

# TOSHIBA DesignAIRS

## Help & Guide Manual

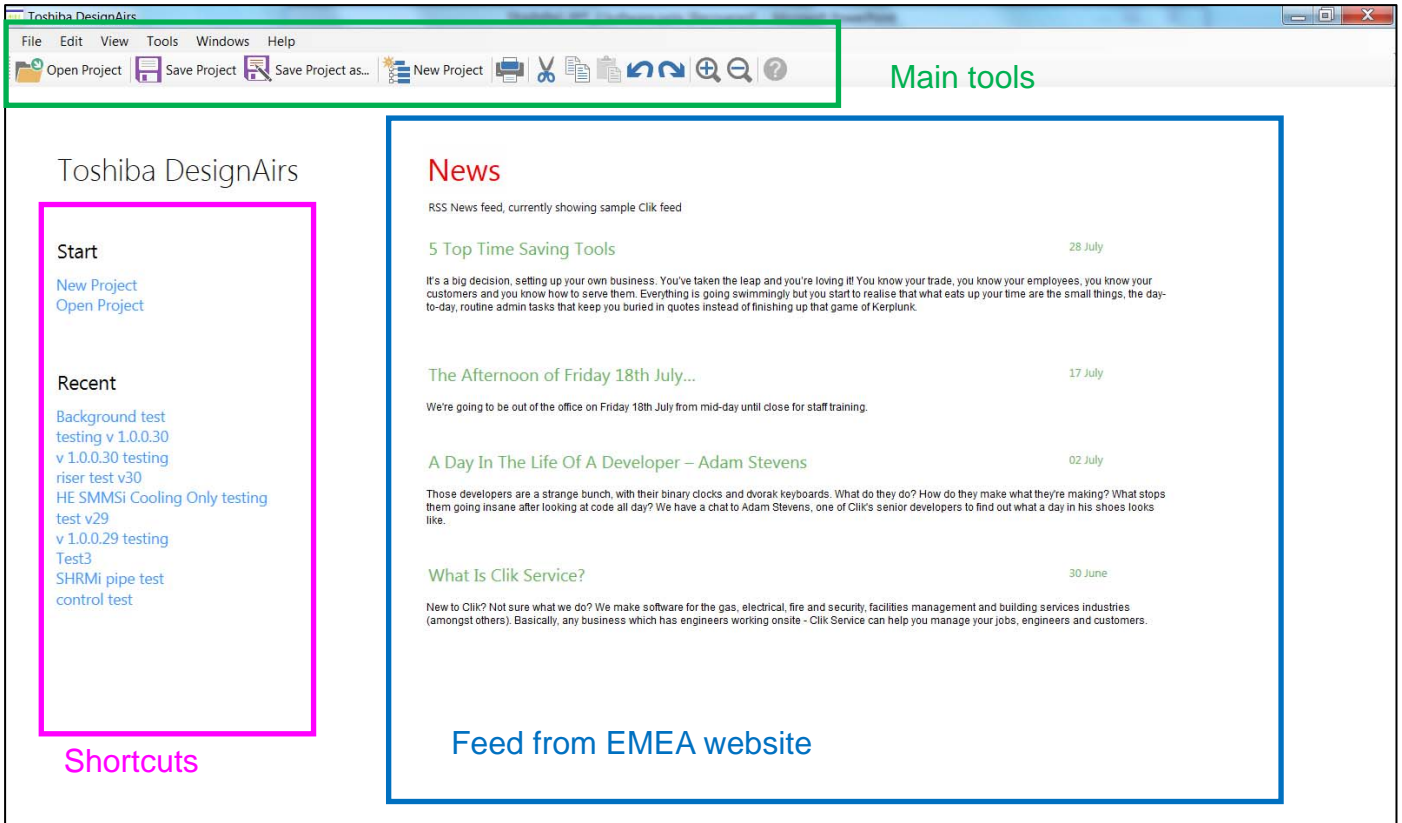
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# 1. MAIN TOOLBAR

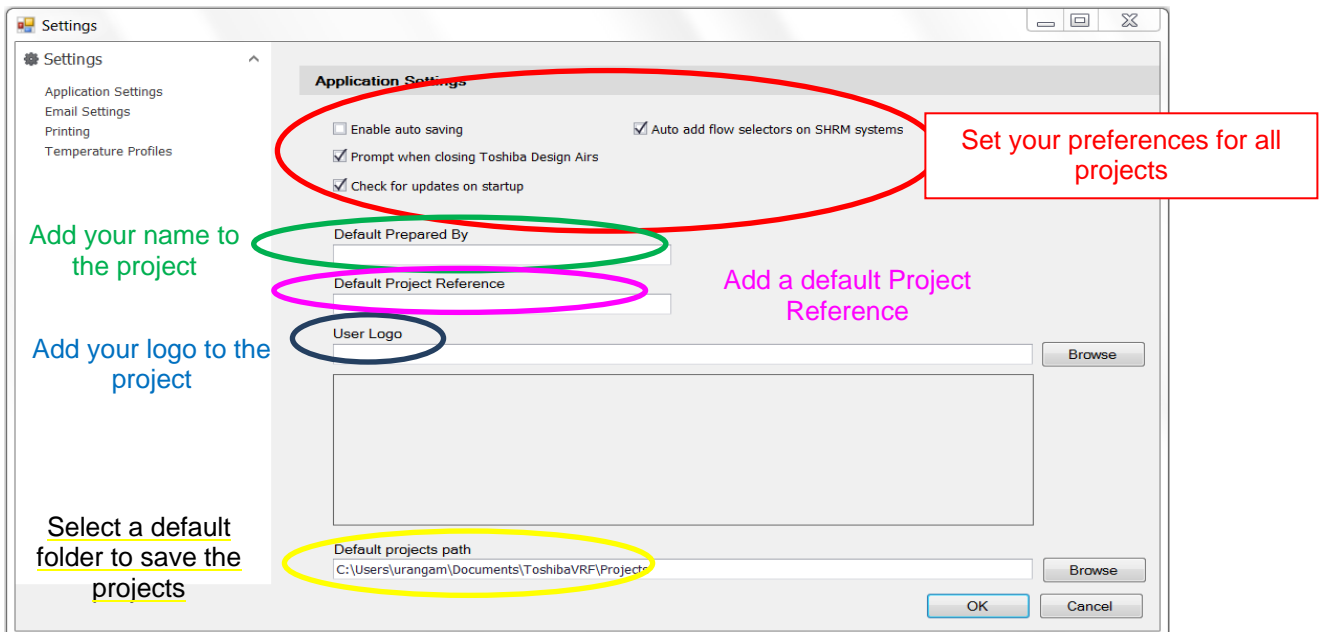
This is the appearance of the Main Window of the software:



We have the main tools in the toolbar of the top of the window and “News” feed from the EMEA Website. We can also find the shortcuts to start a new project or open the most recent ones.

## 1.1. Tools / Options

### 1.1.1. Application Settings



Hence, under Tools / Options / Application Settings:

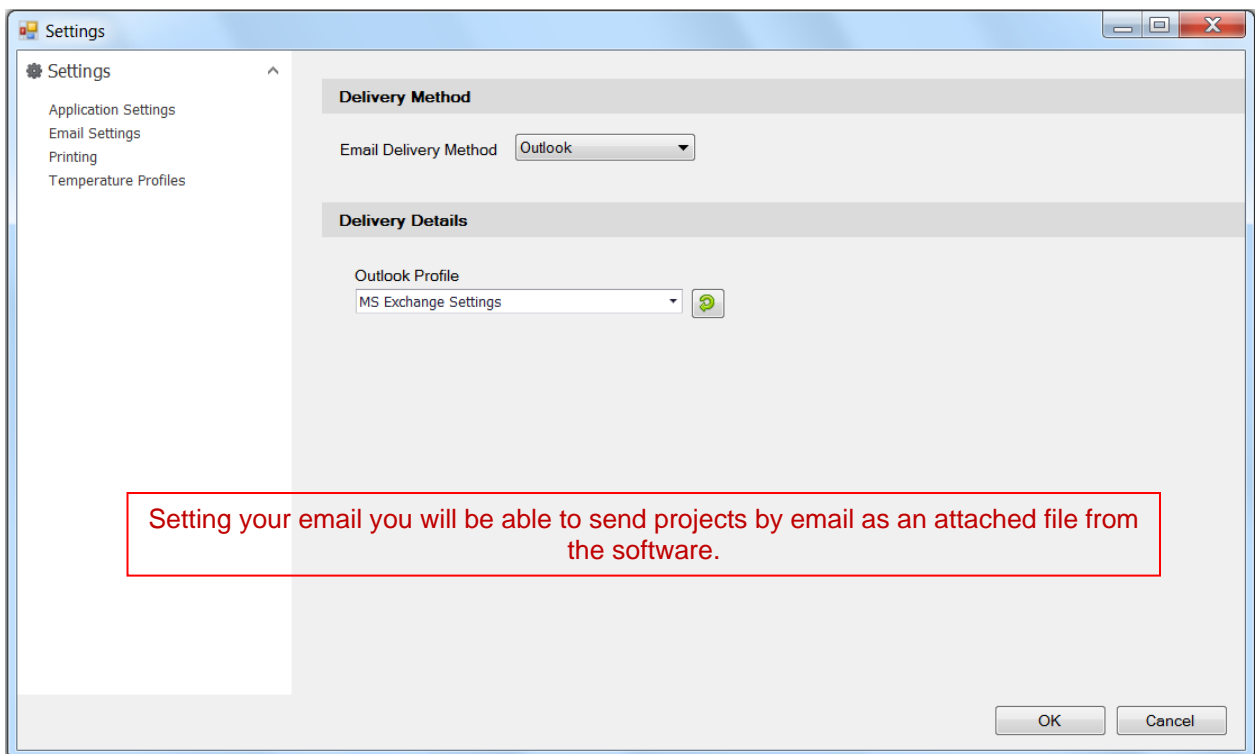
We can activate the "auto-saving" option, the saving pop-up when closing the software, we can select if we want the software to check for updates on start-up (which is recommended), or if we want to add Flow Selectors automatically in SHRMi systems when drag & dropping indoor units.

The user can also set his or her name to appear in the output as the "prepared by", although we want it to be automatically taken from the registration window, we would then be able to change it in here.

In addition, we can add a default project reference and our company's logo to be printed out on the Output.

To sum up, we can choose the default folder where we want the projects to be saved. We could for example save all the projects in the Network, so that we can share the files.

### 1.1.2. Email Settings



Under the "Email settings", we can set our email so that projects can be sent as attached files directly from the software.

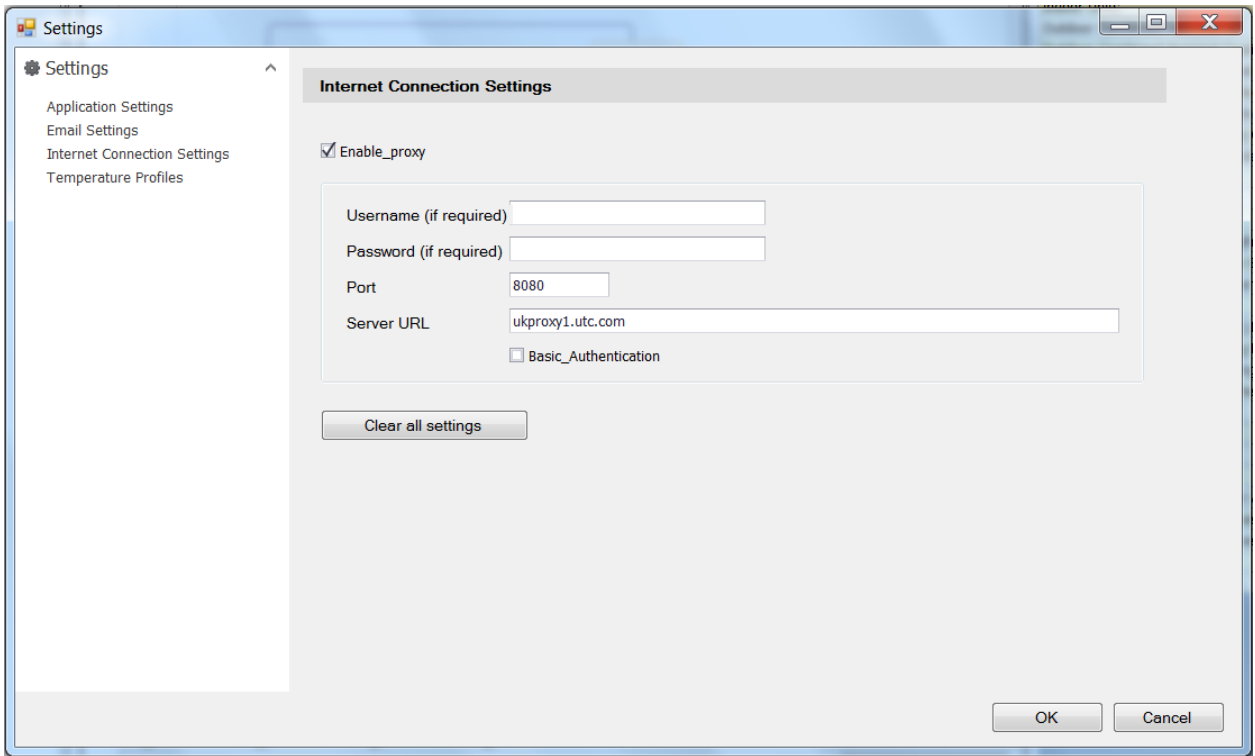
Besides, in the first stage of the software, you will be able to send any errors report that might happen while designing.

### 1.1.3. Internet Connection Settings

We will be able to change the settings of the internet connection.

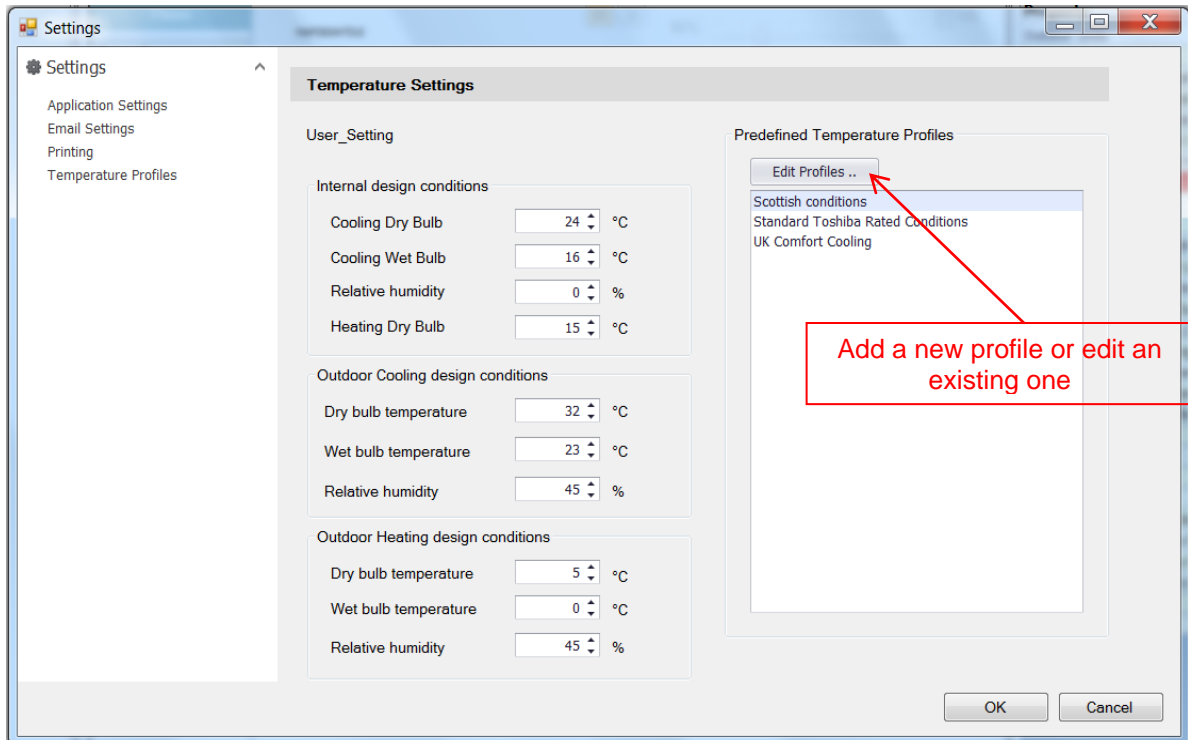
In case your company uses a proxy to access to internet, we can set it up in this window so that the software has access to internet and can check for the updates and download the newest version.



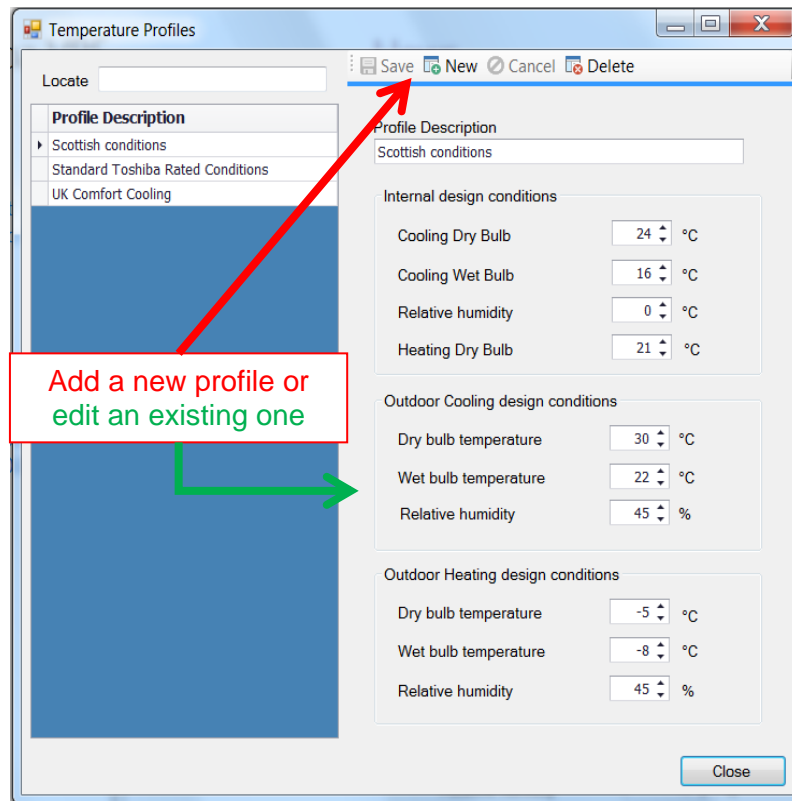


### 1.1.4. Temperature Profiles

Last settings are the temperature profiles, where we can define default design conditions, but also add new profiles or edit the existing ones for future designs:

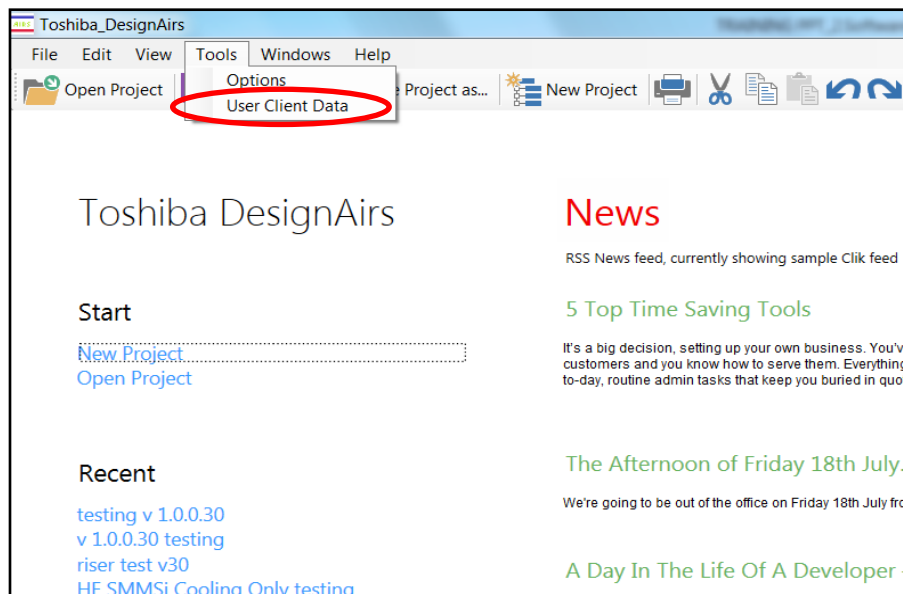


We can add new profiles by clicking on “New”, or edit an existing one just selecting the profile from the list in the left and changing the values (do not forget to save the changes!)

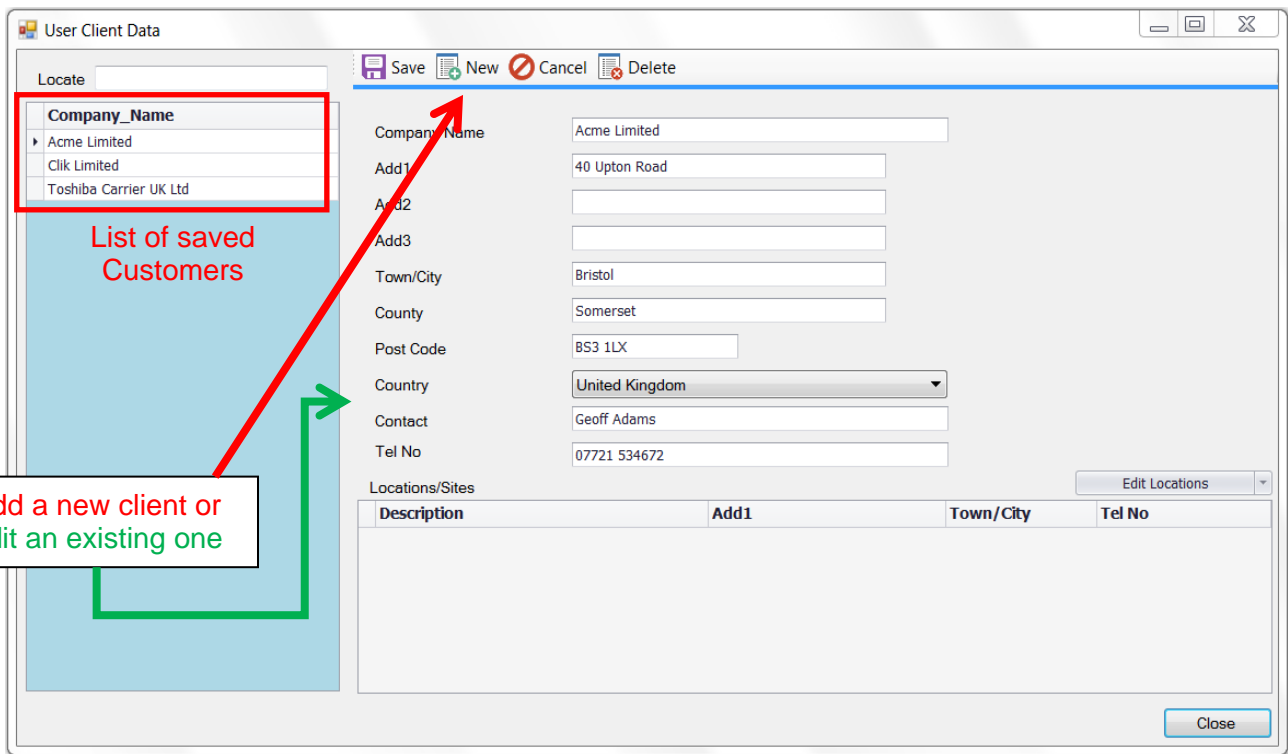


## 1.2. Tools / User Client Data

Under Tools → User Client Data, we can create a contact list with all the clients' data that we need.



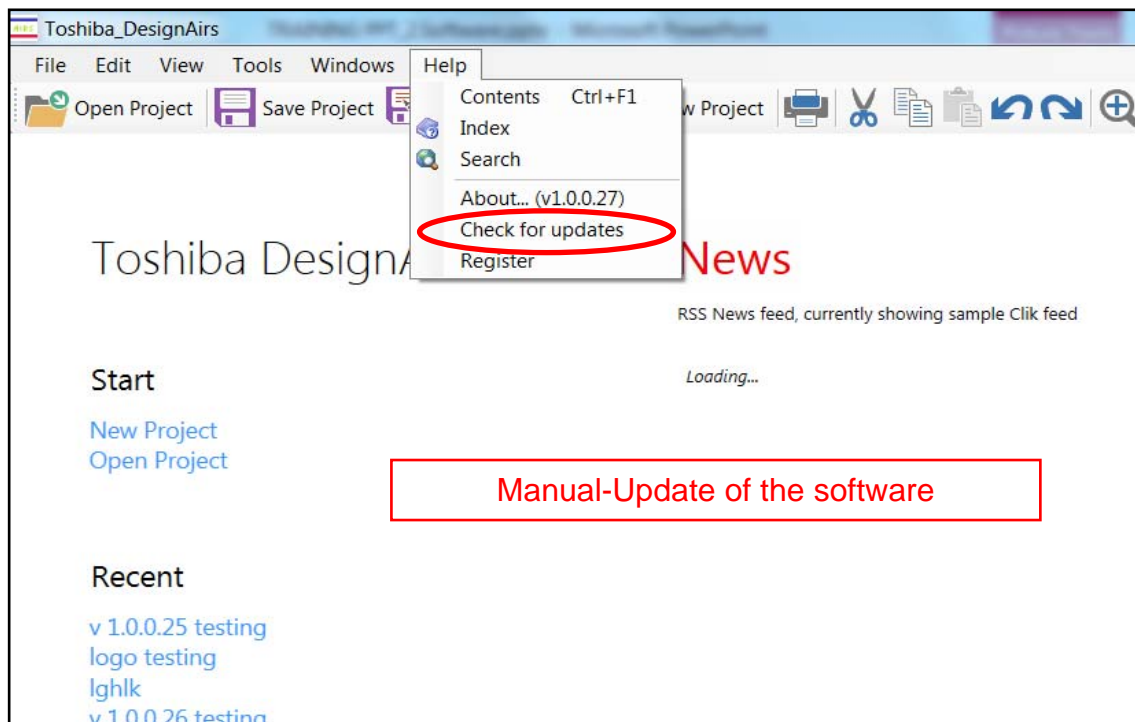
If we want to add a new client we will have to press "new" fill in the information and save the changes. To edit an existing customer data, select it from the list in the left, edit the wrong data and press save.



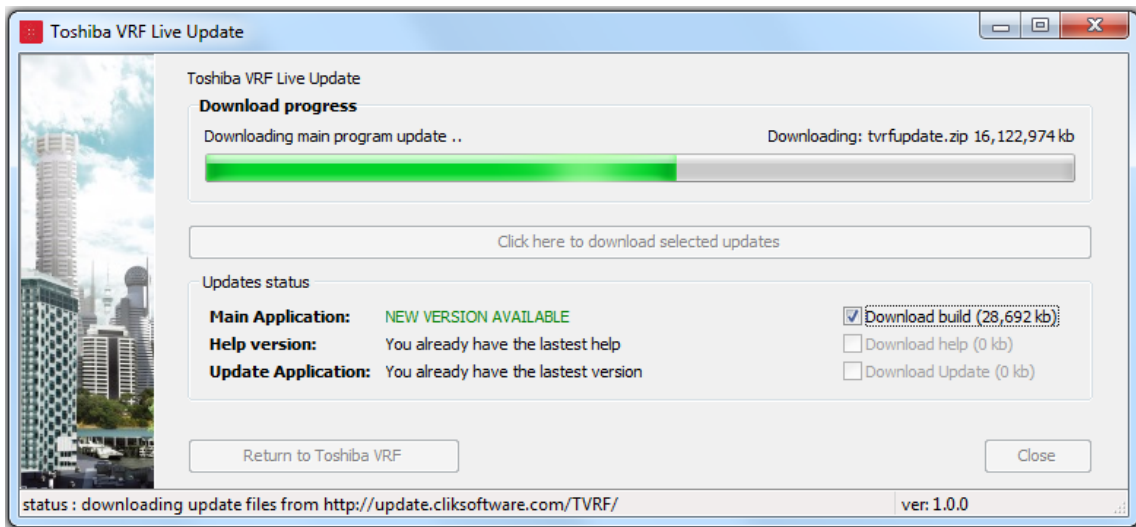
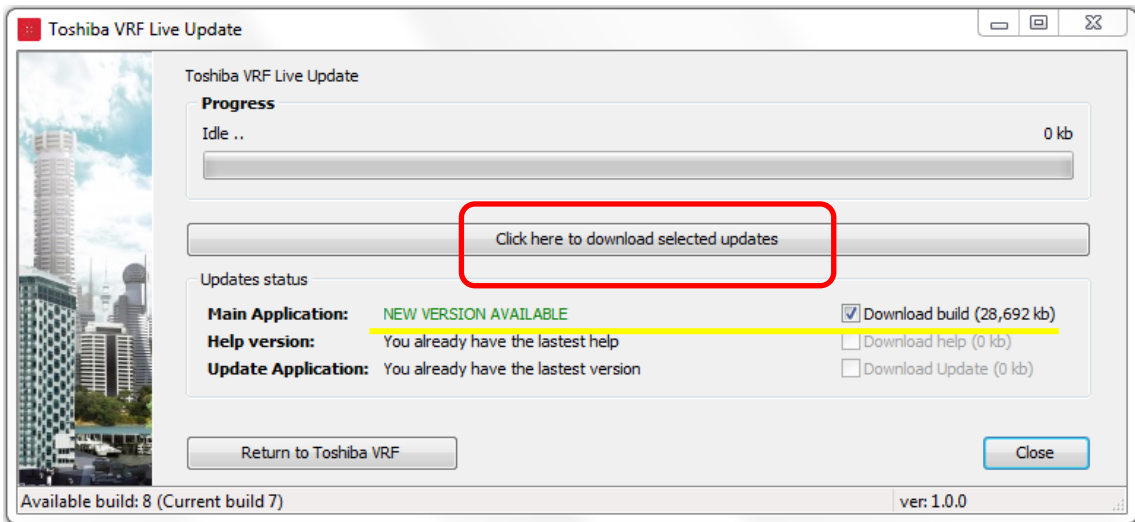
### 1.3. Tools / Help / Check for Updates

Under help we can manually check for updates.

The software will let us know automatically any newer available version (unless we have turned off the option in the General Preferences under Tools), but if we want to do it manually, we can find it here, under Help / Check for updates:

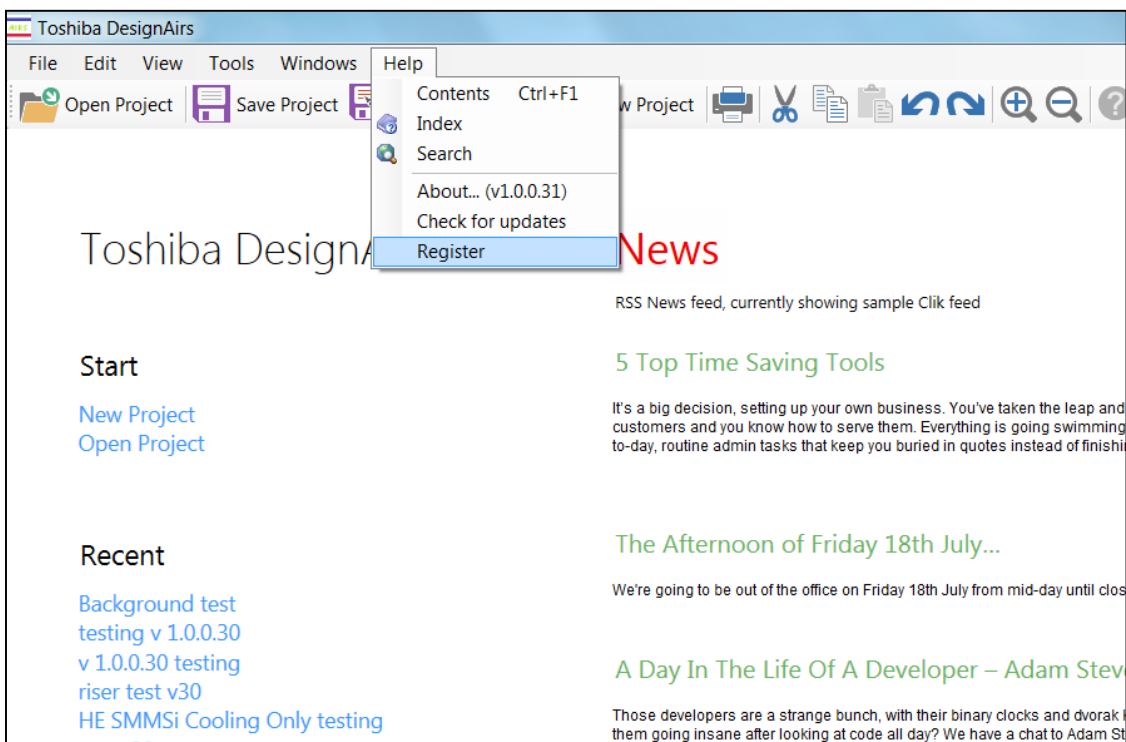


We will be able to see if there is a new version available and to download it from the updater:



#### 1.4. Tools / Help / Register

Finally, under Help / Register, we can add any information that we did not fill in during the Registration Form:

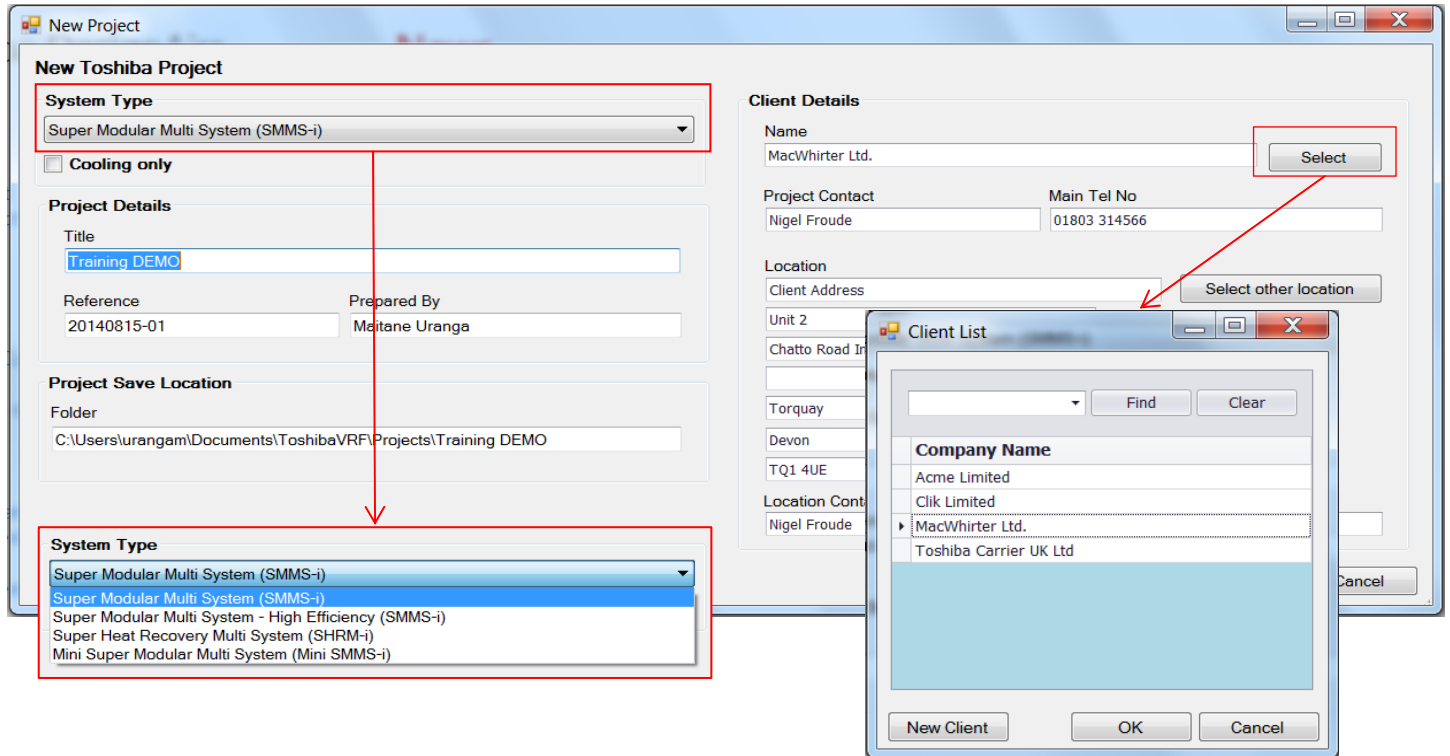


## 2. DESIGNING TOOLS

### 2.1. New Project Window

We can select the requirements for the new project: System type (SMMSi is going to be the default one), Project name and Client's details.

