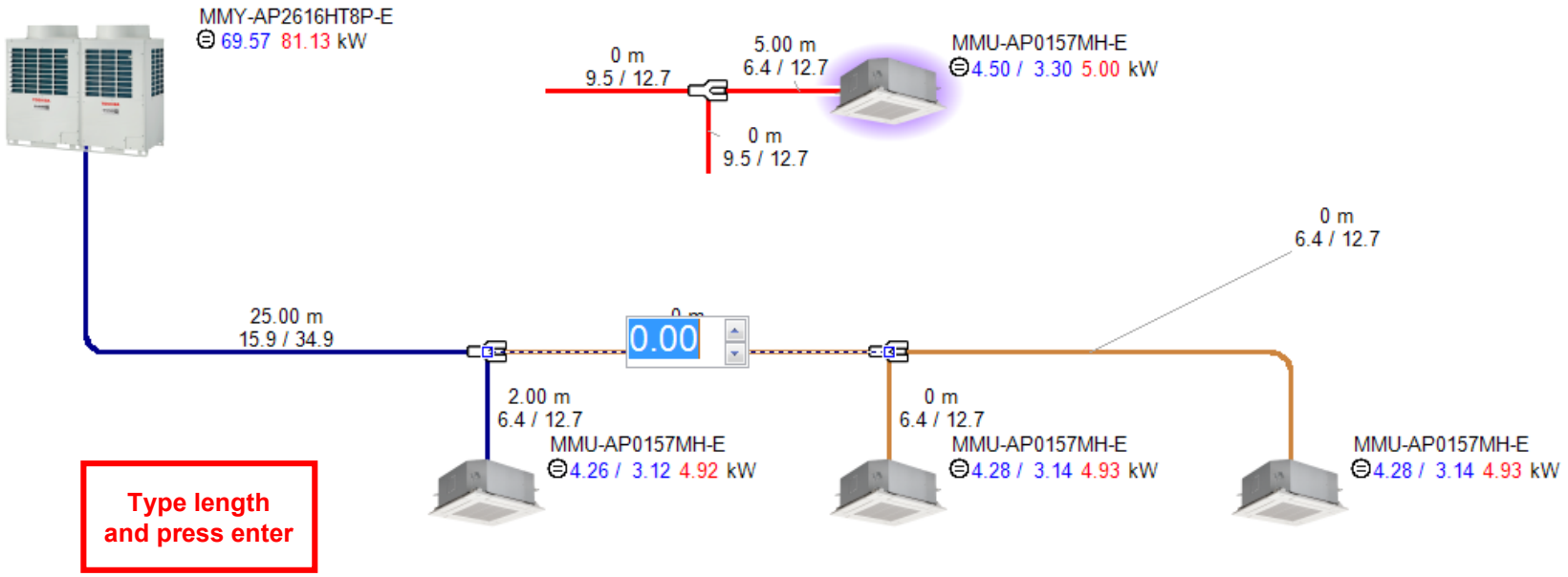
Piping mode:

The quotation mode and the design mode will create the design automatically; however, the software offers many more options for a customized design. There are infinite possible combinations for the pipework:



Pipework:

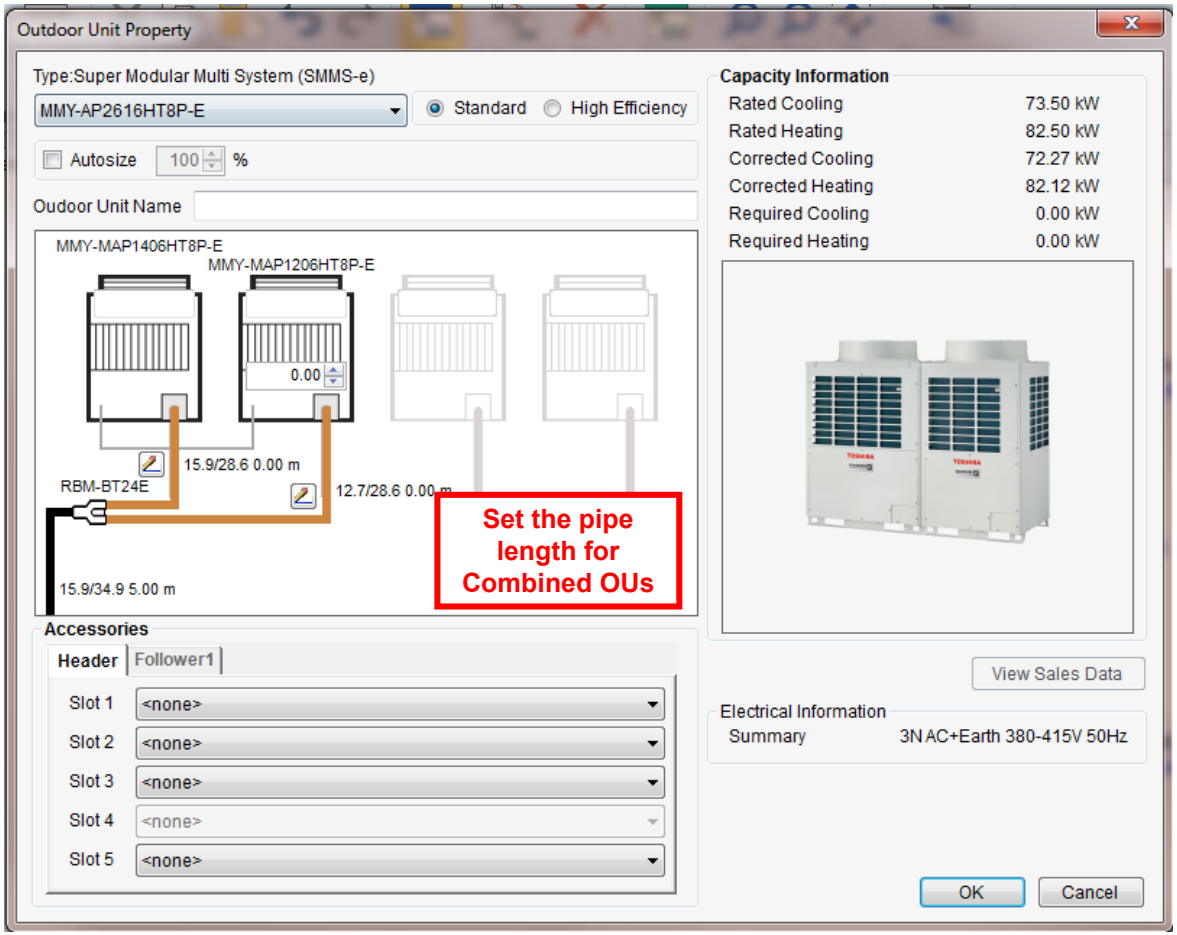
Double click on a pipe to enter it's length and once the length has been set, the colour will change to blue. Red pipe means they are not connected to the OU:



Outdoor Unit properties:

Double click over the Outdoor unit to open the Outdoor Unit properties window

Select model manually or set the auto size



Picture and capacities are displayed

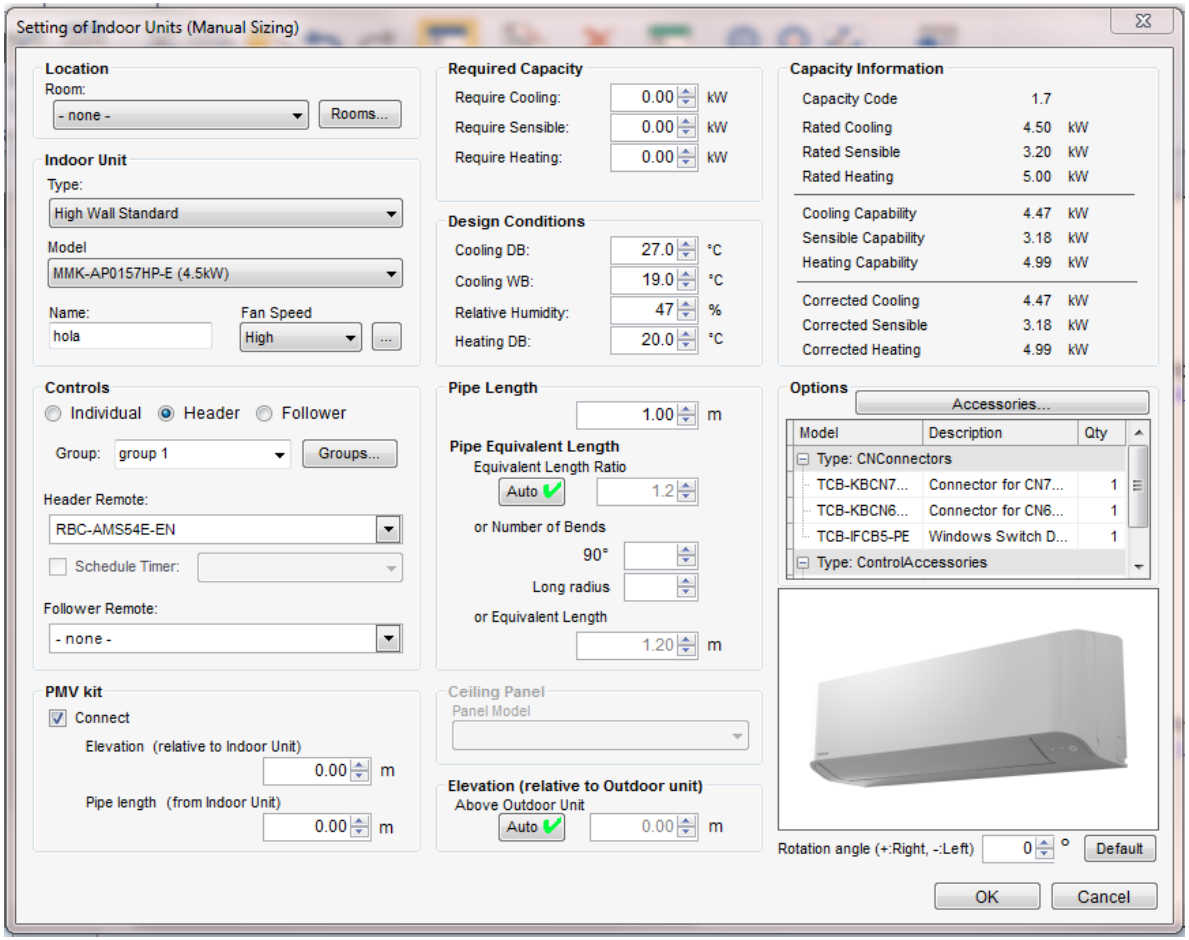
Select the accessories if required

Indoor Unit properties

Double click over any Indoor unit to open the Indoor Unit properties window

Select model, size, room and Fan Speed

Configure the grouping and controls of the unit



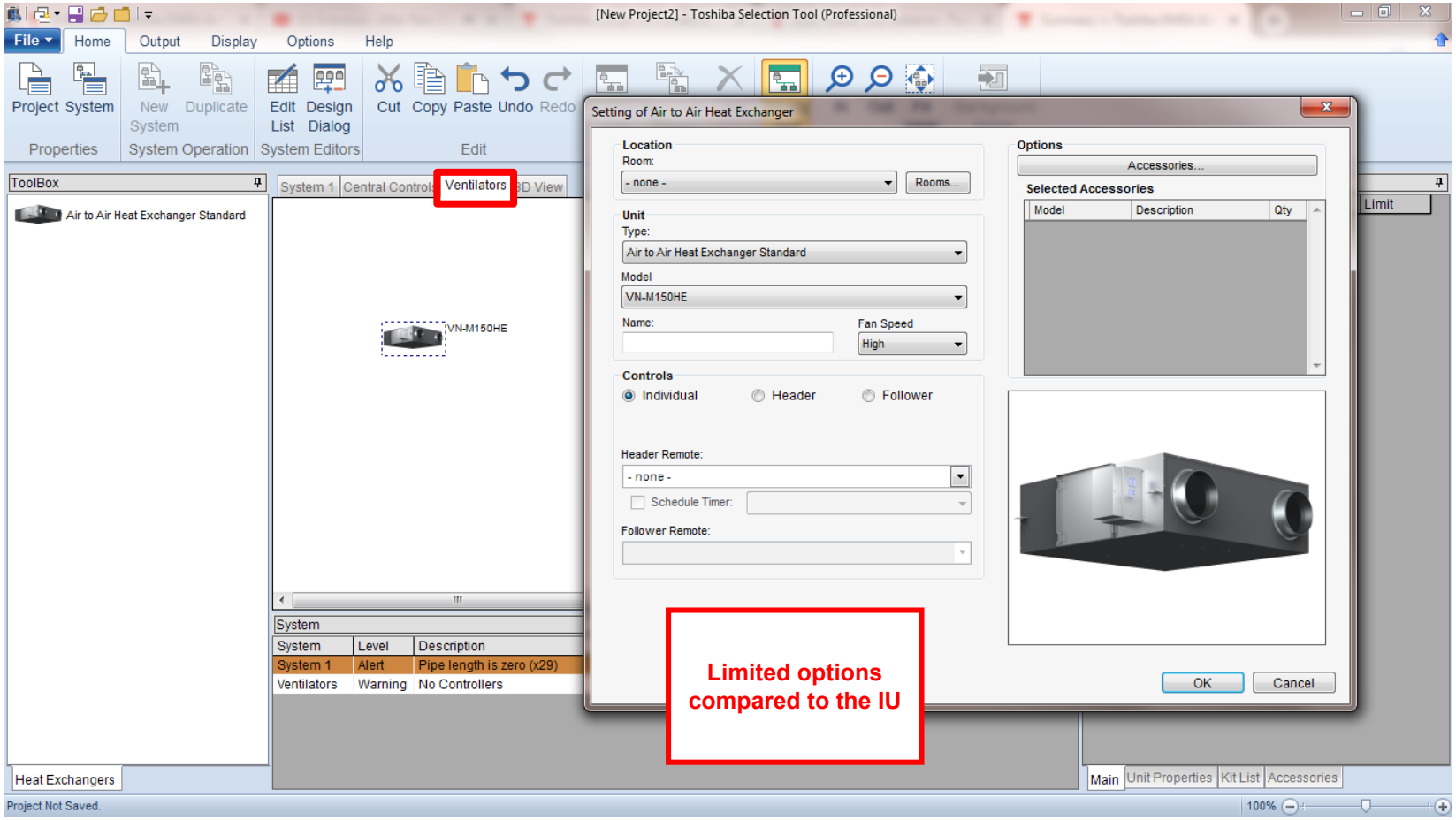
Individual required capacities and design conditions can be set

Picture and capacities are displayed

Select the accessories if required and set pipe length/height

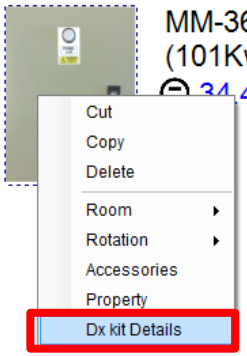
Ventilators

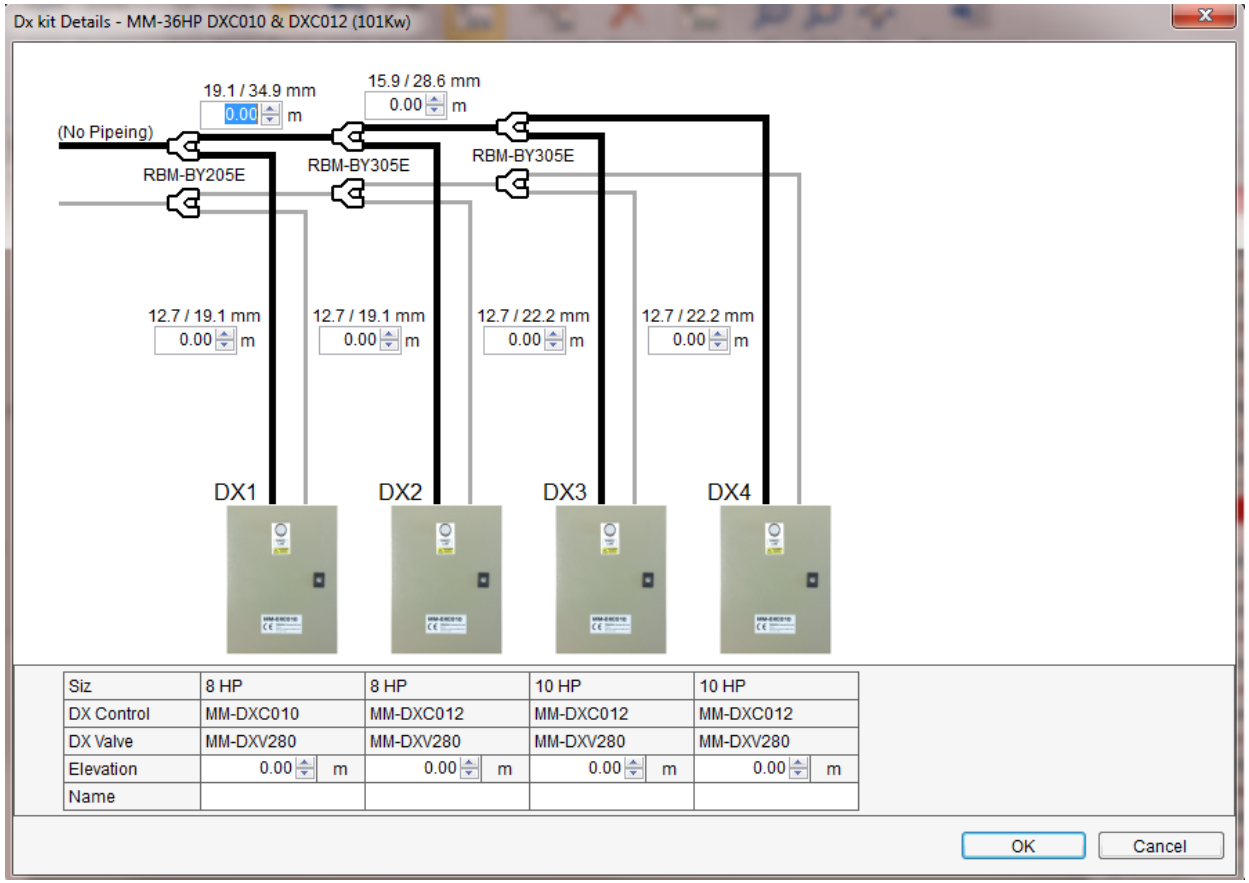
Currently on a separate tab. Double click over to open properties window



Dx-kit details

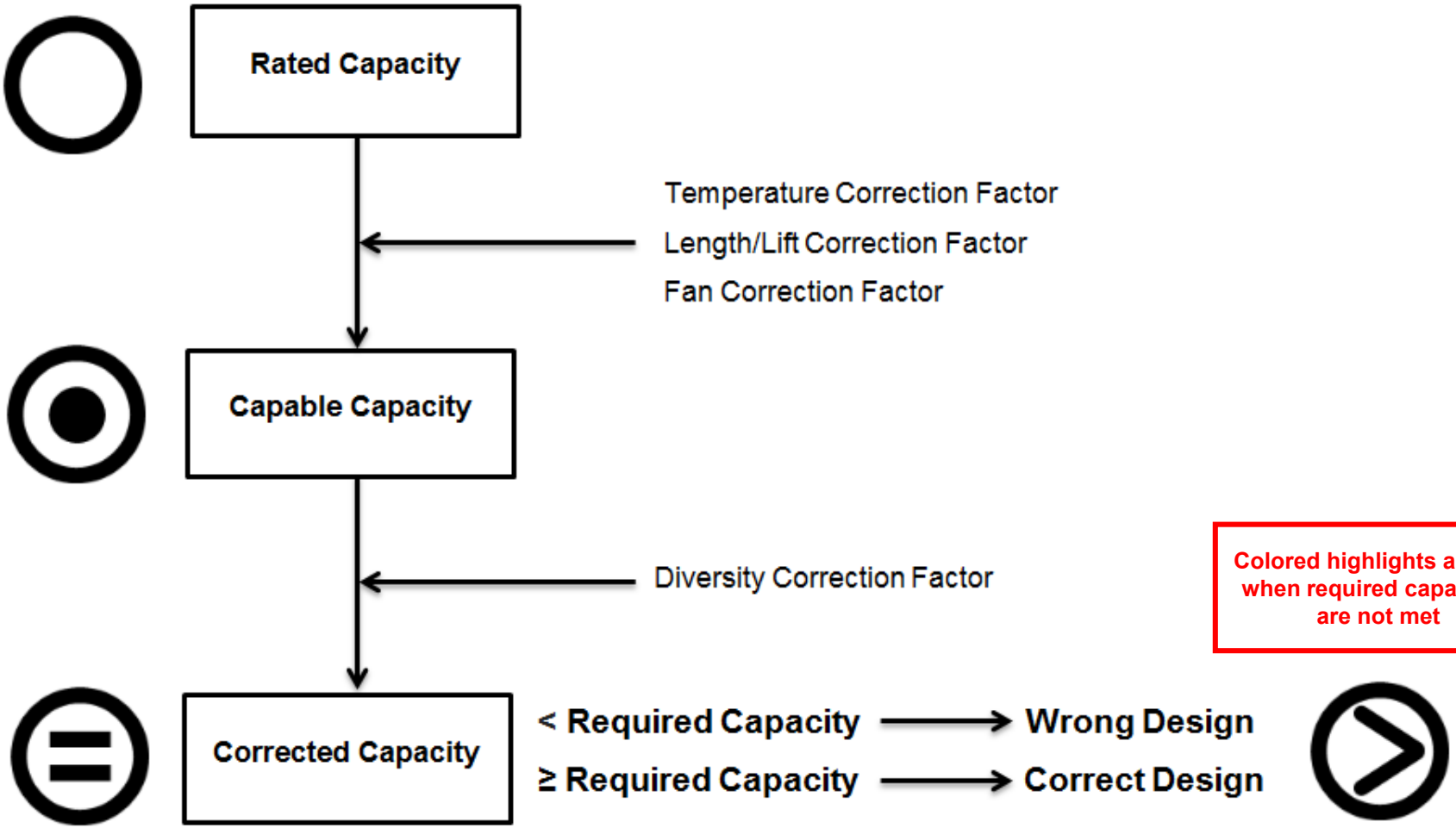
Right click on a DX-kit in order to open the pipework:





Capacities calculation

How the capacities are calculated:



Edit list:

Configure multiple units properties faster

Click on "Edit List" to open the window

Edit List

System 1 | System 2 | System 3 | System 4 | System 5 | System 6 | System 7

Indoor Units							Requirements (kW)			Corrected (kW)		
Select	No	Image	Type	Model	Fan Speed	Name	Cooling	Sensible	Heating	Cooling	Sensible	Heating
	1		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High		0.00	0.00	0.00	4.62	3.18	5.13
	2		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High		0.00	0.00	0.00	4.62	3.18	5.13
	3		High Wall Standard	MMK-AP0157HP-E (4.5kW)	Medium		0.00	0.00	0.00	2.31	1.55	2.57
	4		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High		0.00	0.00	0.00	4.62	3.18	5.13
	5		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High	abc	0.00	0.00	0.00	4.62	3.18	5.13
	6		High Wall Standard	MMK-AP0157HP-E (4.5kW)	MediumPlus	dfg	0.00	0.00	0.00	2.31	1.60	2.57
	7		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High	hjk	0.00	0.00	0.00	4.62	3.18	5.13
	8		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High	fdg	0.00	0.00	0.00	4.62	3.18	5.13
	9		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High	(copy)	0.00	0.00	0.00	4.62	3.18	5.13
	10		High Wall Standard	MMK-AP0157HP-E (4.5kW)	High	(copy)	0.00	0.00	0.00	2.31	1.64	2.57
	11		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High	(copy)	0.00	0.00	0.00	4.62	3.18	5.13
	12		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High		0.00	0.00	0.00	4.62	3.18	5.13
	13		High Wall Standard	MMK-AP0157HP-E (4.5kW)	High		0.00	0.00	0.00	2.31	1.64	2.57
	14		4-way Cassette	MMU-AP0304HP1-E (9.0kW)	High		0.00	0.00	0.00	4.62	3.18	5.13

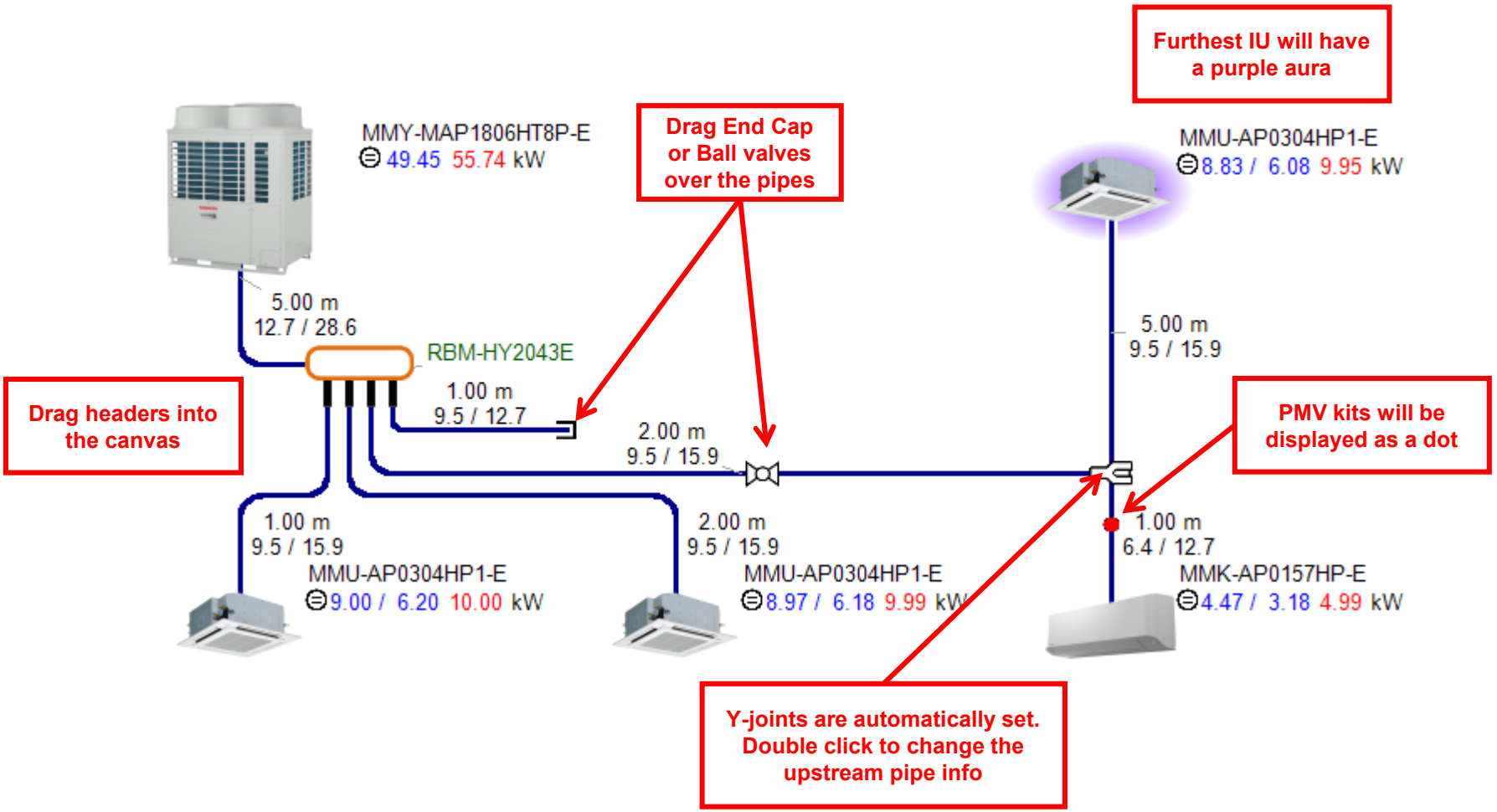
Modify the setting of multiple units at the same time

Copy selected units

Copy all selected | Paste to current system | Close

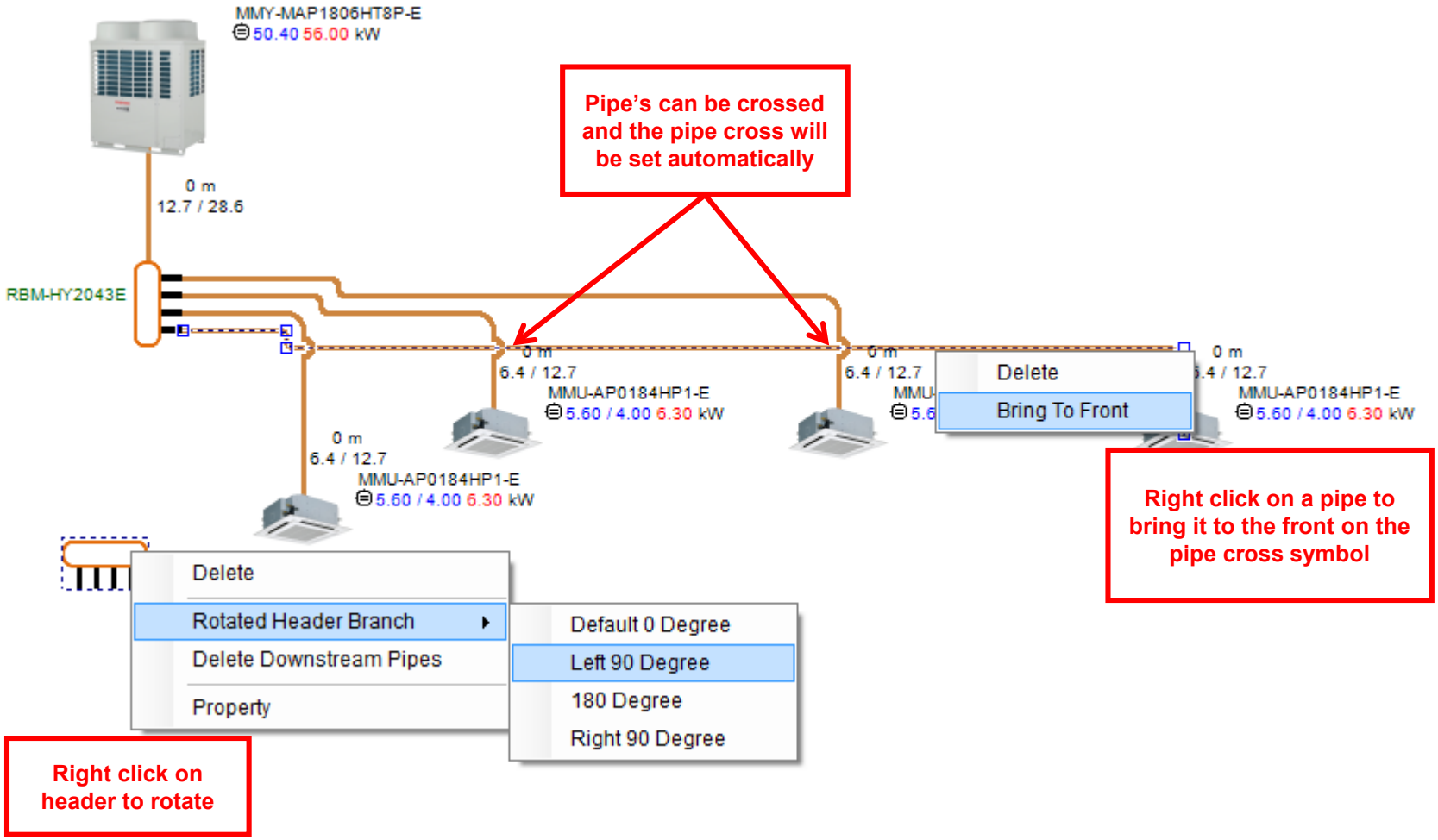
Accessories:

The user can use multiple accessories on the design:



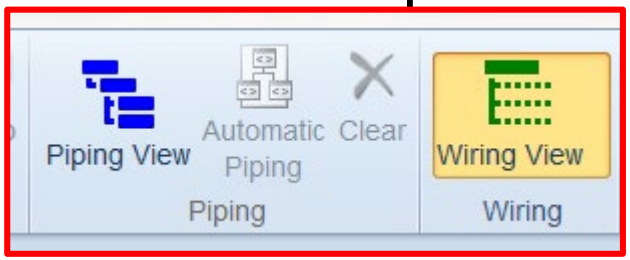
Accessories:

The user can use multiple accessories on the design:

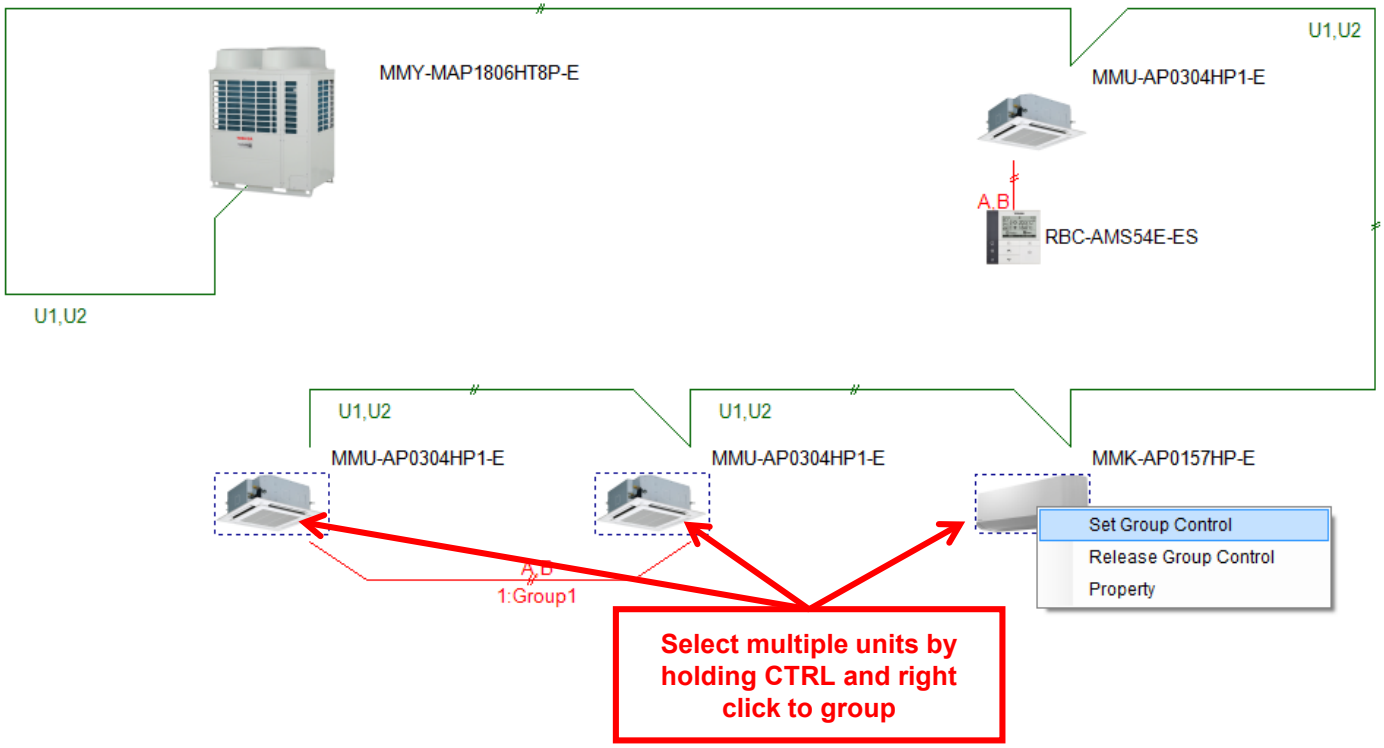


Wiring view:

The user can use multiple accessories on the design:



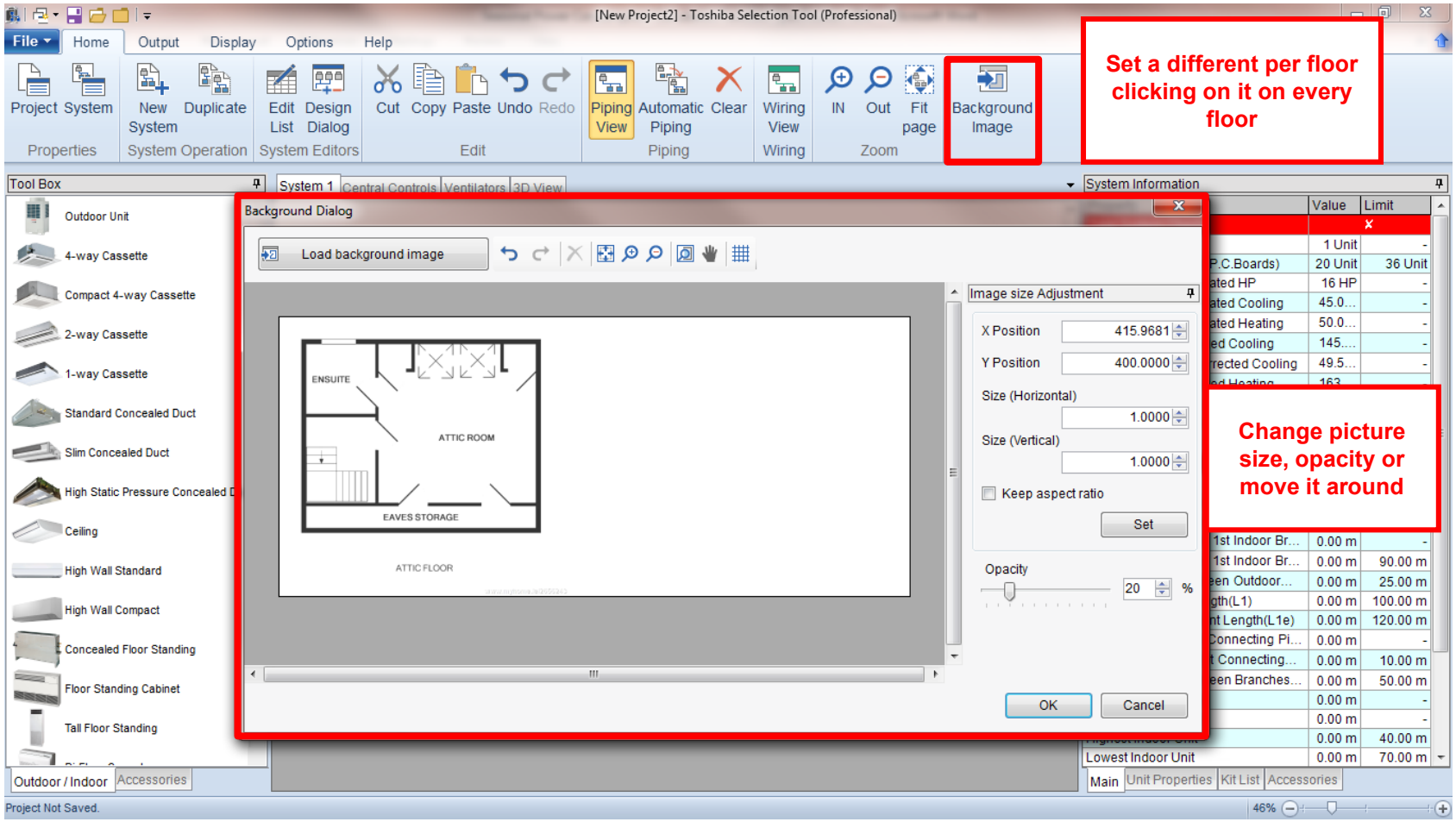
Alternate between wiring vied and piping view using the button on home tab



Select multiple units by holding CTRL and right click to group

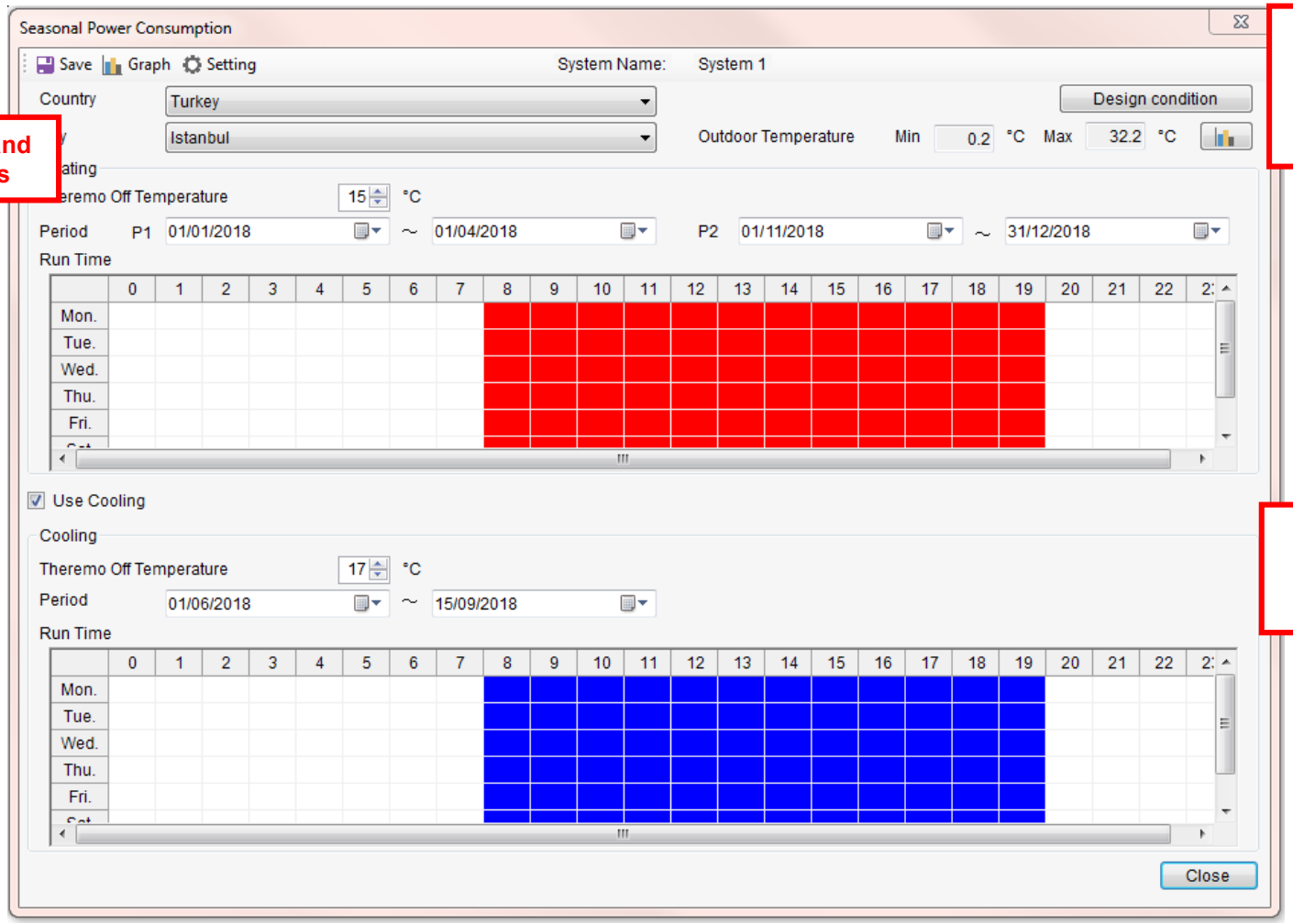
Background picture

Use the background menu to set the background pictures:



Print & PDF output:

Update the Seasonal Power Consumption data to include it:



Set regions and view graphs

Design conditions should not be much higher than the Tmax

Operating time per hour and year

SPC:

SPC calculates the Power Input per every hour on the year based on the load and the design temperatures. The result is an estimate of the OU consumption per year

Same method but different number for each OU

MMY-MAP0806HT8P-E (8HP, 22.4kW system)

Cooling		Compressor + Oudoor Fan Power consumption (kW)															
Outdoor Unit Dry-Bulb (℃)	Outdoor Unit 100% Cooling Capacity (kW)	100% Capacity		90% Capacity		80% Capacity		70% Capacity		60% Capacity		50% Capacity		40% Capacity		30% Capacity	
		TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)
40 ℃	20.8	20.8	5.99	18.8	4.85	16.7	3.89	14.6	3.09	12.5	2.43	10.4	1.89	8.34	1.47	6.25	1.15
39 ℃	21.2	21.2	5.90	19.1	4.78	16.9	3.84	14.8	3.04	12.7	2.39	10.6	1.87	8.47	1.45	6.35	
37 ℃	21.8	21.8	5.72	19.6	4.64	17.5	3.72	15.3	2.95	13.1	2.32	10.9	1.81	8.73	1.41	6.54	
35 ℃	22.4	22.4	5.54	20.2	4.49	17.9	3.60	15.7	2.86	13.4	2.25	11.2	1.75	8.96	1.36	6.72	
32 ℃	22.4	22.4	5.10	20.2	4.15	17.9	3.34	15.7	2.66	13.4	2.10	11.2	1.65	8.96	1.29	6.72	
31 ℃	22.4	22.4	4.72	20.2	3.85	17.9	3.10	15.7	2.48	13.4	1.97	11.2	1.55	8.96	1.22	6.72	
30 ℃	22.4	22.4	4.55	20.2	3.71	17.9	3.00	15.7	2.40	13.4	1.90	11.2	1.50	8.96	1.18	6.72	
29 ℃	22.4	22.4	4.38	20.2	3.58	17.9	2.89	15.7	2.32	13.4	1.84	11.2	1.46	8.96	1.15	6.72	
27 ℃	22.4	22.4	4.08	20.2	3.34	17.9	2.70	15.7	2.17	13.4	1.73	11.2	1.38	8.96	1.09	6.72	
25 ℃	22.4	22.4	3.80	20.2	3.11	17.9	2.53	15.7	2.04	13.4	1.63	11.2	1.30	8.96	1.03	6.72	0.83
23 ℃	22.4	22.4	3.62	20.2	2.97	17.9	2.42	15.7	1.95	13.4	1.57	11.2	1.25	8.96	1.00	6.72	0.80
21 ℃	22.4	22.4	3.54	20.2	2.91	17.9	2.37	15.7	1.92	13.4	1.54	11.2	1.23	8.96	0.99	6.72	0.80
20 ℃	22.4	22.4	3.51	20.2	2.88	17.9	2.35	15.7	1.90	13.4	1.53	11.2	1.23	8.96	0.98	6.72	0.79
19 ℃	22.4	22.4	3.47	20.2	2.86	17.9	2.33	15.7	1.89	13.4	1.52	11.2	1.22	8.96	0.98	6.72	0.79
17 ℃	22.4	22.4	3.41	20.2	2.81	17.9	2.30	15.7	1.86	13.4	1.50	11.2	1.21	8.96	0.97	6.72	0.79
15 ℃	22.4	22.4	3.36	20.2	2.77	17.9	2.27	15.7	1.84	13.4	1.49	11.2	1.20	8.96	0.97	6.72	0.78

TC : Total Capacity PI : Power Input
Indoor air temperature conditions : 27.0℃ dry-bulb / 19.0℃ wet bulb

Many internal factors (set temp, Ambient Temp, Capacities, nominal power…) are used to calculate the capacity and the power input

Calculated per operating hour during the year and results on the output

If OU design temp is higher than the Region Tmax, the load wont reach 100% giving higher numbers

Calculates the load linearly between Thermo_off and T_design

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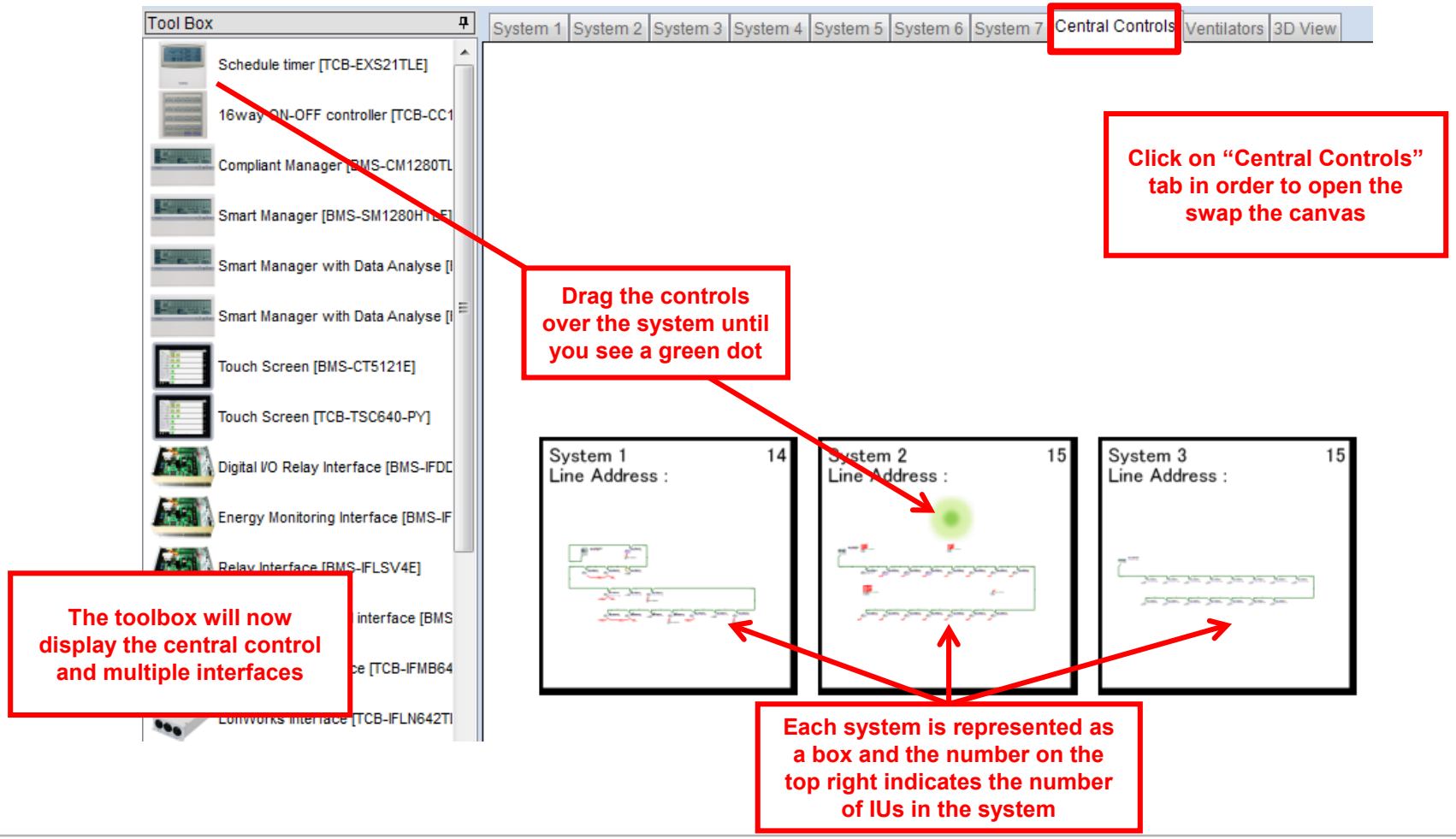
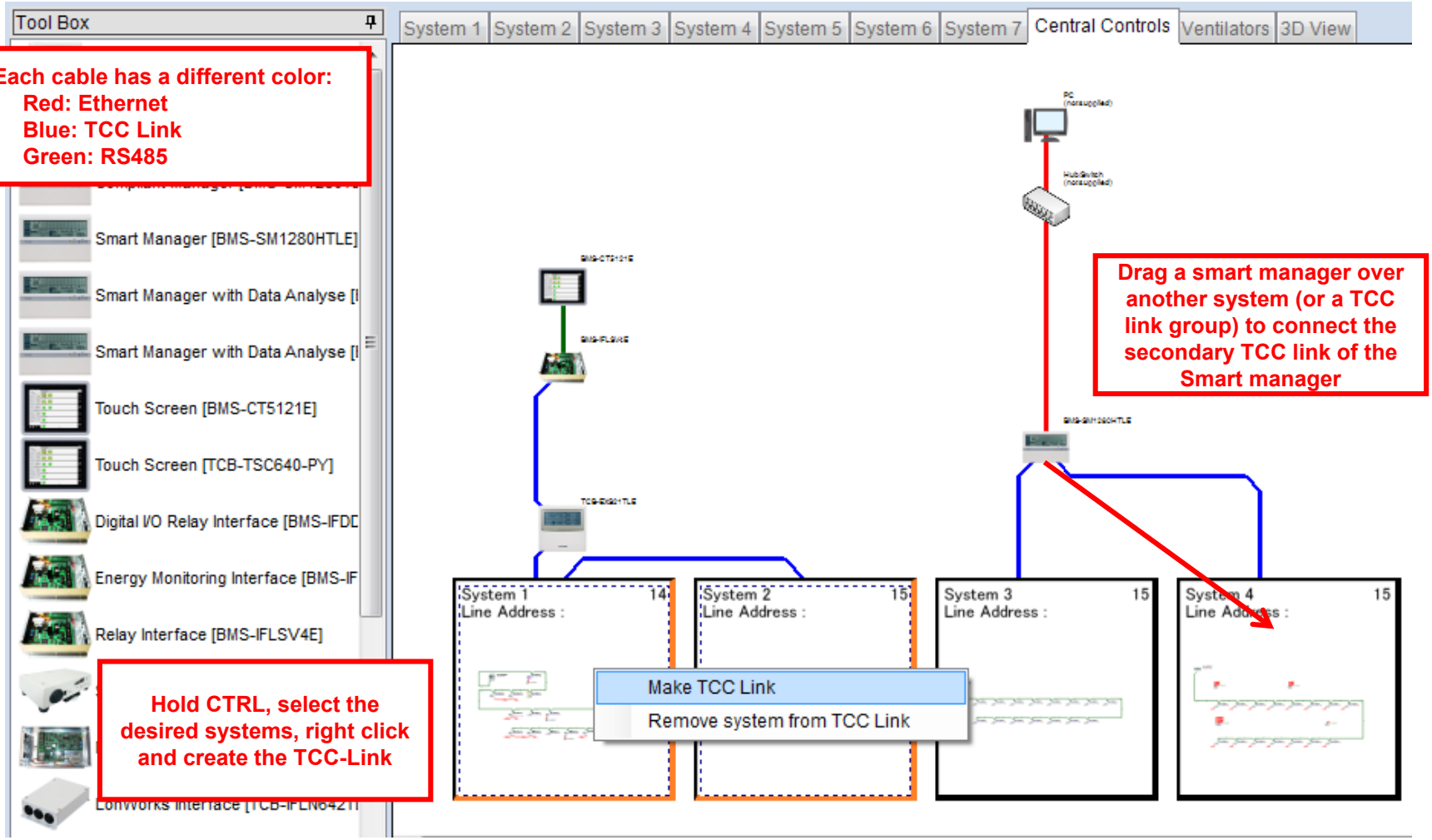
Central Controls tab:

The user can design the Central Controls of the project:



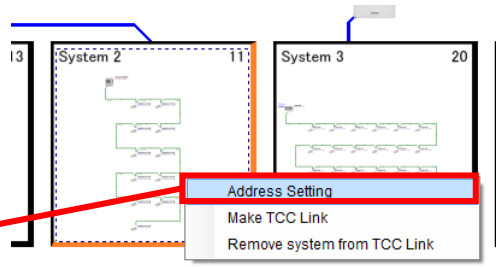
TCC-Link:

The systems can be connected with a TCC link:



Address Setting:

The address for all the units can be set.
Right click on a system to set them:



Address setting

No	Model	Indoor Unit No	Floor	Room	Unit Name	Parent Indoor Unit No.	Group Address	Line Address	Indoor Unit Address
1	MMY-MAP1606HT8P-E	-		-		-	-		-
2	MMU-AP0094HP1-E	System 1-1				-	0		1
3	MMU-AP0094HP1-E	System 1-2				-	0		2
4	MMU-AP0094HP1-E	System 1-3				-	0		3
5	MMU-AP0094HP1-E	System 1-4				-	0		4
6	MMU-AP0094HP1-E	System 1-5				-	0		5
7	MMU-AP0094HP1-E	System 1-6				-	0		6
8	MMU-AP0092WH1	System 1-7				-	0		7
9	MMU-AP0092WH1	System 1-8				-	0		8
10	MMU-AP0092WH1	System 1-9				-	0		9
11	MMU-AP0092WH1	System 1-10				-	0		10
12	MMU-AP0092WH1	System 1-11				-	0		11
13	MMU-AP0092WH1	System 1-12				-	0		12
14	MMU-AP0092WH1	System 1-13				-	0		13
15	MMU-AP0092WH1	System 1-14				-	0		14
16	MMU-AP0092WH1	System 1-15				-	0		15

Automatic setting

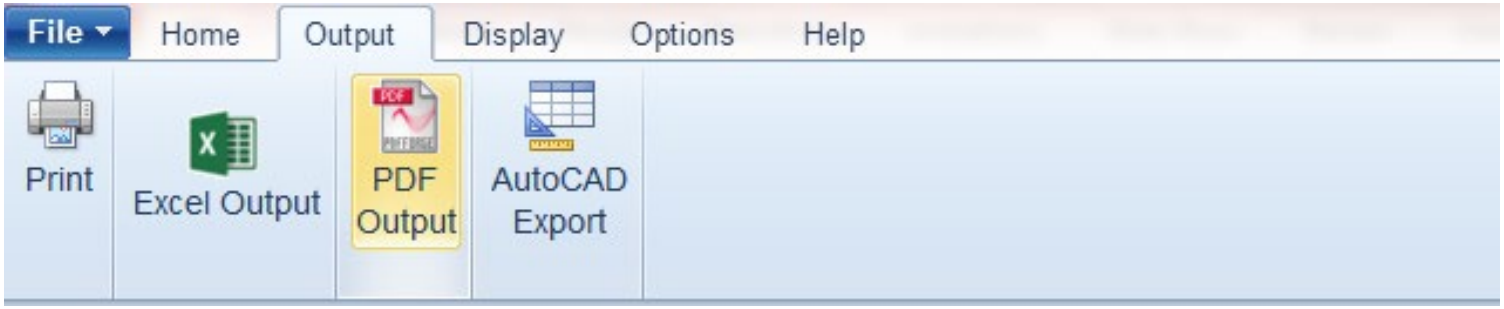
Set the Address to the units on the system

OK Cancel

Index

Output options:

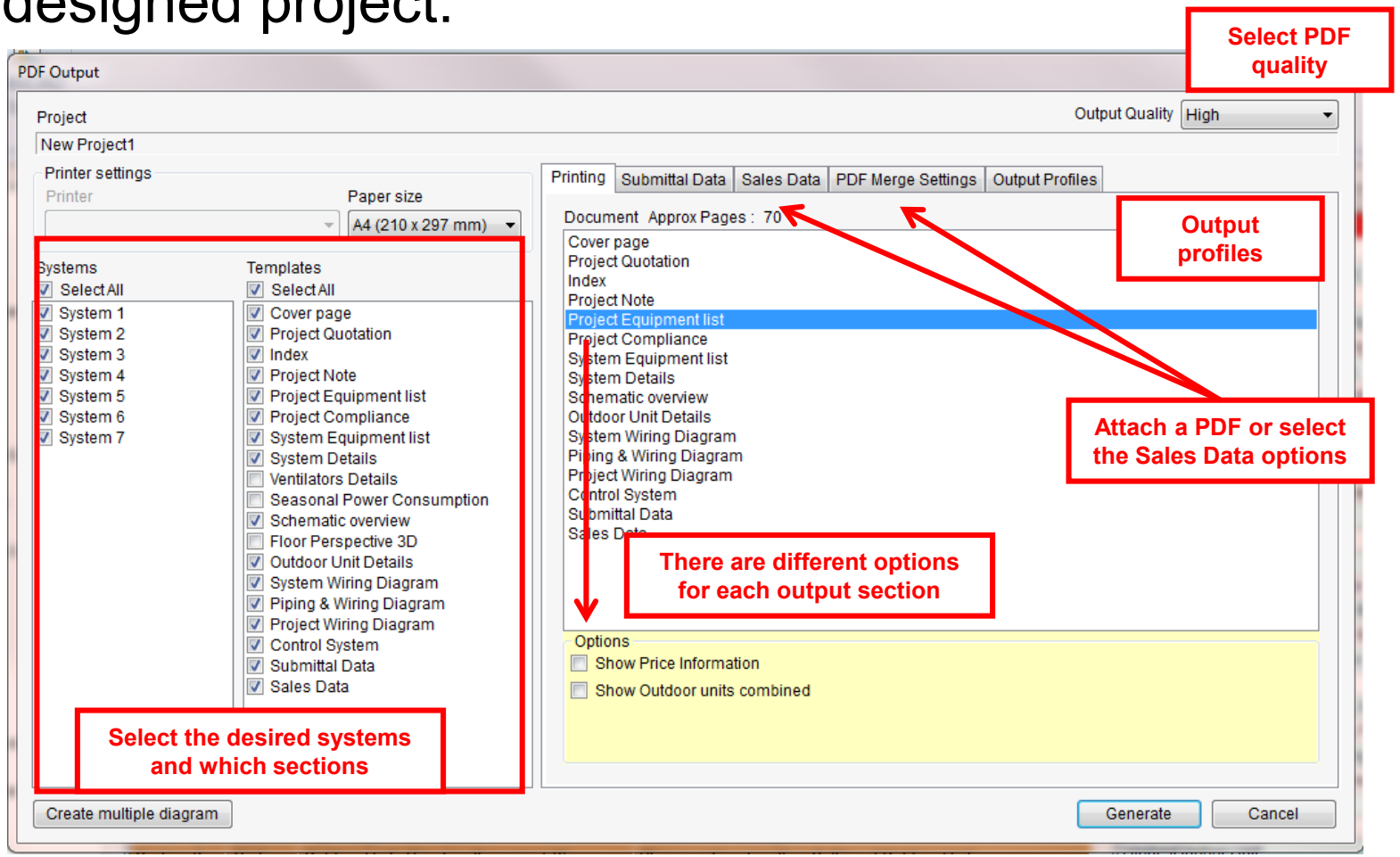
On the Output tab, the user can create multiple outputs for the designed project:



The print and the PDF output are the same, the differences is that the print option will printi it and the PDF will save it as a PDF on the computer

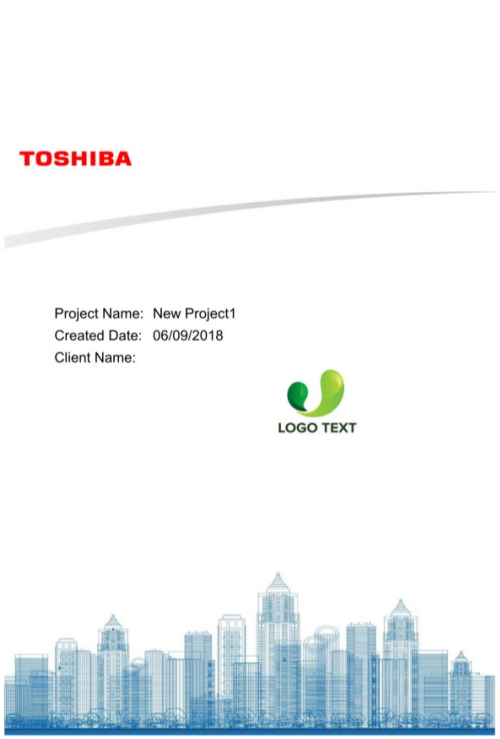
Print & PDF output:

On the Output tab, the user can create multiple outputs for the designed project:



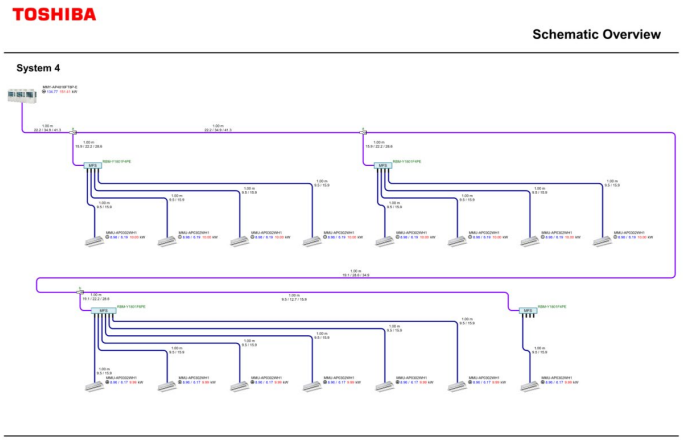
Print & PDF output:

After printing or saving the PDF, a professional output will be created:


TOSHIBA

Project Name: New Project1
Created Date: 06/09/2018
Client Name:

LOGO TEXT


TOSHIBA

Schematic Overview

System 4

Project Name:New Project1
Prepared By:
Revision:
Version:1.2.10
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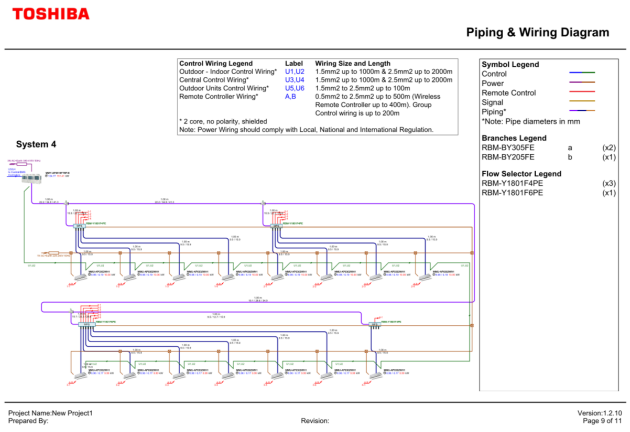
TOSHIBA

Piping & Wiring Diagram

Control Wiring Legend	Label	Wiring Size and Length
Outdoor - Indoor Control Wiring*	U1,U2	1.5mm2 up to 1000m & 2.5mm2 up to 2000m
Central Control Wiring*	U3,U4	1.5mm2 up to 1000m & 2.5mm2 up to 2000m
Outdoor Units Control Wiring*	U5,U6	1.5mm2 to 2.5mm2 up to 100m
Remote Controller Wiring*	A,B	0.5mm2 to 2.5mm2 up to 500m (Wireless Remote Controller up to 400m). Group Control wiring is up to 200m

* 2 core, no polarity, shielded
Note: Power Wiring should comply with Local, National and International Regulation.

Symbol Legend
Control
Power
Remote Control
Signal
Piping*
*Note: Pipe diameters in mm

Branches Legend
RBM-BY305FE a (x2)
RBM-BY205FE b (x1)

Flow Selector Legend
RBM-Y1801F4PE (x3)
RBM-Y1801F6PE (x1)

System 4

Project Name:New Project1
Prepared By:
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Version:1.2.10
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System Equipment List

System 1

Outdoor Units

Model	Quantity	Description
MMY-AP4[illegible]8HT8P-E	1	Super Modular Multi System (SMMS-e)
MMY-MAP[illegible]06HT8P-E	1	Super Modular Multi System (SMMS-e)

Indoor Units

Model	Quantity	Description
MMU-AP[illegible]HT-E	15	3.2HP 4-way Cassette

Y Joints

Model	Quantity	Description
RBM-BT24E	2	Outdoor Unit Branch Kit
RBM-BY305E	8	Y-Joint
RBM-BY205E	1	Y-Joint
RBM-BY105E	5	Y-Joint

Accessories

Model	Quantity	Description
RBC-U31PGP(W)-E	15	Ceiling Panel

Piping Length

Pipe Diameter	Total Length	Gas Side	Discharge Side	Liquid Size
9.5mm	0.00 m	0.00 m	0.00 m	0.00 m
12.7mm	0.00 m	0.00 m	0.00 m	0.00 m
15.9mm	0.00 m	0.00 m	0.00 m	0.00 m
19.1mm	0.00 m	0.00 m	0.00 m	0.00 m
22.2mm	0.00 m	0.00 m	0.00 m	0.00 m
28.6mm	0.00 m	0.00 m	0.00 m	0.00 m
34.9mm	0.00 m	0.00 m	0.00 m	0.00 m
41.3mm	0.00 m	0.00 m	0.00 m	0.00 m

Total Refrigerant Charge Amount

Refrigerant (R410A)	Amount	Description
Outdoor Unit	34.500 kg	Refrigerant amount charged in factory
Additional Refrigerant	12.700 kg	Amount needed for the pipes at the site
TOTAL:	47.200 kg	

Outdoor Design Temperature

Mode	Description	Temperature
Cooling	Dry bulb Temperature	35.0 °C
Heating	Wet bulb Temperature	6.0 °C

Electronic Information(OutdoorUnits)

Property	Value	Description
MOCP(A)	125	Maximum Overcurrent Protection
MCA(A)	107.4	Minimum Circuit Amps
Protection Device Size(A)		
Wire(cable size)(mm2) or AWG(#)		

Electronic Information(IndoorUnits)

Property	Value	Description
Total MCA(A)	16.35	

Project Name:New Project1
Prepared By:
Revision:
Version:1.2.10
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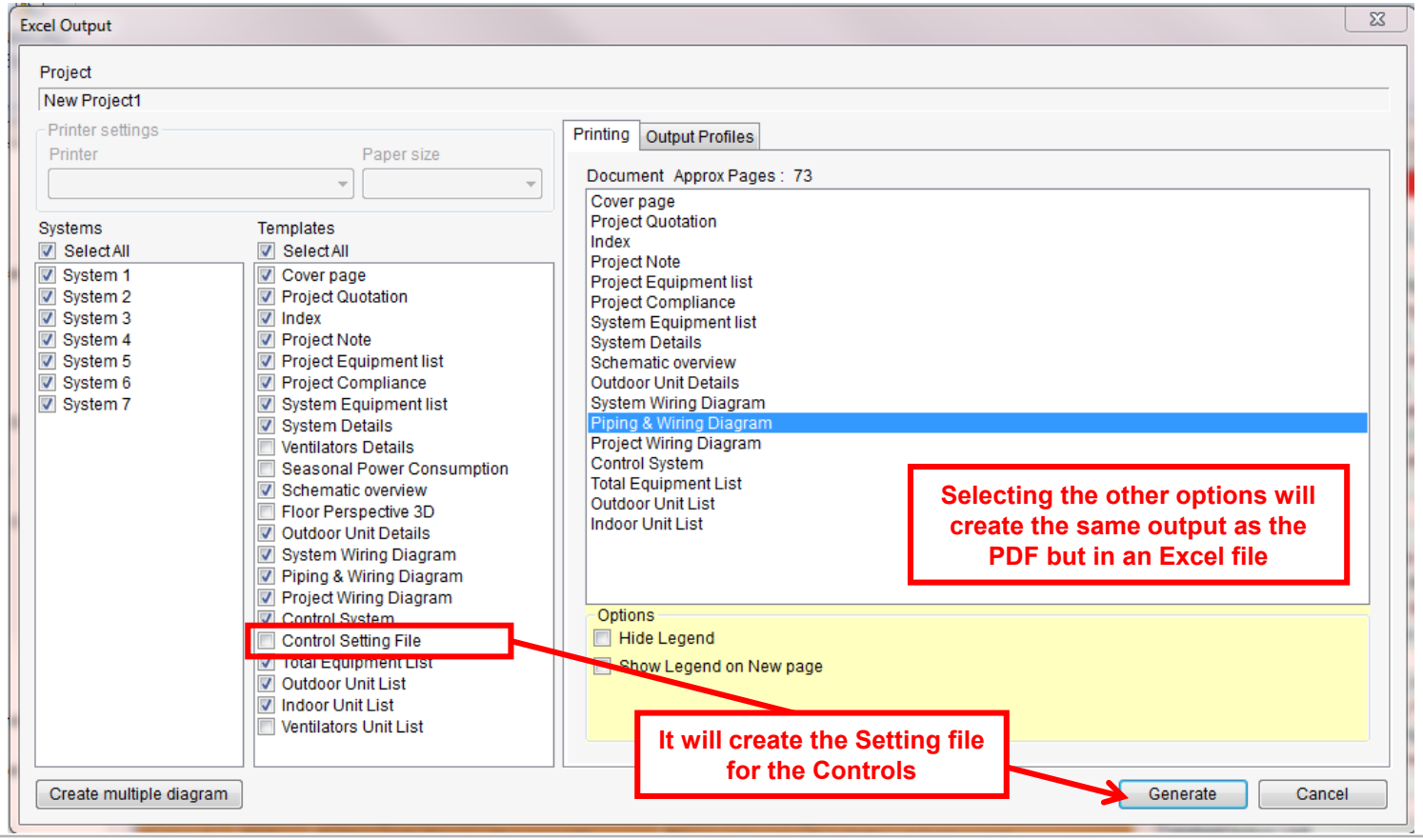
Excel output:

The Excel output will create an Excel file with al the data regarding the project. It will create the same output as the Print & PDF, but it also includes the Setting file:



Setting File:

The Setting File created through the Excel output looks like this:

Building Name	New Project 2												IP Address	192.168.2.80				

No	Air Conditioner Information												Digital I/O Relay Interface		Energy Monitoring Relay Interface	
	Outdoor Name	Outdoor Unit Combination Model Name	Indoor Unit Model Name	I/F No	Central Address	Line Address	Indoor Unit Address	Group Address	Parent Indoor Unit No.	R.C.group / Indoor Name	Floor Name	Tenant Name	Area Name	Key Input	Fire Alarm	Power Meter (Indoor)	Power Meter (Outdoor)
														Address - Channel	Address - Channel	Address - Channel	Address - Channel
1		38VT040S68HTEE	40VU027S-4S-TEE	0													
2		38VT040S68HTEE	40VU027S-4S-TEE	0													
3		38VT040S68HTEE	40VU027S-4S-TEE	0													
4		38VT040S68HTEE	40VU027S-4S-TEE	0													
5		38VT040S68HTEE	40VU027S-4S-TEE	0													
6		38VT040S68HTEE	40VU027S-4S-TEE	0													
7		38VT040S68HTEE	40VU027S-4S-TEE	0													
8		38VT040S68HTEE	40VU027S-4S-TEE	0													
9		38VT040S68HTEE	40VU027S-4S-TEE	0													
10		38VT040S68HTEE	40VU027S-4S-TEE	0													
11		38VT040S68HTEE	40VU027S-4S-TEE	0													
12		38VT040S68HTEE	40VU027S-4S-TEE	0													
13		38VT040S68HTEE	40VU027S-4S-TEE	0													
14		38VT022168HTEE	40VU0122-2S-JEE	0													
15		38VT022168HTEE	40VU0122-2S-JEE	0													
16		38VT022168HTEE	40VU0122-2S-JEE	0													
17		38VT022168HTEE	40VU0122-2S-JEE	0													
18		38VT022168HTEE	40VU0182-2S-JEE	0													
19		38VT022168HTEE	40VU0182-2S-JEE	0													
20		38VT022168HTEE	40VU0182-2S-JEE	0													
21		38VT022168HTEE	40VU0242-2S-JEE	0													
22		38VT022168HTEE	40VU0242-2S-JEE	0													
23		38VT022168HTEE	40VU0242-2S-JEE	0													
24		38VT022168HTEE	40VU0242-2S-JEE	0													
25																	
26																	
27																	
28																	