Bear in mind that just the Project name is mandatory.



### 2.2. Designing Window

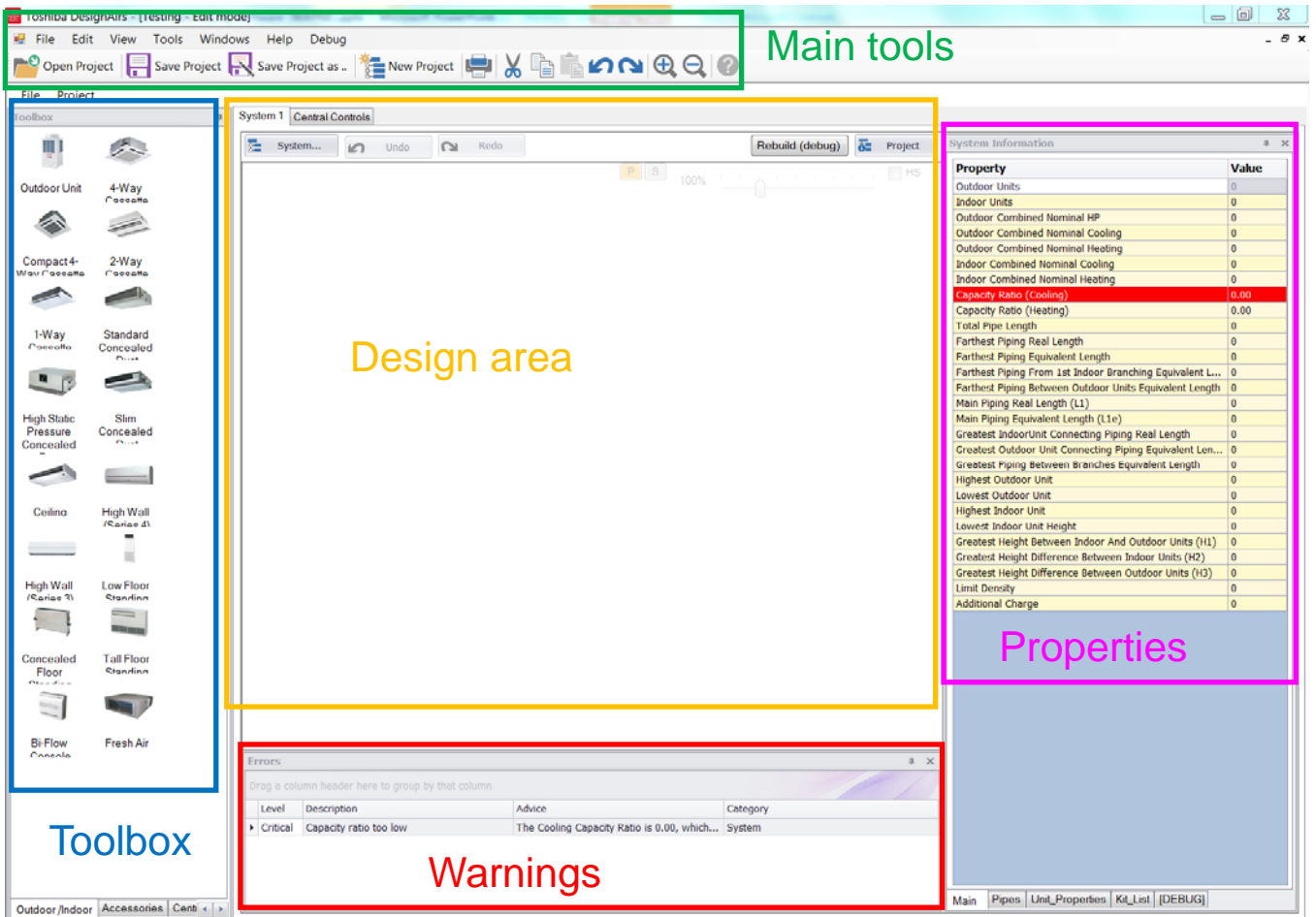
There are 4 main areas in the Designing Window apart from the main tools that we have already seen.

1<sup>st</sup> one, the Toolbox: where we can see the main elements that we can add into the design.

2<sup>nd</sup> one, the actual Design area: where we will drag the elements and create our design.

3<sup>rd</sup> one, the System Information: where we will be able to read a summary of the system properties

And 4<sup>th</sup> one, the Warnings: where the issues will be displayed



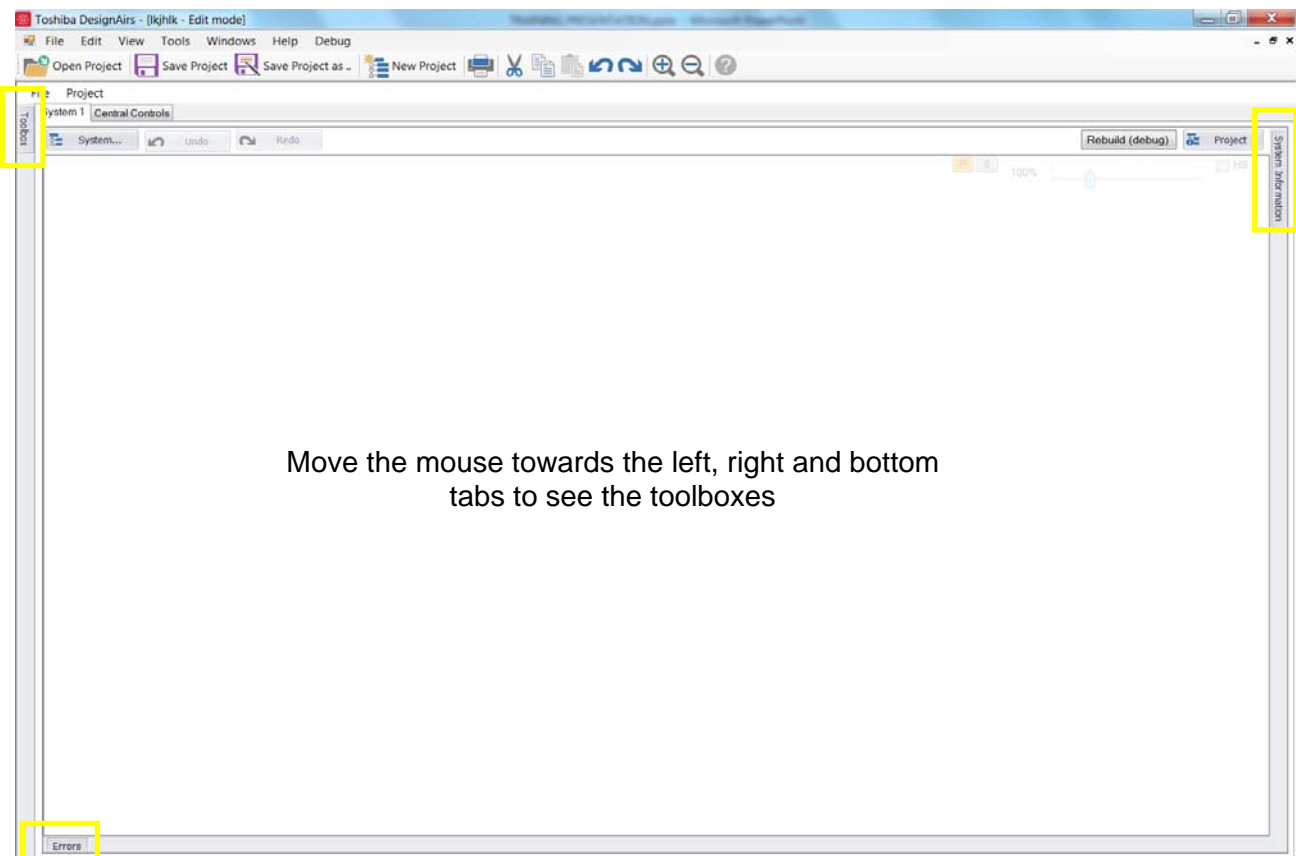
### 2.3. Auto-Hiding and moving toolboxes

We can customize the working area by auto-hiding or moving the toolbox, system information and warning.



If we select the Auto-Hide options in the 3 of them, we will see that the design-area is much bigger.

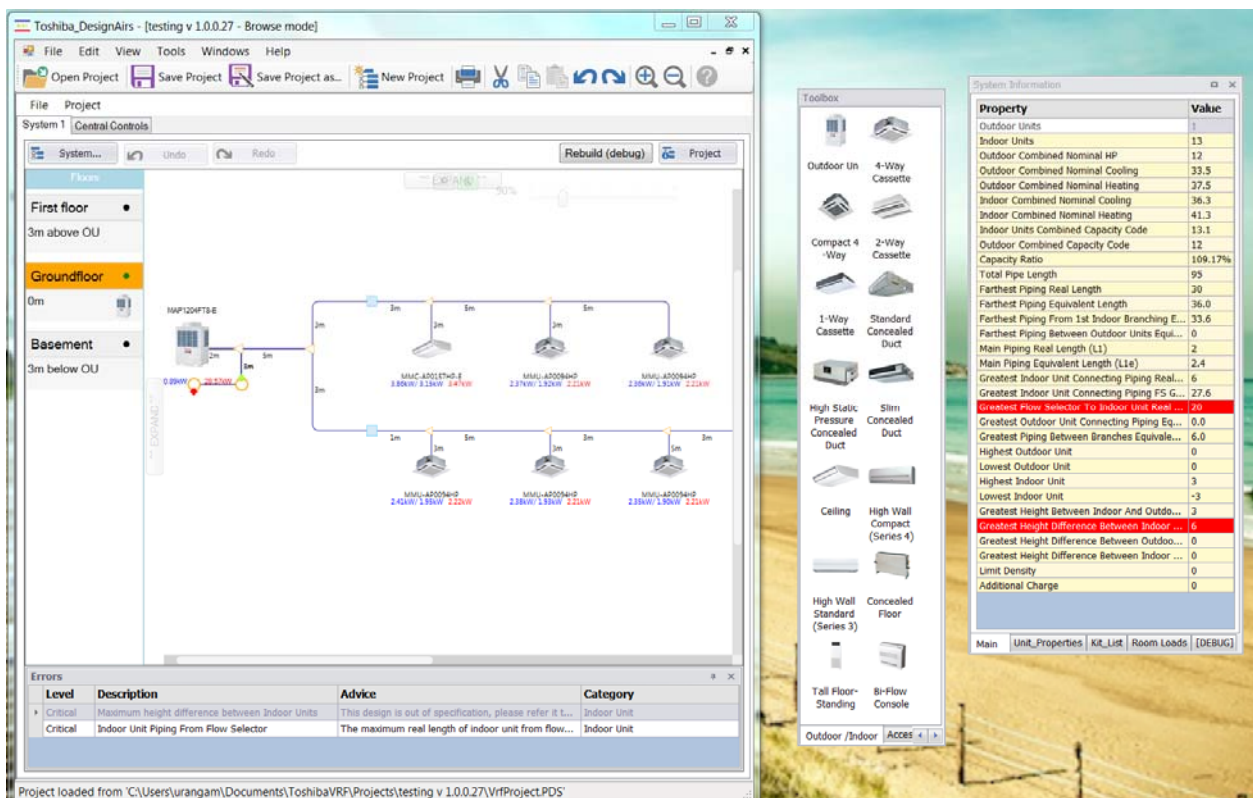
In order to see them again, we need to move the mouse over the tabs:



Move the mouse towards the left, right and bottom tabs to see the toolboxes

If we work with more than one monitor or screen, we will find very useful moving the toolboxes into the 2<sup>nd</sup> screen, so all the information will be visible, and the working area will be the biggest possible.

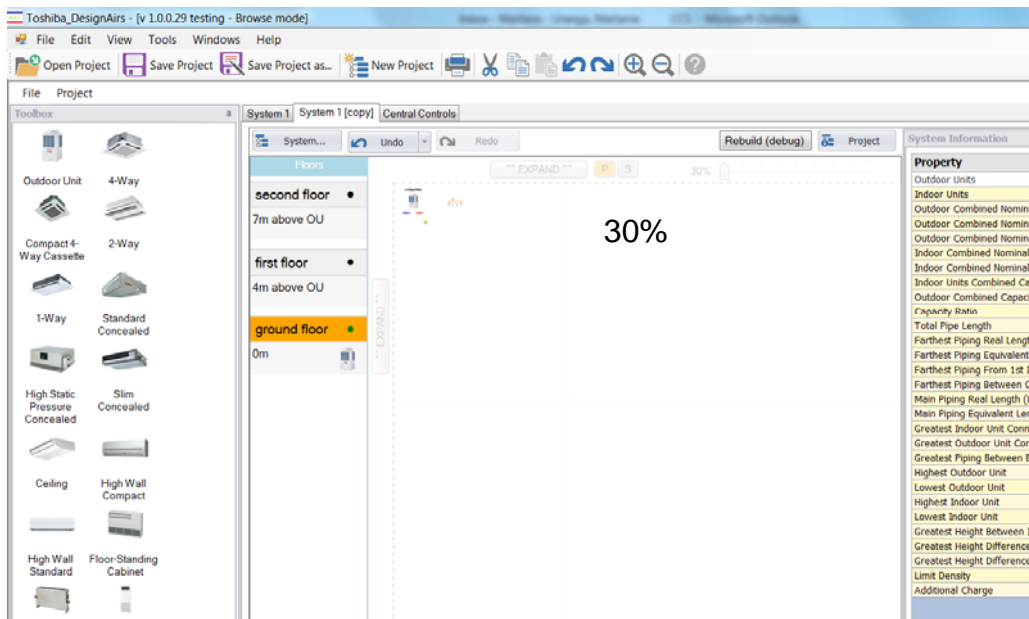
We can move the toolboxes just by drag and dropping them:



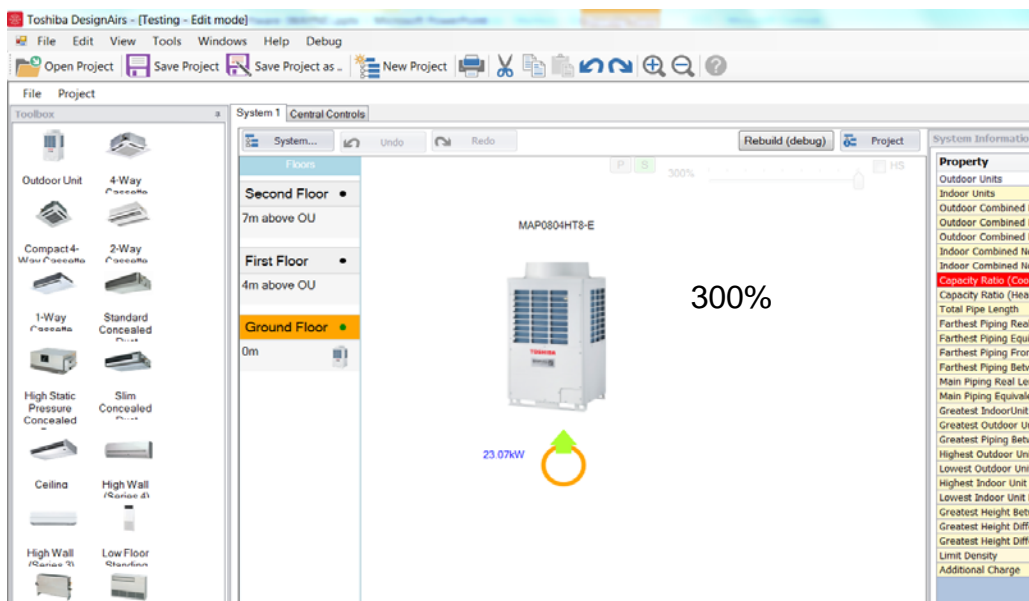


## 2.4. Zooming Tool

The mouse-wheel works as a zooming feature, so we can zoom out until 30% going down with the wheel.

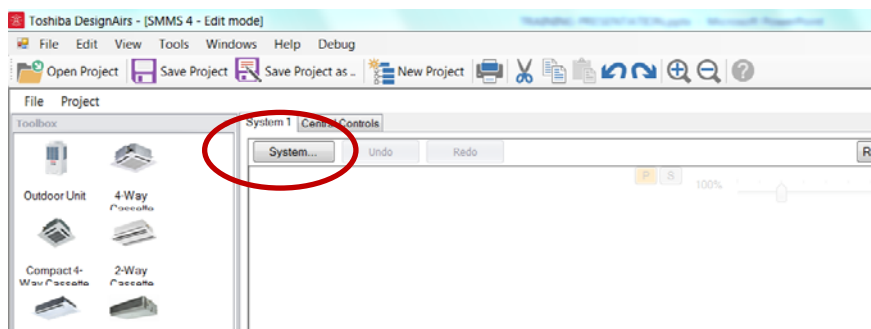


And zoom in up to 300% going up.



## 2.5. System Properties

If we click on "system", we will be able to set properties for the current system.





### 2.5.1. General

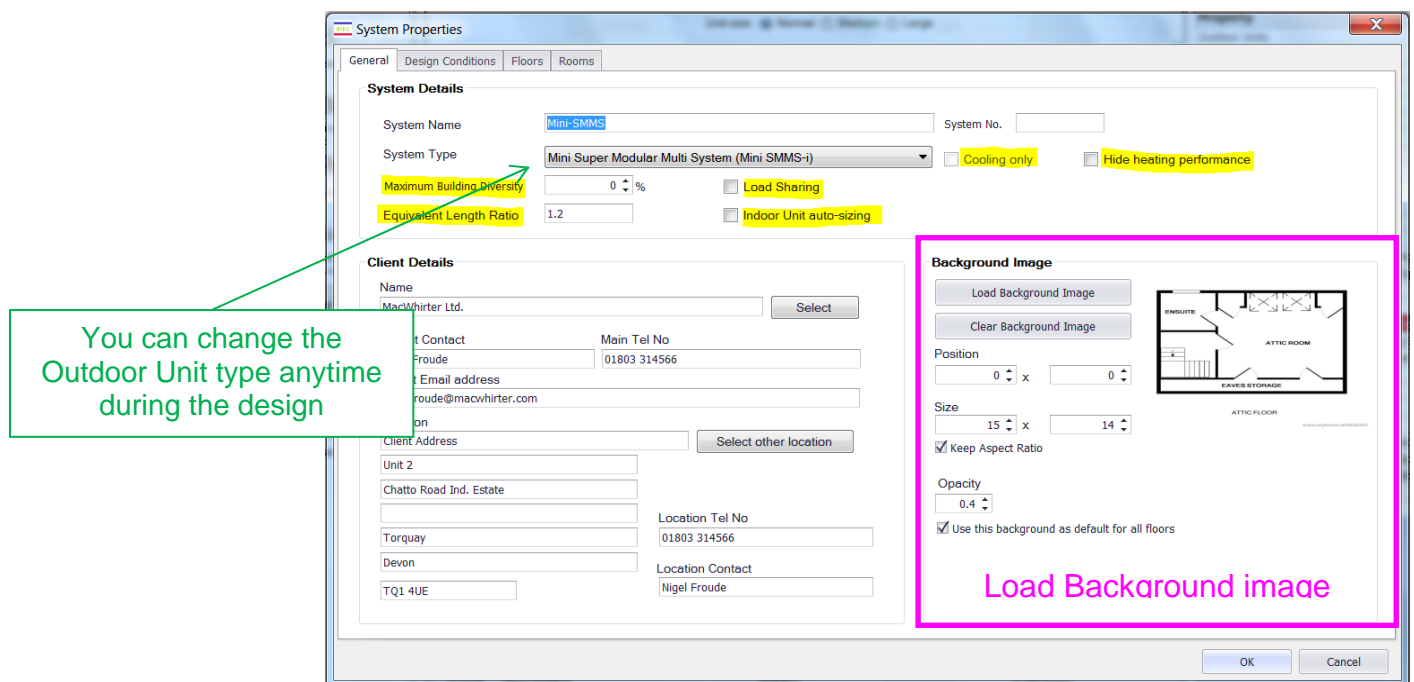
First tab is “General” where we can change system details as the system type. For SMMSi systems, we will be able to select if we want it to be cooling only (this option will be greyed out for the rest of Outdoor Units). Whereas when Mini-SMMS Outdoor Unit is selected a new option will be available “Hide heating performance”, which will be useful if the system is going to be used for cooling purposes only.

More details are selectable in this window, such as the Load Sharing option, Building diversity, the Equivalent Length default Ratio for the system, and Auto-Sizing of Indoor Units.

Apart from that, we can find the Client Details, so if we have not filled in the customer information at the beginning of the project, we can do it anytime during the design.

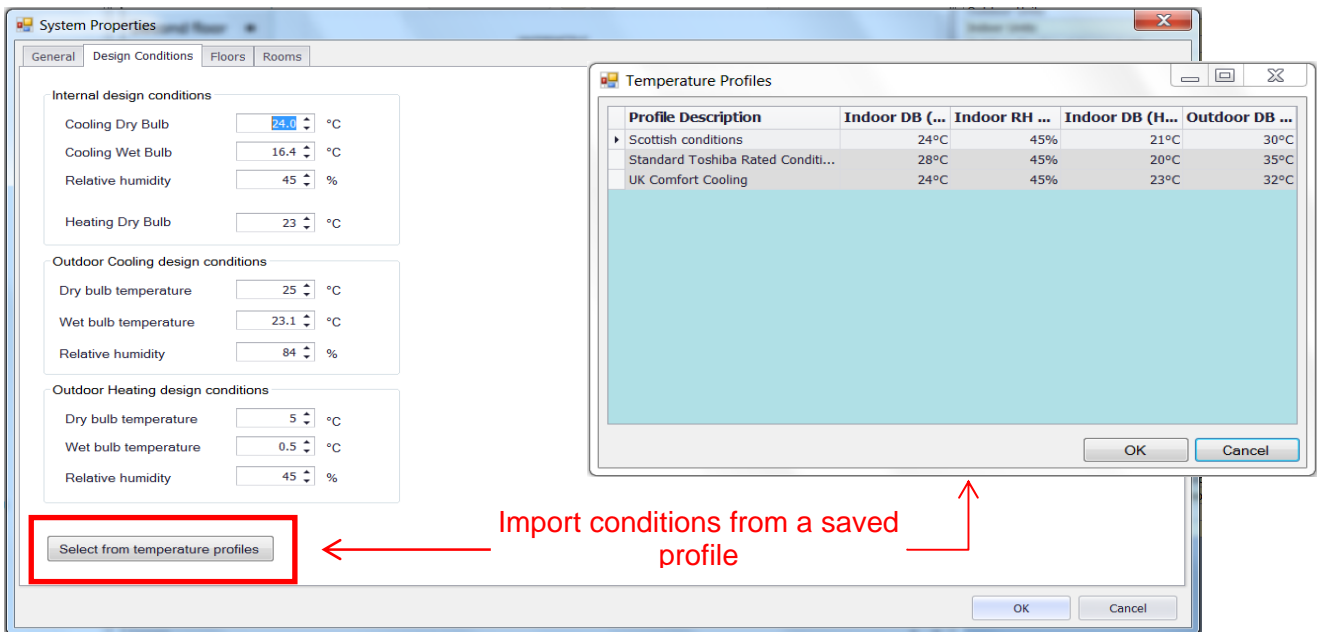
Last feature is the “Background image”. You can load or delete a background image, set its position, size and the opacity. We can also set whether this image is going to be used for all floors in case of multi-floor systems. If not, we will be able to add background images to each floor in the floors tab.

All this information can be set up anytime during the design, but in the case of the background image it is highly recommended to add it at the first stage of the design.



### 2.5.2. Design Conditions

In the second tab under System we can set the Design Conditions. We can either enter the data manually, or select from the already saved profiles.

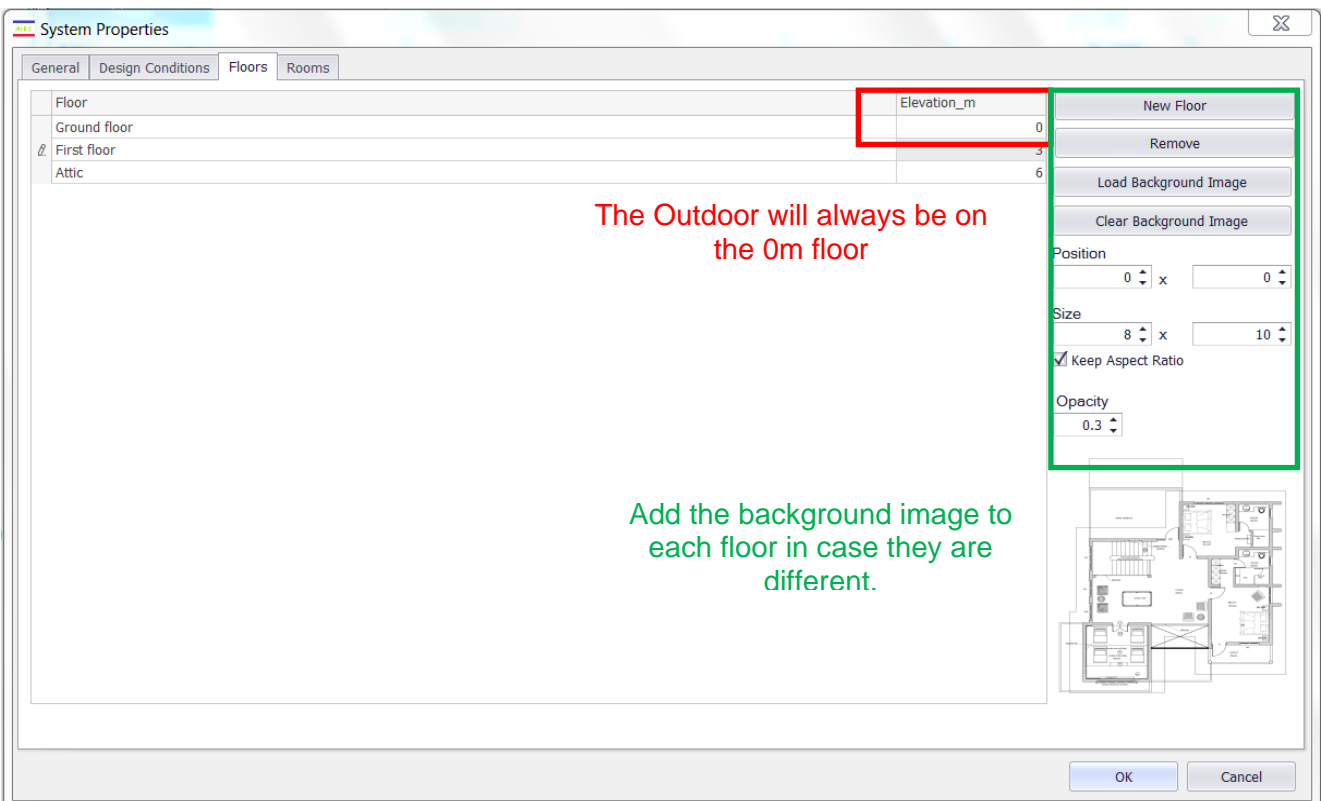


### 2.5.3. Floors

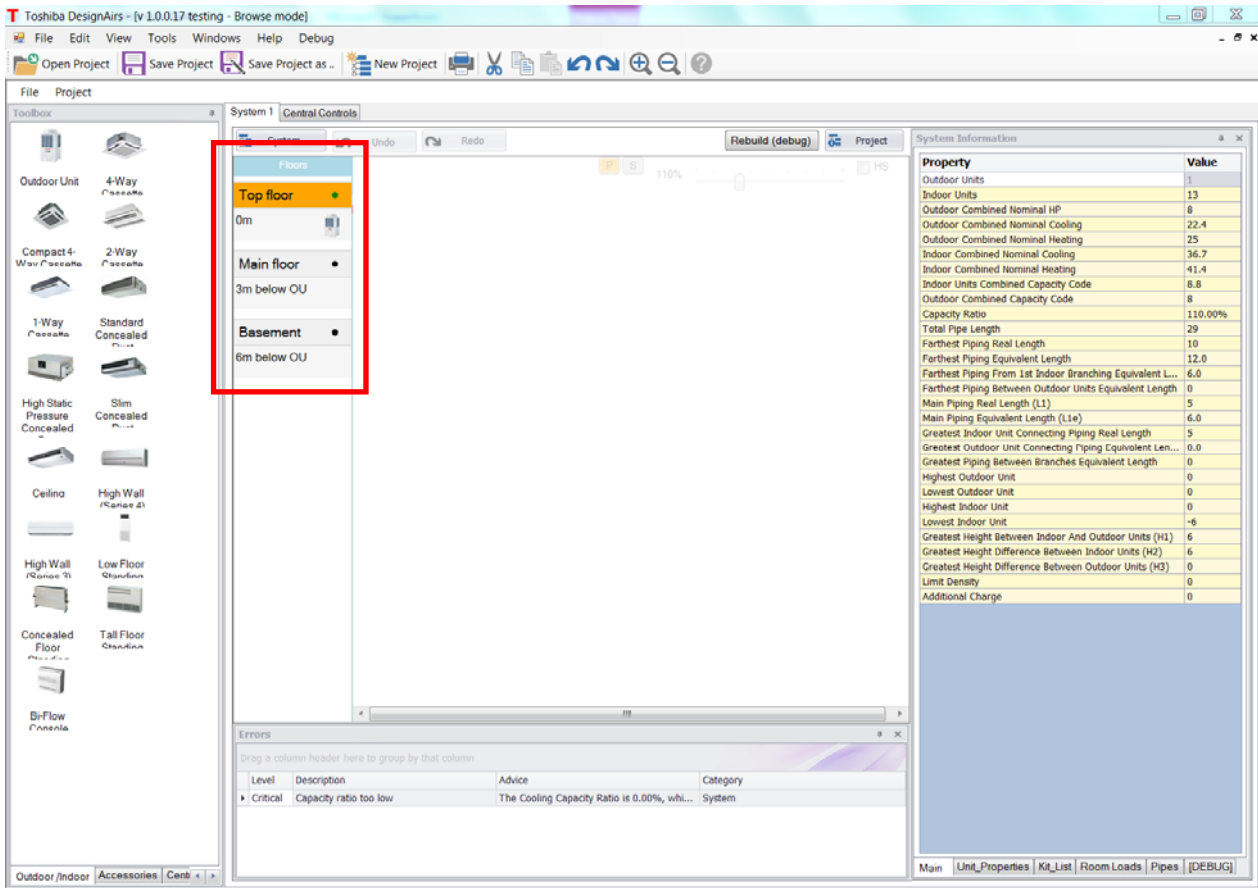
In the next tab we can add different floors to our system. We need to define the name and elevation of each floor taking into account that the outdoor unit will always be in the 0m floor. We will set positive values for higher floors, and negative values for lower floors.

The elevation of each floor will always be set up comparing it to the Outdoor Unit level (0m).

Besides, we can add background images to each floor in case the images are different depending on the floor.



This is how the floors will be represented in the Main window:



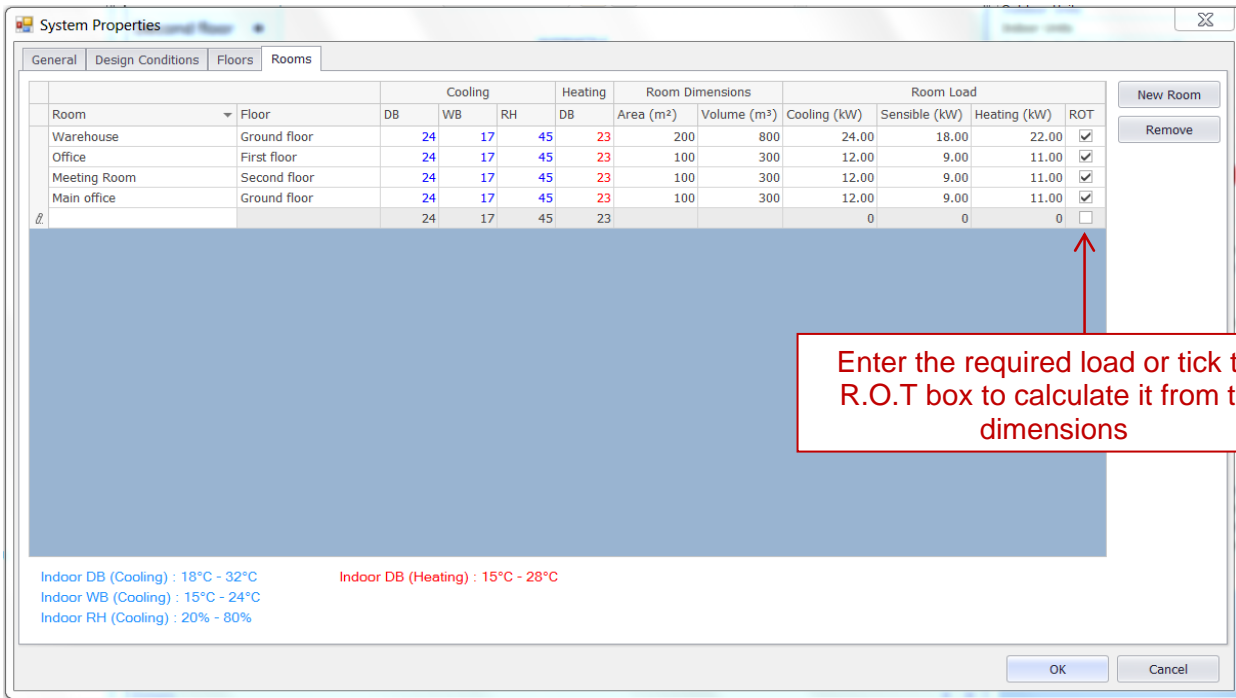
We can see the name of each floor, its elevation in comparison to the Outdoor Unit, and the image of the Outdoor in order to quickly know in which floor it is.

### 2.5.4. Rooms

We can define the rooms of our design in the last tab of the system properties. In order to do so, we need to define the name of each room and select the floor in which they are.

Besides, we could enter the required load per room, or just tick the Rule of Thumb box so that the software calculates it from the area of the room (we would need to enter the dimensions, obviously).

If the room volume is provided, the software will carry out the Gas Charge Safety Calculation and will warn us (the designer) if any room is too small and require Additional Protective Equipment such as leak detection or ventilation.



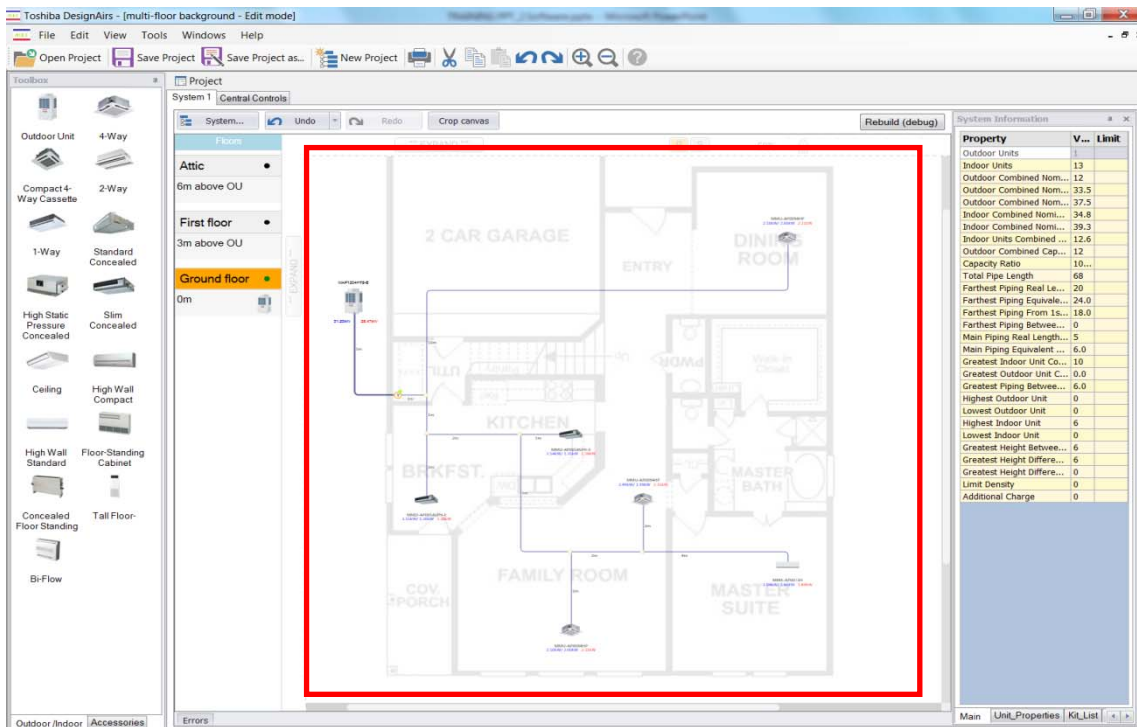
## 2.6. Background image

We have just seen that the background image can be added from the System Properties Window.

The files to be imported as background images need to be in image format, i.e. \*.bmp, \*.jpg, \*.gif, \*.tif, \*.png or \*.wmf

If we would like to add a PDF file as background, we will need to “take a snapshot” of the file (under Edit), save it as an image using Paint or another similar program and upload this image as a background image.

This is how the background image will appear in the main window:



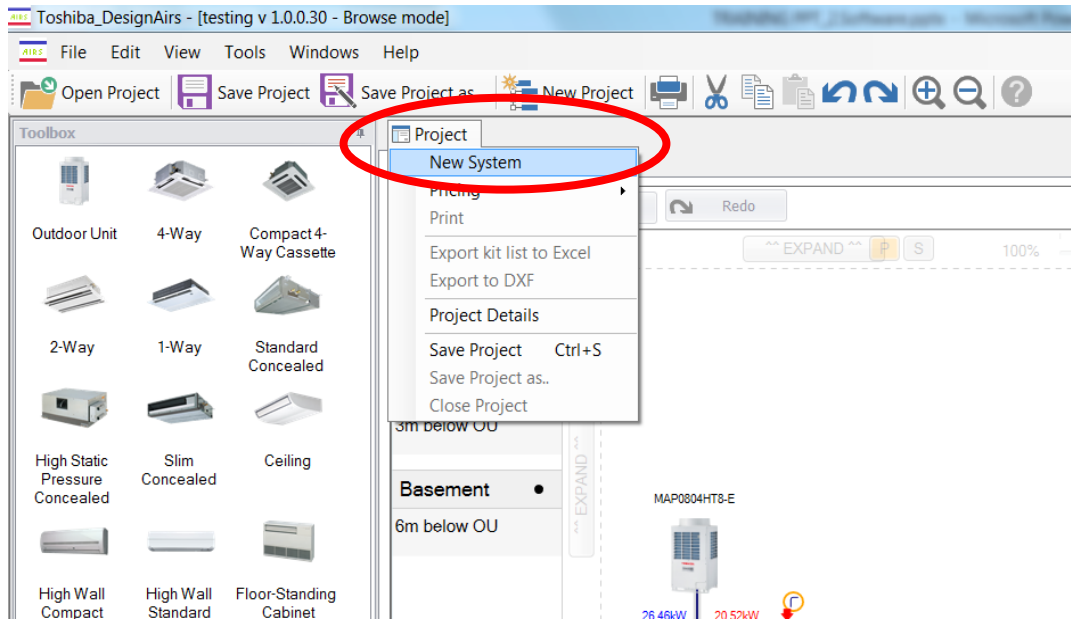
In this example, the opacity of the image has been set into a low value so that we can see better the air conditioning design. But we can change this value.

## 2.7. Project

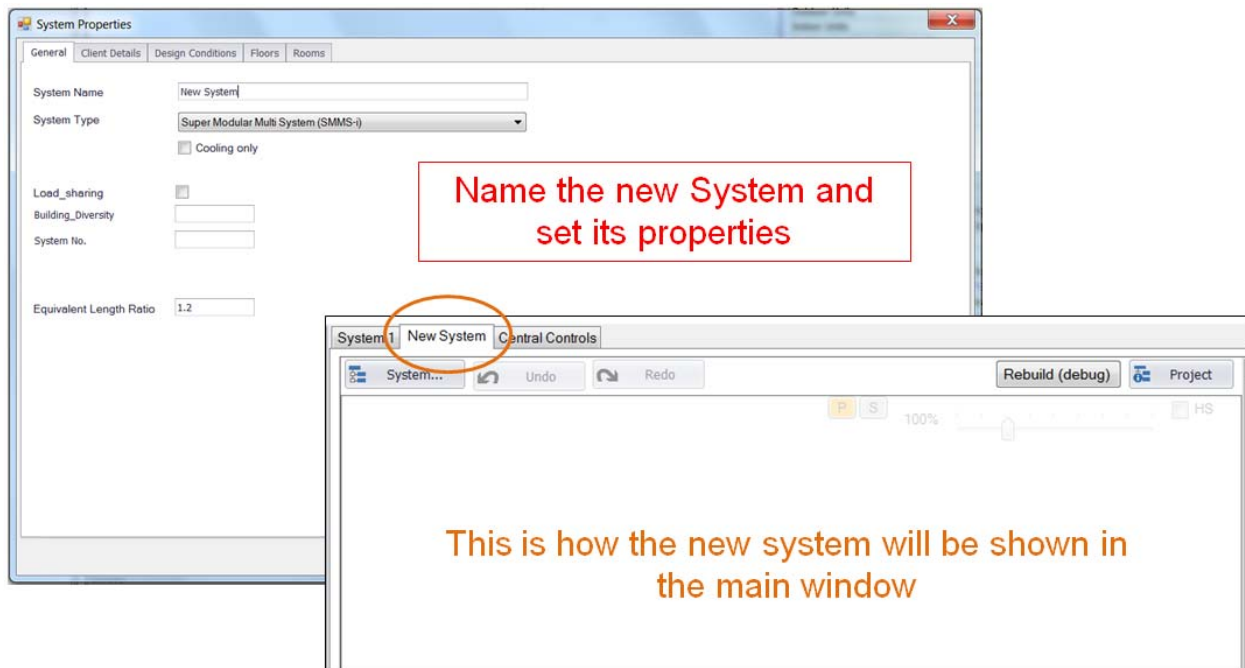
### 2.7.1. Project / New System

In case we need to add a new System, we need to go to Project → New System.

We will be able to add new systems at any time during the design



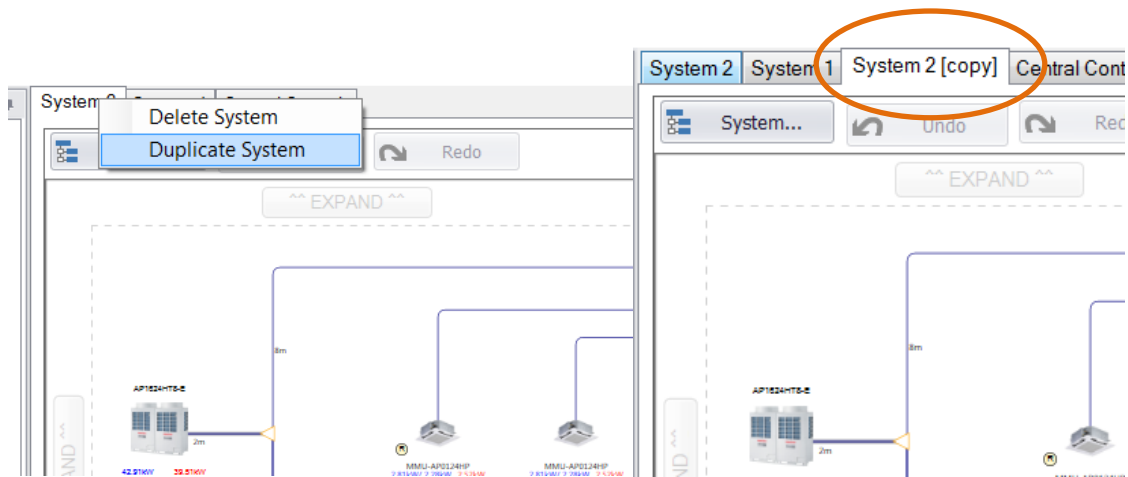
We will have to define a name for the new system and set its properties. The new system will appear as a new tab next to the existing systems:



We can also duplicate an existing system. To do so, right click on the existing system tab, and select "Duplicate System"

The copied system will appear as a new tab next to the original one.

If we want to delete a system, we would have to right click on it, and select "Delete System".

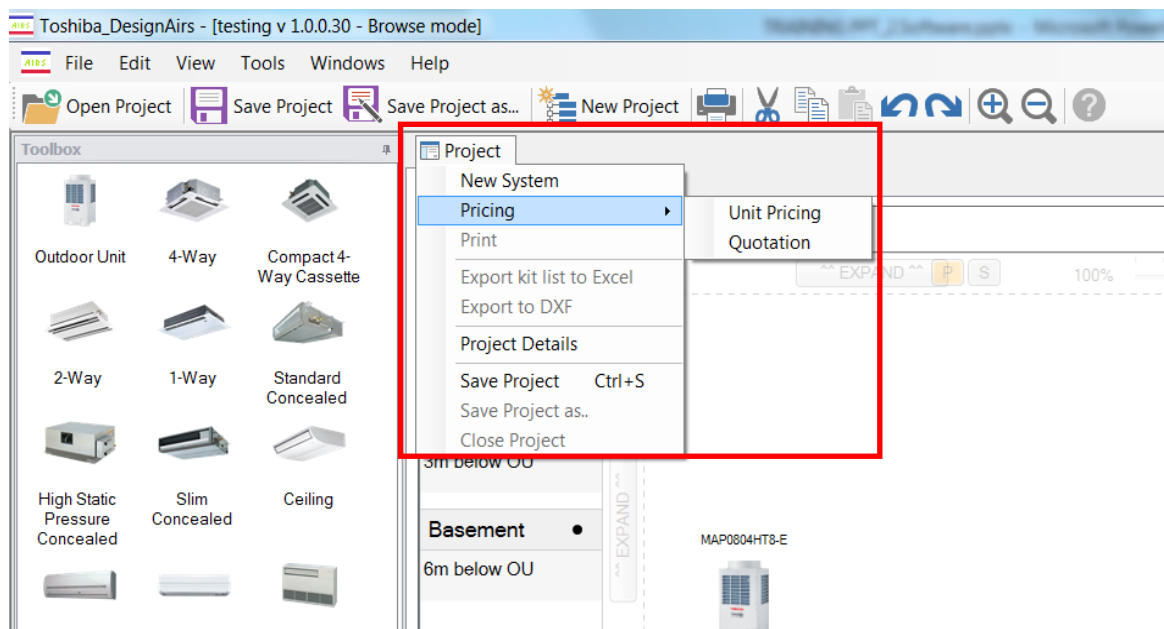


## 2.7.2. Project / Pricing

Under Project / Pricing we can set the prices of all our products.

In the first option "unit pricing" we can set general prices for all the projects.

In the second option "project quotation" we can change the previous values into specific prices for the current project.



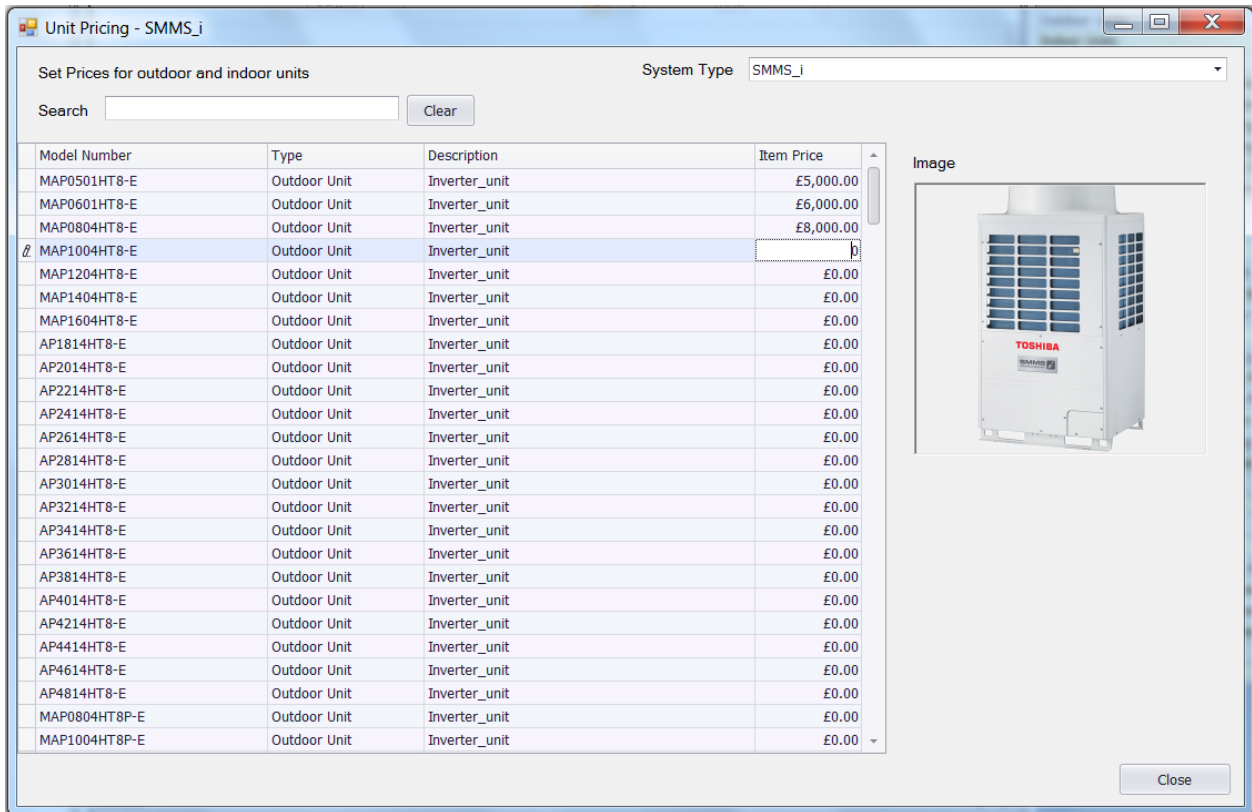
### 2.7.2.1. Project / Pricing / Unit Pricing

Hence, as we said, in the unit Pricing list we can set the General prices of the elements for ALL of the available products.

In the final version of the software, we will be able to scale the prices: General Prices + 20%, or General Prices – 10% for example.

We will also be able to set special pricing lists, for certain customers.

The prices must be setup manually by the user. However, in the final version there will be an option to import prices from an excel spreadsheet.

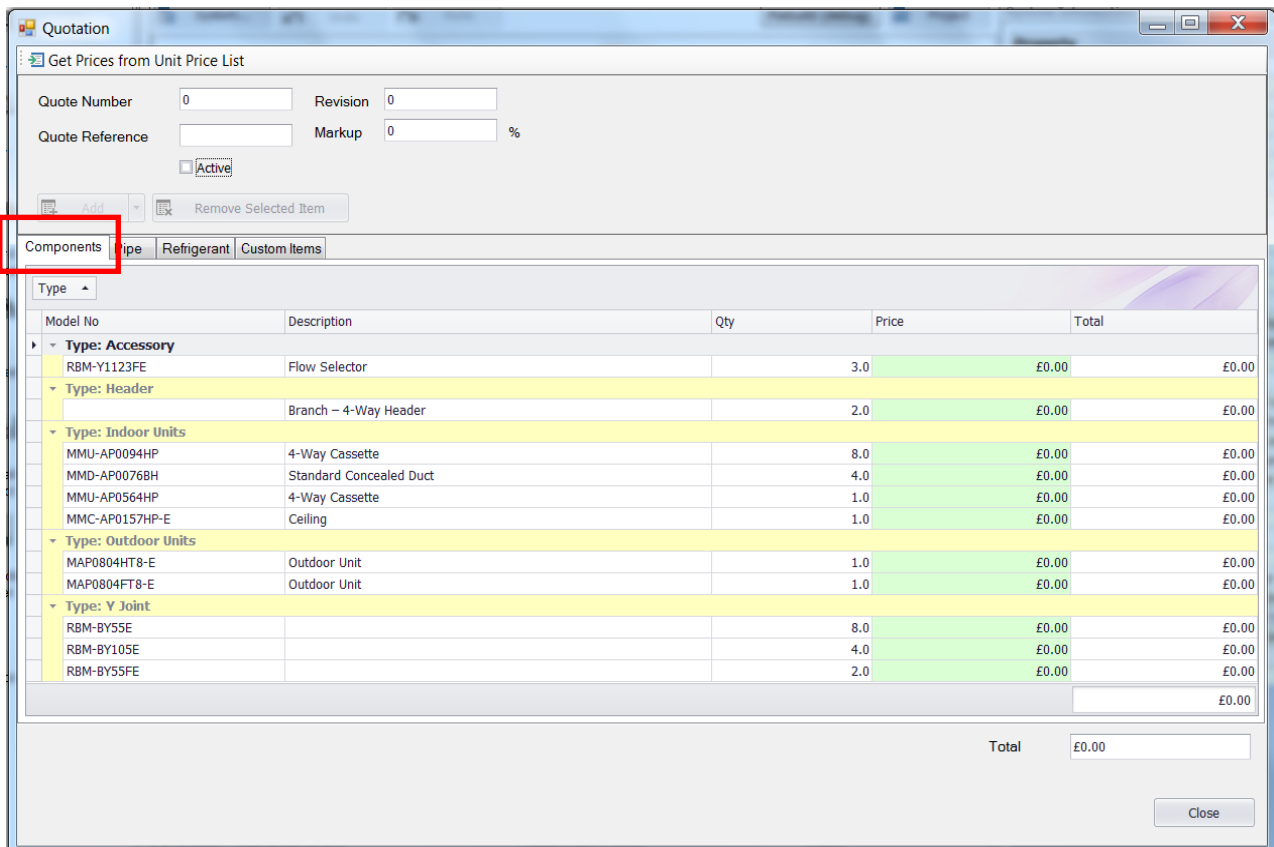


### 2.7.2.2. Project / Pricing / Quotation

The Project Quotation sets the prices for the current project.

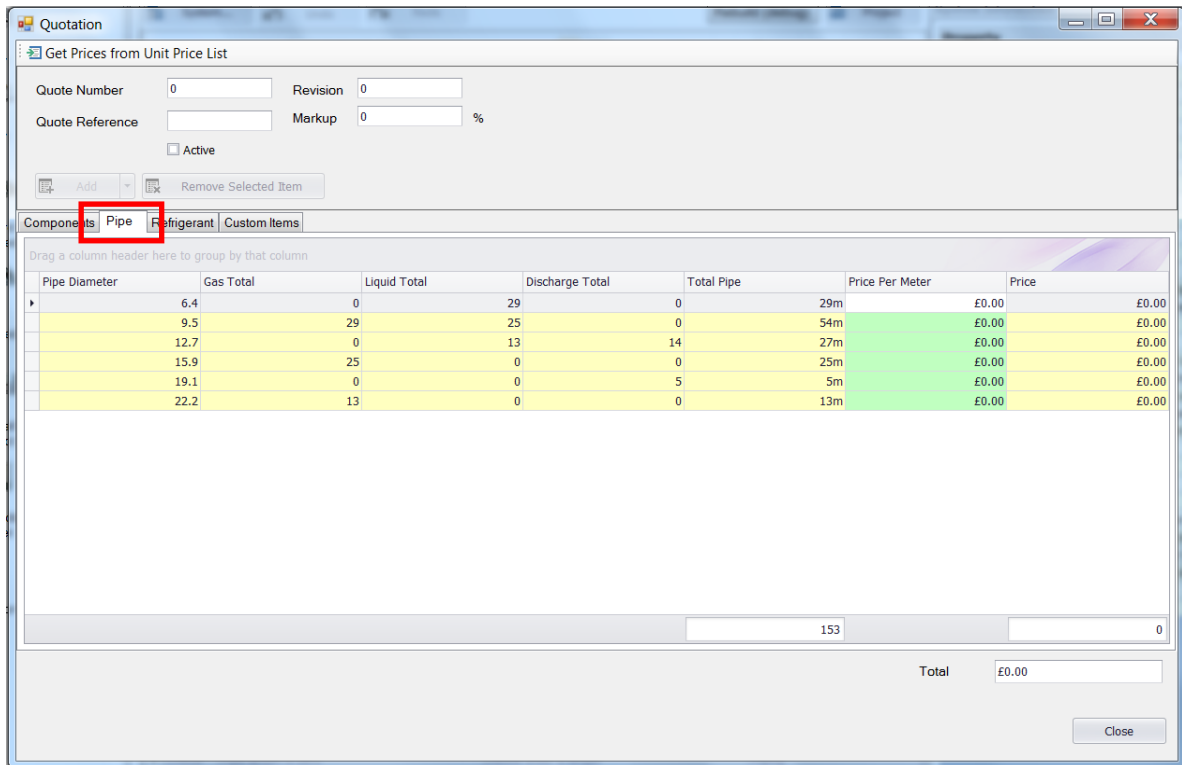
Prices can be taken from the Unit Price List, and then modify for this specific project.

We can see prices of all the components of the project.

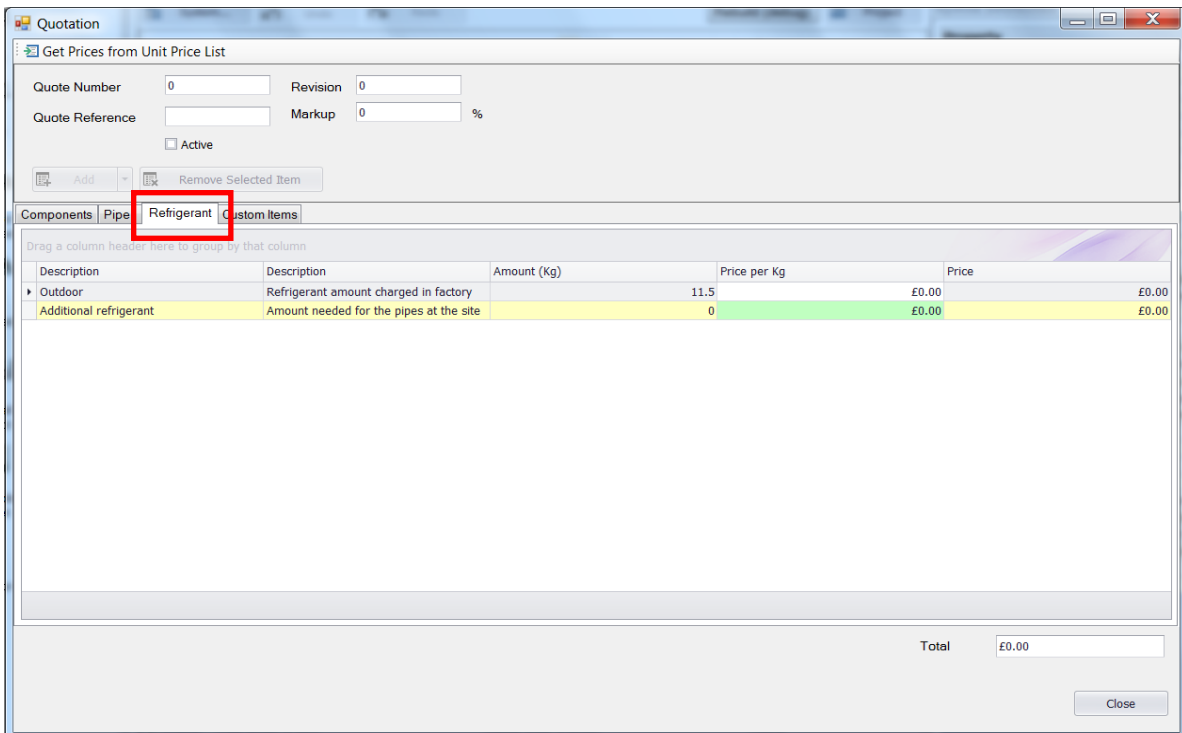


We can also see prices of each size of pipe per meter and total.

The user can set the price of each size pipe to include insulation and/or typical fitting cost as well.



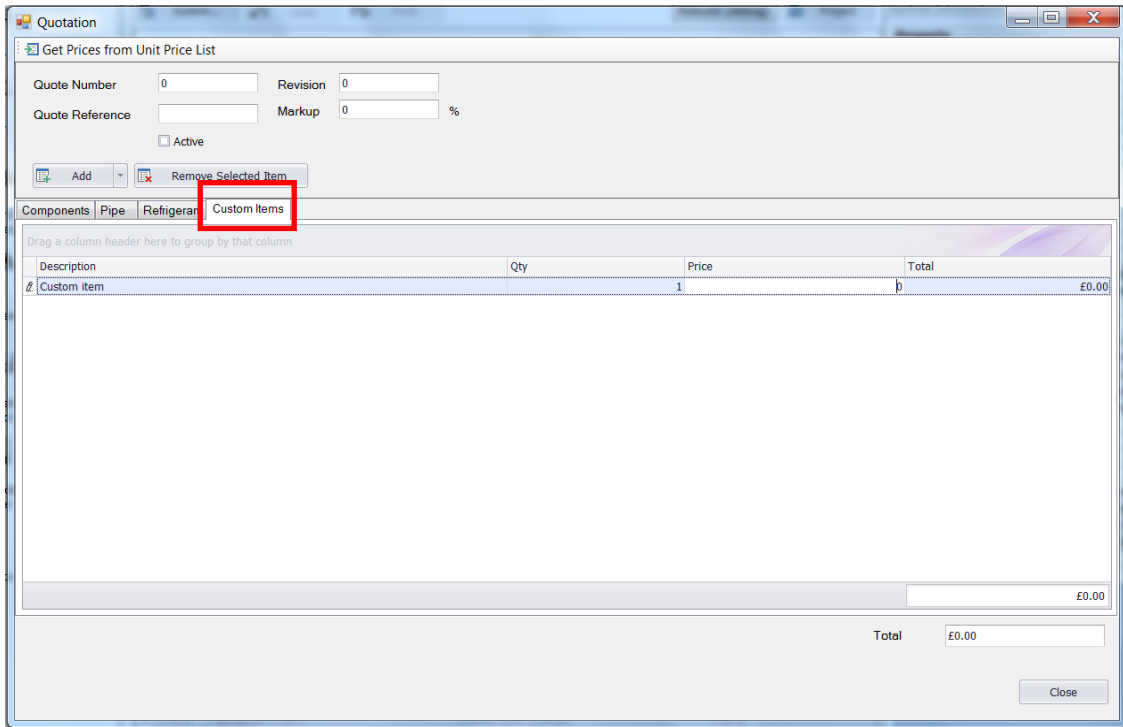
We can also set the price of the additional refrigerant per kg.



And finally we will be able to add any other extra-cost that we want to add into the project, such as installation, labour, crane hire etc.

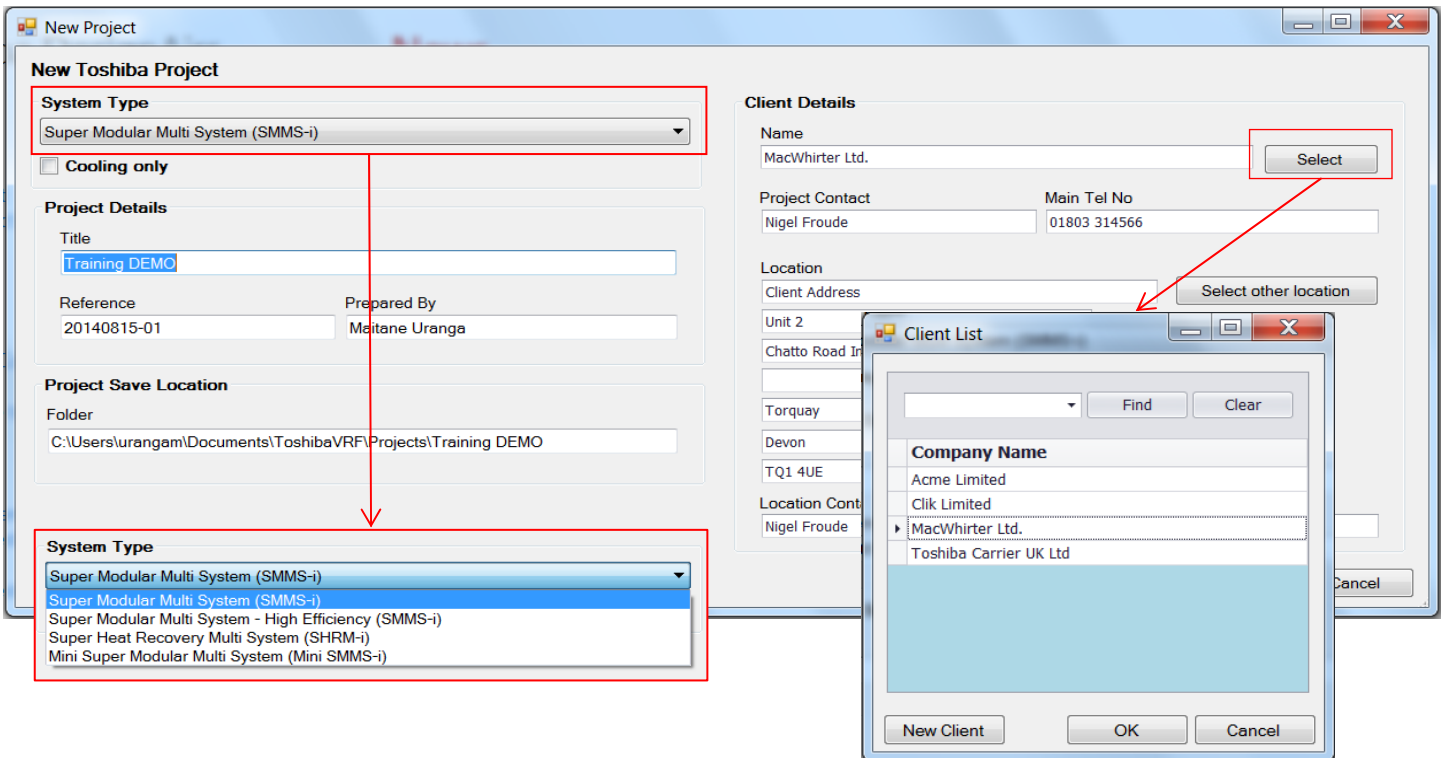
We will just need to press "Add" to add new rows where we will type the extra-costs.





### 2.7.3. Project / Project Details

The "New Project" Window will be open so that we can change or add any information:



## 2.8. System Information

We can read all the information of our design in the “System Information” panel. There are different tabs where we can find different properties of our system:

The screenshot displays the Toshiba DesignAirs software interface. The main window shows a central controls panel with a piping diagram. On the right, the System Information panel is open, displaying a table of properties and their values. Below the main window, a navigation bar contains tabs for Main, Unit\_Properties, Kit\_List, Room Loads, and [DEBUG]. The [DEBUG] tab is currently selected. The System Information panel also has a tab bar at the bottom with the same tabs, and the [DEBUG] tab is selected there as well. A green box highlights the navigation bar and the System Information panel's tab bar. A red box highlights the System Information table.

Property	Value
Outdoor Units	3
Indoor Units	18
Outdoor Combined Nominal HP	16
Outdoor Combined Nominal Cooling	45
Outdoor Combined Nominal Heating	50
Indoor Combined Nominal Cooling	26.0
Indoor Combined Nominal Heating	63.2
Indoor Units Combined Capacity Code	19.75
Outdoor Combined Capacity Code	16
Capacity Ratio	123.44%
Total Pipe Length	103
Farthest Piping Real Length	33
Farthest Piping Equivalent Length	39.6
Farthest Piping From 1st Indoor Branching Equiva...	27.2
Farthest Piping Between Outdoor Units Equivalent L...	0
Main Piping Real Length (L1)	2
Main Piping Equivalent Length (L1e)	2.4
Greatest Indoor Unit Connecting Piping Real Length	5
Greatest Outdoor Unit Connecting Piping Equivalent...	0.0
Greatest Piping Between Branches Equivalent Length	9.6
Highest Outdoor Unit	0
Lowest Outdoor Unit	0
Highest Indoor Unit	0
Lowest Indoor Unit	0
Greatest Height Between Indoor And Outdoor Units...	0
Greatest Height Difference Between Indoor Units (H2)	0
Greatest Height Difference Between Outdoor Units ...	0
Limit Density	0
Additional Charge	0

[debug] will not be there in the final version, it is just for development.

### 2.8.1. Main

First tab is the main properties, where we can see all the rules and the current status of our design.

We can see that the limit column is not available yet, but it will be in the final version.

Property	Value	Limit
Outdoor Units	1	
Indoor Units	11	
Outdoor Combined Nominal HP	8	
Outdoor Combined Nominal Cooling	22.4	
Outdoor Combined Nominal Heating	25	
Indoor Combined Nominal Cooling	25.4	
Indoor Combined Nominal Heating	28.9	
Indoor Units Combined Capacity Code	9.2	
Outdoor Combined Capacity Code	8	
Capacity Ratio	115.00%	
Total Pipe Length	49.0	
Farthest Piping Real Length	22	
Farthest Piping Equivalent Length	26.4	
Farthest Piping From 1st Indoor Branching Equivalent Length	24.0	
Farthest Piping Between Outdoor Units Equivalent Length	0	
Main Piping Real Length (L1)	2	
Main Piping Equivalent Length (L1e)	2.4	
Greatest Indoor Unit Connecting Piping Real Length	7	
Greatest Indoor Unit Connecting Piping FS Group Equivalent Length	0	
Greatest Flow Selector To Indoor Unit Real Length	1	
Greatest Outdoor Unit Connecting Piping Equivalent Length	0.0	
Greatest Piping Between Branches Equivalent Length	6.0	
Highest Outdoor Unit	0	
Lowest Outdoor Unit	0	
Highest Indoor Unit	0	
Lowest Indoor Unit	0	
Greatest Height Between Indoor And Outdoor Units (H1)	0	
Greatest Height Difference Between Indoor Units (H2)	0	
Greatest Height Difference Between Outdoor Units (H3)	0	
Greatest Height Difference Between Indoor Units Downstream Of A Flow Selector (H4)	0	
Limit Density	0	
Additional Charge	0	

Main Unit\_Properties Kit\_List Room Loads [DEBUG]

## 2.8.2. Unit Properties

Second one, Unit Properties where we can see the specifications or properties of the indoor or outdoor unit currently selected:

Properties	
Model No.	MMC-AP0157HP-E
Description	Ceiling
<b>Pipe Length (m)</b>	1
<b>Elevation (m)</b>	6
▶ Performance	4.5/5.0
▲ Power Requirement	0.033kW/0.365A
Power Supply	1 phase 50Hz 230V (220 - 240V) ...
Running Current	0.365
Power Consumption	0.033
Starting Current	0.545
▶ Appearance	
Outer Dimensions	235/950/690, //
Total Weight	23/
Heat Exchanger	Finned tube
Soundproof Heat Insulatin...	Polyethylene foam
▶ Fan Unit	840/690/540, 94
Air Filter	Standard filter (Long life filter)
Controller	Remote controller
▶ Piping	12.7/6.4/20
Sound Pressure Level	/
Sound Power Level	/
Series	7

Main Unit\_Properties Kit\_List Room Loads [DEBUG]

### 2.8.3. Kit List

In the kit list we will see all elements that we need in our design, starting from outdoor or indoor units, until accessories and pipes:

Qty	Type	Model No
1.0	OutdoorUnit	AP1814HT8-E
1.0	Branch	RBM-BT14E
6.0	IndoorUnit	MMU-AP0184HP
3.0	IndoorUnit	MMD-AP0076BH
1.0	IndoorUnit	MMC-AP0157HP-E
1.0	IndoorUnit	MMK-AP0073H
1.0	Branch	RBM-BY205E
8.0	Branch	RBM-BY55E
1.0	Branch	RBM-BY105E
1.0	EndCap	
24	Pipework	6.4mm
27	Pipework	9.5mm
22	Pipework	12.7mm
20	Pipework	15.9mm
2	Pipework	22.2mm
5	Pipework	28.6mm

### 2.8.4. Room Loads

Last tab is related to the Room Loads. There we can see the required and reached capacities for each room.

If the reached or total capacity of the room is bigger than the required one, it will be displayed in green, otherwise, if we do not have enough capacity connected to the room, it will be displayed in red.