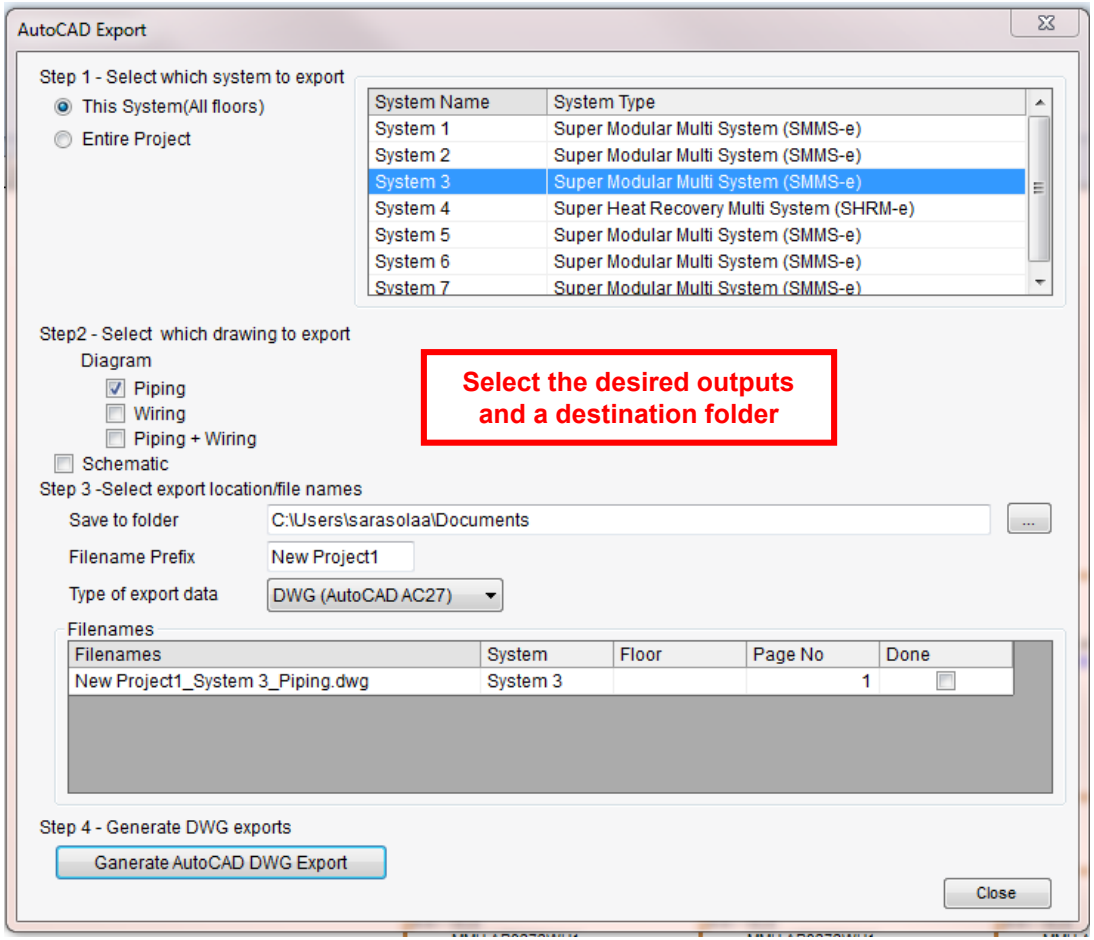
Import it to the Controls using the Setting File software.

Separate software, download it from the portal

CAD output:

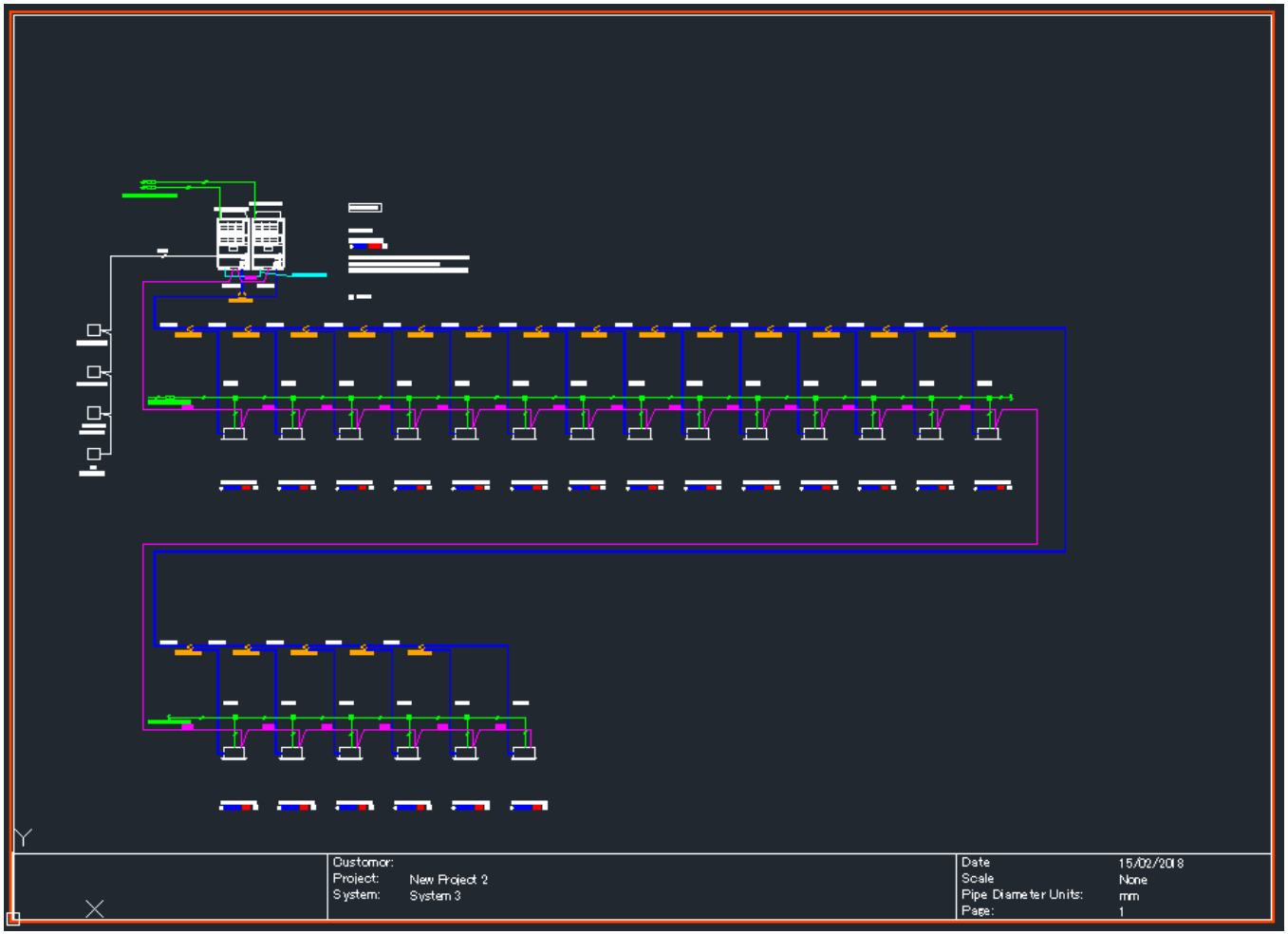
Create the design schematic or diagram on a CAD file using the CAD output:

Create CAD outputs for one system or all the project



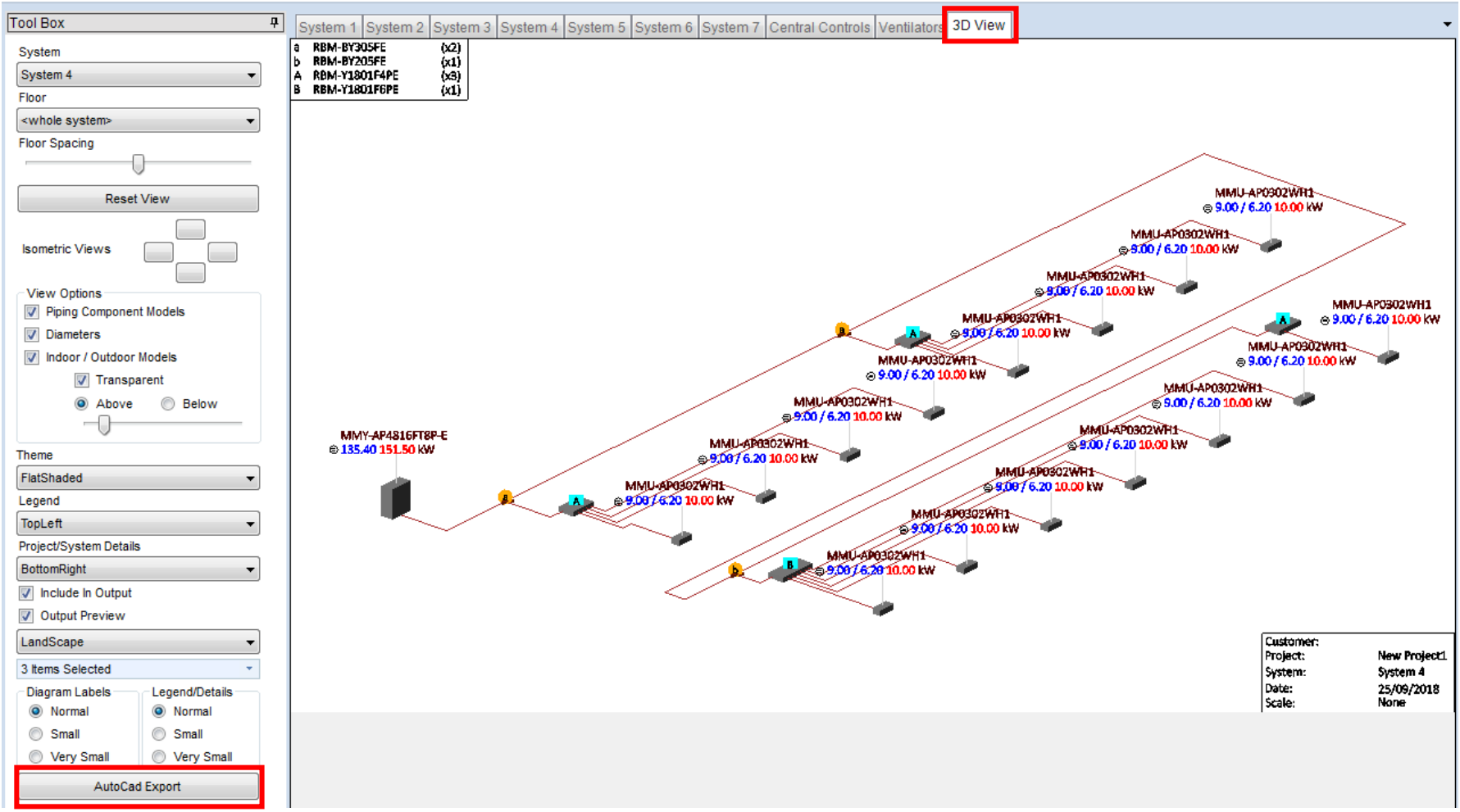
CAD output:

This is how the Piping and wiring CAD looks like:



3D CAD output:

This is how the 3D CAD looks like:

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