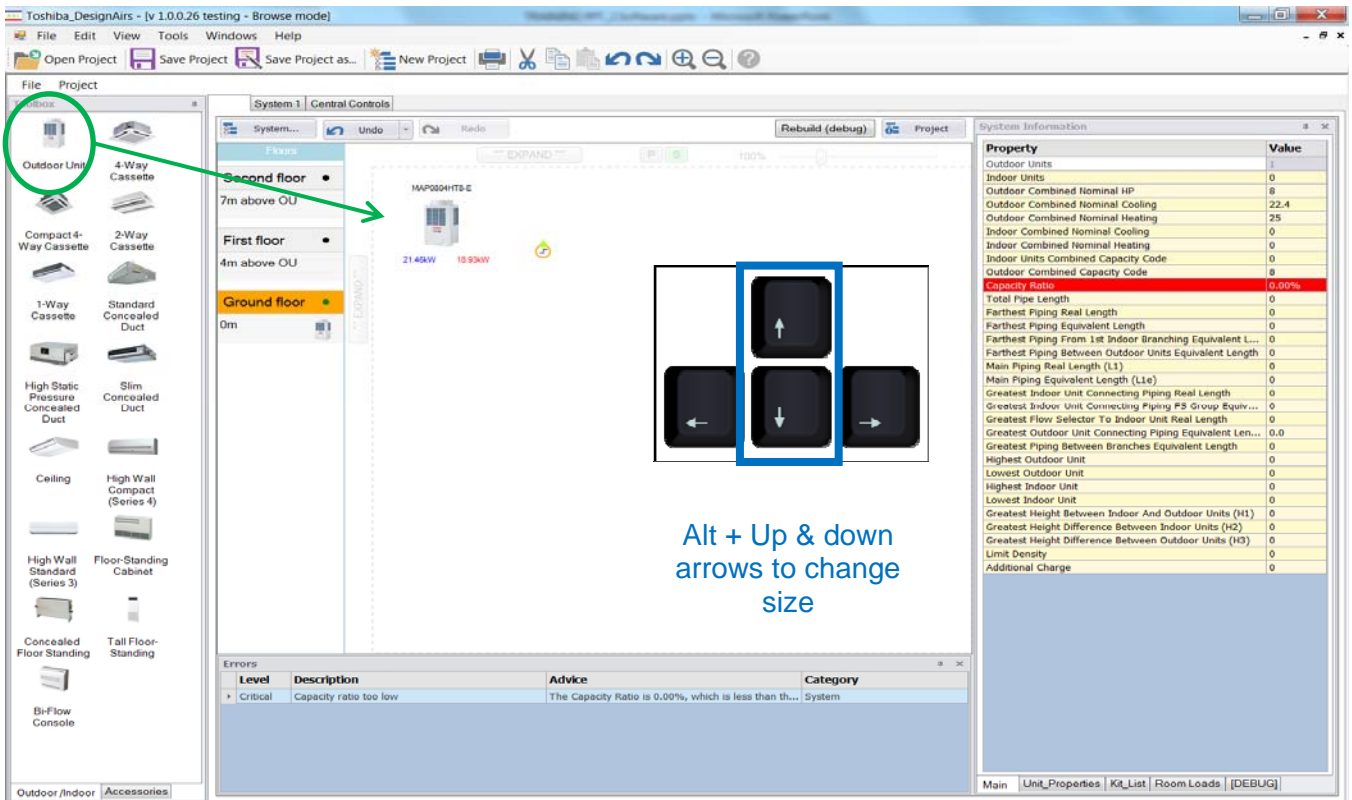
Room	Cooling (kW)	Sensible (kW)	Heating (kW)
<b>Office 3</b>			
Required	12.00	9.00	11.00
Total	14.2710	9.5121472...	15.393754...
<b>Bathroom 3</b>			
Required	2.40	1.80	2.20
Total	2.8140	2.0211260...	3.0681743...
<b>Office 2</b>			
Required	12.00	9.00	11.00
Total	2.8140	2.0443574...	3.0779179...
<b>Bathroom 2</b>			
Required	2.40	1.80	2.20
Total	1.7085	1.3629049...	1.8275137...
<b>Office 1</b>			
Required	12.00	9.00	11.00
Total	1.7085	1.3629049...	1.8275137...

## 3. OUTDOOR

### 3.1. Adding the Outdoor Unit

Adding the outdoor unit is as simple as drag and dropping it.

If we are using “floors” (as in this example), we will be given a “riser” symbol as well as the Outdoor unit itself.

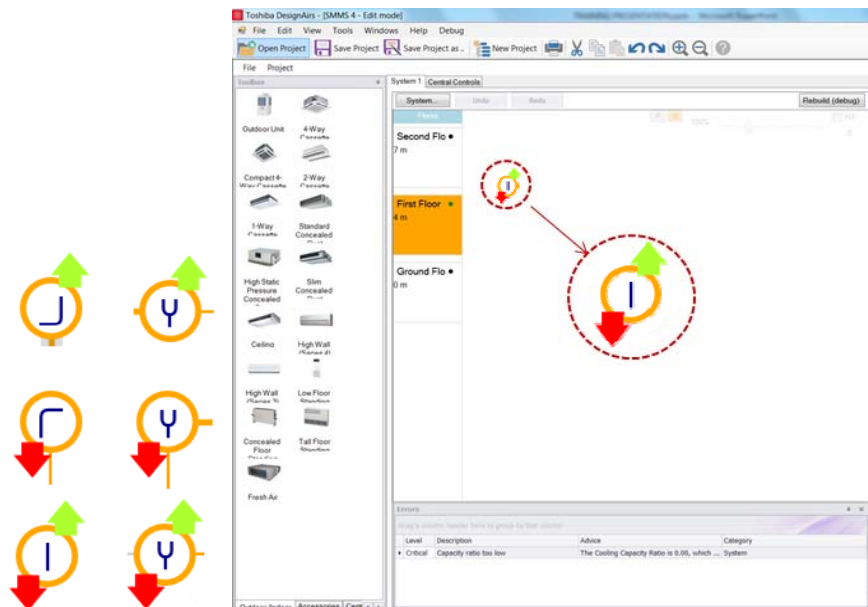


We can use the up & down keyboard arrows to change the size. If we press Alt + up arrow, we will increase the unit size. With Alt + down arrow, we will decrease the unit size.

### 3.2. Risers

When using floors, in order to pipe the upstairs indoor units to the outdoor, we need to set the piping through all floors. We will use the “risers” for that, and we can see how they are represented below. There are different representations depending on if the risers to next and previous floors are concentric or not, and if there is a Y joint or just a bend in the riser.

1. Green arrow means that the riser is going up to the next floor
2. Red arrow means that the riser is going down to the previous floor
3. Green and Red arrows mean that the riser goes up and down



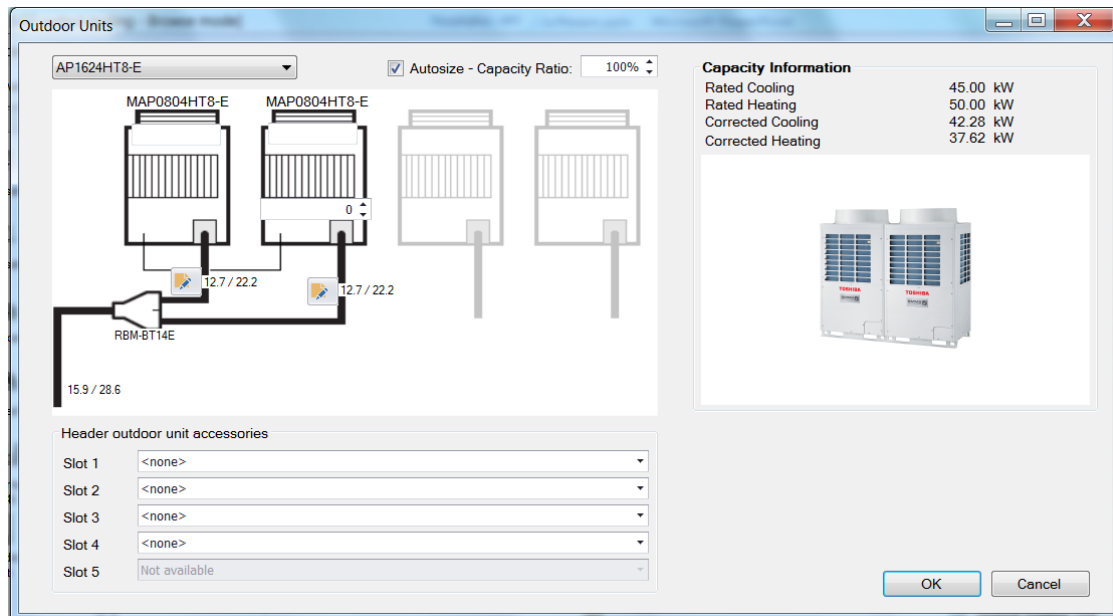
### 3.3. Outdoor Unit Properties Window

Double click on the outdoor unit to go into its properties.

We can size the outdoor unit if we open the dropdown menu. We can read Rated and Corrected Capacity of the Outdoor Unit under the Capacity Information. Besides, we could select to Auto-size the Outdoor Unit to the closest capacity ratio that we set and select the desired Outdoor Accessories.

In the final version we should be able to see all the specifications of the selected Outdoor Unit by clicking some links.

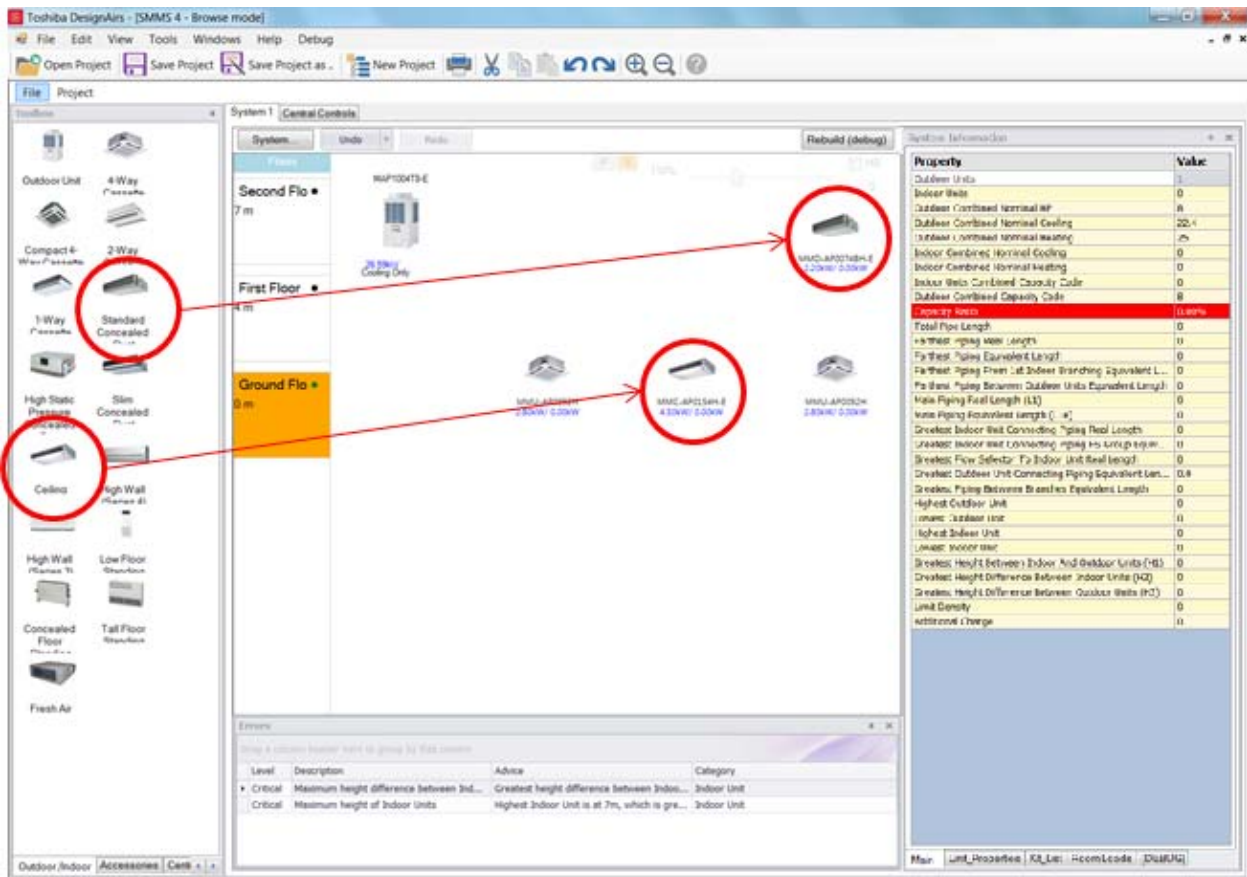
We will have access to all the Sales Data of the Databook.



## 4. INDOOR

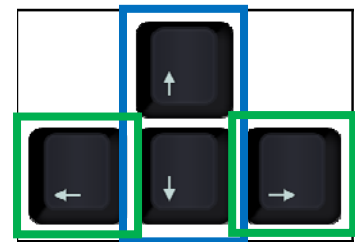
### 4.1. Adding the Indoor Unit

Drag and drop the indoor units in the same way as the outdoor.



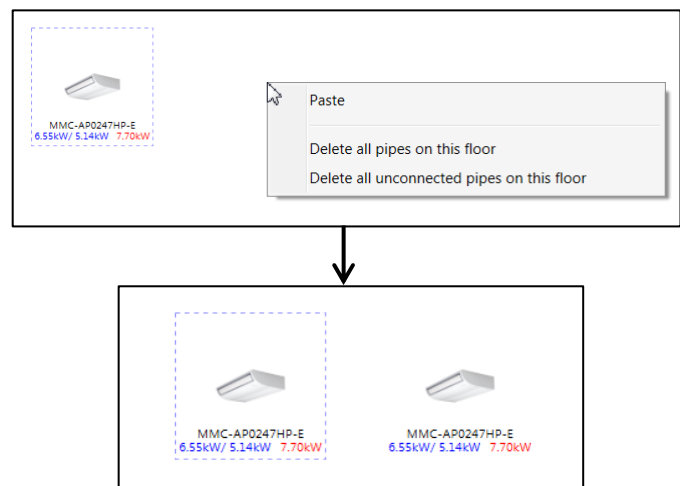
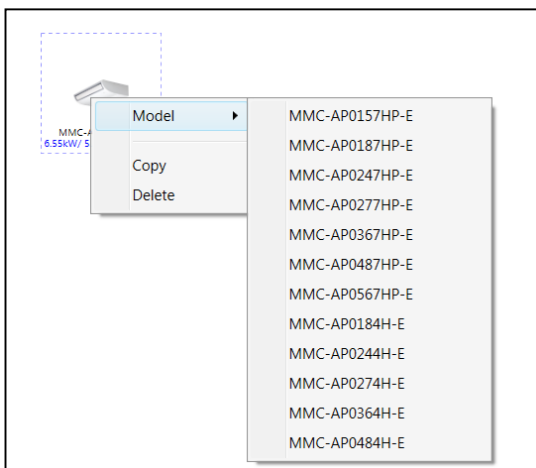
We can use the up & down keyboard arrows to change the size, and left & right arrows to change model.

- If we press Alt + up arrow, we will increase the unit size. With Alt + down arrow, we will decrease the unit size.
- Alt + left arrow will be used to select the previous unit model. And Alt + right arrow will be used to select the next unit model.



Alt + Up & down arrows to change size  
 Alt + Left & right arrows to change model

Another option to change the size of the Indoor Unit is to right click on it and select "Model". Besides, in the same context menu we will be able to copy or delete the Indoor Unit:



## 4.2. Indoor Unit Properties Window

Indoor Unit Properties Window will come up when double clicking on the desired Indoor Unit:

Double Click

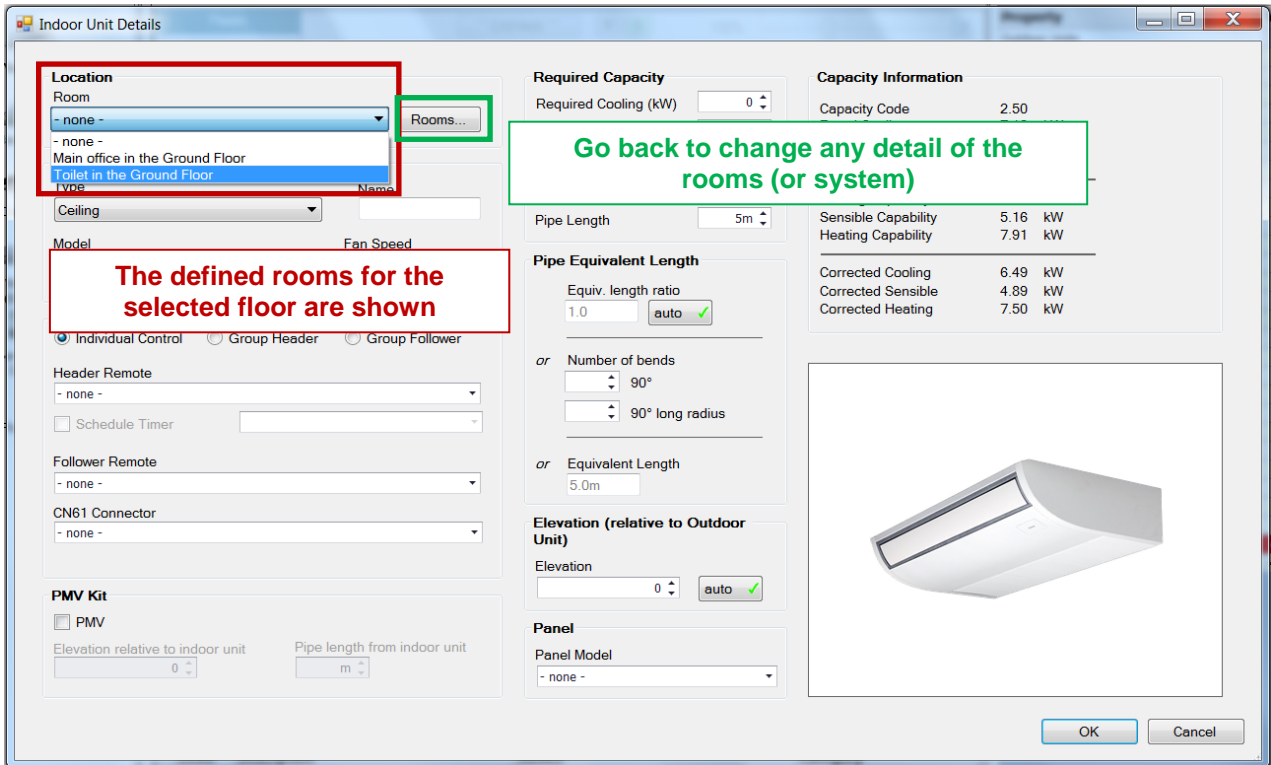


#### 4.2.1. Location

First feature of the indoor unit property window is the Location of that Indoor Unit (the room).

The different rooms that have been defined for that floor will be shown in the dropdown menu.

In case the user wants to make any change on the definition of the rooms, there is a shortcut labeled as “Rooms”.



#### 4.2.2. Type & Model

Next feature is the Type, size and fan speed of the indoor unit. Besides, the indoor unit can be named as well.

All range of Toshiba indoor units and sizes will be available in the final version. Right now, Air to Air, DX Coil and Hot Water Module are not available.



Indoor Unit Details

Location  
Room: - none - Rooms...

**Indoor Unit**  
Type: Ceiling Name:   
Model: MMC-AP0247HP-E Fan Speed: High

**Controls**  
 Schedule Timer  
Follower Remote: - none -  
CN61 Connector: - none -  
PMV Kit  
 PMV  
Elevation relative to indoor unit: 0 Pipe length from indoor unit: m

**Required Capacity**  
Required Cooling (kW): 0  
Required Heating (kW): 0  
Required Sensible (kW): 0

**Pipe Length**  
Pipe Length: 5m

**Pipe Equivalent Length**  
Equiv. length ratio: 1.0 auto  
Number of bends: 90°  
90° long radius  
or Equivalent Length: 5.0m


**Elevation (relative to Outdoor Unit)**  
Elevation: 0 auto

**Panel**  
Panel Model: - none -

**Capacity Information**

Capacity Code	2.50
Rated Cooling	7.10 kW
Rated Sensible	5.30 kW
Rated Heating	8.00 kW
<hr/>	
Cooling Capability	6.85 kW
Sensible Capability	5.16 kW
Heating Capability	7.91 kW
<hr/>	
Corrected Cooling	6.49 kW
Corrected Sensible	4.89 kW
Corrected Heating	7.50 kW

Select the type and size of indoor unit that best fits your installation



OK Cancel

#### 4.2.3. Controls

Remote controllers and CN61 connectors are selectable in here.

We can also set groups of header & follower indoor units. We will have to give a name to the group when defining the header, and then go into each follower indoor unit one by one and add it into the same group as the header.

Indoor Unit Details

Location  
Room: - none - Rooms...

**Indoor Unit**  
Type: Ceiling Name:   
Model: MMC-AP0247HP-E Fan Speed: High

**Controls**  
 Individual Control  Group Header  Group Follower  
Header Remote:  Group Member Information  
 Schedule Timer  
Follower Remote: - none -  
CN61 Connector: - none -

**Required Capacity**  
Required Cooling (kW): 0  
Required Heating (kW): 0  
Required Sensible (kW): 0

**Pipe Length**  
Pipe Length: 5m

**Pipe Equivalent Length**  
Equiv. length ratio: 1.0 auto  
Number of bends: 90°  
90° long radius  
or Equivalent Length: 5.0m


**Elevation (relative to Outdoor Unit)**  
Elevation: 0 auto

**Panel**  
Panel Model: - none -

**Capacity Information**

Capacity Code	2.50
Rated Cooling	7.10 kW
Rated Sensible	5.30 kW
Rated Heating	8.00 kW
<hr/>	
Cooling Capability	6.85 kW
Sensible Capability	5.16 kW
Heating Capability	7.91 kW
<hr/>	
Corrected Cooling	6.49 kW
Corrected Sensible	4.89 kW
Corrected Heating	7.50 kW

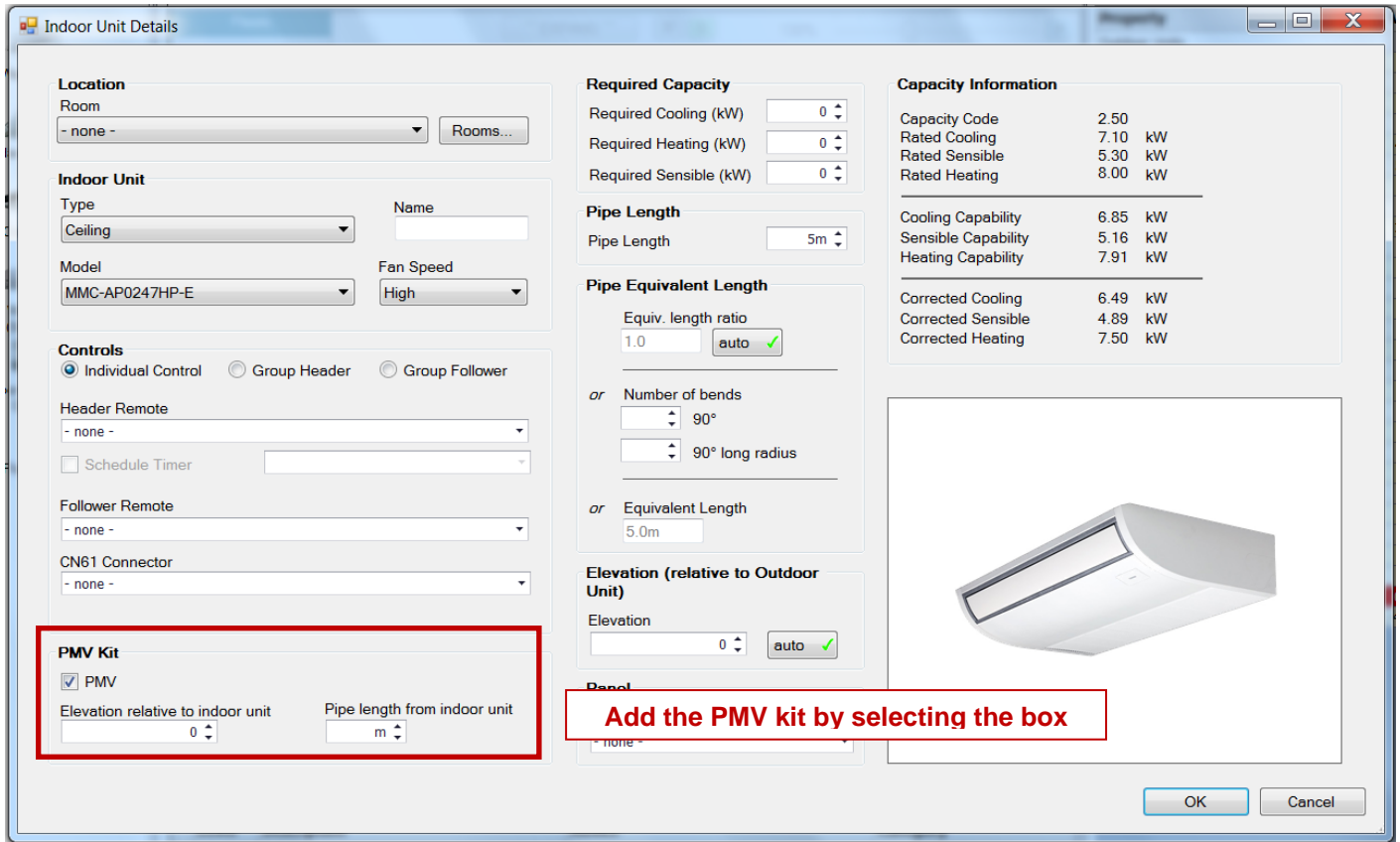
Select the controller that best fits your building



OK Cancel

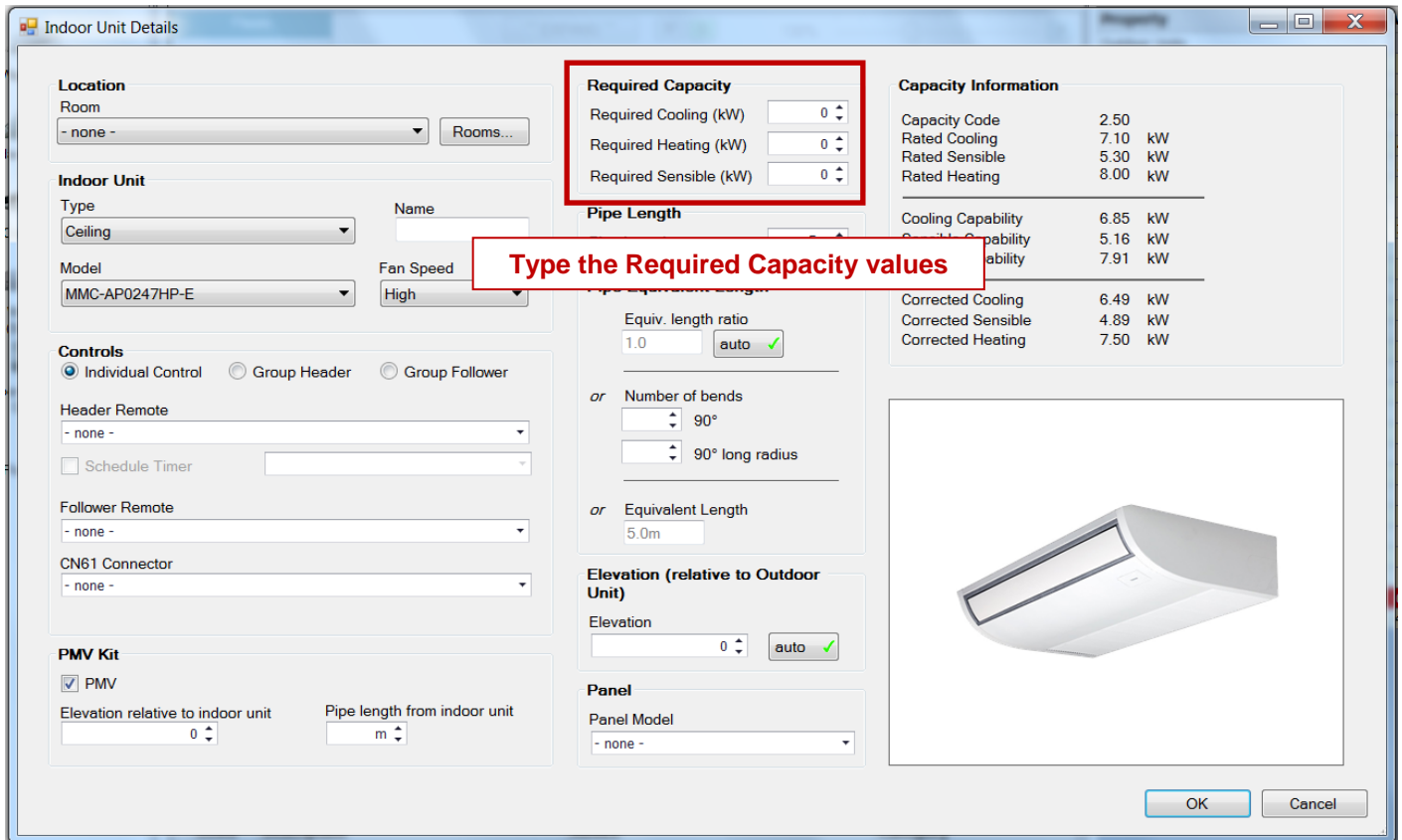
#### 4.2.4. PMV Kit

PMV kits can be added by selecting the box, and set its position typing the elevation and pipe length relative to the Indoor Unit.



#### 4.2.5. Required Capacity

Set the Required Capacity values for the selected Indoor Unit:

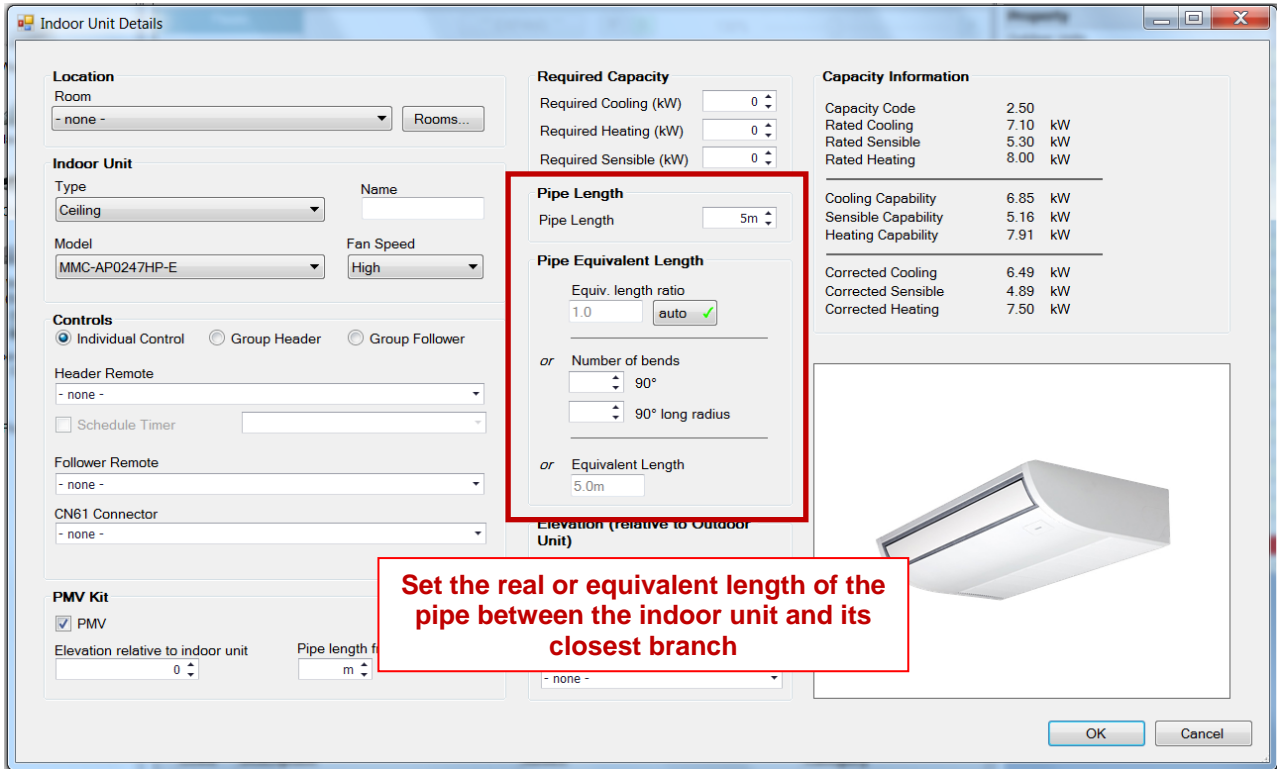


#### 4.2.6. Pipe Length

In this window both the REAL and EQUIVALENT length of the pipe can be set.

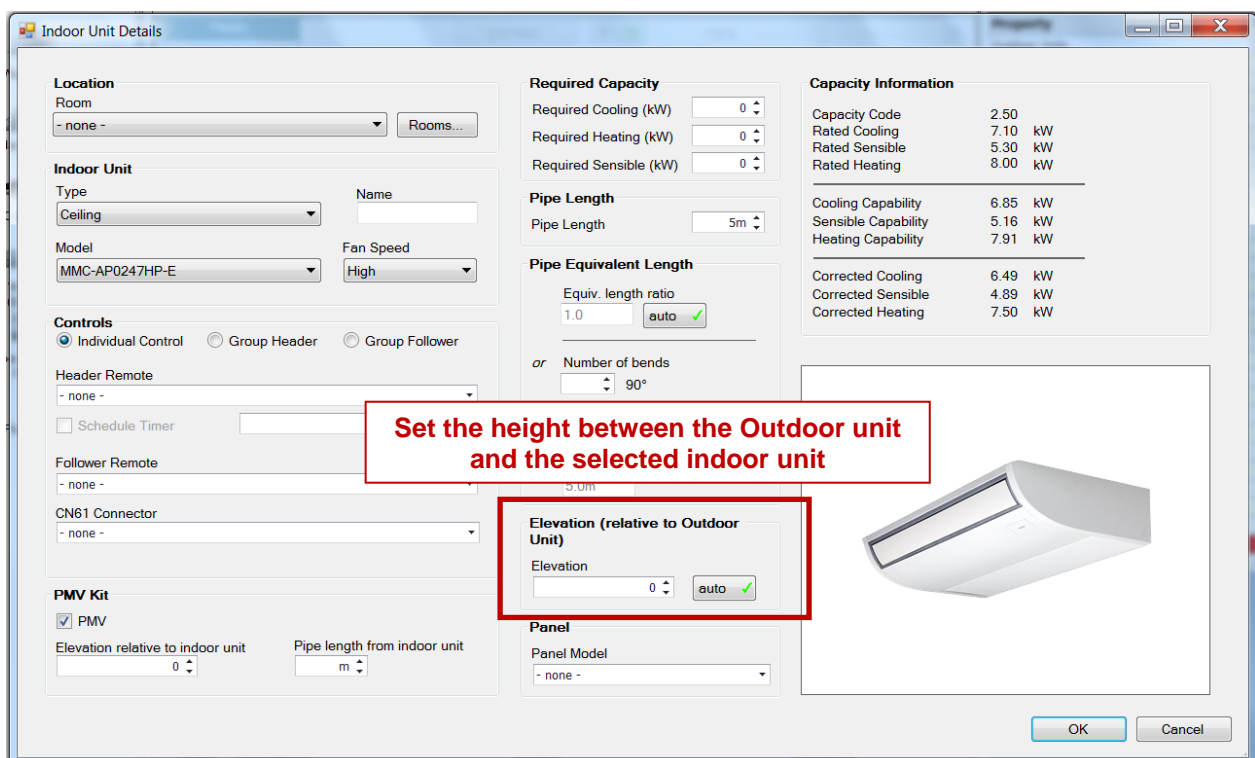
The equivalent pipe length can be defined in 3 different ways:

- Selecting a general ratio to calculate it from the real pipe length (the default value is in General Preferences under System, but it is editable for each unit).
- Entering the number of bends that that branch has
- Or just typing the equivalent length of that branch.



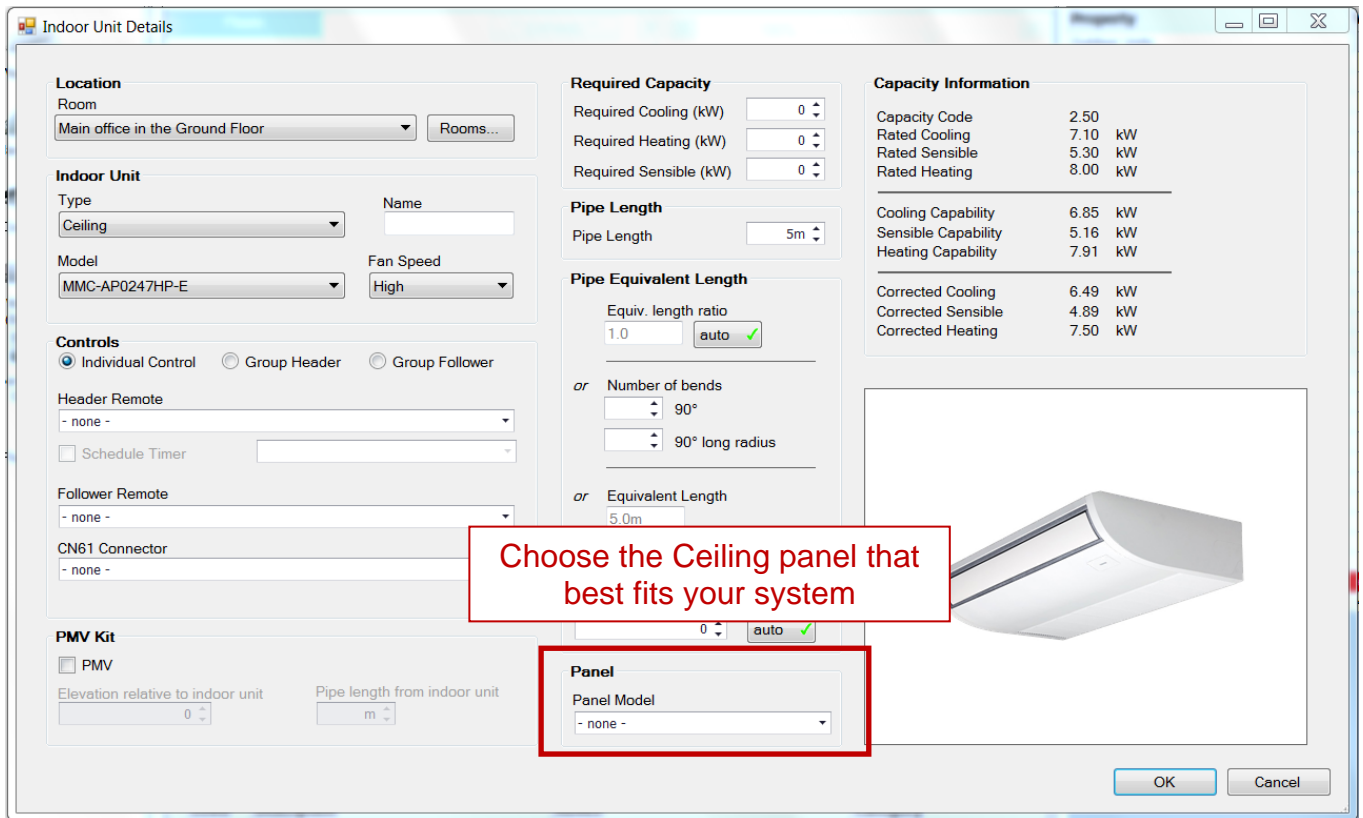
#### 4.2.7. Elevation

Next feature is the elevation of the Indoor in comparison to the Outdoor. Positive values will be set when the indoor is above (Outdoor BELOW), and negative values when the indoor is below (Outdoor ABOVE).



### 4.2.8. Ceiling Panel

Regarding the Ceiling Panel, a default one will be selected for those Indoor Units that need one. Anyway, the user will be able to modify it for the one that best fits its system (as long as there is more than one type available).



### 4.2.9. Capacity Information

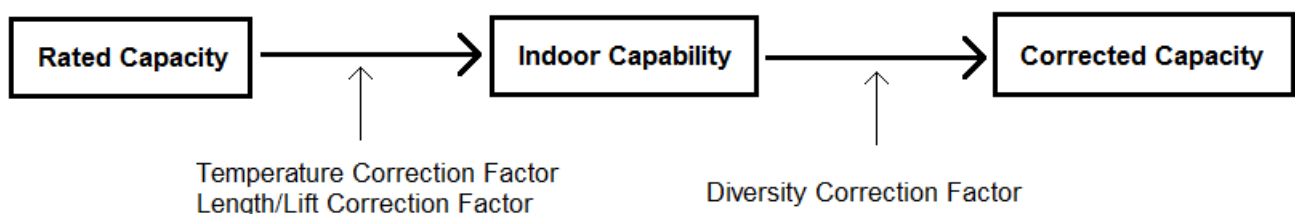
Last feature of the Indoor properties window is the capacity information, where the user can read (not set), all the values related to the cooling, sensible and heating capacities of the indoor unit.

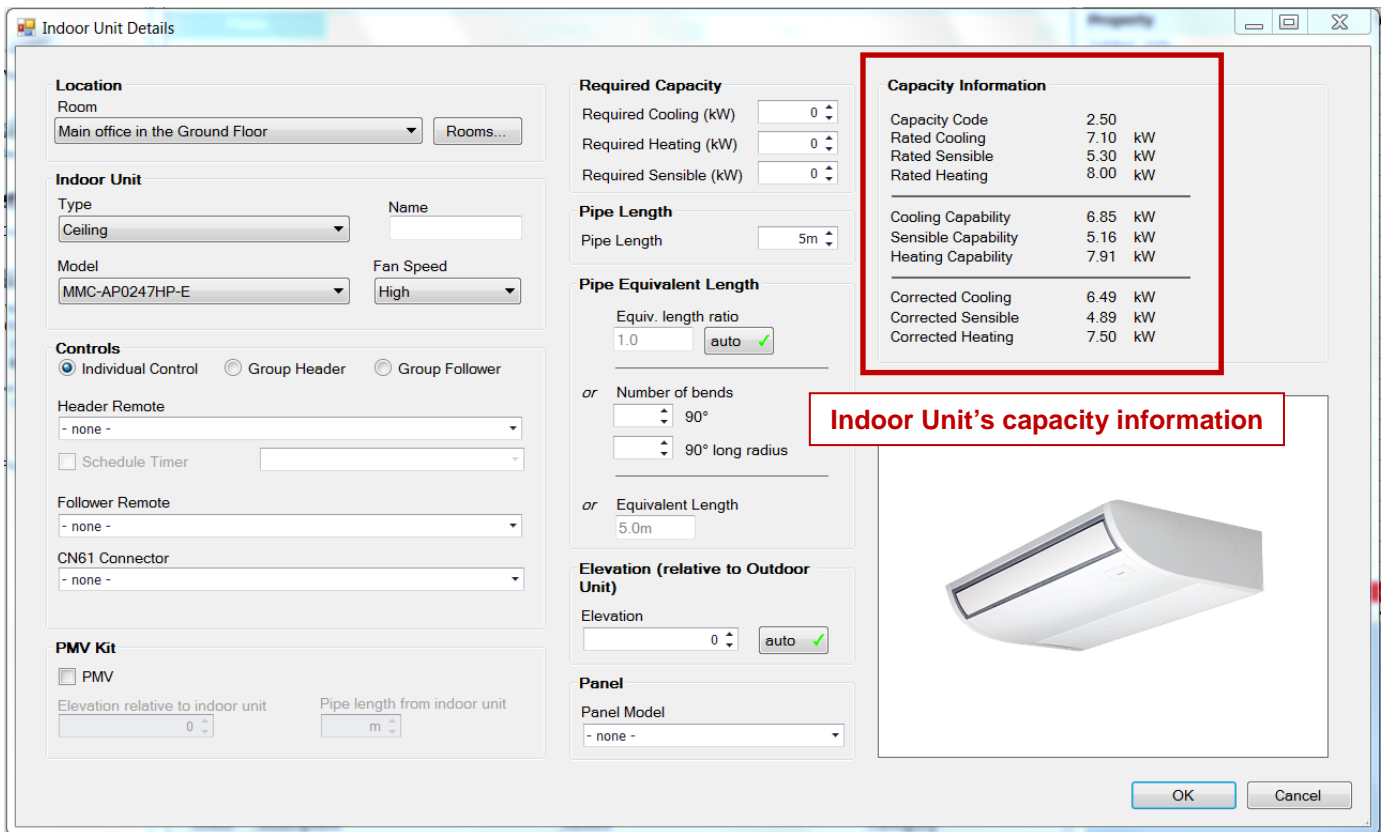
First feature is the Capacity Code of the Indoor Unit (in HP)

Next values are the Rated Capacities for Cooling, Sensible and Heating, namely, the available kW with no losses.

Following the Rated Capacities, Capability values are displayed, which is what the Indoor Unit is capable of. This value takes into account the Correction Factors for temperature and length.

Finally, the Corrected Capacities of the Indoor Unit, which will be the same as the Capability values as long as the Outdoor Unit is correctly sized and the system diversity is 100% or lower. But if the outdoor is under-sized i.e. the system diversity is higher than 100%, the Corrected Capacity will be lower than the Capability, as Diversity Correction Factors will be applied.



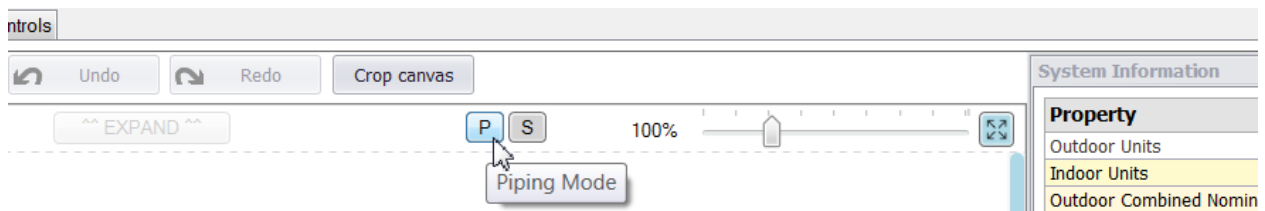


## 5. PIPING

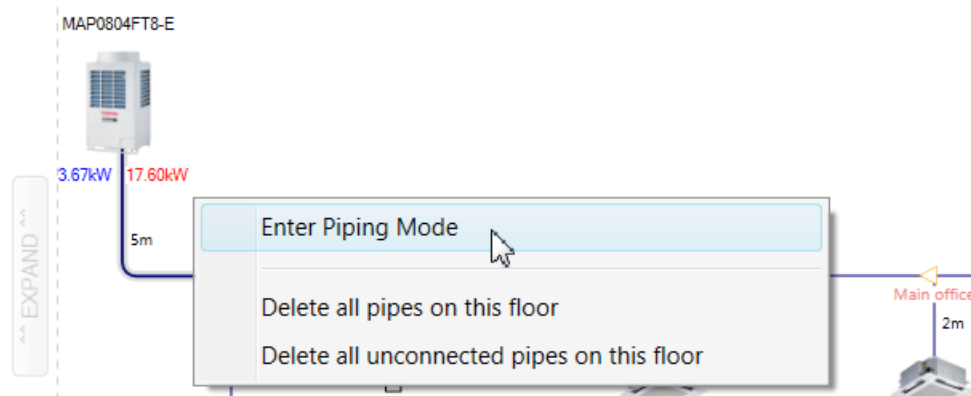
### 5.1. Changing to Piping Mode

Entering in Piping Mode is required to start creating the pipes. This can be made in 3 different ways:

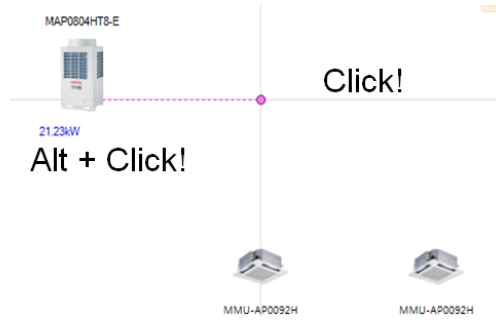
1. Selecting "Piping Mode" on the top-right hand side of the design area:



2. Right click with the mouse on the working area and select "Enter Piping Mode":



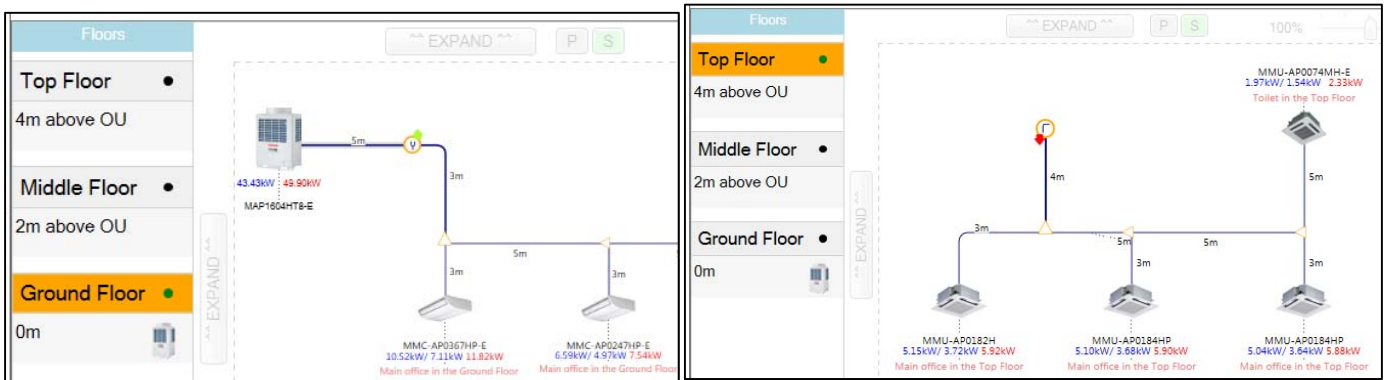
- While pressing Alt on the keyboard click on the element where you want the pipe to start. That way “Piping Mode” will be automatically entered, and piping will continue just clicking on the starting and ending points:



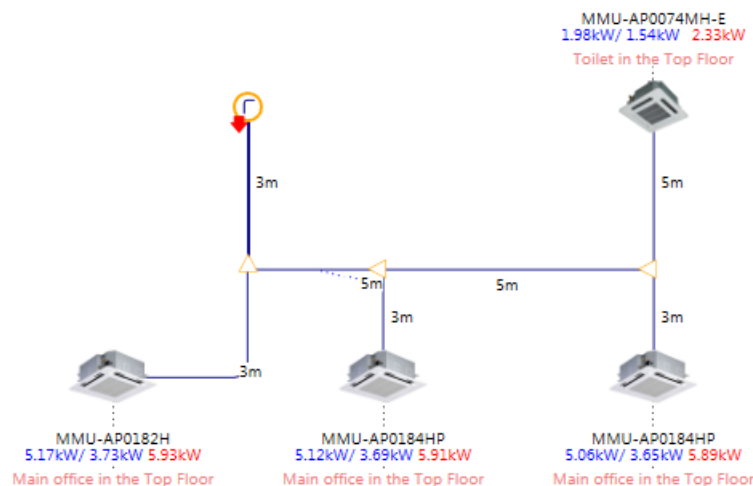
## 5.2. Starting & finishing pipes

Piping can be start pressing Alt and clicking on a unit and finish it pressing Alt and clicking again on the desired endpoint. Alt needs to be pressed just to enter and exit Piping Mode. In the meantime (while designing the piping) left-clicks of the mouse will be enough to change the direction of the current pipe or to start a new one.

Usually, Indoor Units will be connected to the Outdoor unit, but if the design is a multi-floor system, the indoor units will need to be connected into the riser instead.

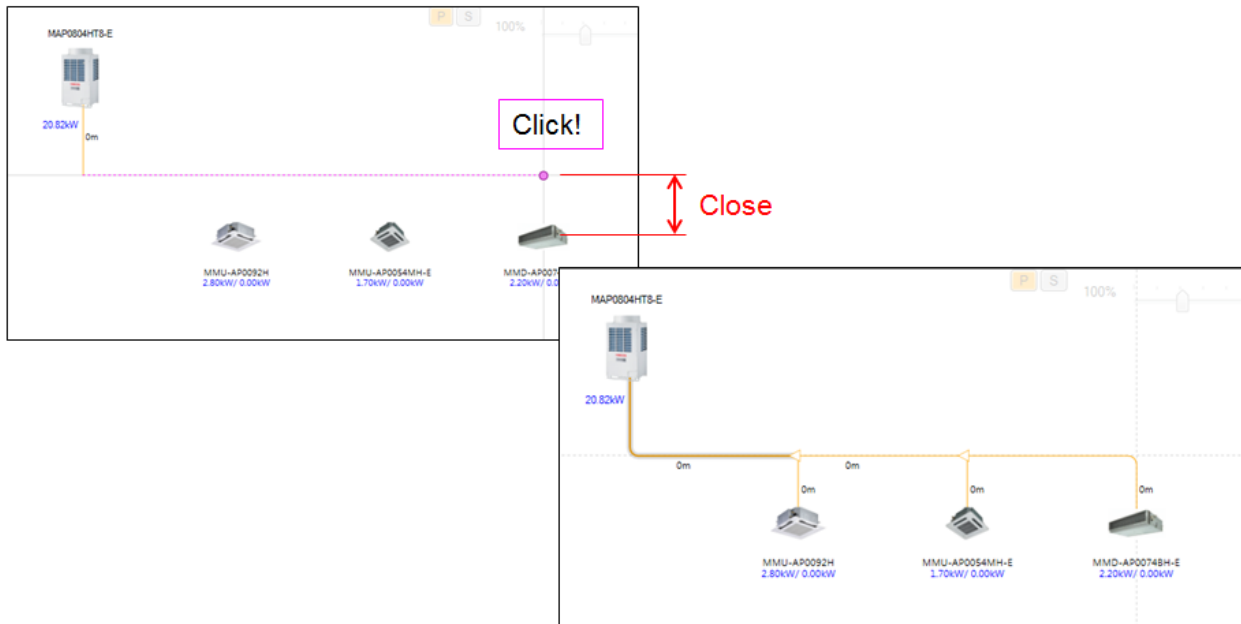


Please note that the piping can be design from the top, bottom and sides of the units:



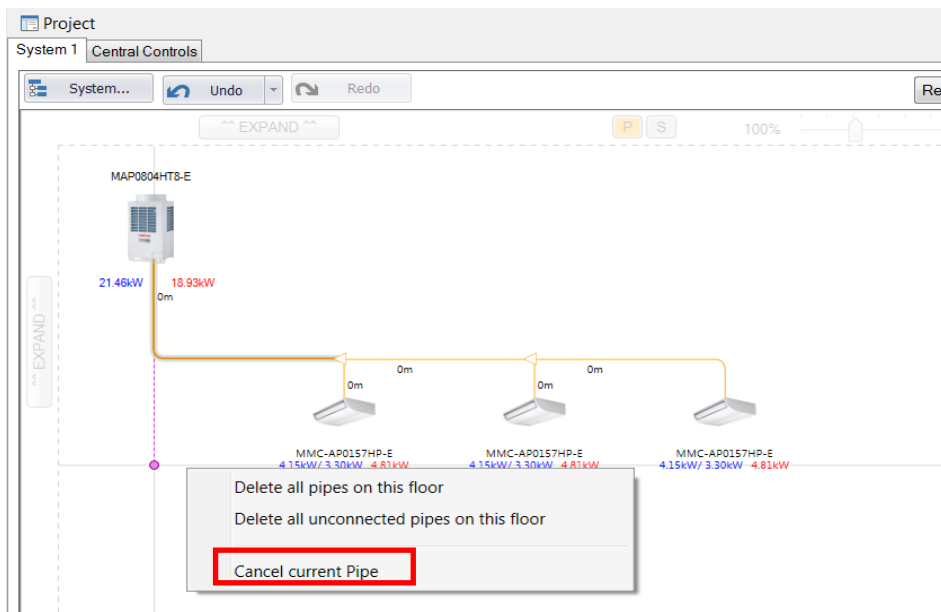
### Tip for a quick piping:

All the indoor units can be piped at the same time if they are in a row. Just, piping the farthest indoor unit at close distance, all the indoor units that are in the middle will automatically be piped too:



In order to know that the piping is correct look at the squared angles of the pipes, they should have become bended and also zero pipe lengths should appear.

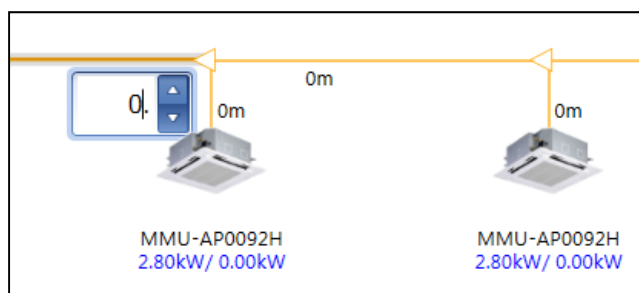
In case there is need to cancel the current pipe or change the starting point of the pipe, press “Esc” on the keyboard, or right click with the mouse and select “Cancel current Pipe”:



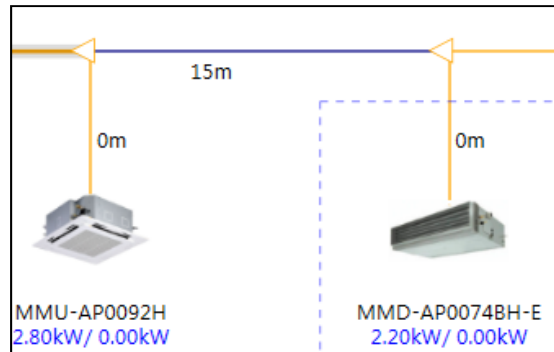
When right clicking on the working area, we can also find the options “Delete all pipes on this floor” and “Delete all unconnected pipes on this floor”. A pipe will be unconnected if it is not linked to the Outdoor unit.

### 5.3. Setting pipe-lengths

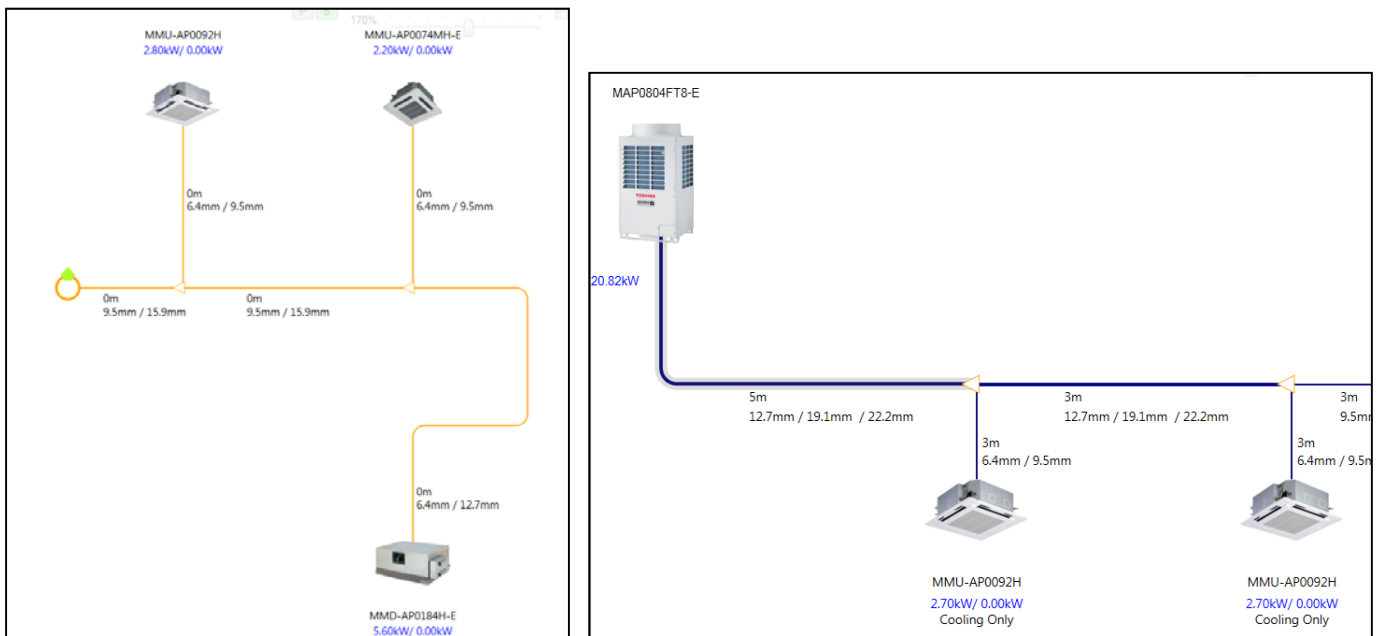
If we double click on a pipe a small box will appear where we can type the REAL length of the pipe:



When setting the pipe length in the box and pressing “enter”, this box will jump into the next 0m pipe automatically. This way, we can set all the pipe lengths of the system in a row. Once the pipe is different from zero, the colour changes from orange into navy blue and that the warning disappears from the warnings window.

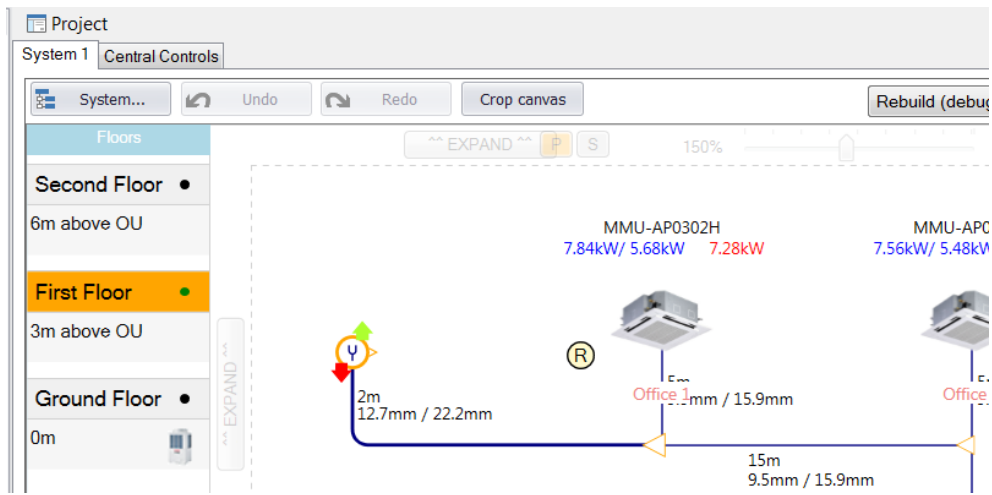


When the zooming is 130% or below, it is only shown the length of the pipes. But if we zoom in, we will also be able to see the diameters of the pipes: 2 values for SMMSi and Mini-SMMS systems (as they are 2 pipe systems), and 3 values for SHRMi systems (3 pipe systems):



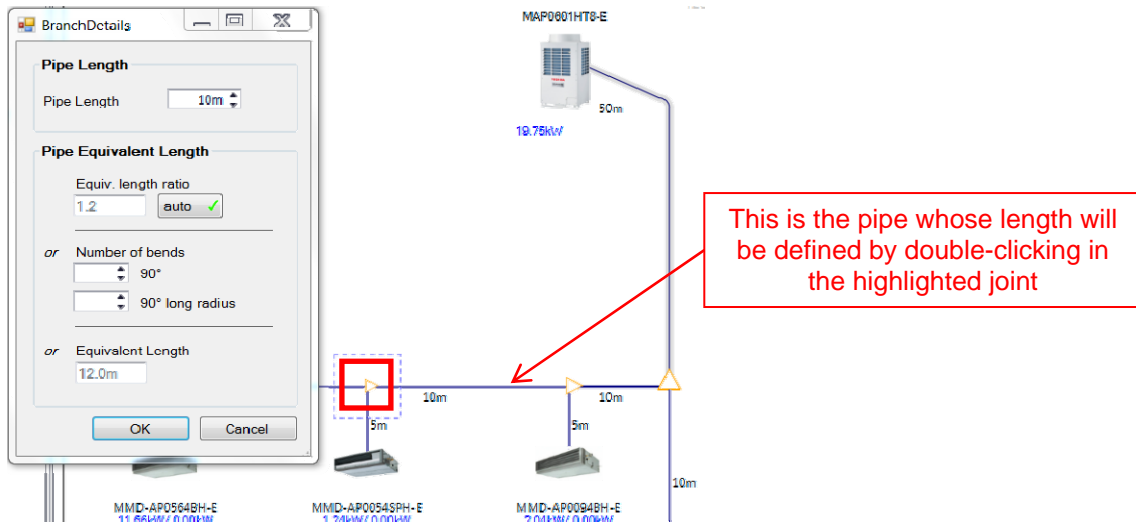
In multi-floor systems, when setting the pipe-length into the riser, only the horizontal length must be entered. The software will add automatically the length of the vertical pipe according to the floor heights that have been set when defining the floors.



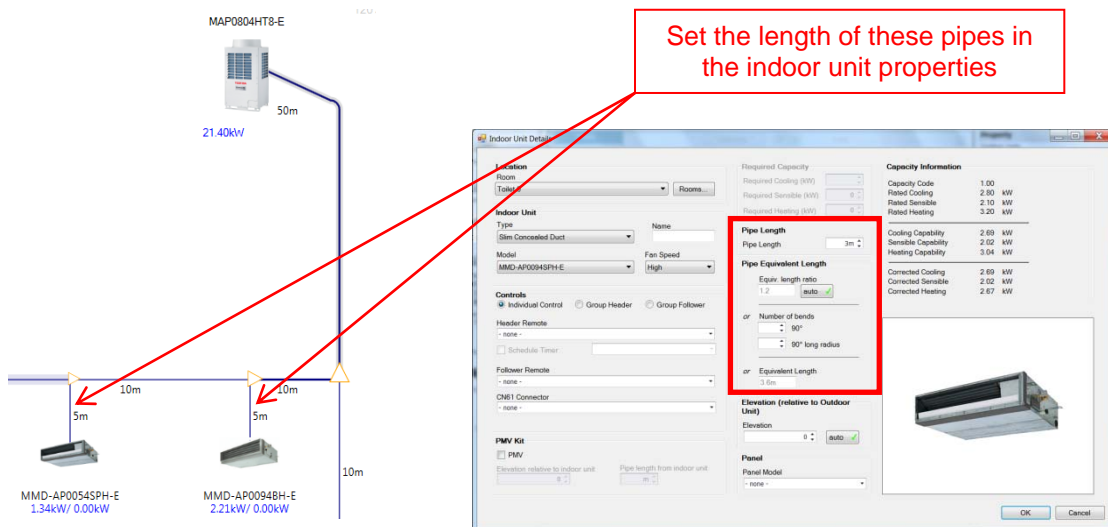


### 5.4. Real & Equivalent Pipe Lengths

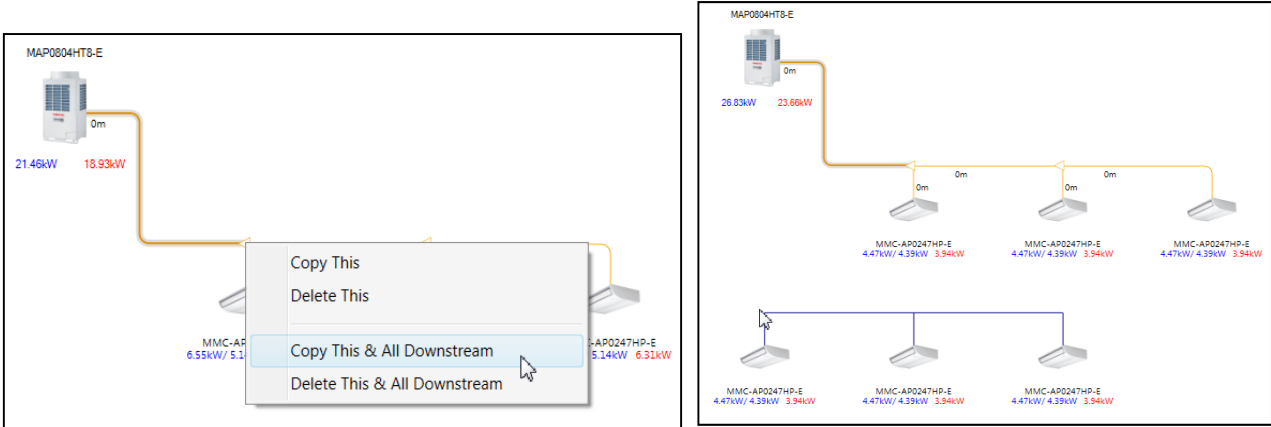
If we want to set the EQUIVALENT length instead of the REAL length of the pipe, we have to double click on the joint that comes downstream the pipe:



Go into indoor unit properties to set the real or equivalent length of the pipes that come from the last joint into the indoor unit:

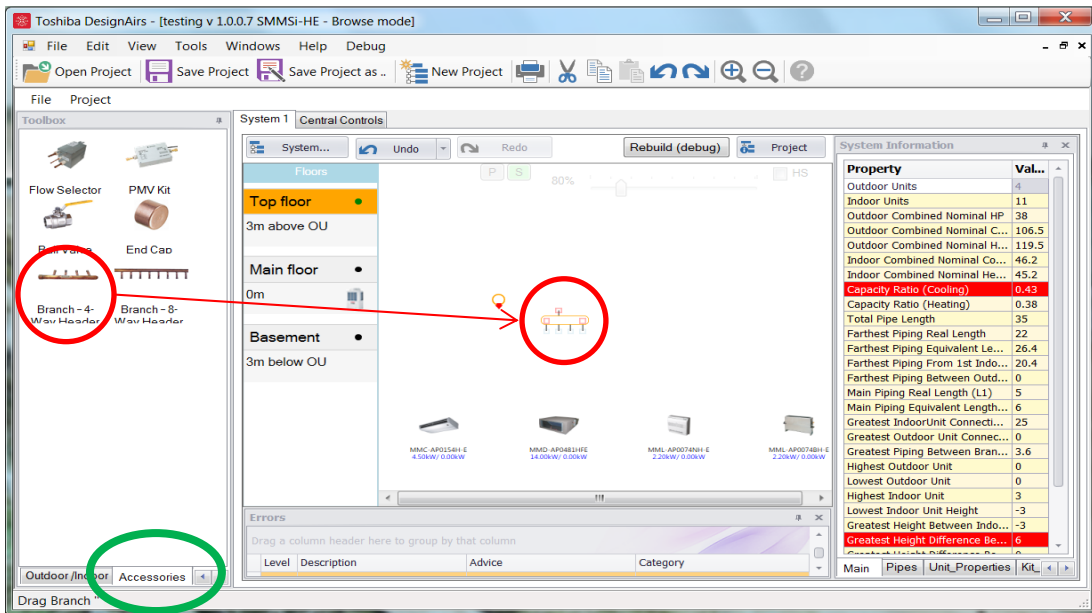


If we want to copy or delete more than one unit and their piping at the same time, we can right click on the Y joint and select “Copy this & all downstream” or “Delete this & all downstream”. In case we have copied it, right click on any point of the design and select “Paste” to paste it.

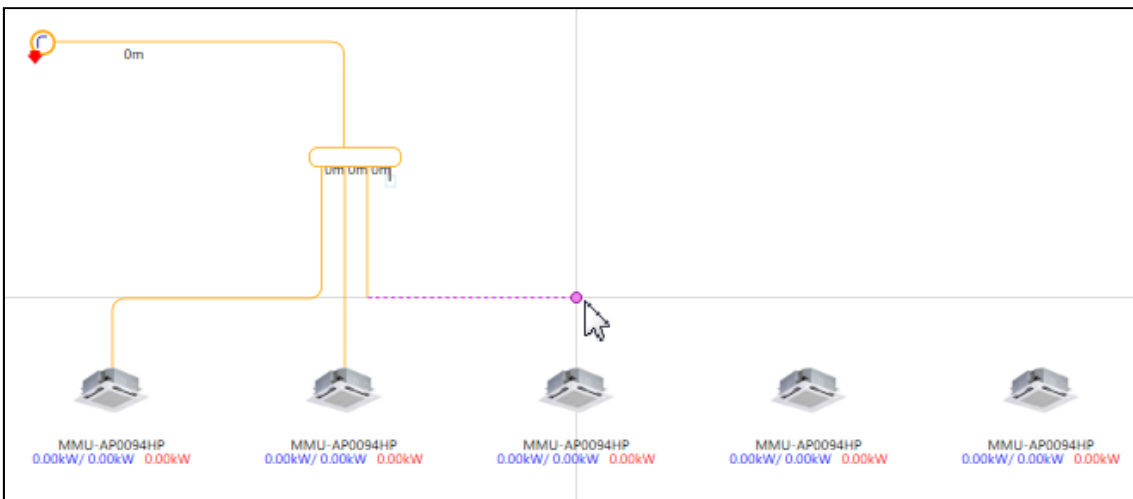


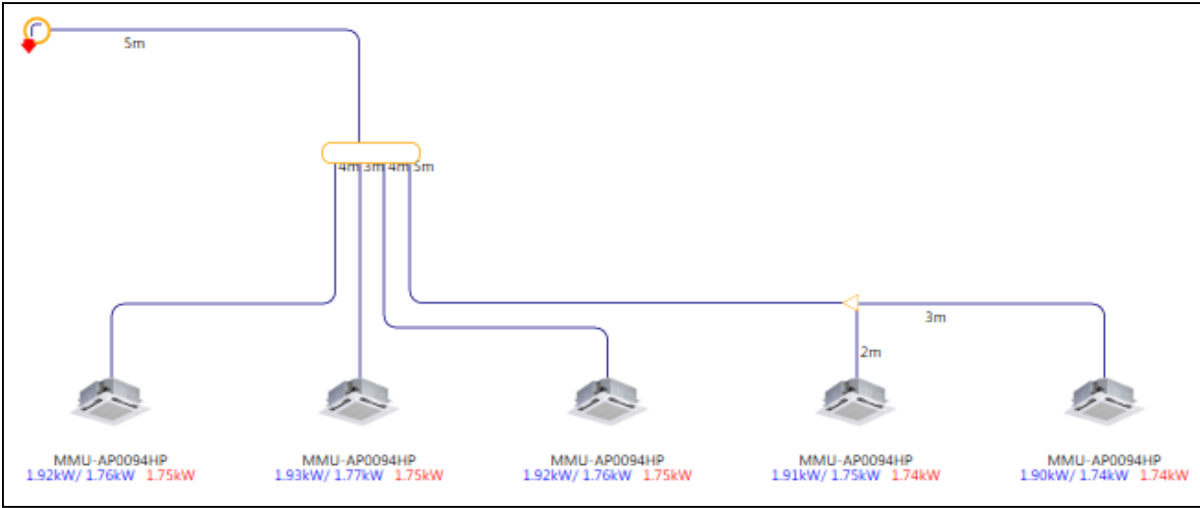
### 5.5. 4 & 8 branch headers

The software will use by default Y joints for the piping. But if 4 or 8 header branches are required, they can be dragged and dropped from the accessories tab in the toolbox.



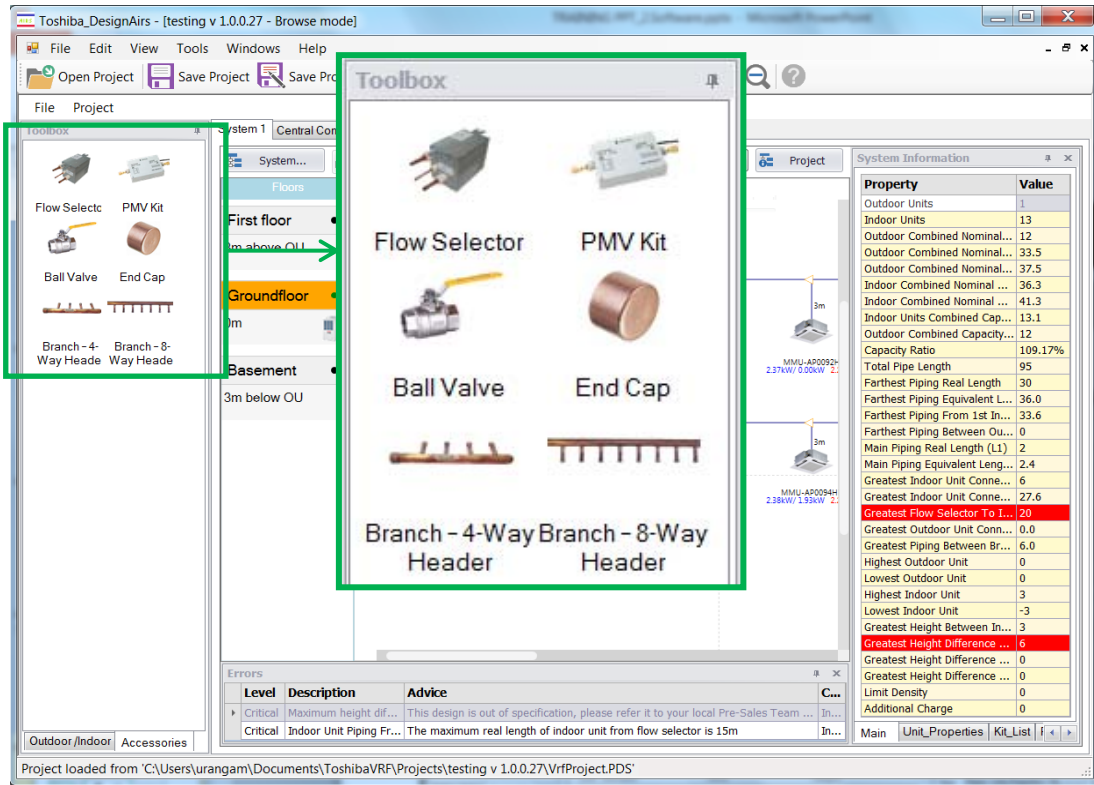
The piping of these headers is set in the same way, and so is the setting of the length.



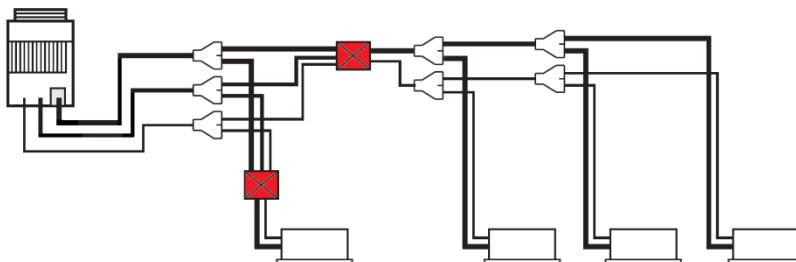


## 6. ACCESSORIES

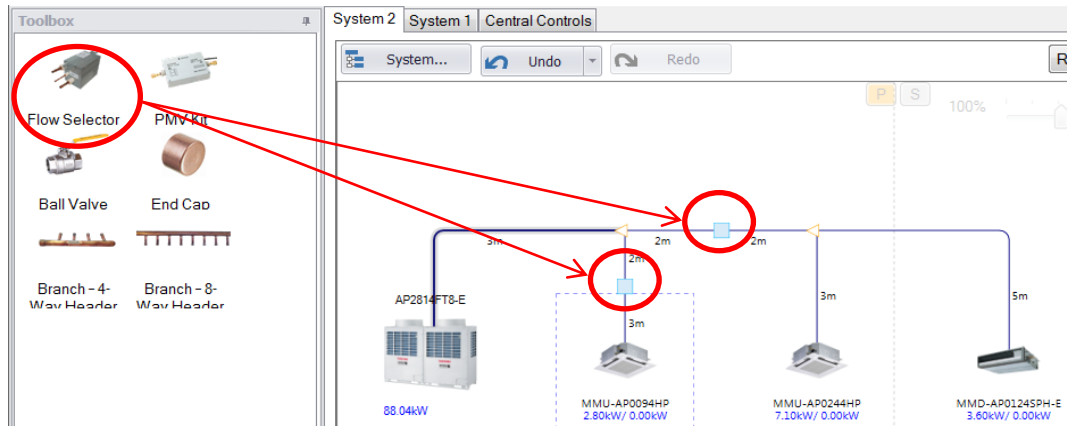
Available accessories are shown in the “Accessories” tab of the toolbox, which are Flow Selector, PMV kit, Ball Valve, End Cap, 4 Header branch and 8 Header branch.



### 6.1. Flow Selector



There are two options to add Flow Selectors; one is by drag & dropping them into the places that best fit the design, as any other element.

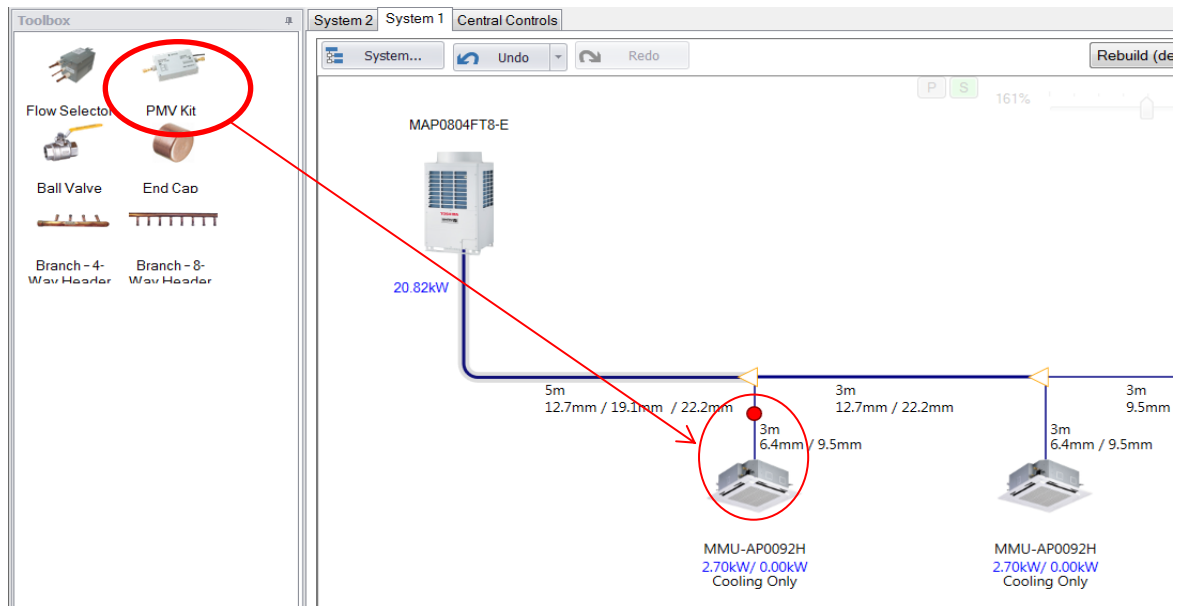


The other option is to have enabled the “auto adding of flow selectors in SHRMi systems” under Tools → Options. If that option is enabled, flow selectors will be added automatically into each indoor unit when piping them. Please note that Flow Selectors will only be available for SHRMi systems. For the rest of the system types, Flow Selector option is disabled.

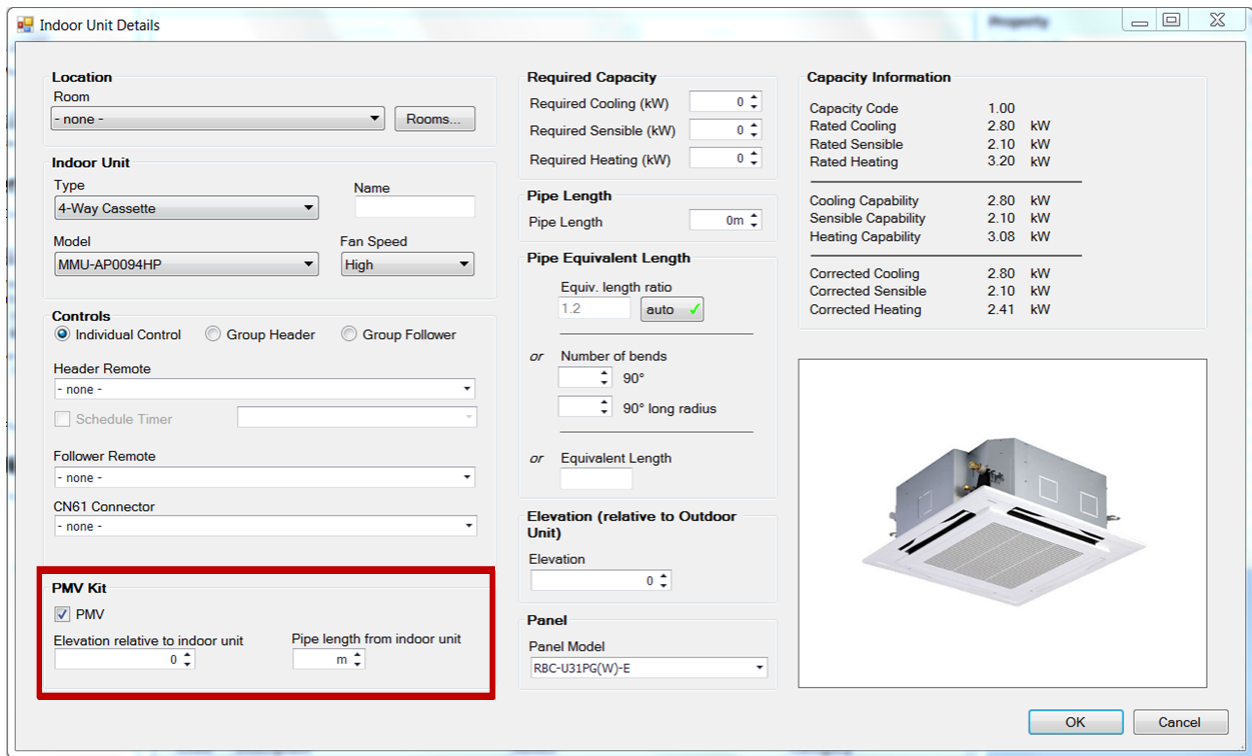
## 6.2. PMV Kit

There are also 2 options to add PMV kits (please note, that bigger than 3HP indoor units are not allowed to have a PMV kit connected, so they will not be able to be added):

- First one is drag & dropping it into the indoor unit that we want.

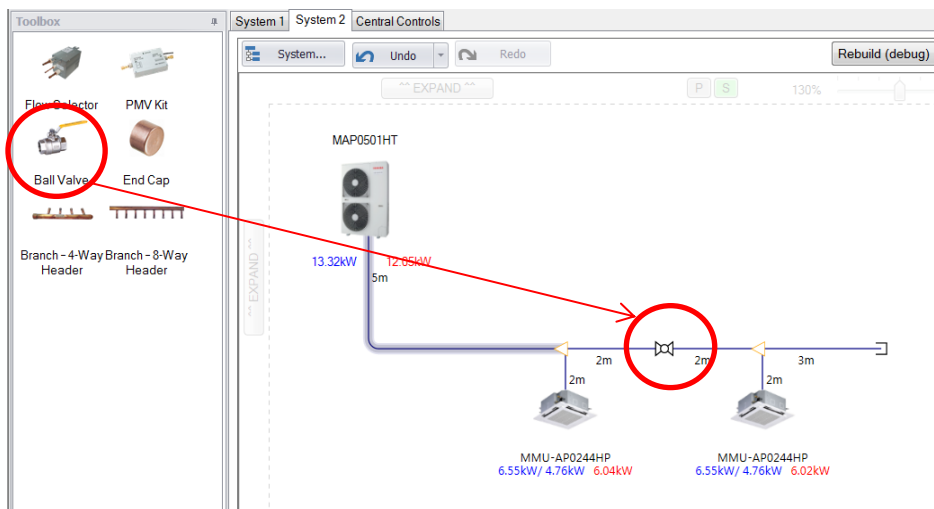


- Second one is selecting the PMV Kit option in the Indoor Unit properties window:



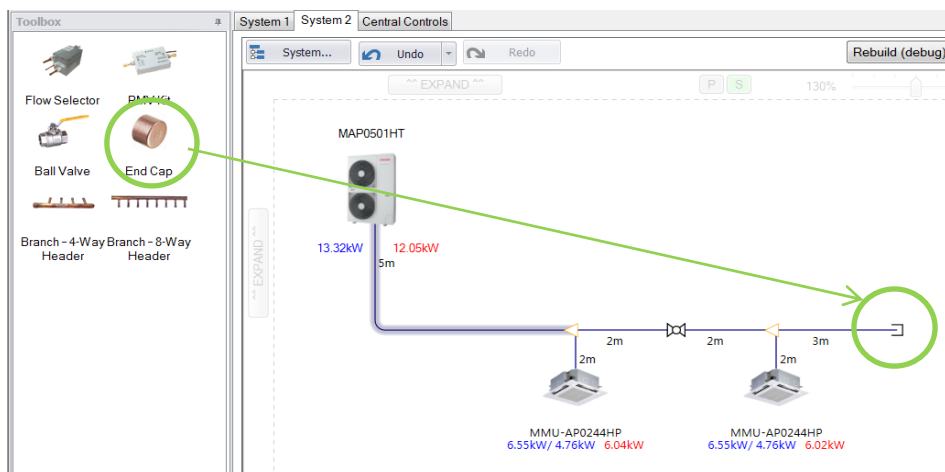
### 6.3. Ball Valve

Ball Valve is added by drag & dropping it:

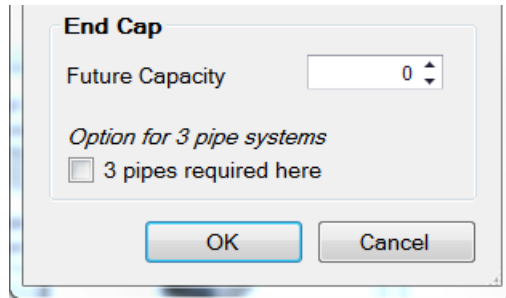


### 6.4. End Cap

End Cap is added by drag & dropping it:

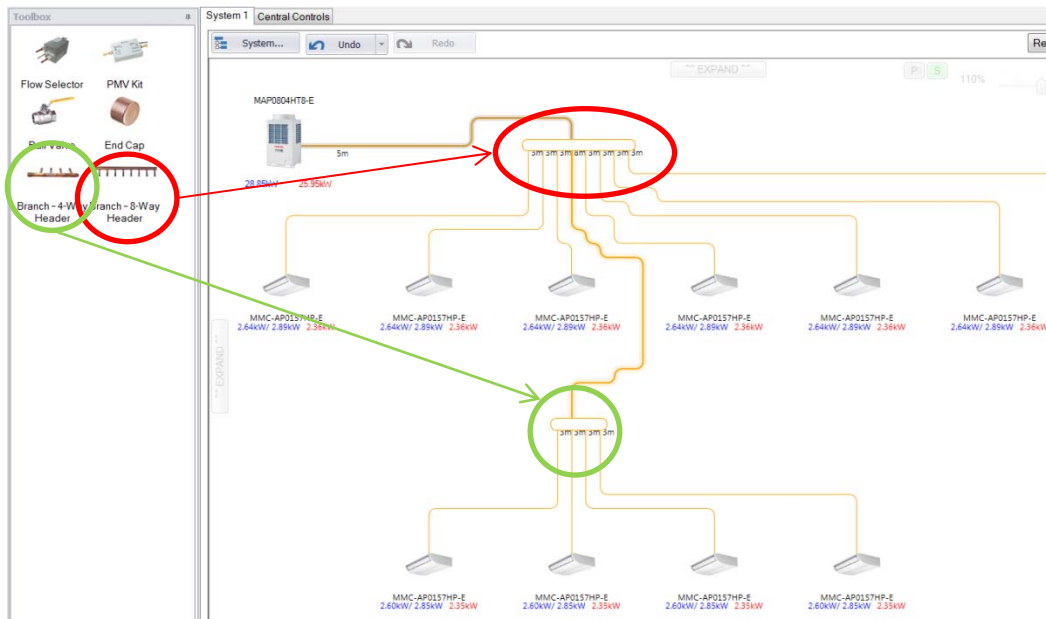


When double clicking on it, a window will pop up where the capacity for a future expansion of the system can be defined. This way, the pipes will be ready to feed the Indoor Units that are planned to install in the future:



### 6.5. 4 & 8 branch headers

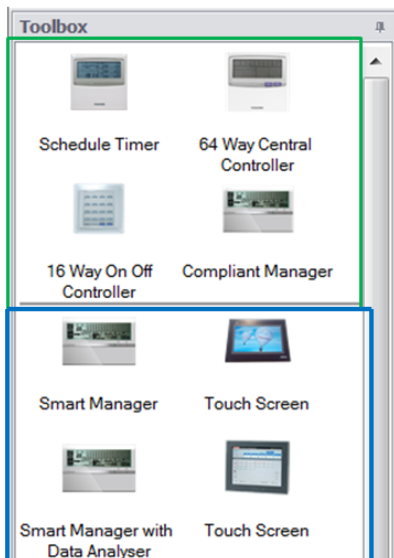
4 and 8 branch headers are also added by drag & dropping them into the working area.



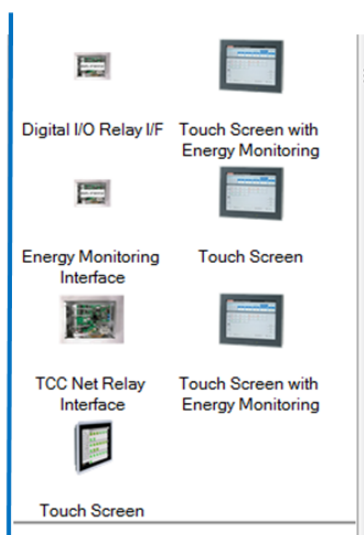
### 7. CENTRAL CONTROLLERS

Central Controllers are split into 3 main groups: Standard operation central controllers, advanced central controllers, and BMS controllers:

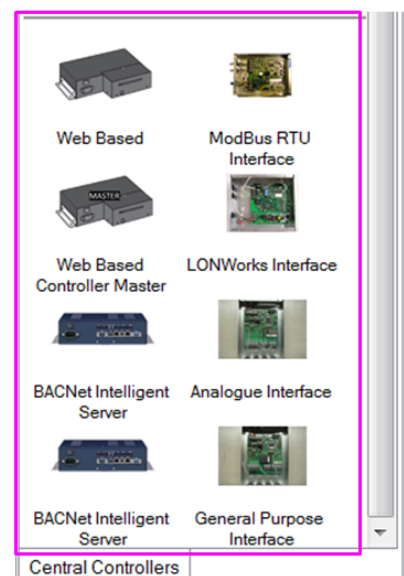
#### Standard Operation Central Controllers



#### Advanced Central Controllers



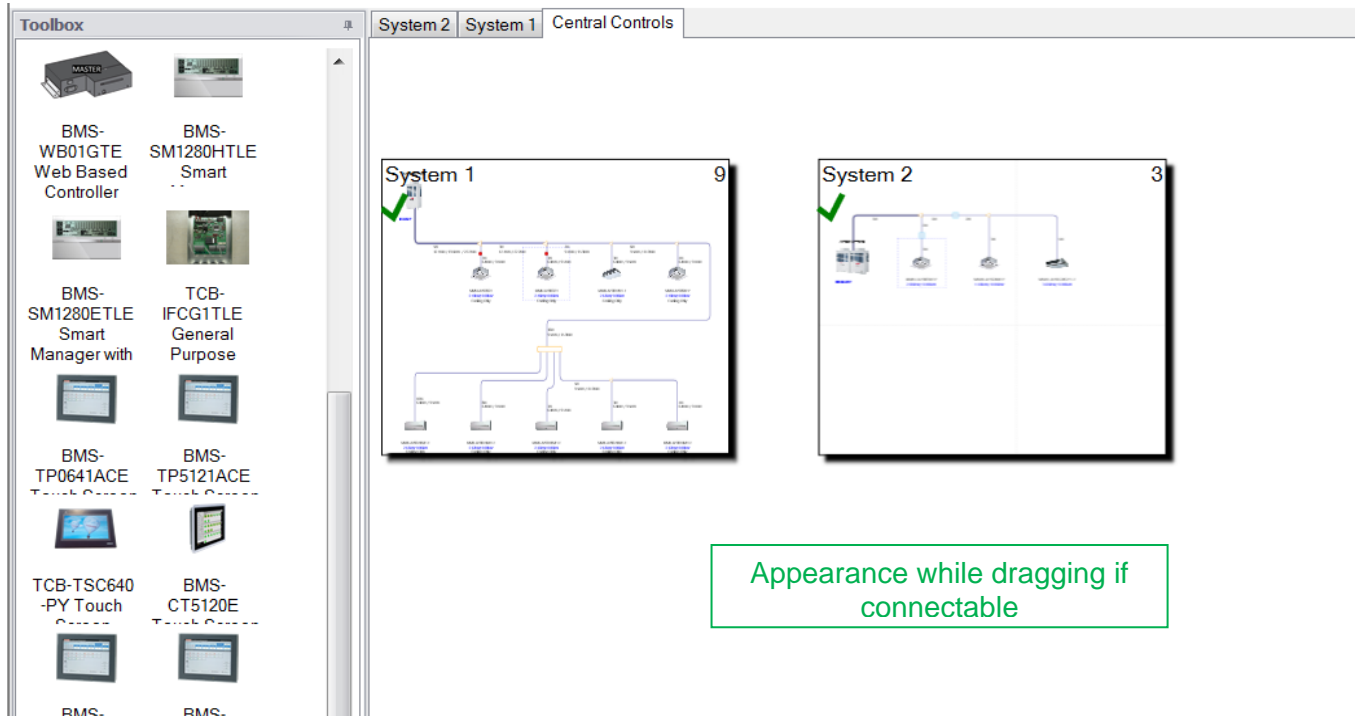
#### BMS Controllers



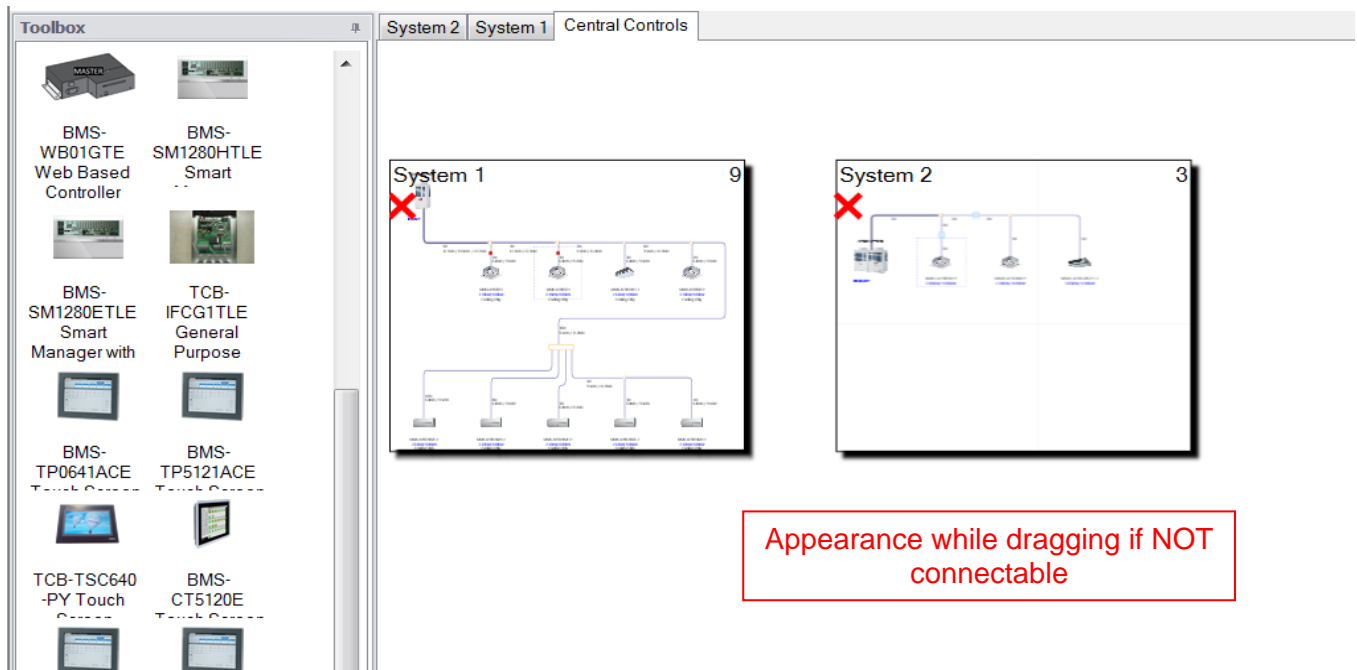
## 7.1. Adding Central Controllers

Central Controllers are added into the system by drag & dropping them.

If the controller that we are dragging is connectable to the system, we will be able to see green “ticks”:

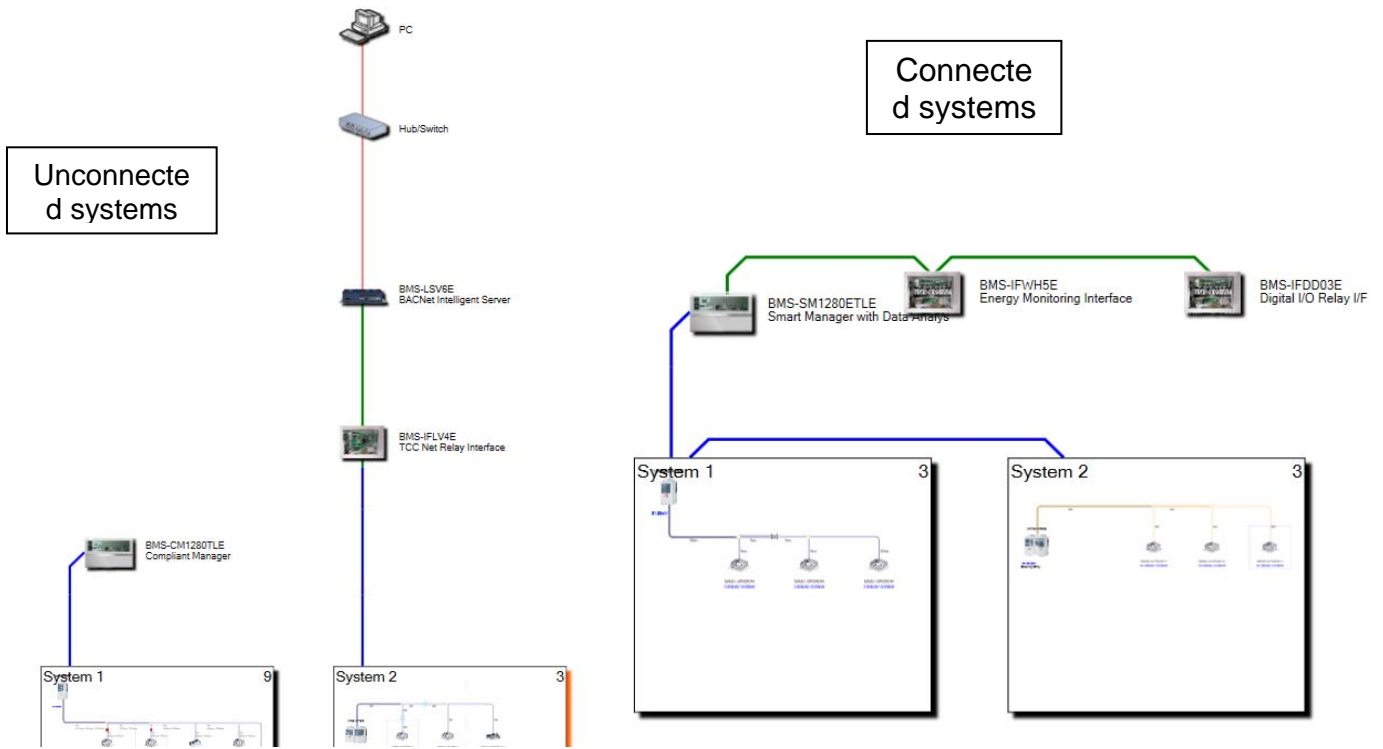


But if the controller that we are dragging is NOT connectable to the system, we will see RED “crosses”:



## 7.2. Connecting systems between them

Once that the controllers have been dragged and dropped, see below how they look like:

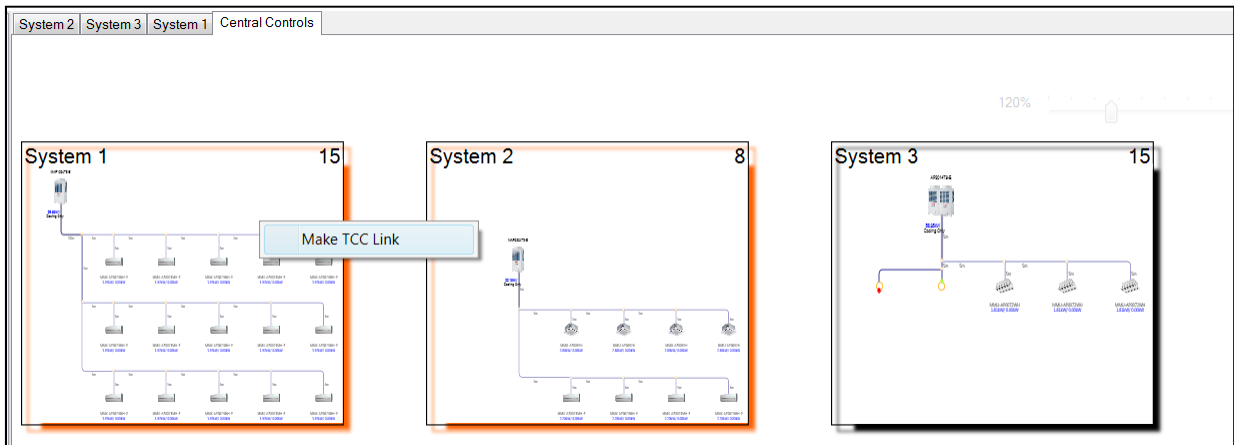


In the left unconnected systems are shown, whereas in the right connected systems are displayed.

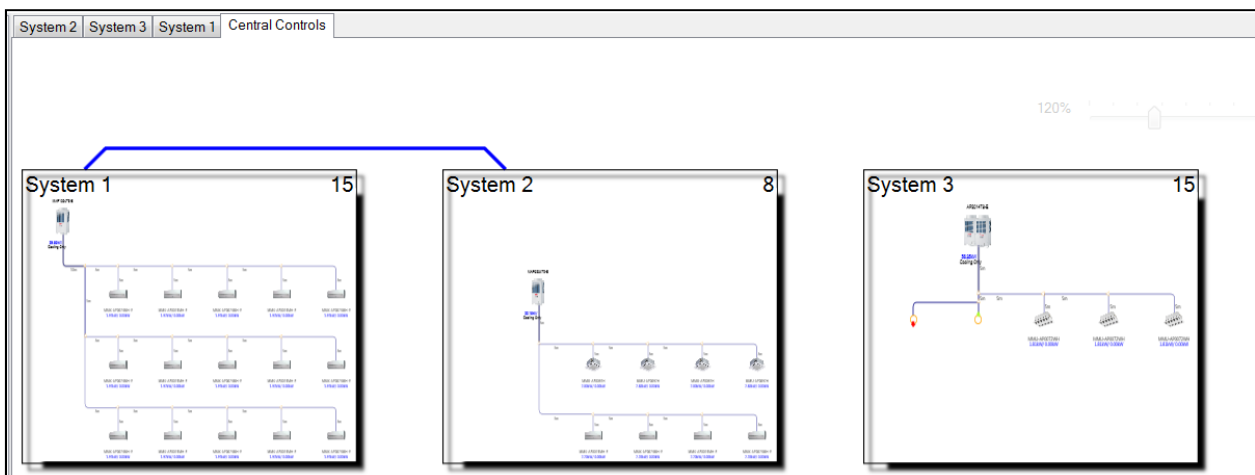
Systems can be connected between them so that they share a line on the Central Controllers for example.

In order to do so, to connect for example systems 1 and 2 between them we need to keep Ctrl hold and select the systems that we want to connect, 1 and 2 in this case.

Right click on them and select the option "Make TCC Link":

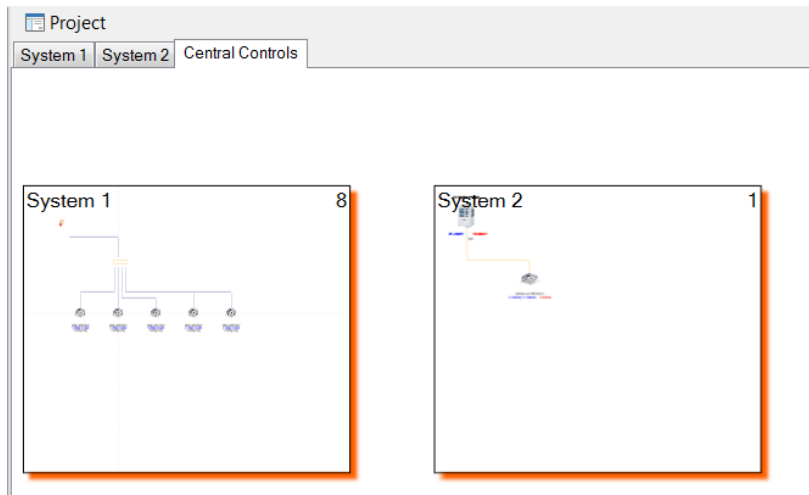


Automatically, a TCC Link will link those systems.

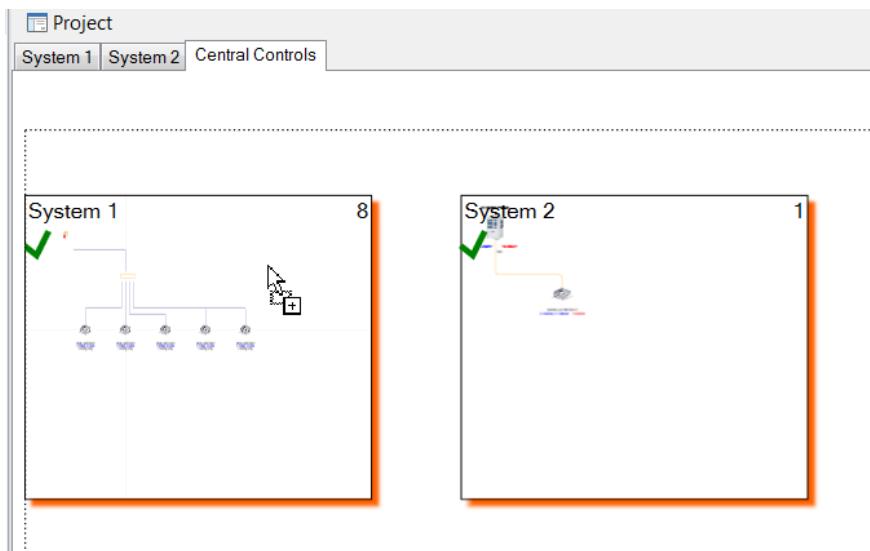




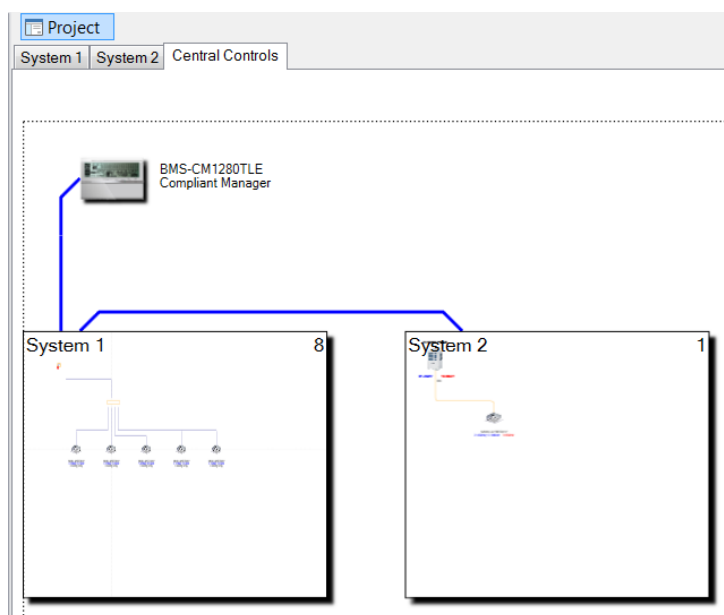
In order to add a controller for 2 systems in a quicker way, we could just skip the “Make TCC Link” step and directly drop the chosen Central Controller on top of the systems when they have both been selected while Ctrl was hold:  
So, press Ctrl and select the systems:



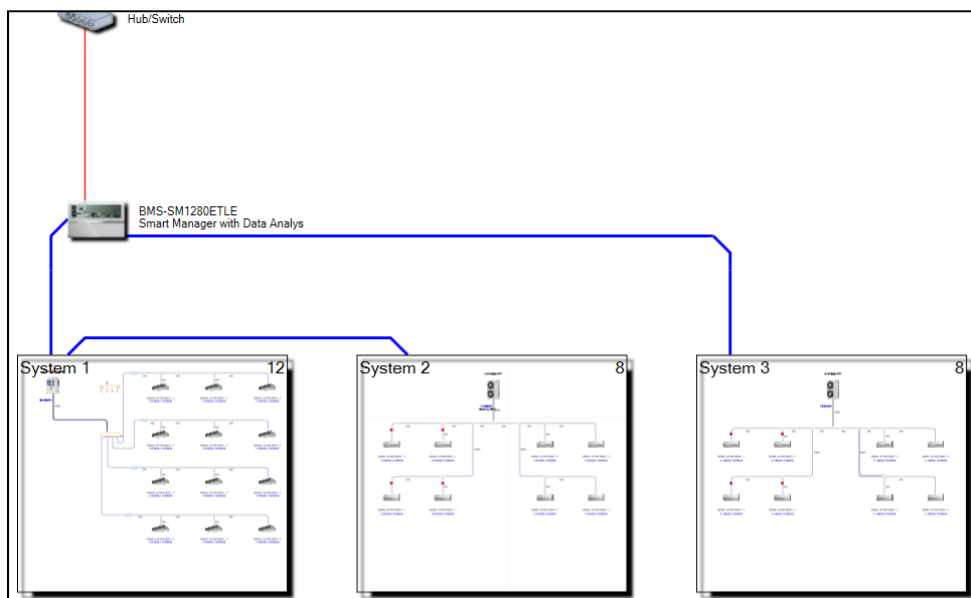
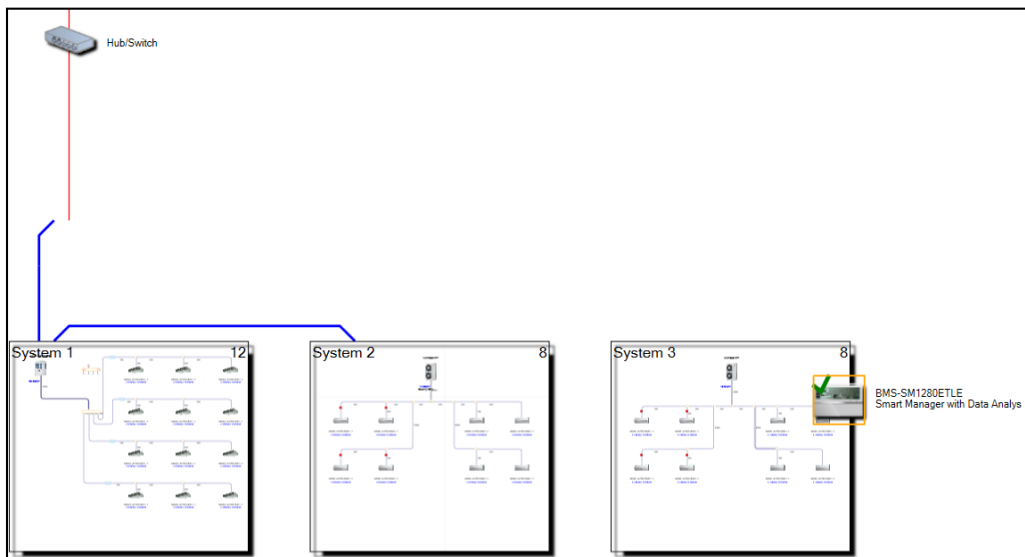
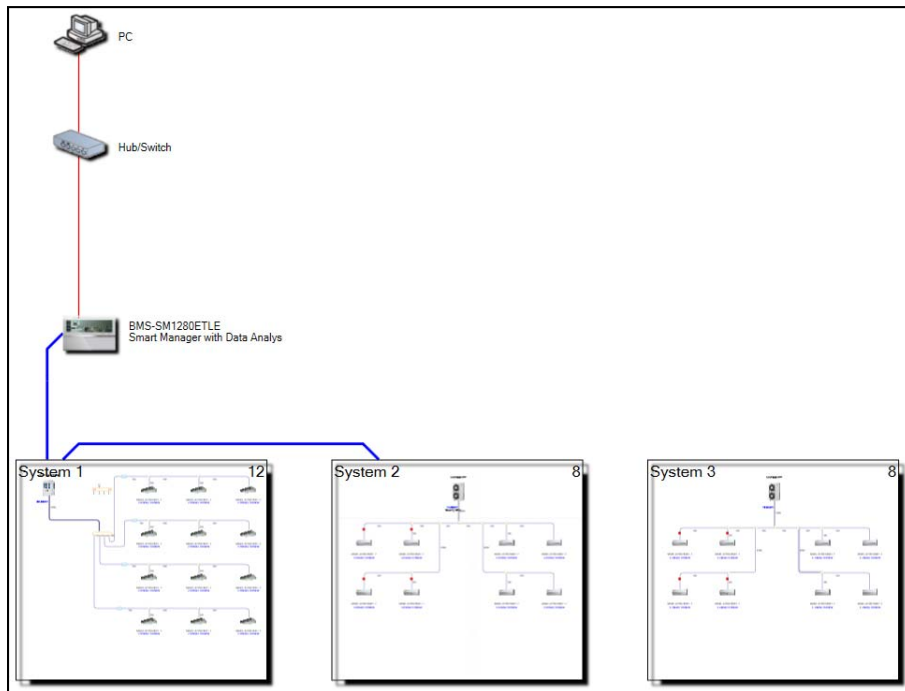
Drag the Central Controller on top of them until green ticks are shown:



And finally drop the Central Controller:



When Systems 1 and 2 are connected to a Smart Manager through line 1, if we want to connect a 3<sup>rd</sup> System into the same Smart Manager through the 2<sup>nd</sup> line, we will have to drag and drop the Smart Manager on top of the third system.



So as we can see in the previous image Systems 1 and 2 are connected to the SM through line 1 and System 3 is connected to the same SM through line 2.

### 7.3. Type of connections

The colour of the connection will be different depending on the type of connection.

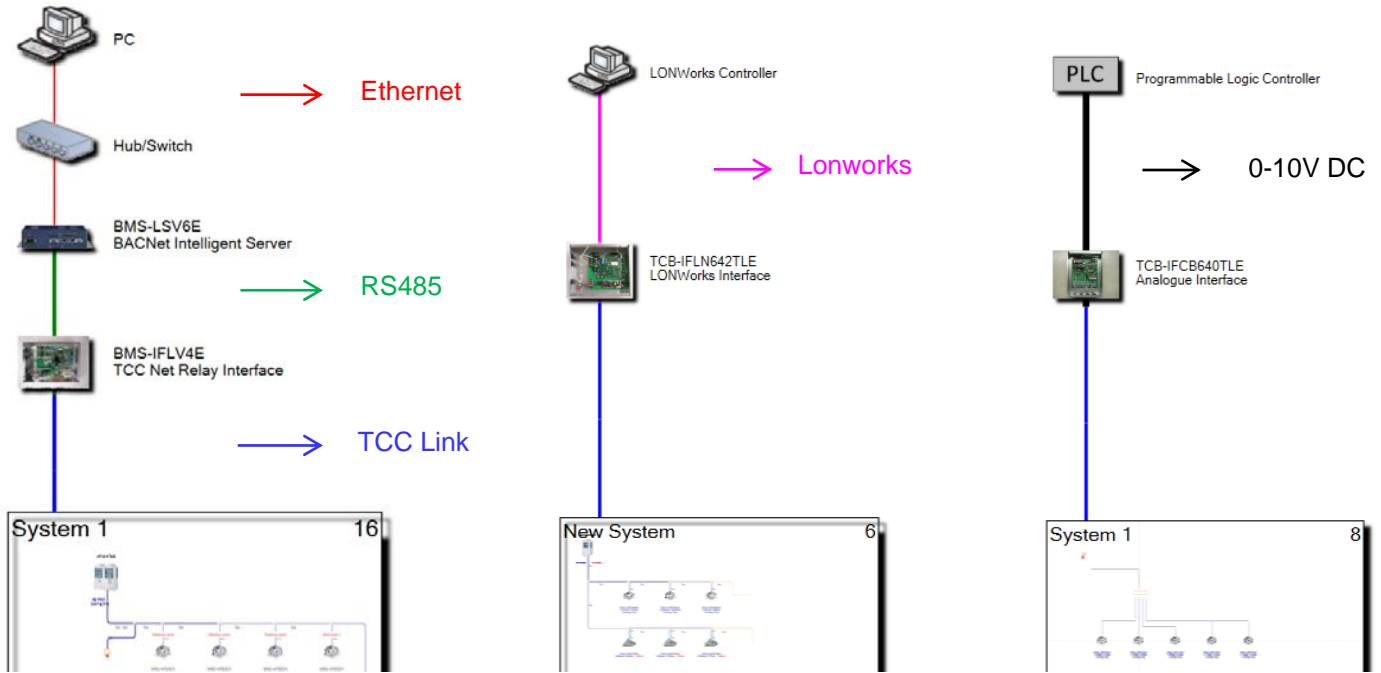
Red will be for Ethernet

Green will be for RS485

Blue will be for TCC Link

Magenta will be for Lonworks twisted Pair

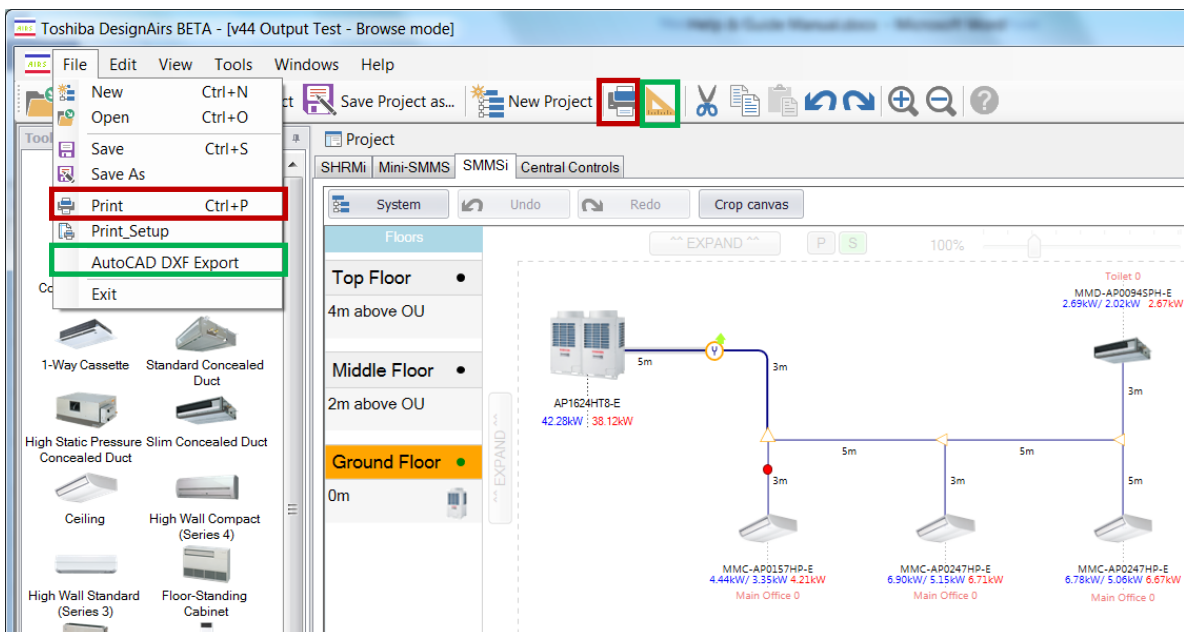
Black for 0-10V DC



### 8. OUTPUT

Once that the design is finished, there are 2 options to generate the Outputs:

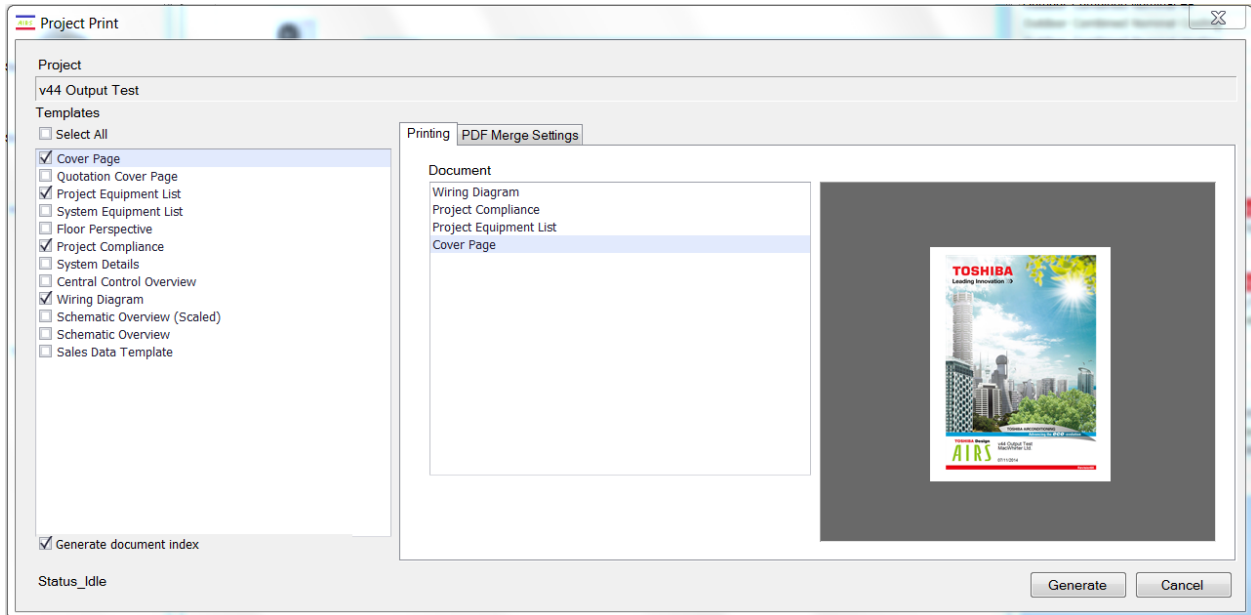
- Under file → Print or AutoCAD DXF Export
- Or print directly from the main toolbar



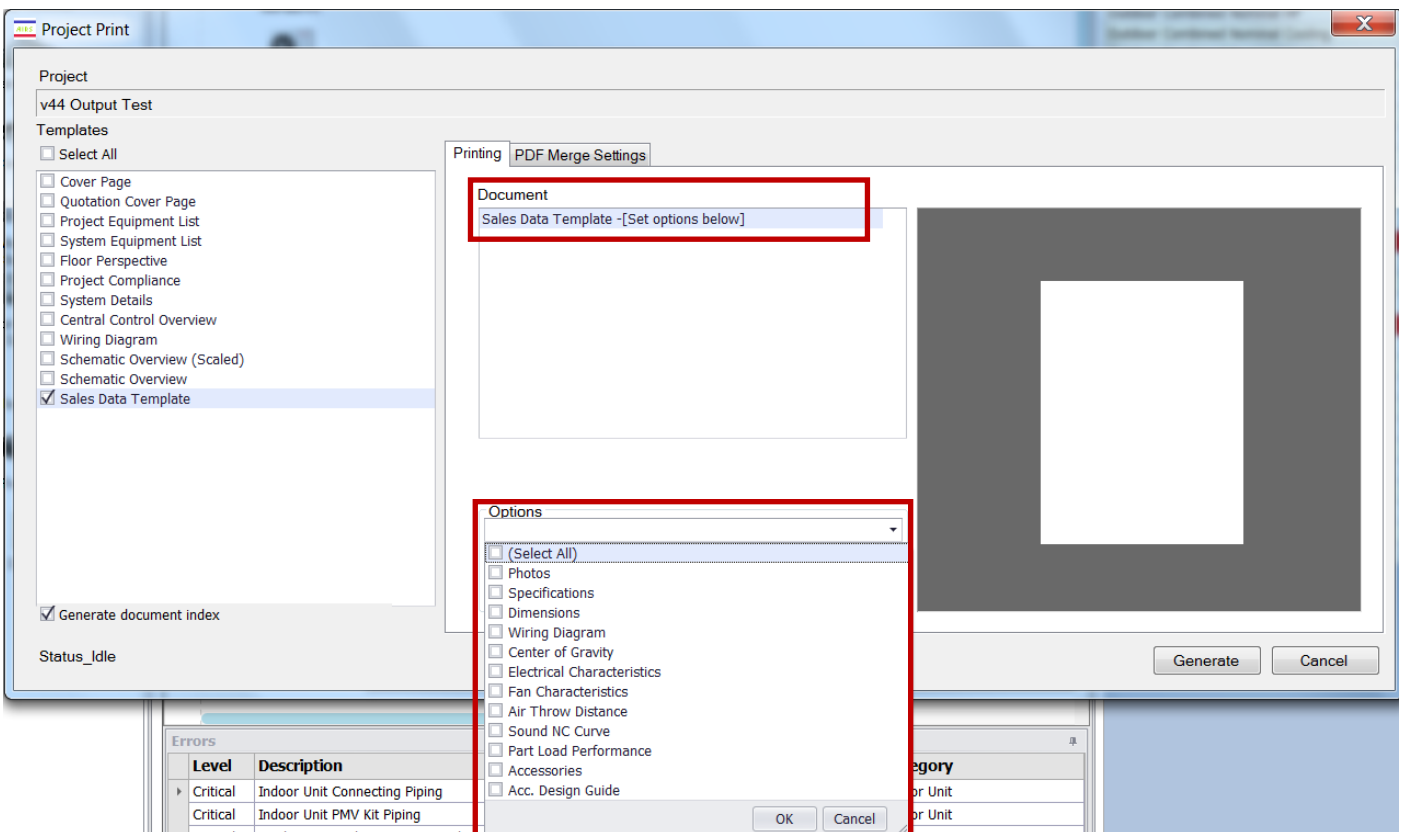
## 8.1. Output Report

### 8.1.1. Selecting the documents of the Output Report

When selecting any of the options in red on the previous image, the Project Print Window will pop up where it can be selected which files we want to print out:

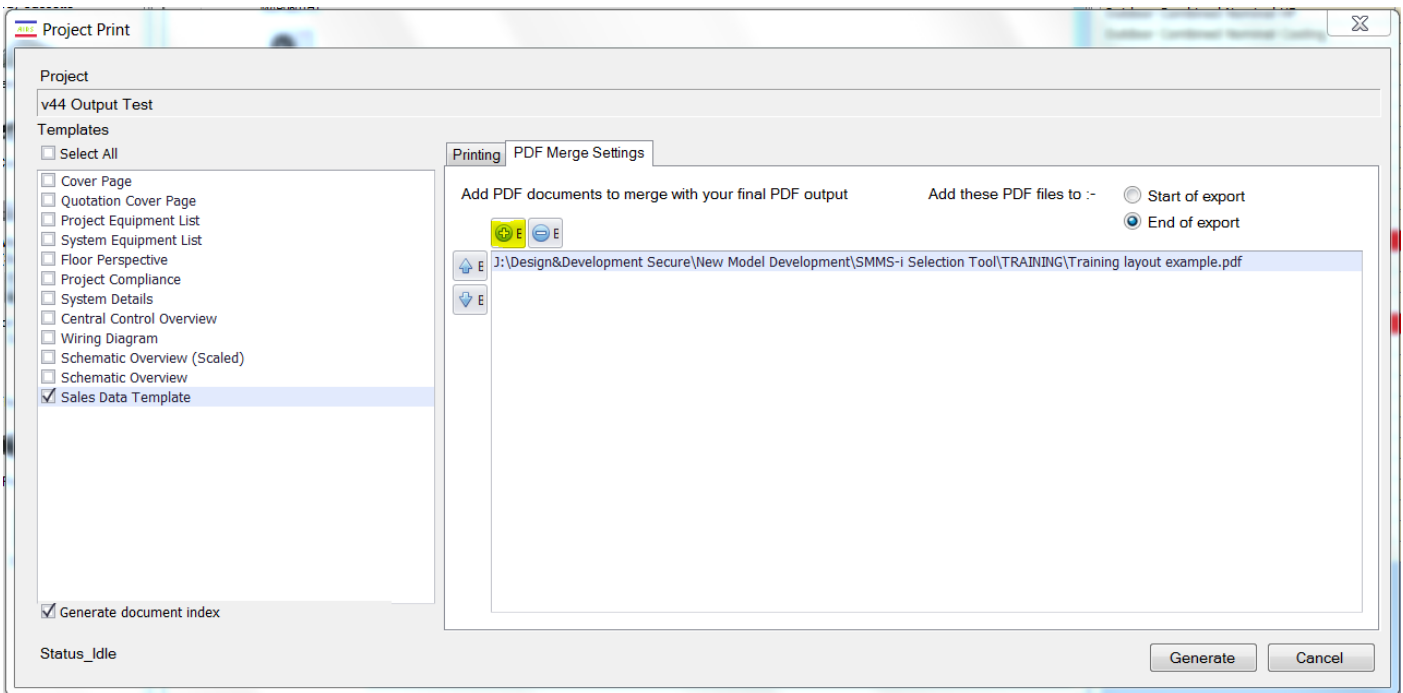


If we select "Sales Data" to be included in the Output Report, we will then have to select which information out of the Sales Data we are interested in:



### 8.1.2. Adding PDF files into the Output

Apart from the files that the software generates, other PDF format files can be loaded to be added into the output using the highlighted plus icon:

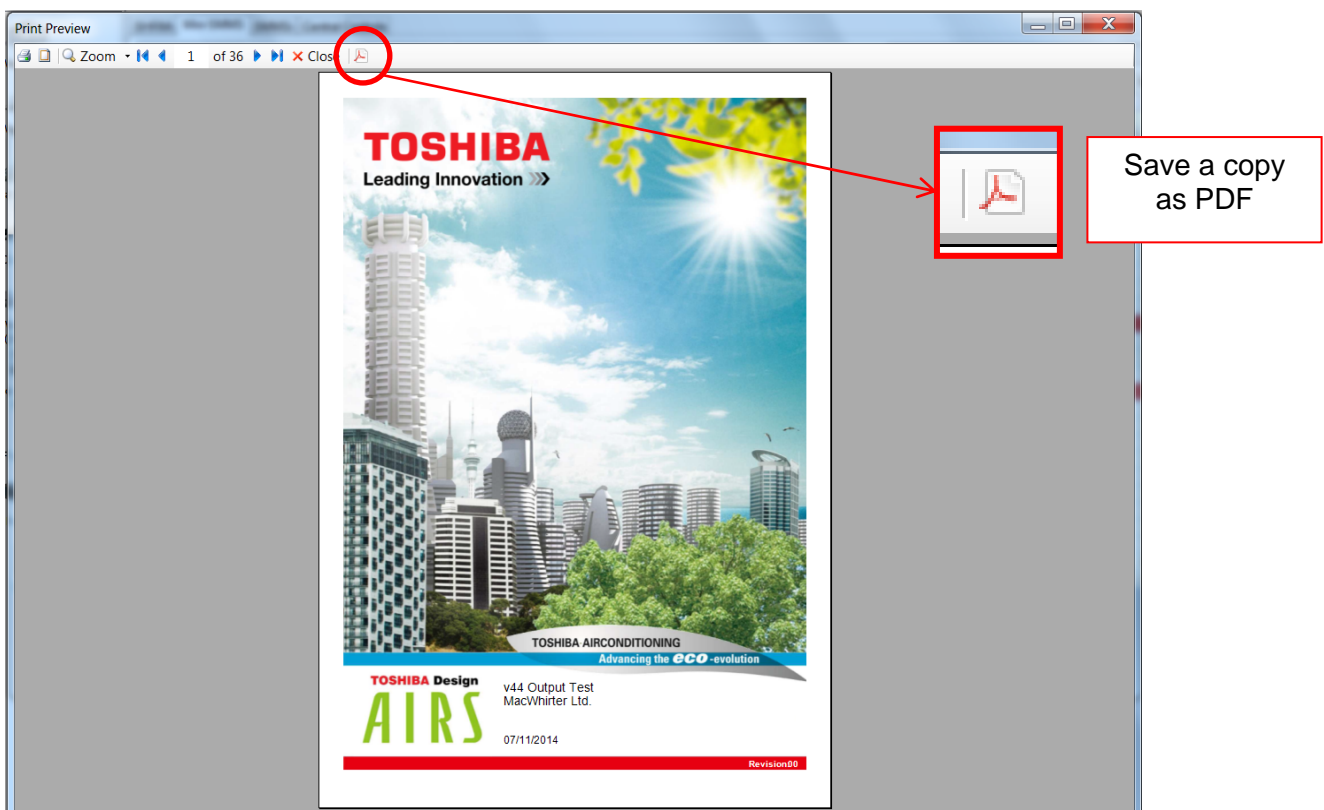


Files can be deleted pressing the “- E” button when they are selected. They can also be reorder with the up and down arrow buttons, and it is possible to choose if the merged PDF documents will be added at the beginning or at the end of the Output Report.

Once we have selected and added all the files we are interested in, we will press Generate to create the print preview.

### 8.1.3. Creating the PDF version of the Output Report

Once the Print Preview is open, there is an option on the toolbar to print directly the Output Report from the print preview, and another one to save a copy as PDF.



The whole Output Report consists on the following documents:

1. Cover Page, where the Name of the Project, the Customer's name and logo and the date can be seen:

**TOSHIBA**  
Leading Innovation >>>

**TOSHIBA AIRCONDITIONING**  
Advancing the *eco*-evolution

**TOSHIBA Design**  
**AIRS**



Tesco Roborough  
MacWhirter Ltd.  
09/09/2014

**MacWhirter**  
WESTERN LTD  
AIR CONDITIONING

**Revision: 2.0**



2. Project Quotation Cover, where we can see the main information about the project, customer, site and the user:

<b>TOSHIBA</b> Leading Innovation >>> 															
<hr/> <b>Toshiba Design AIRS - Project Quotation</b> <hr/>															
															
<table border="1"> <tr><td><b>Client:</b></td><td>MacWhirter Ltd.</td></tr> <tr><td><b>To:</b></td><td>Nigel Froude</td></tr> <tr><td><b>Tel:</b></td><td>01803 314566</td></tr> <tr><td><b>email:</b></td><td><a href="mailto:nigel.froude@macwhirter.com">nigel.froude@macwhirter.com</a></td></tr> </table>	<b>Client:</b>	MacWhirter Ltd.	<b>To:</b>	Nigel Froude	<b>Tel:</b>	01803 314566	<b>email:</b>	<a href="mailto:nigel.froude@macwhirter.com">nigel.froude@macwhirter.com</a>	<table border="1"> <tr><td><b>Client Address:</b></td></tr> <tr><td>Unit 2</td></tr> <tr><td>Chatto Road Ind. Estate</td></tr> <tr><td>Torquay</td></tr> <tr><td>Devon</td></tr> <tr><td>TQ1 4UE</td></tr> </table>	<b>Client Address:</b>	Unit 2	Chatto Road Ind. Estate	Torquay	Devon	TQ1 4UE
<b>Client:</b>	MacWhirter Ltd.														
<b>To:</b>	Nigel Froude														
<b>Tel:</b>	01803 314566														
<b>email:</b>	<a href="mailto:nigel.froude@macwhirter.com">nigel.froude@macwhirter.com</a>														
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<b>Site Name:</b>	Tesco Roborough														
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<table border="1"> <tr><td><b>Prepared By:</b></td><td>W.Dolley</td></tr> <tr><td><b>Company:</b></td><td>Toshiba Carrier UK Ltd.</td></tr> </table>	<b>Prepared By:</b>	W.Dolley	<b>Company:</b>	Toshiba Carrier UK Ltd.	<table border="1"> <tr><td><b>Address</b></td></tr> <tr><td>Porsham Close</td></tr> <tr><td>Belliver Industrial Estate</td></tr> <tr><td>Roborough</td></tr> <tr><td>Devon</td></tr> <tr><td>PL6 7DB</td></tr> </table>	<b>Address</b>	Porsham Close	Belliver Industrial Estate	Roborough	Devon	PL6 7DB				
<b>Prepared By:</b>	W.Dolley														
<b>Company:</b>	Toshiba Carrier UK Ltd.														
<b>Address</b>															
Porsham Close															
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Roborough															
Devon															
PL6 7DB															
<hr/> <table border="0"> <tr> <td>Prepared By: W. Dolley</td> <td>Registered To: Toshiba Carrier UK Ltd</td> <td>V1.0.0.34</td> <td>Rev. 2.0</td> <td>#page</td> </tr> </table>		Prepared By: W. Dolley	Registered To: Toshiba Carrier UK Ltd	V1.0.0.34	Rev. 2.0	#page									
Prepared By: W. Dolley	Registered To: Toshiba Carrier UK Ltd	V1.0.0.34	Rev. 2.0	#page											

3. Index of the report:





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## Toshiba DesignAIRS - Index

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4. Project Equipment List, where all the required elements for the complete project (including all the systems), quantity and price are listed.

We can read the following information in different tables for the whole project: Outdoor units, Indoor units, Y joints, Headers, Accessories, Central Control Devices, Pipes, Refrigerant Amount and Outdoor Design Temperature:



## Toshiba DesignAIRS- Project Equipment List

**v44 Output Test Equipment List**

**Outdoor Units**

Model name	Description	Quantity	Price
AP1624HT8-E	16HP SMMSi HE	1.0	£0.00
MAP0601HT	6HP Mini SMMSi	1.0	£0.00
MAP1204FT8-E	12HP SHRMi	1.0	£0.00

**Indoor Units**

Model name	Description	Quantity	Price
MMC-AP0157HP-E	1.7HP Ceiling	1.0	£0.00
MMC-AP0247HP-E	2.5HP Ceiling	6.0	£0.00
MMD-AP0094SPH-E	1.0HP Slim Concealed Duct	1.0	£0.00
MMU-AP0184HP	2.0HP 4-Way Cassette	6.0	£0.00
MMU-AP0074MH-E	0.8HP Compact 4-Way Cassette	1.0	£0.00
MMK-AP0073H	0.8HP High Wall Standard (Series 3)	4.0	£0.00

**Y joints**

Model name	Description	Quantity	Price
RBM-BT14E	Outdoor Unit Branch Kit	1.0	£0.00
RBM-BY55E	Y Joint	8.0	£0.00
RBM-BY105E	Y Joint	2.0	£0.00
RBM-BY205E	Y Joint	1.0	£0.00
RBM-BY105FE	Y Joint	3.0	£0.00
RBM-BY53E	Y Joint	2.0	£0.00

**Accessories**

Model name	Description	Quantity	Price
RBC-U31PG(W)-E	Panel	6.0	£0.00
RBC-UM11PG(W)E	Panel	1.0	£0.00
RBM-Y1123FE	Flow Selector	2.0	£0.00
RBM-Y1803FE	Flow Selector	2.0	£0.00

**Piping Length**

Pipe Diameter	Gas side (m)	Discharge side (m)	Liquid side (m)	Total Length (m)	Price
6.4	0	0	60	60	£0.00
9.5	24	0	77	101	£0.00
12.7	36	10	23	69	£0.00
15.9	69	0	5	74	£0.00
19.1	8	9	0	17	£0.00
22.2	18	0	0	18	£0.00
28.6	10	0	0	10	£0.00

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**Refrigerant Charge Amount**

Refrigerant (R410A)	Description	Amount (kg)	Price
Outdoors	Refrigerant amount charged in factory	23	£0.00
Additional refrigerant	Amount needed for the pipes at the site	20.4375	£75.00


Labour	£2,000.00
Other materials	£300.00
<b>TOTAL #ProjectName (VAT not included)</b>	<b>£42,460.00</b>

**Outdoor Design Temperature**

System	Mode	Description	Temperature
System 1	Cooling	Dry Bulb Temperature	35°C
	Heating	Web Bulb Temperature	0°C
System 2	Cooling	Dry Bulb Temperature	35°C
	Heating	Web Bulb Temperature	0°C

- Notes:
- Equivalent length is calculated by coefficient 1.300
  - The user is responsible for ensuring that all data entered is correct
  - Equipment selections have been based on the Design Guidelines stated within the Toshiba SMMS-i/SHRM/Mini-SMMS Installation Manual
  - It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.
  - Please note that in the event of future system expansion being allowed for in the system design or a change in cooling/heating requirements, a re-evaluation of the air conditioning system must be made prior to final installation.
  - All equipment selections have been based on the equipment SES equipment schedules provided. The above prices are nett, exclusive of VAT
  - The prices shown are for this project only, as agreed with your account manager
  - Delivery will be free of charge on a day nominated by Toshiba during normal business hours and to a level site on mainland UK only
  - Stock of equipment should be confirmed at time of ordering
  - Quotation remains valid and open for acceptance for a period of 60 days
  - It is the responsibility of the recipient to verify and confirm that the equipment selection and system design is correct before installation.

5. The Project Compliance will let us know if the project satisfies the specifications of Toshiba. We will be able to see the limits of the specifications, the value of our design for that specification, and hence, if that complies or not.



## Toshiba DesignAIRS- Project Compliance

---

### v44 Output Test Compliance

#### SMMSi

Rules	Specification	Design	Ok
Combined outdoor unit nominal capacity in range	48	16	✓
Height between outdoor units in range	0	5	✓
Max number of indoor units	27	8	✓
Height between indoor units in range	40	4	✓
Indoor unit below outdoor unit heights in range	50		✓
Indoor unit above outdoor unit heights in range	30		✓
PVM to indoor unit in range	0m - 0m		✓
Concentration limit exceeded	0.3	0.28545454545454545..	✓
Indoor DB (Cooling) is out of range	18°C - 32°C	27°C	✓
Indoor DB (Cooling) is out of range	15°C - 24°C	19°C	✓
Indoor RH (Cooling) is out of range	20°C - 80°C	45°C	✓
Indoor DB (Heating) is out of range	15°C - 28°C	23°C	✓
Outdoor DB (Cooling) is out of range	-5°C - 43°C	35°C	✓
Outdoor WB (Heating) is out of range	-20°C - 15.5°C	1°C	✓
Capacity ratio in range	50.0% - 135.0%	90.8%	✓
Main piping equivalent length	120	6.0	✓
Main piping real length	100	5	✓
Piping between branches equivalent length	50	6.0	✓
Total pipe length	300	65	✓
Farthest Equivalent Piping Length	195	34.8	✓
Farthest Real Piping Length	155	29	✓
Farthest Equivalent Piping Length From First Branch	65	28.8	✓
Farthest Equivalent Piping Length Between Outdoor_Units	25	0	✓
Greatest Outdoor Unit Connecting Piping Equivalent Length	10	0.0	✓

<b>Overall SMMSi</b>	✓
----------------------	---

#### Mini-SMMS

Rules	Specification	Design	Ok
Combined outdoor unit nominal capacity in range	6	6	✓
Height between outdoor units in range	0	0	✓
Max number of indoor units	9	3	✓
Height between indoor units in range	15	0	✓
Indoor unit below outdoor unit heights in range	20		✓
Indoor unit above outdoor unit heights in range	30		✓
Indoor Unit Connecting Piping	15	20	✗
PVM to indoor unit in range	2m - 10m		✓
Concentration limit exceeded	0.3	0	✓

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**Mini-SMMS**

Rules	Specification	Design	Ok
Indoor RH (Cooling) is out of range	20°C - 80°C	45°C	✓
Indoor DB (Heating) is out of range	15°C - 28°C	23°C	✓
Outdoor DB (Cooling) is out of range	-5°C - 43°C	35°C	✓
Outdoor WB (Heating) is out of range	-15°C - 15°C	1°C	✓
Capacity ratio in range	80.0% - 130.0%	100.0%	✓
Main piping equivalent length	65	9.8	✓
Main piping real length	65	8	✓
Total pipe length	180	37	✓
Farthest Equivalent Piping Length	125	39.6	✓
Farthest Real Piping Length	100	33	✓
Farthest Equivalent Piping Length From First Branch	35	30.0	✓
Farthest Equivalent Piping Length Between Outdoor_Units	0	0	✓
Greatest Outdoor Unit Connecting Piping Equivalent Length	0	0.0	✓


WARNING! The Mini-SMMS design is out of the specifications of Toshiba

<b>Overall Mini-SMMS</b>	<b>x</b>
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6. After the overall view of the Project, we go into each System particulars. First one is the System Equipment List, which is similar to the Project Equipment List but is just for one individual system.

We can see every single element that is needed for the system, the quantity and the price. Furthermore, it will also be shown the Design Temperature of the system, and the electrical characteristics of both Outdoor and Indoor.



## Toshiba Design AIRS - System Equipment List

---

### #1stSystemName Equipment List

**Outdoor Units**

Model name	Description	Quantity	Price
MMY-AP3014FT8-E	30HP SHRMI	1	£16,000.00

**Indoor Units**

Model name	Description	Quantity	Price
MMU-AP0184SH-E	2HP 1 Way Cassette	1	£2,000.00
MMU-AP0054MH-E	0.6HP Compact 4 Way Cassette	1	£1,250.00
MMD-AP0964H-E	10HP High Static Pressure Duct	3	£15,000.00
MMU-AP0092H-E	1.0HP 4 Way Cassette	1	£1,250.00
MML-AP0074H-E	0.8HP Standard Floor Cabinet	1	£1,000.00
MMK-AP0073H-E	0.8HP High Wall	1	£1,500.00

**Y joints**

Model name	Description	Quantity	Price
RBM-BY55E	Two Y joint kit	2	£60.00
RBM-BY205E	Two Y joint kit	1	£40.00
RBM-BY305FE	Two Y joint kit	2	£250.00
RBM-BT24FE	Y Joint	1	
RBM-BT14FE	Y Joint	1	

**Accessories**

Model name	Description	Quantity	Price
RBC-AMS51E-EN	Multi Language wired Remote Controller	2	£400.00
RBM-Y1802FE	Flow Selector	1	£300.00
RBM-Y1122FE	Flow Selector	1	£300.00
RBM-PMV0902E	PMV Kit	1	£300.00

**Piping Length**

Pipe diameter	Suction Gas (m)	Discharge Gas (m)	Liquid (m)	Total Length (m)	Price
6.4mm	0	0	21.5	21.5	£200.00
9.5mm	18.5	0	15	33.5	£250.00
12.7mm	3	5	16	24	£160.00
15.9mm	15	0	0	15	£210.00
19.1mm	0	0	8	8	£0.00
22.2mm	16	3	22	41	£10.00
28.6mm	8	22	0	30	£80.00
34.9mm	22	0	0	22	£80.00

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**Refrigerant Charge Amount**

Refrigerant (R410A)	Description	Amount (kg)	Price
Outdoor	Refrigerant amount charged in factory	22	£0.00
Additional refrigerant	Amount needed for the pipes at the site	8.5375	£50.00
<b>TOTAL #1stSystemName</b>			<b>£40,310.00</b>

**Outdoor Design Temperature**

Mode	Description	Temperature
Cooling	Dry Bulb Temperature	35°C
Heating	Web Bulb Temperature	0°C

**Electric information (Outdoor Units)**

Property	Description	Value
MOCP (A)	Maximum Overcurrent Protection	50
MCA (A)	Minimum Circuit Amps	36.5
Protection Device size (A)		*
Wire (cable size) (mm <sup>2</sup> or AWG(#))		*


**Electric information (Indoor Units)**

Property	Description	Value
Total MCA (A)		5.47
Protection Device size (A)		*
Wire (cable size) (mm <sup>2</sup> or AWG(#))		*

\* Manually filled by user

7. System Details will let us know the specific capacity information of Outdoor and Indoor units. In case of the Outdoor, we will see the Rated and Corrected capacities for Cooling and Heating and the Diversity of the system. And, in case of the Indoor, we will see the general Capacity Code and Fan speed, and specific Rated, Corrected and Required capacities for Cooling and Heating.

If rooms and floors have been defined there will be information tables related to them as well.



## Toshiba Design AIRS - System Details

### #1stSystemName Details

**Outdoor Unit Models**

Model Name	Header	Follower 1	Follower 2	Follower 3
MMY-AP3014FT8-E	MMY-	MAP1004FT8	MAP1004FT8	MAP1004FT8

**Outdoor Unit**

Model Name	Unit Name	Cooling (kW)		Heating (kW)		System Diversity
		Rated	Corrected	Rated	Corrected	
MMY-AP3014FT8-E	Outdoor System 1	85	77.64	95	73.54	117%

**Indoor Units**

Model Name	Unit Name & Room	Capacity Code	Fan Speed	Mode	Capacity (Total/ Sensible) [kW]		
					Rated	Corrected	Required
MMU-AP0184SH	Indoor 1 Office	2HP	High	Cooling	5.6 / 4.9	4.7 / 4.5	4.00 / 2.90
				Heating	6.3	4.25	
MMU-AP0054MH	Indoor 2 Office	0.6HP	High	Cooling	1.7 / 1.3	1.40 / 1.18	0.90 / 0.90
				Heating	1.9	1.28	
MMD-AP0964H	Indoor 3 Office	10.0HP	High	Cooling	28.0 / 21.0	22.44 / 16.08	17.00 / 15.00
				Heating	31.5	21	
MMU-AP0092H	Indoor 4 Toilet	1HP	High	Cooling	2.8 / 2.1	2.20 / 1.82	
				Heating	3.2	2.12	
MML-AP0074H	Indoor 5 Toilet	0.8HP	High	Cooling	2.2 / 1.4	1.71 / 1.20	
				Heating	2.5	1.65	
MMK-AP0073H	Indoor 6 Toilet	0.8HP	High	Cooling	2.2 / 1.7	1.71 / 1.45	
				Heating	2.5	1.65	
MMD-AP0964H	Indoor 7 Office	10.0HP	High	Cooling	28.0 / 18.3	21.83 / 15.72	17.00 / 12.00
				Heating	31.5	20.83	20
MMD-AP0964H	Indoor 8 Office	10.0HP	High	Cooling	28.0 / 18.3	21.67 / 15.60	17.00 / 12.00
				Heating	31.5	20.77	20

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**Floor Information**

Floors	Room Name	Indoor Units			Mode	Design Conditions		
		Name	Model			DB [°C]	WB [°C]	RH [%]
Ground Floor	Main Office	Indoor 1	MMU-AP0184SH		Cooling	24	17	45
		Indoor 2	MMD-AP0054MH		Heating	23		
		Indoor 3	MMD-AP0964H					
		Indoor 4	MMD-AP0964H					
First Floor	Toilet 1	Indoor 5	MMU-AP0092H		Cooling	24	17	45
		Indoor 6	MML-AP0074H		Heating	23		
	Office 1	Indoor 7	MMU-AP0184SH		Cooling	24	17	45
		Indoor 8	MMD-AP0054MH		Heating	23		
		Indoor 9	MMD-AP0964H					
		Indoor 10	MMD-AP0964H					

**Room Information**

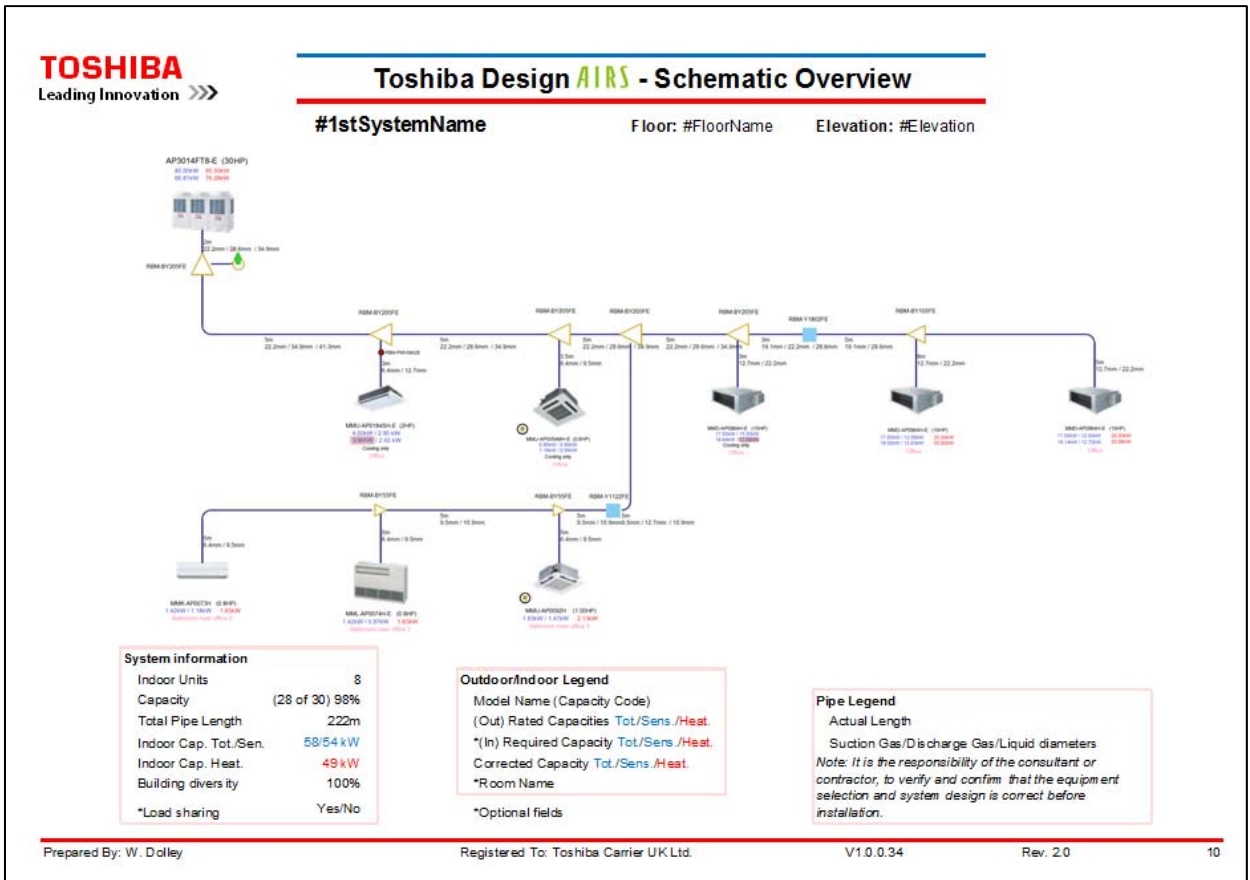
Room Name	Dimensions		Refrigerant Concentration	Rule of Thumb	Mode	Capacity (Total/Sensible)			
	Area [m <sup>2</sup> ]	Volume [m <sup>3</sup> ]				Limit Check	Applied? [W/m <sup>2</sup> ]	Total [kW]	Required [kW]
Main Office	100	300	0.3 kg/m <sup>3</sup>	✓	Yes	120	Cooling	50.37 / 37.48	38.9 / 30.8
							Heating	47.36	40
Toilet 1	25	75	0.4 kg/m <sup>3</sup>	×	Yes	120	Cooling	5.40 / 3.98	5.25 / 3.5
							Heating	4.5	4
Office 1	100	300	0.2 kg/m <sup>3</sup>	✓	No		Cooling	4.7 / 4.5	
							Heating	4.25	



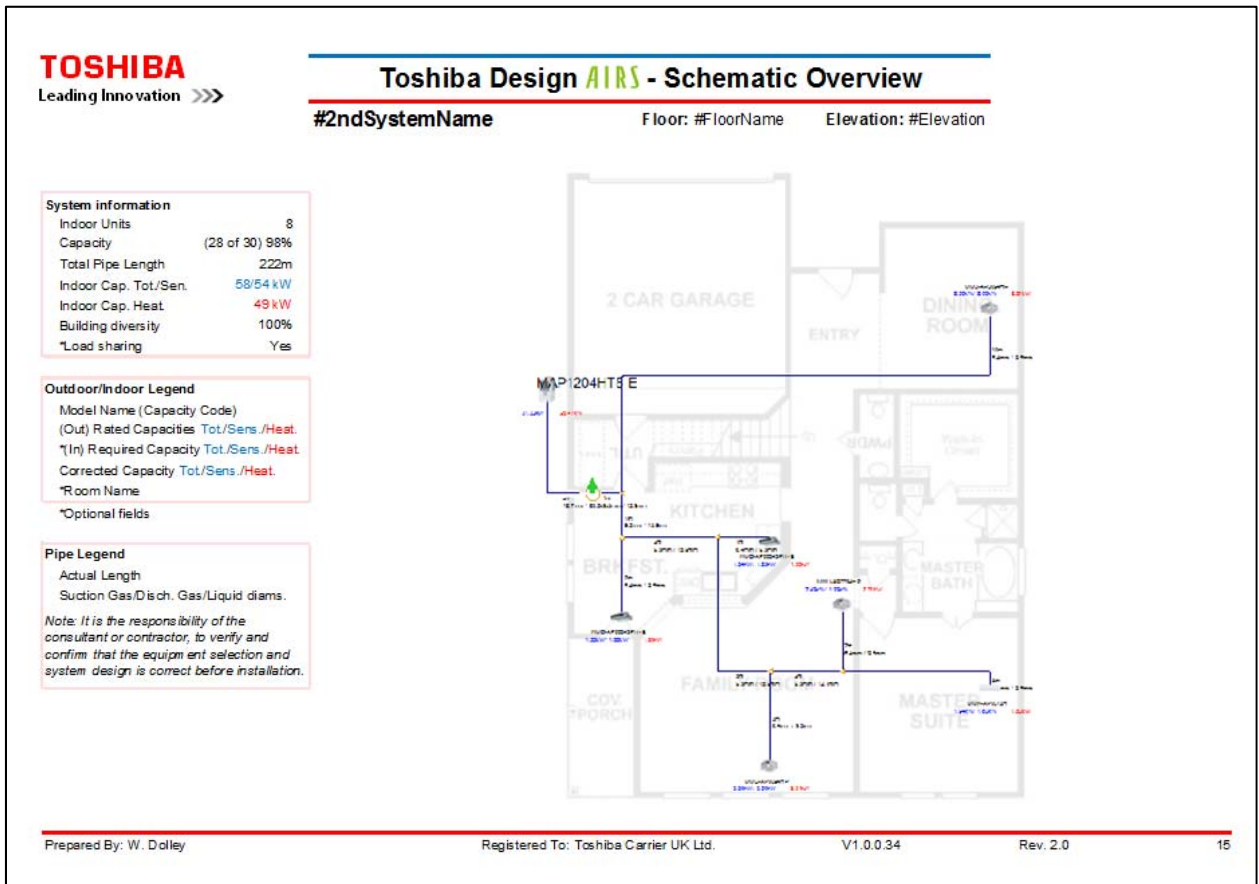
8. Schematic Overview of the system, where we can see the design of the system.

In case the design is very big, we will have the option to print out a Single Page Schematic Overview for a general overview, and another zoomed in view, in order to be able to read the information of the design.

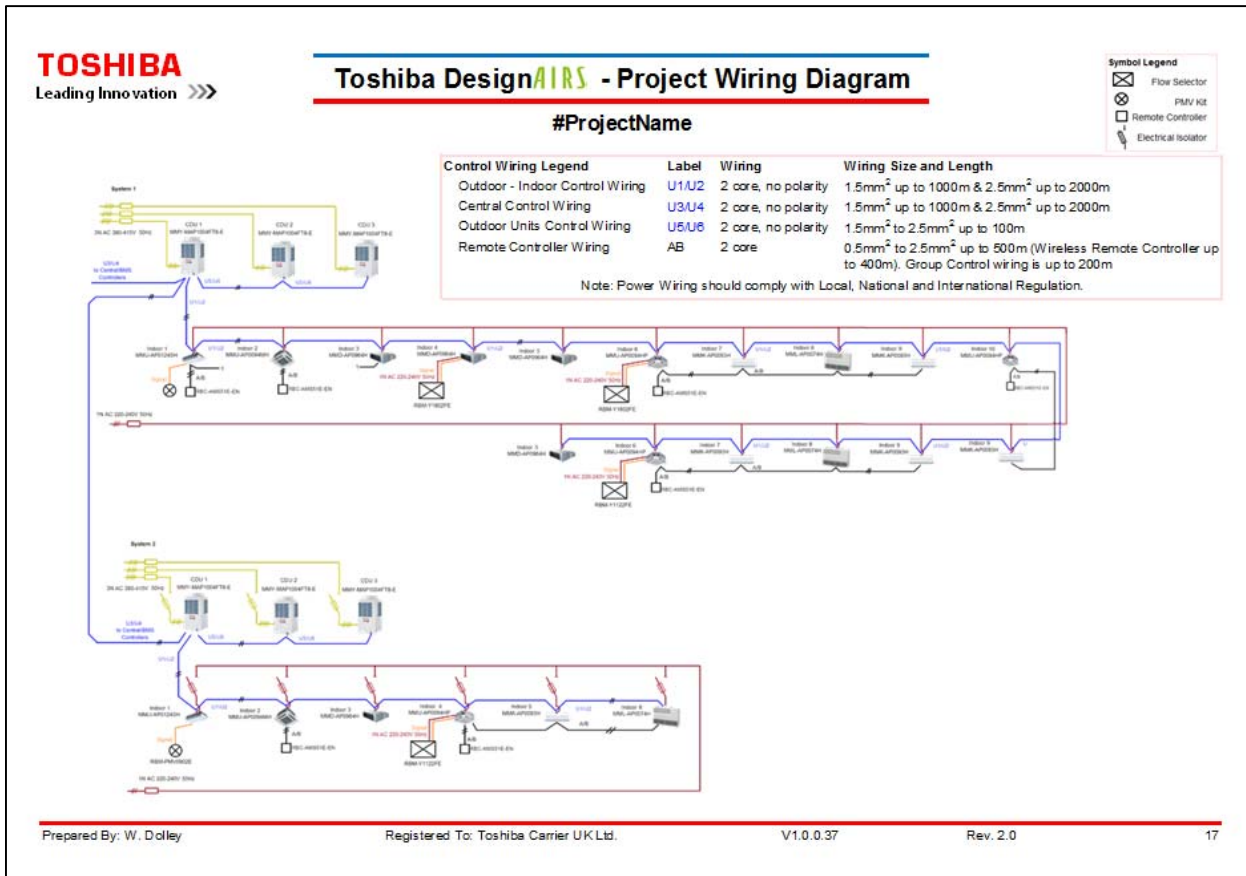
If the design has multiple floors, the name of each floor and its elevation will also be shown under the title.



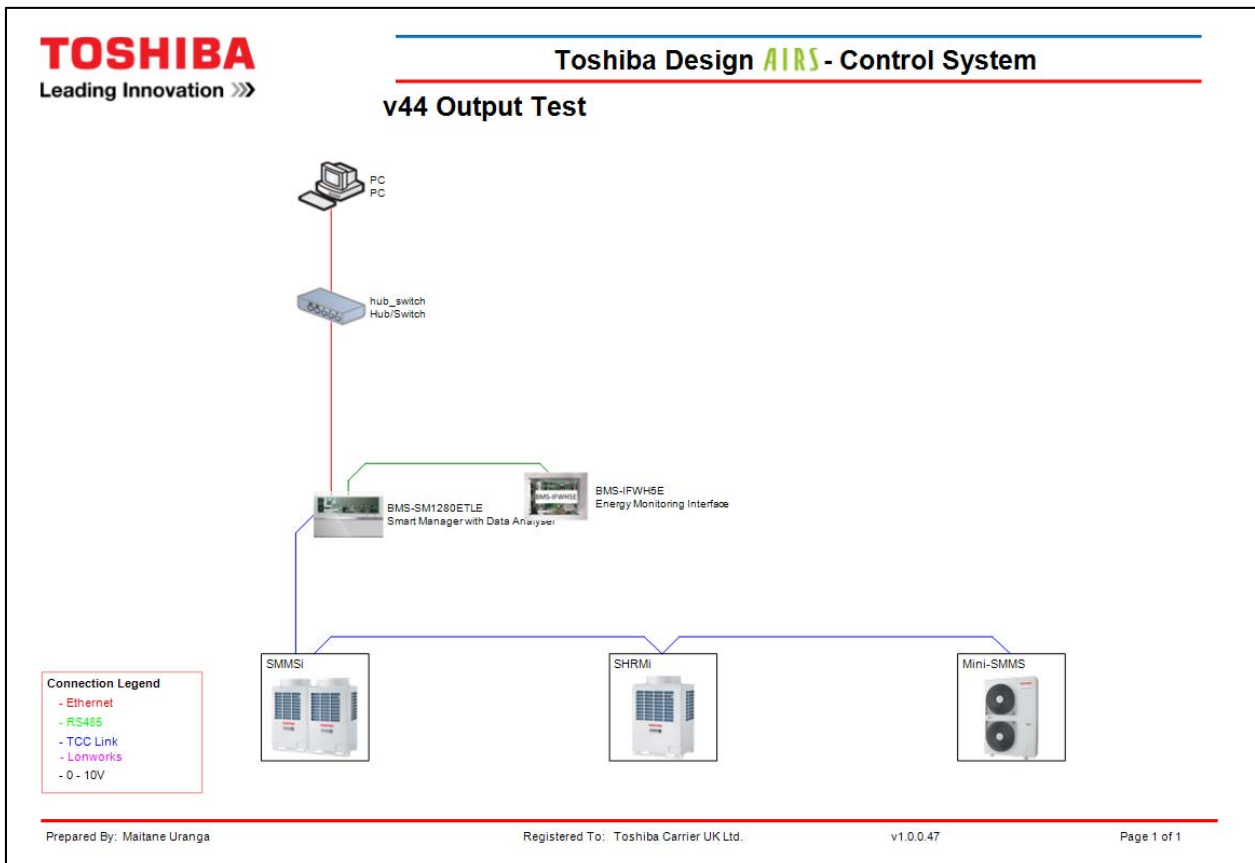
This is the Schematic Overview of a design with background image.



9. The Wiring Diagram shows two wiring systems, the control wiring (TCC Link) and the electrical wiring (specifying the power supplies of Indoor and Outdoor) of all the systems of the project. Besides, Optional Elements of Protection such as local isolators or over-current protectors can be included in this representation.



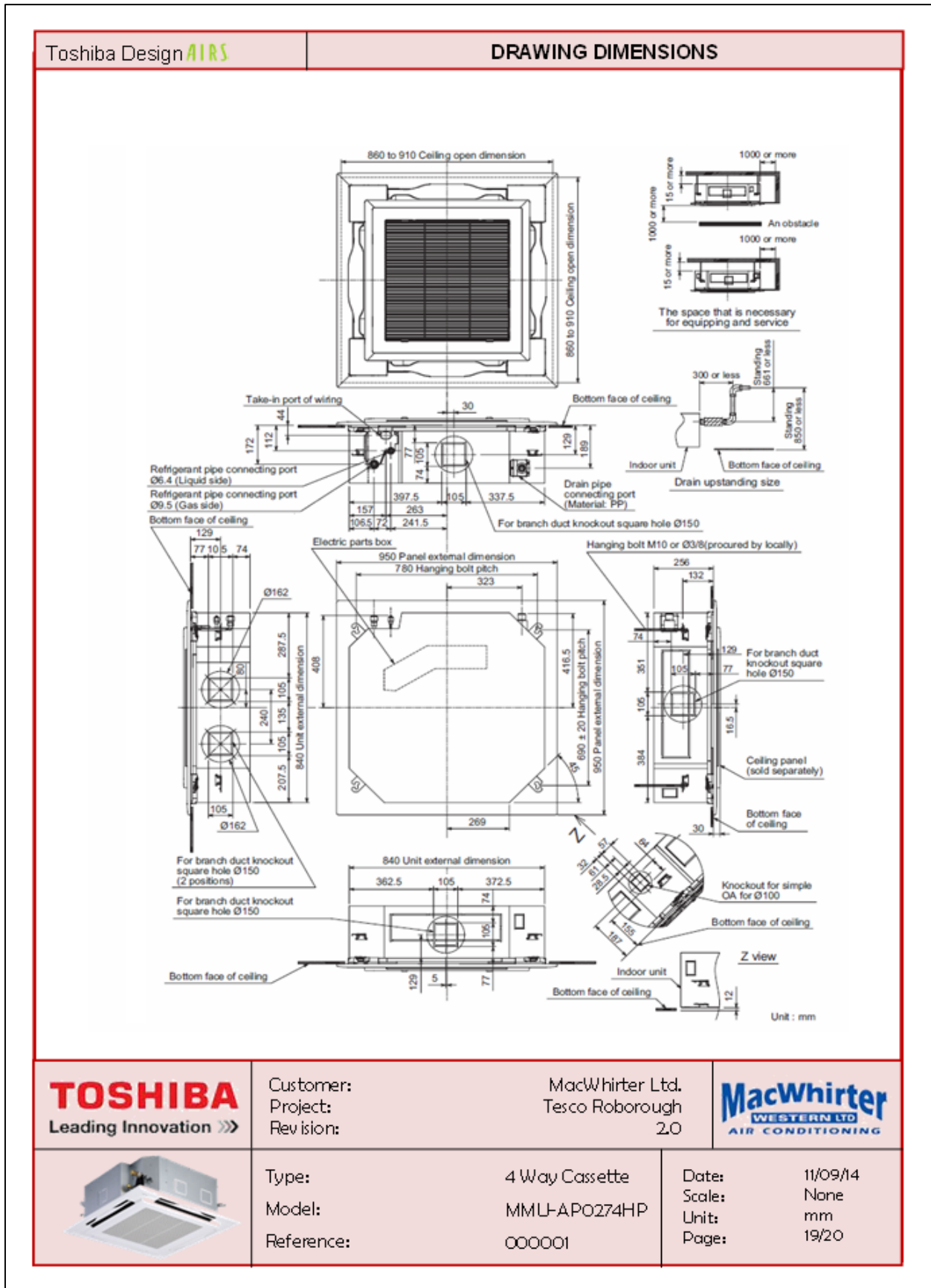
10. Central Control Overview will show us the Central Control Devices connected to each system of the project:



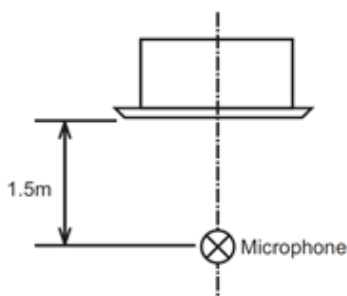
11. Finally, we can add Sales Data of the Outdoor and Indoor units included in the project.

These Sales Data will be: Specification, Dimension, Centre of Gravity, Wiring Diagram, Electrical Characteristics, Fan Characteristics, Air throw distance, Sound NC Curve, Part Load Performance, Accessories and Accessories Design Guide.

We will be able to select which sales data and the unit type that are used within the design to be added into the report.

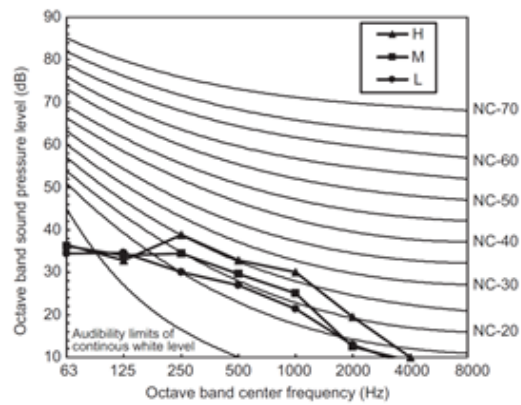


**Sound pressure spectrum**



**MMU-AP0244HP-E, AP0274HP-E**

Sound pressure level(dB)(A)	H-M-L
	35-31-28



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Customer:  
Project:  
Revision:

MacWhirter Ltd.  
Tesco Roborough  
2.0

**MacWhirter**  
WESTERN LTD  
AIR CONDITIONING

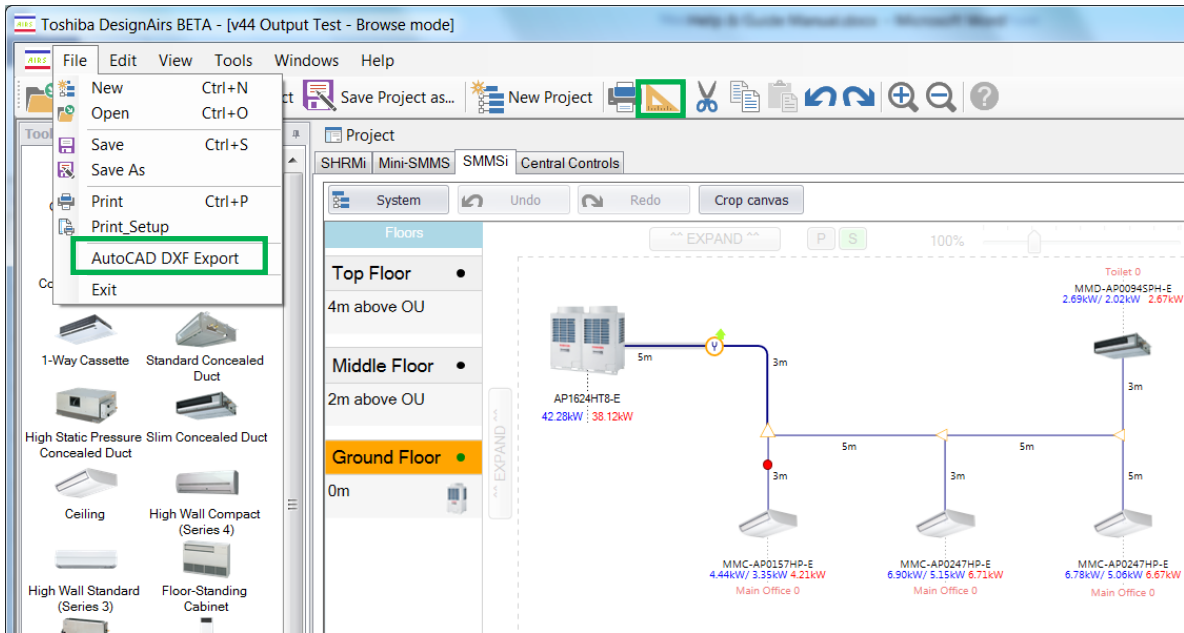


Type: 4 Way Cassette  
Model: MML-AP0274HP  
Reference: 000001

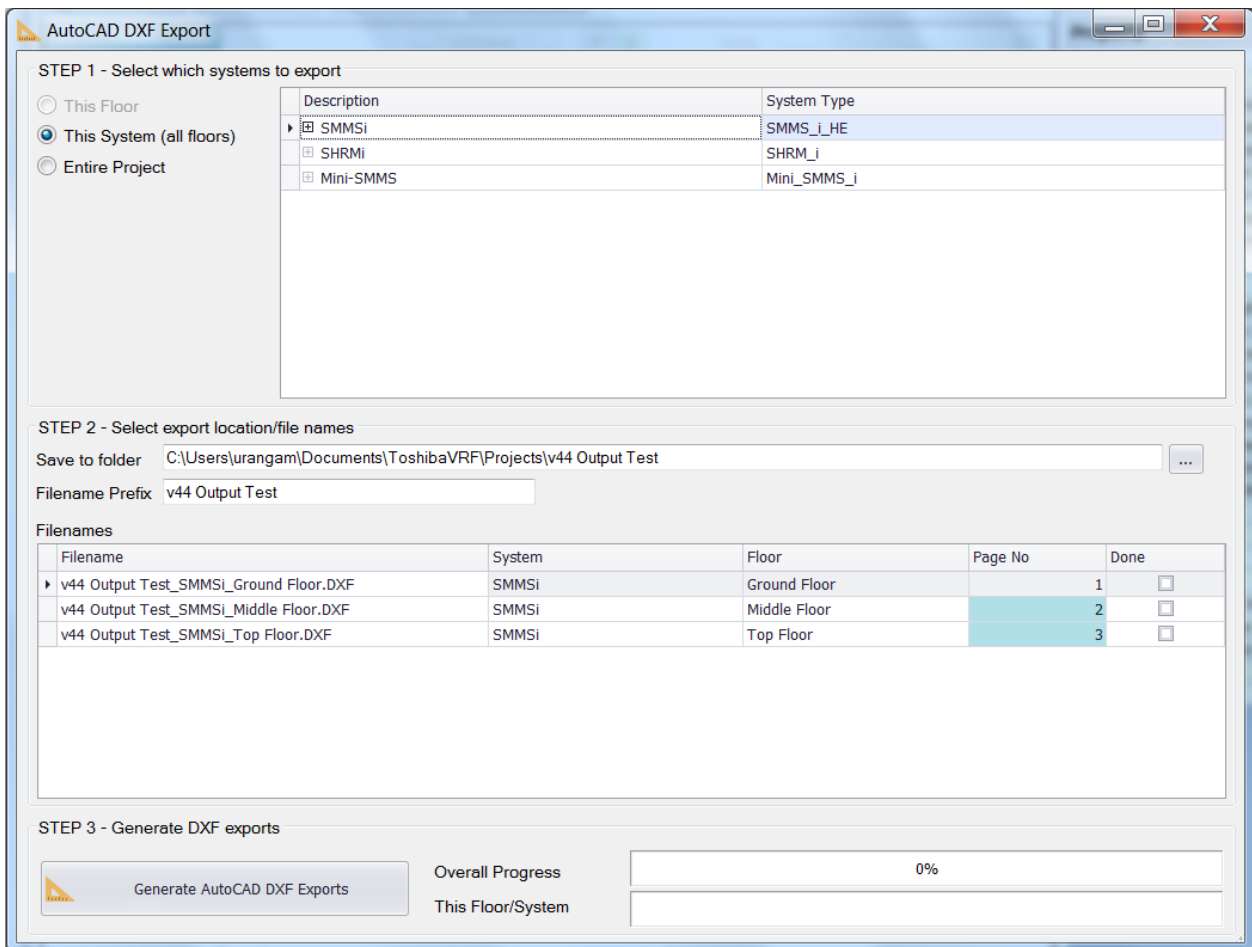
Date: 11/09/14  
Scale: None  
Unit: mm  
Page: 20/20

## 8.2. DXF Output

DXF Output can be generated selecting “AutoCAD DXF Export” under File, or directly from the toolbar:



Selecting any of the previous options, the DXF Export window will pop up, where we will be able to select if we want to print out the entire project or one particular system, where we want the output to be saved and its name, and even the page number that we want to set to each document:



Once that the settings are the desired ones, pressing “Generate AutoCAD DXF Exports” button at the bottom-left hand side of the window the output will be generated

AutoCAD view and print preview are shown in the next examples for a multi-floor SMMSi system and a SHRMi system:

