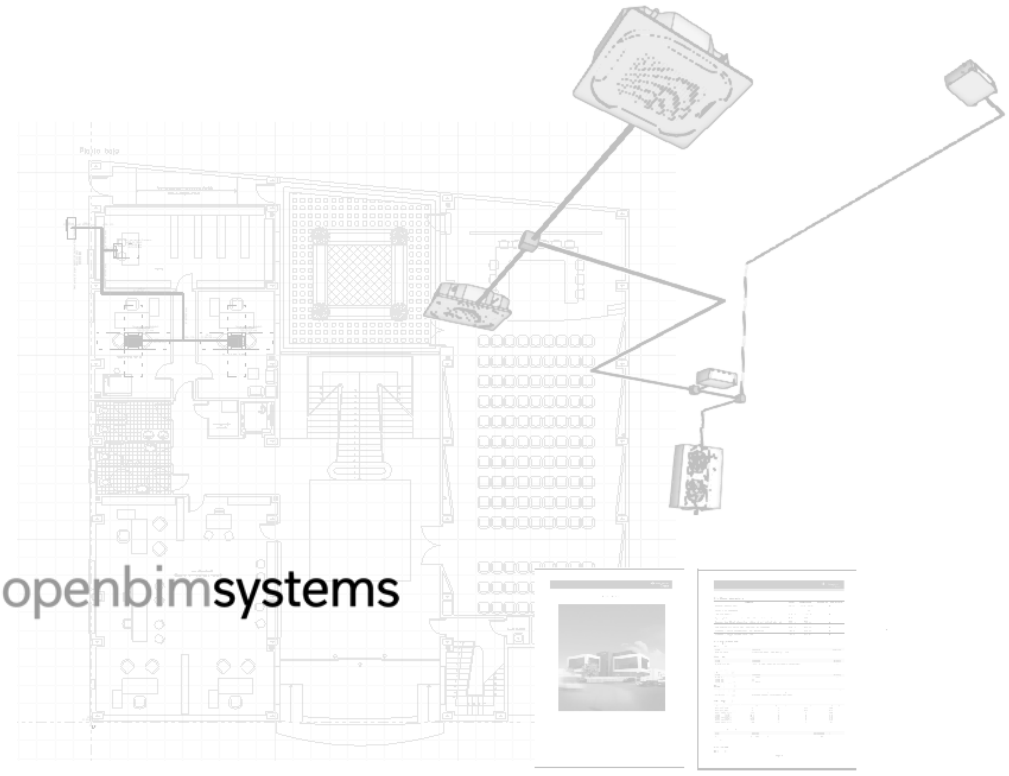
Frigicoll

Open BIM **Kaysun**

User's Manual

How to create a project step by step



openbimsystems

Contents

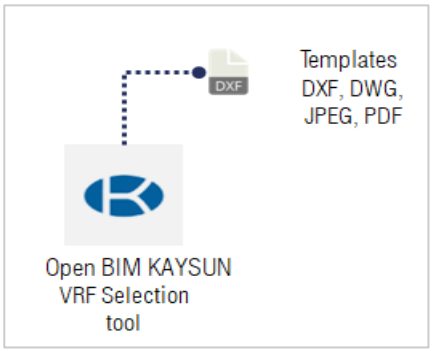
1 BIM introduction

1.1 Aim

The aim of this document is to explain how to use Open BIM Kaysun step by step.

Open BIM Kaysun is a selection tool which designs variable refrigerant flow (VRF) systems. To do this, users position the units and connect them with pipes. The program checks that the line lengths, maximum connected capacities, component selection and piping diagrams are within the system requirements.

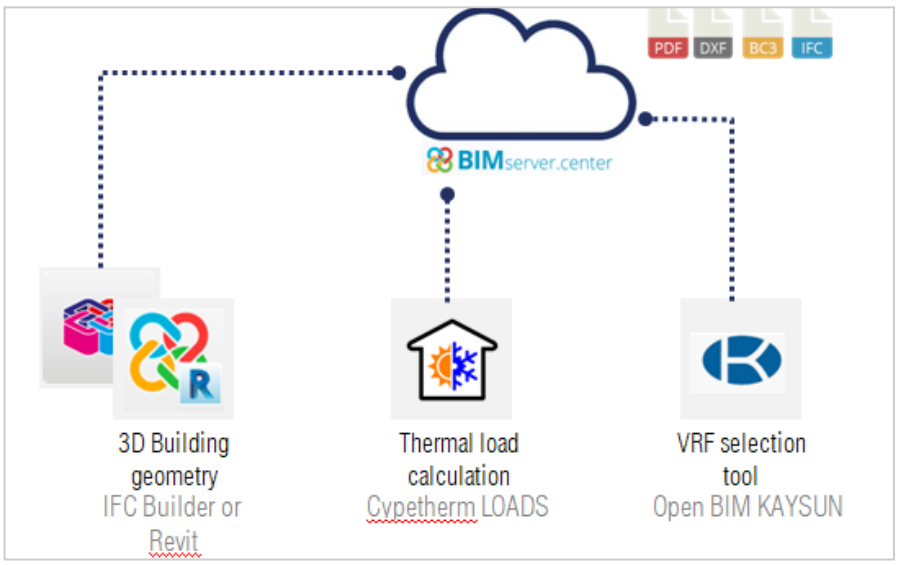
The program is integrated into the Open BIM workflow, which allows users to import models from projects stored on the BIMserver.center platform and to become part of the collaborative, multidisciplinary and multi-user workflow provided by Open BIM technology.



This guide has 2 parts:

1. **PART 1. In isolation with CAD templates.** A guide on how to import a template and design a VRF system.

2. **PART 2. BIM workflow.** A step-by-step guide on how to create building geometry, calculate thermal loads, and design a VRF system.

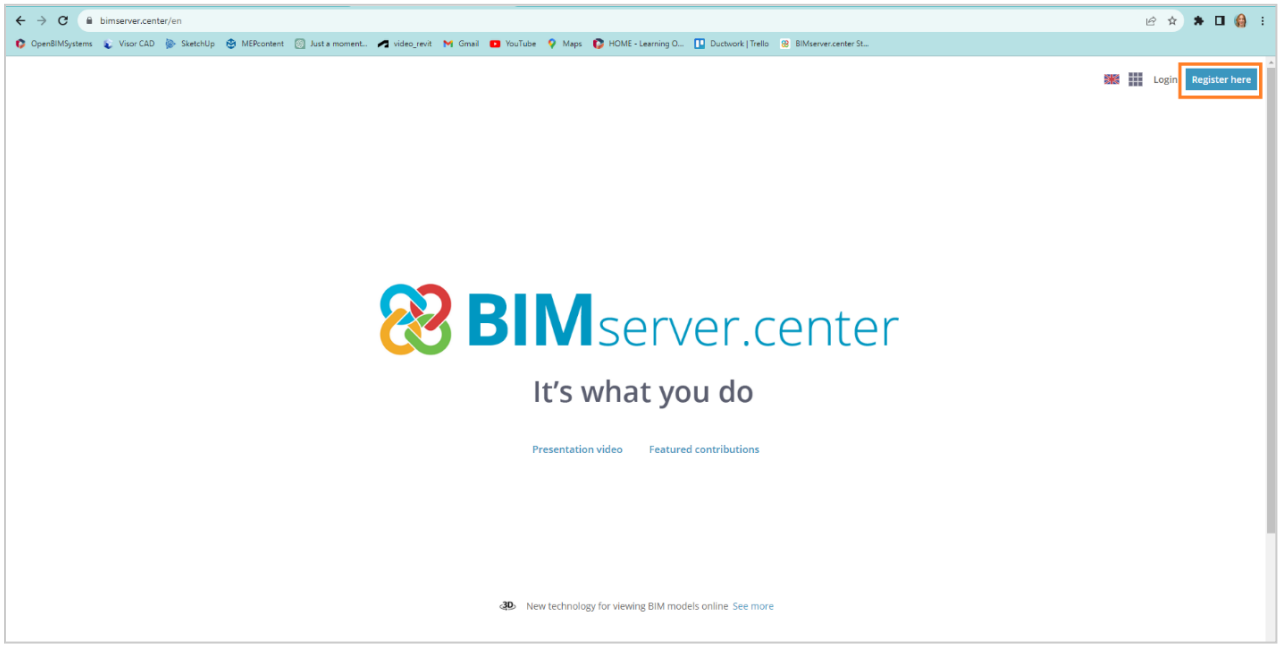


1.2 Material

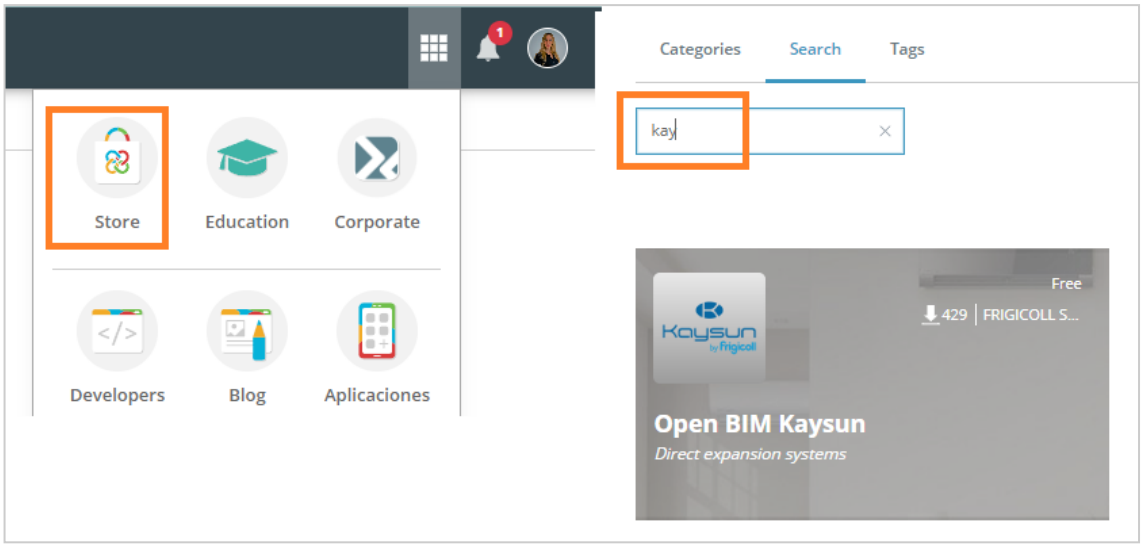
In order to use the program, users will need a computer, access to the internet, and a mouse.

1.3 BIMserver.center

In order to use the platform, download the program and store the projects, users must create an account.



1.4 Installing the program

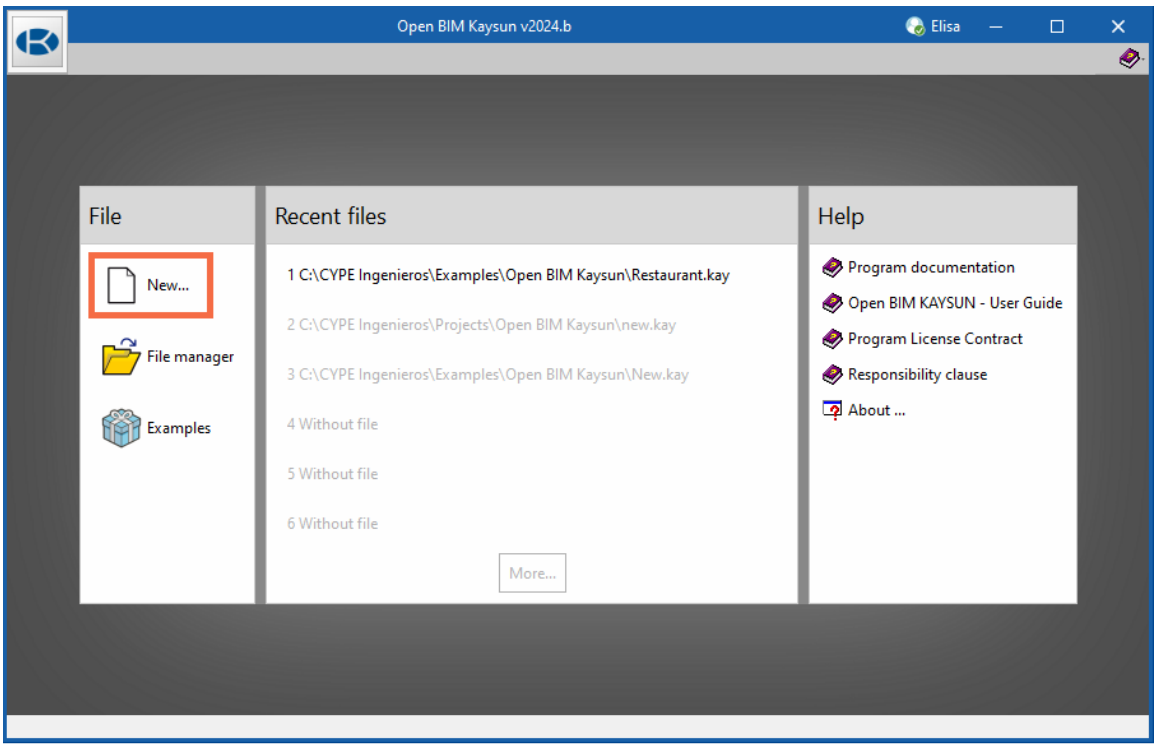


Go to the store and download **Open BIM Kaysun**.

Once the program has been installed, an icon will appear on the desktop.

2 PART 1. In isolation with CAD templates

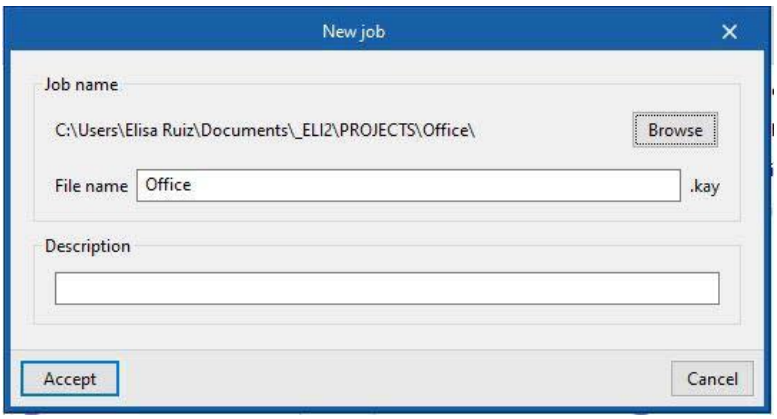
2.1 New file



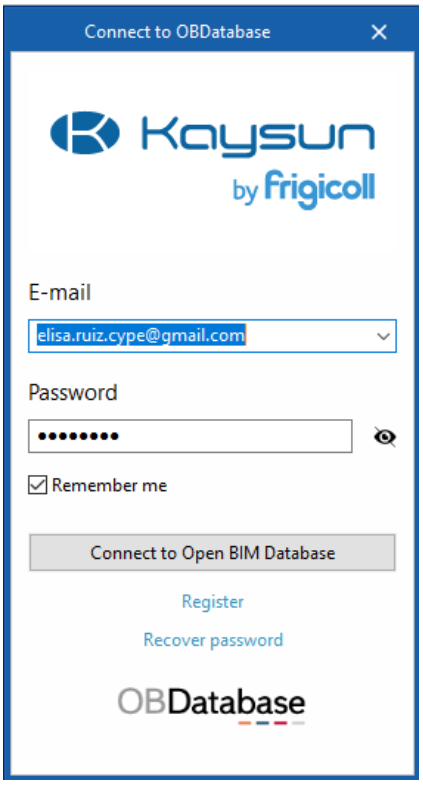
New...

Save the file to your computer. It is best practice to keep the entire project in one folder, which will have the same name as the project.

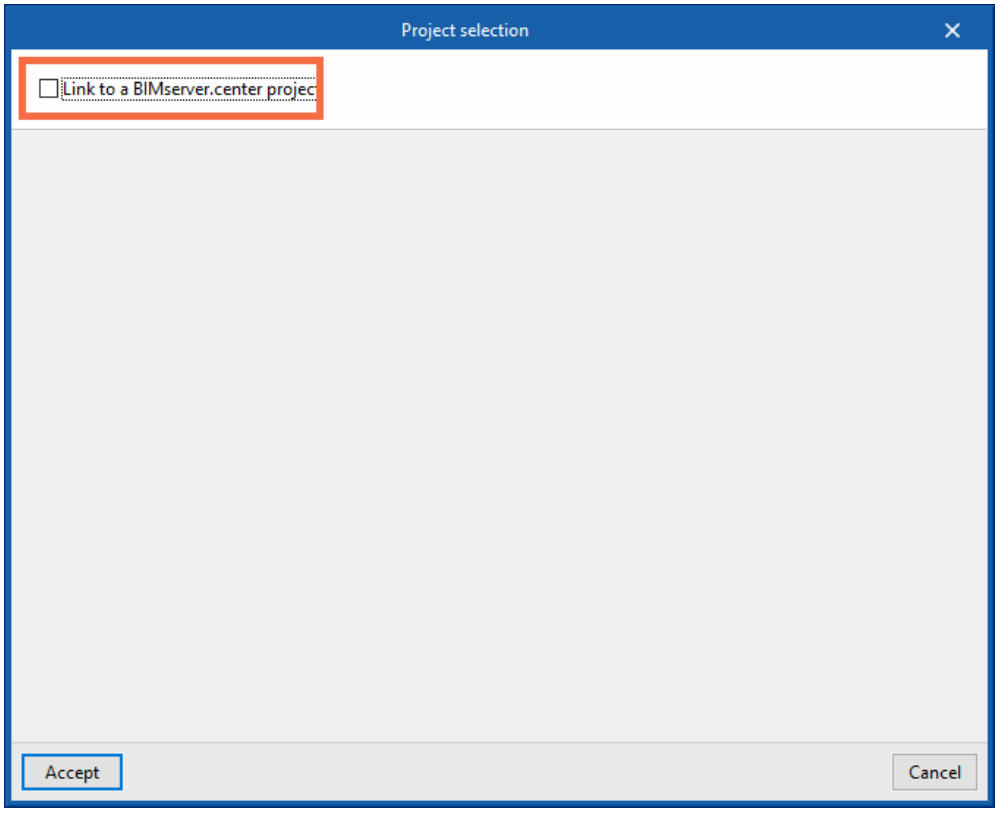
This file will never be shared.



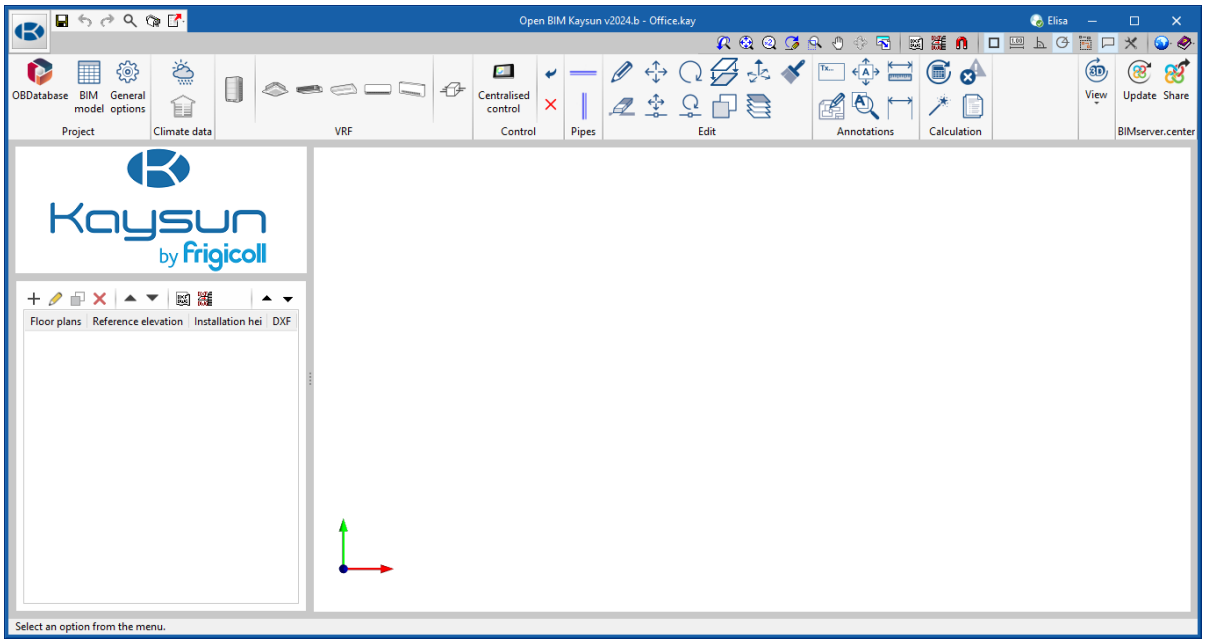
Database



As there is no BIM project to select, uncheck the box.

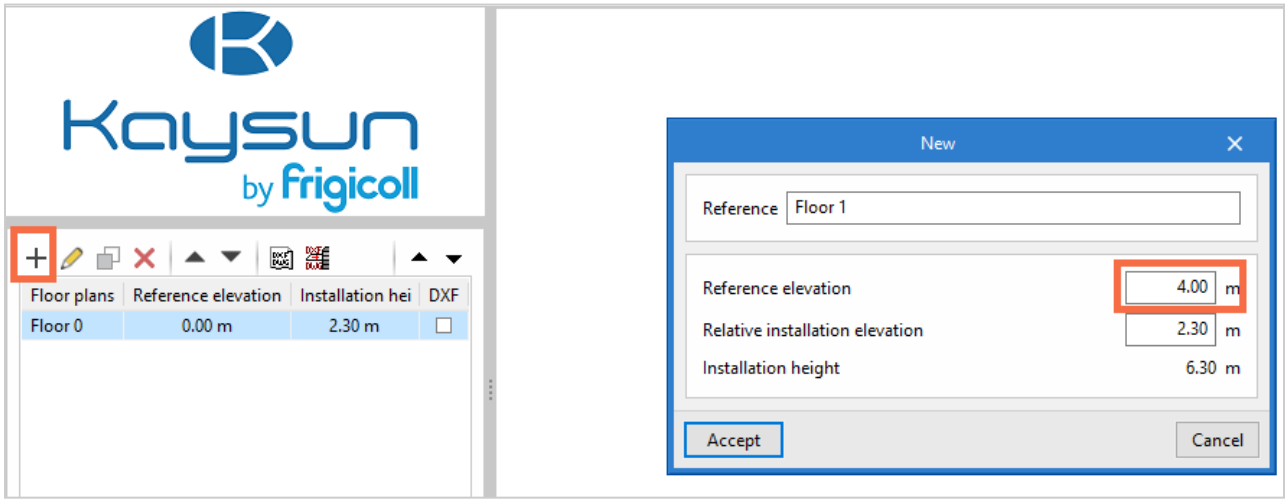


Interface



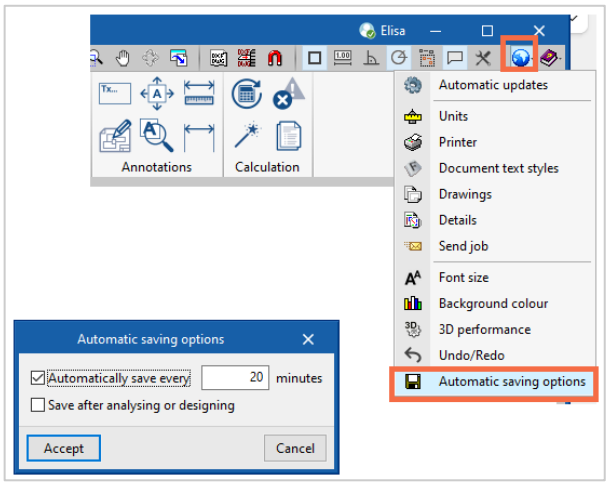
2.2 Floor plans

Create 2 levels.



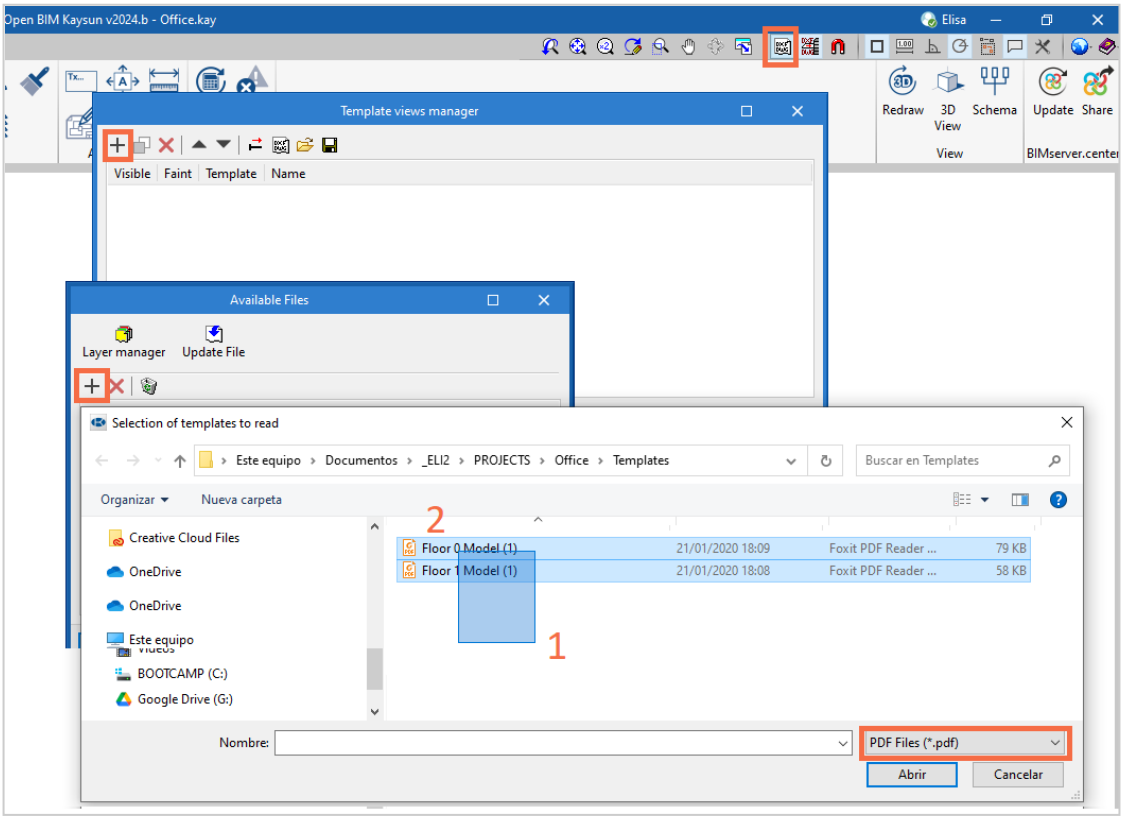
Autosave

Configure the autosave as shown in the image.

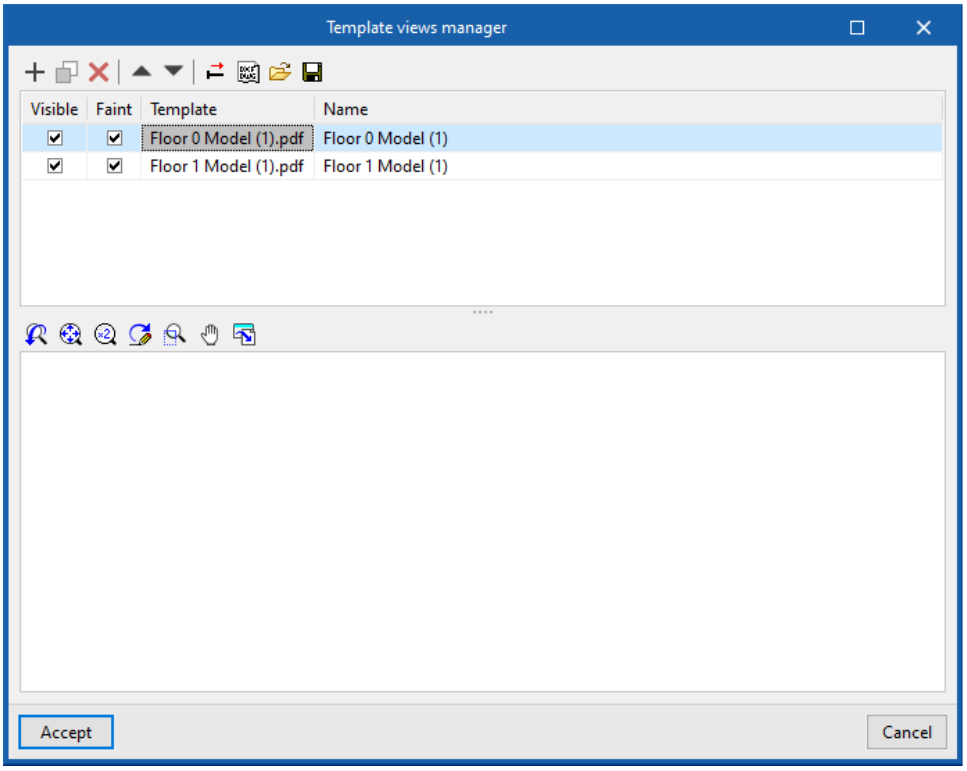


2.3 Templates (CAD, image, PDF)

Import templates saved on the computer. You can find example templates on the second last and third last page of this manual. Save this PDF manual in the project folder with the name *"Template – FLOOR0"* and "*Template – FLOOR 1*", and then import it as a template as follows:

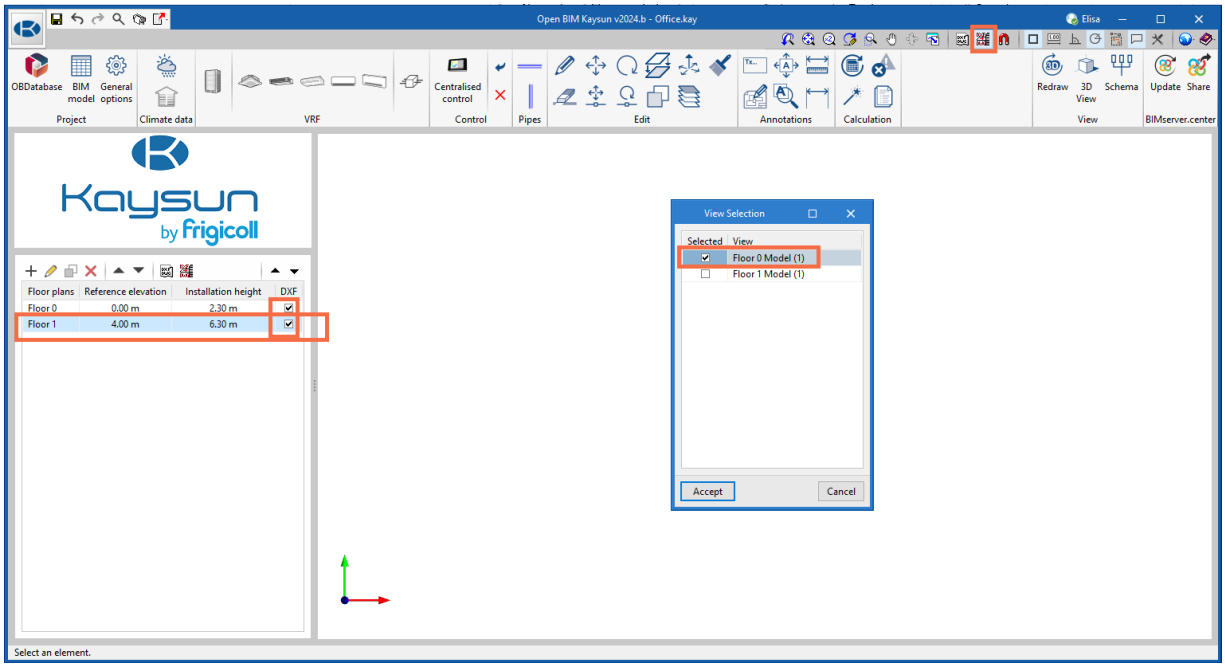


Now the templates have been loaded into the project.

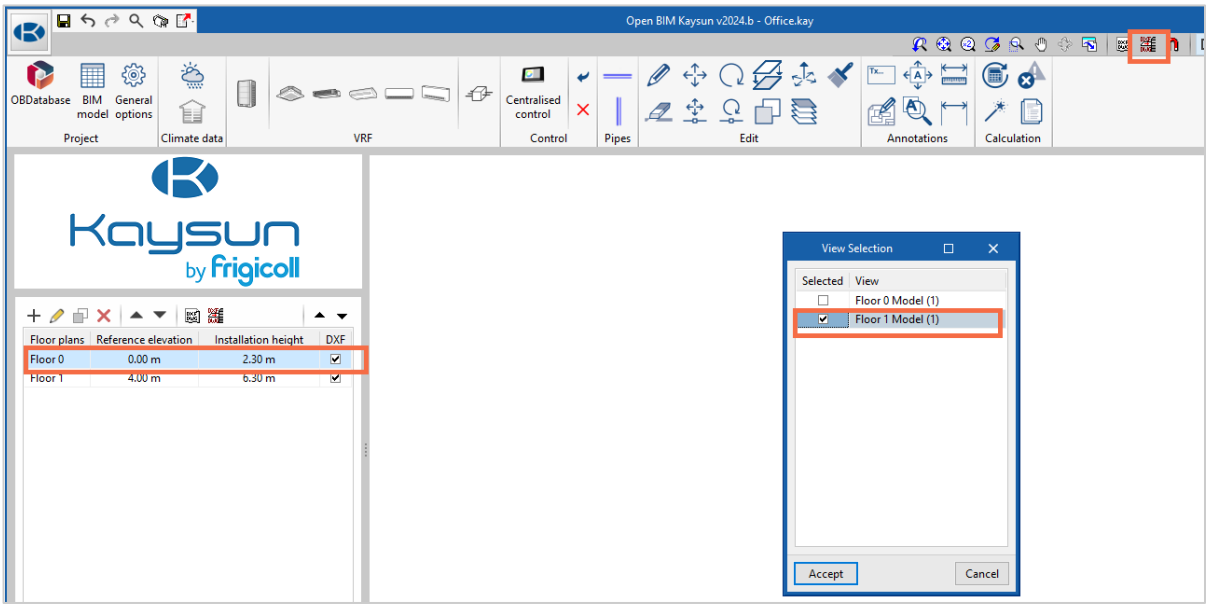


Choose which template will be visible on each floor:

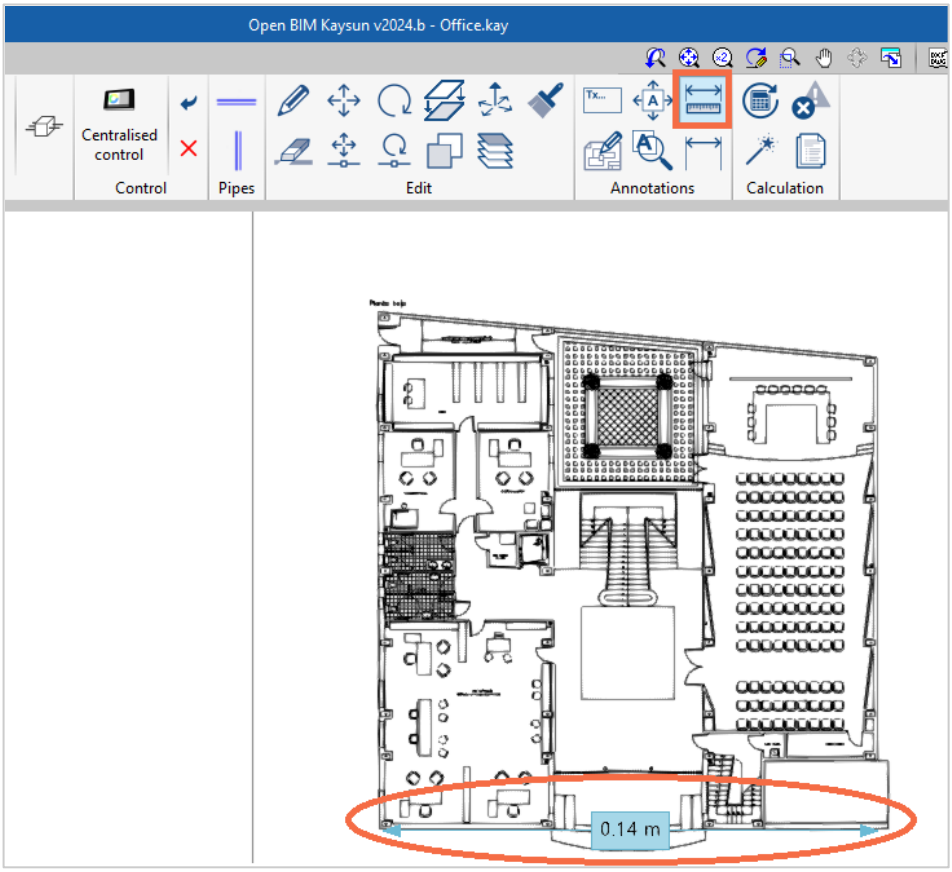
- On floor 0, select the template *Floor 0*.



- On floor 1, select the template *Floor 1*.

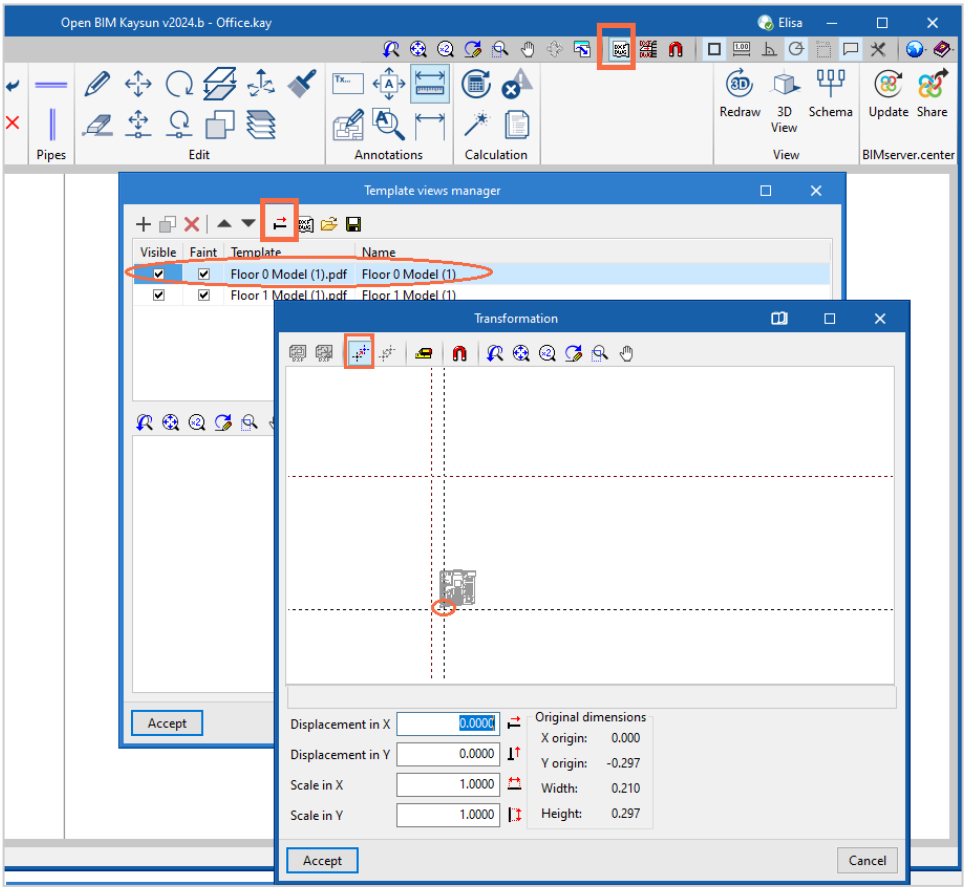


This PDF template is DIN A4 size. In general, PDF drawings usually have DIN A0, A1, A2, A3 or ANSI A, B, C; D or E dimensions. Measure the template to find out its size.

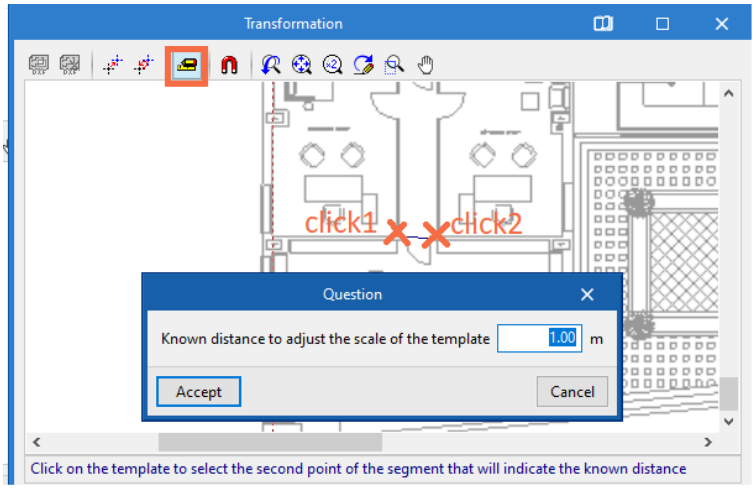


To modify the scale, select the **Template** button again.

> ***Best practice**: place the origin of the coordinates at a known point. Do this in each template.*

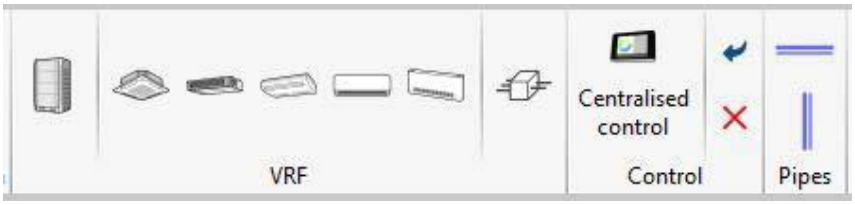


The scale can be modified in the *Scale in X and Y* cells. If the scale is unknown, it can be entered as a known dimension, such as a door.

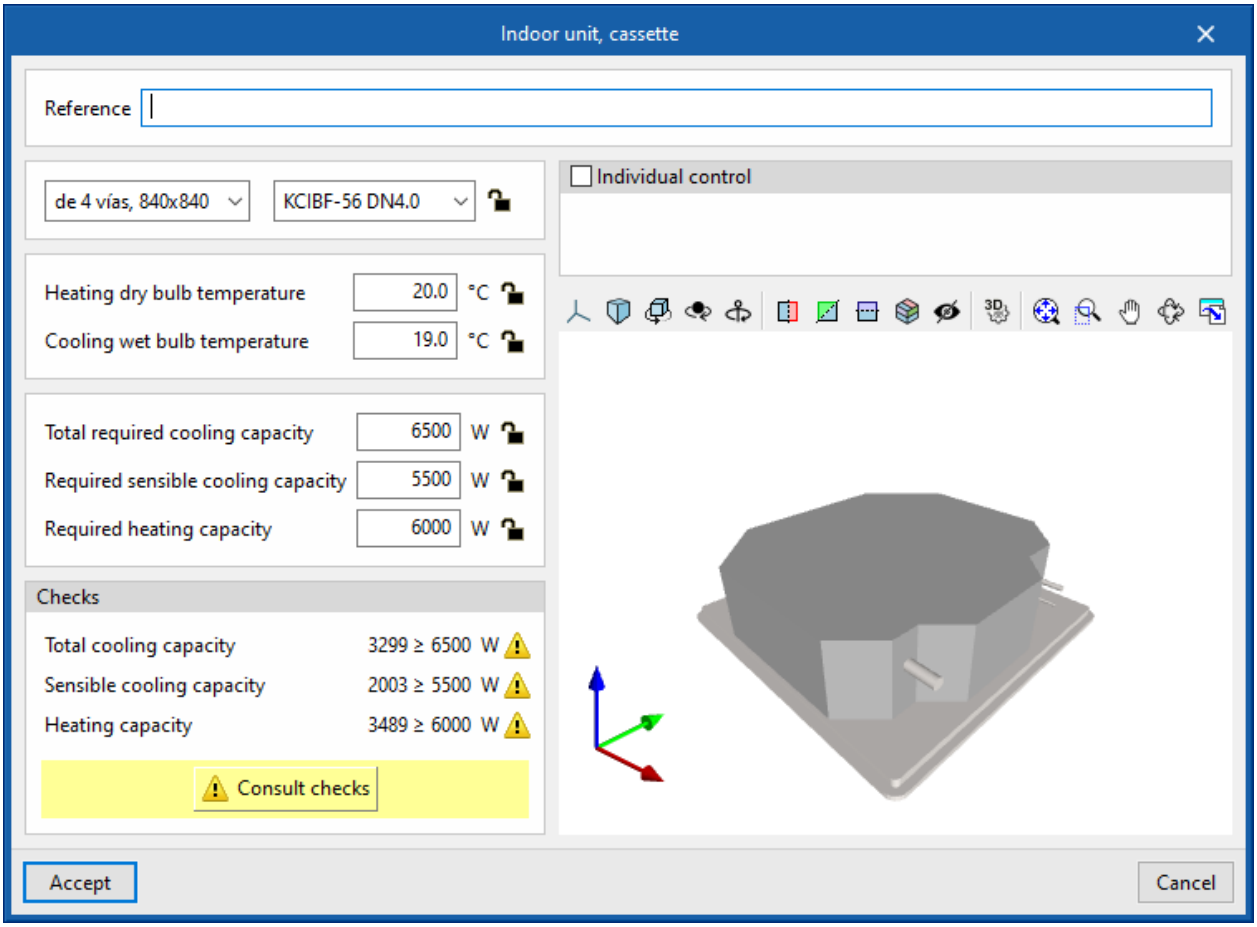


2.4 Indoor/outdoor units

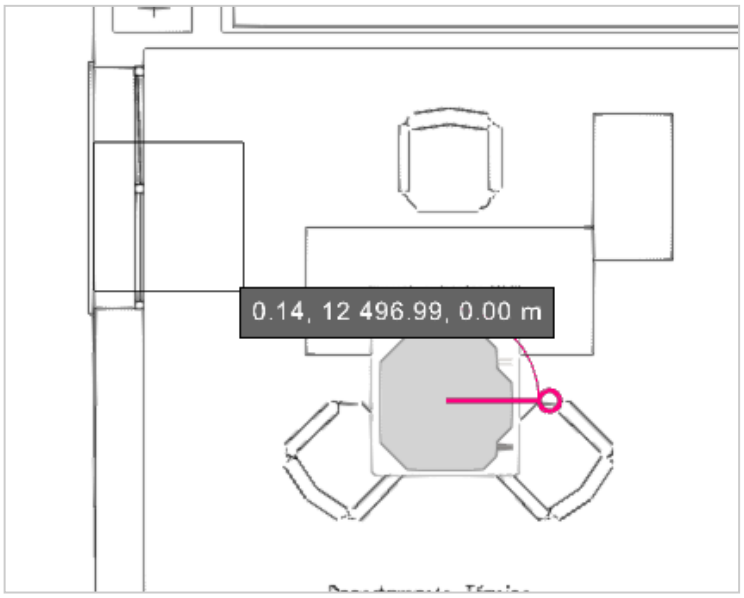
Indoor and outdoor units



In the VRF section, you will see padlocks next to the cells. When a cell has a padlock, it means that the data will be selected by the program. As the program is being used alone, without any imported BIM models, the thermal loads and design conditions data needs to be entered. If you were working on a BIM project with spaces, this data would be overwritten after the analysis if the padlocks were left unlocked, but this is not applicable in this case.

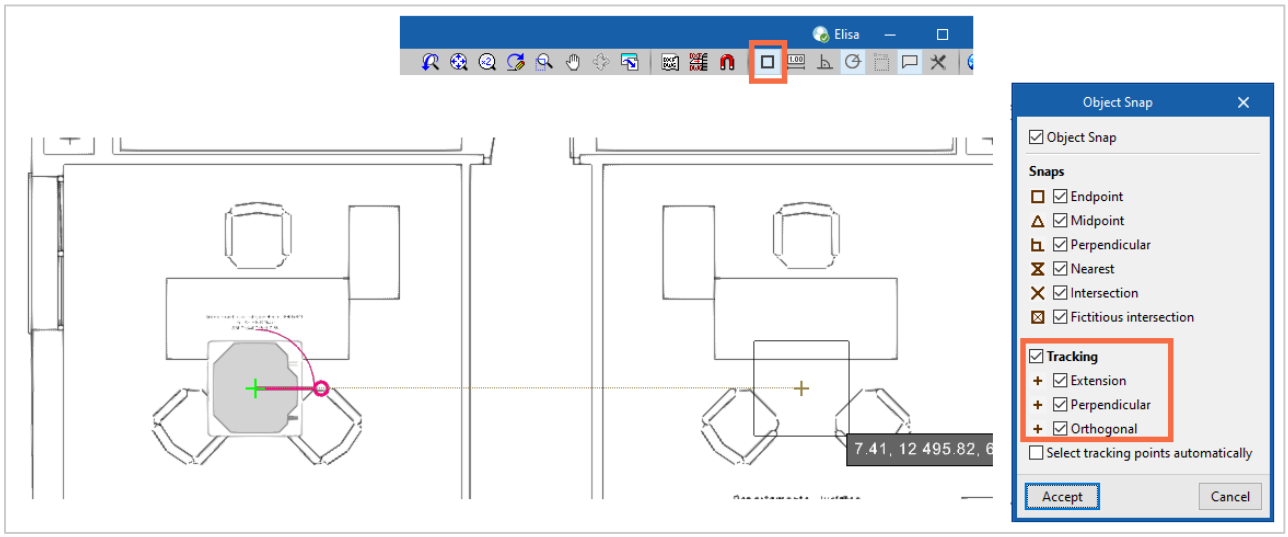


Place the unit in the plan.

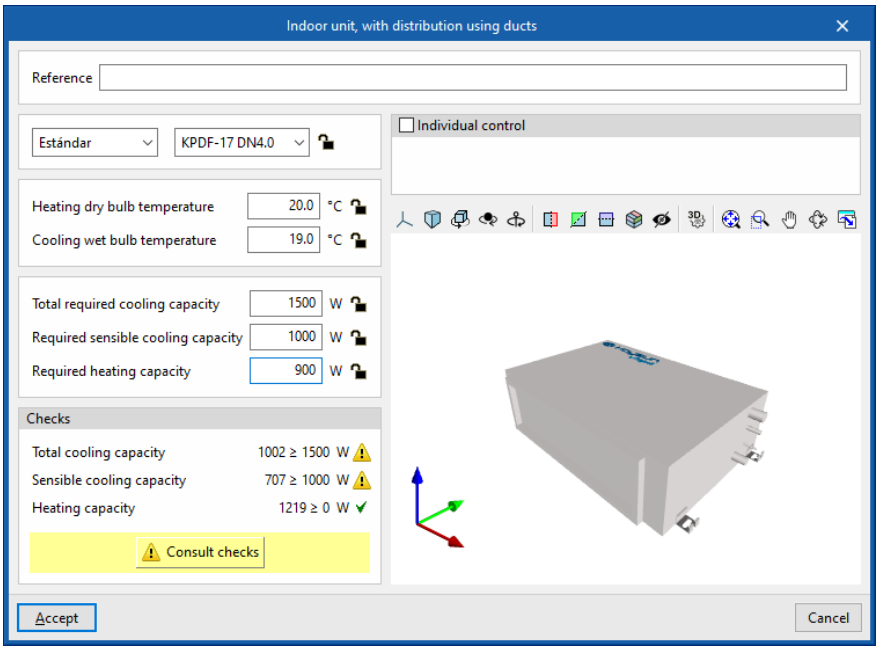


2.5 Accurate drawing

Activate the tracking tools in order to draw accurately. When placing the second unit, you will see that a tracking line appears on the screen.

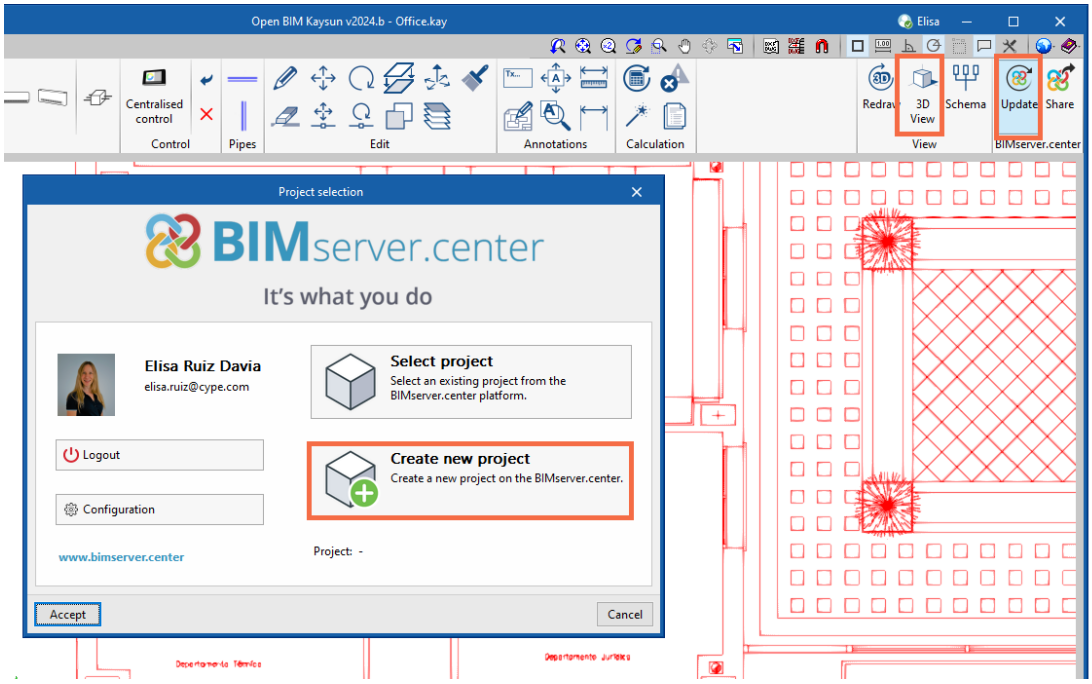


Placing a duct unit.



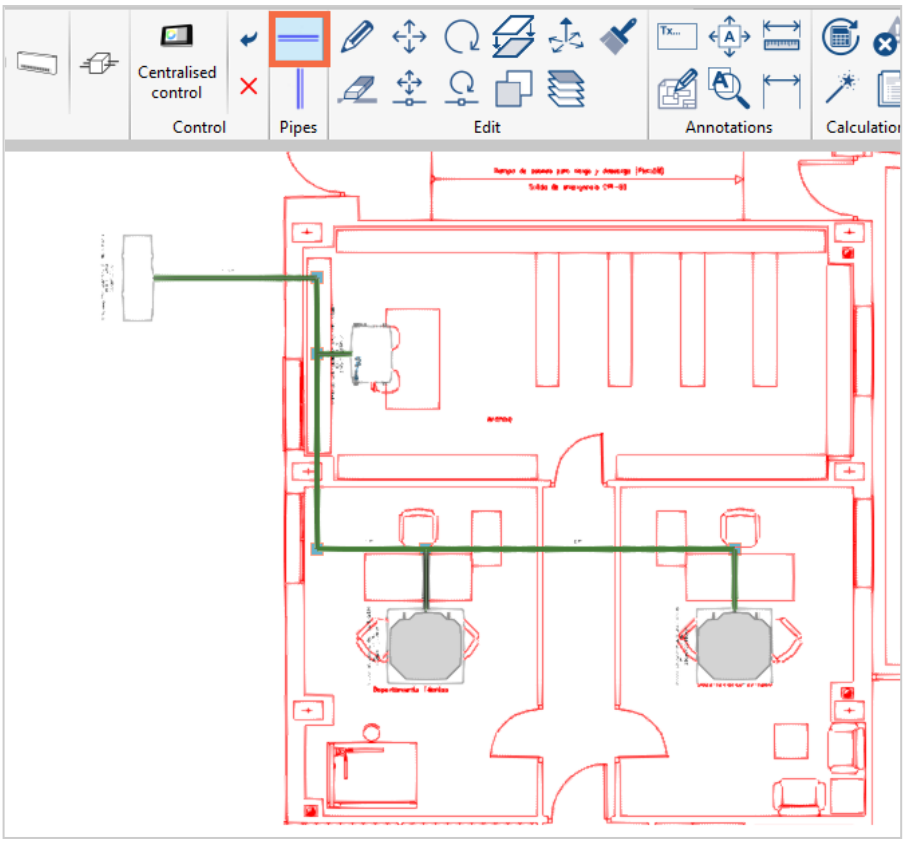
2.6 3D view

To access the 3D view, a BIM project must be created.

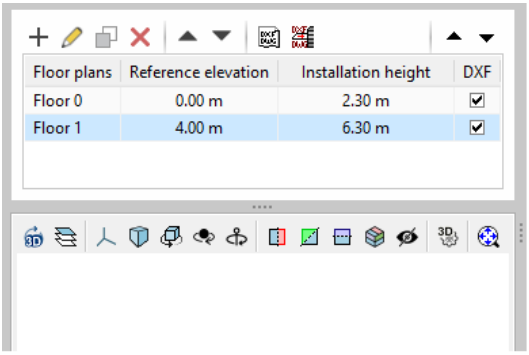


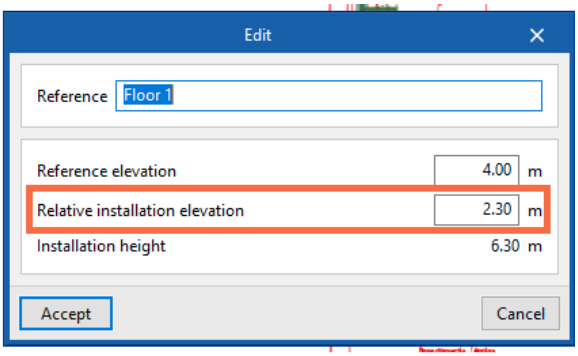
2.7 Pipes

To design a VRF system, you must connect a pipe with several indoor units and with an outdoor unit. Right-click to end the command.

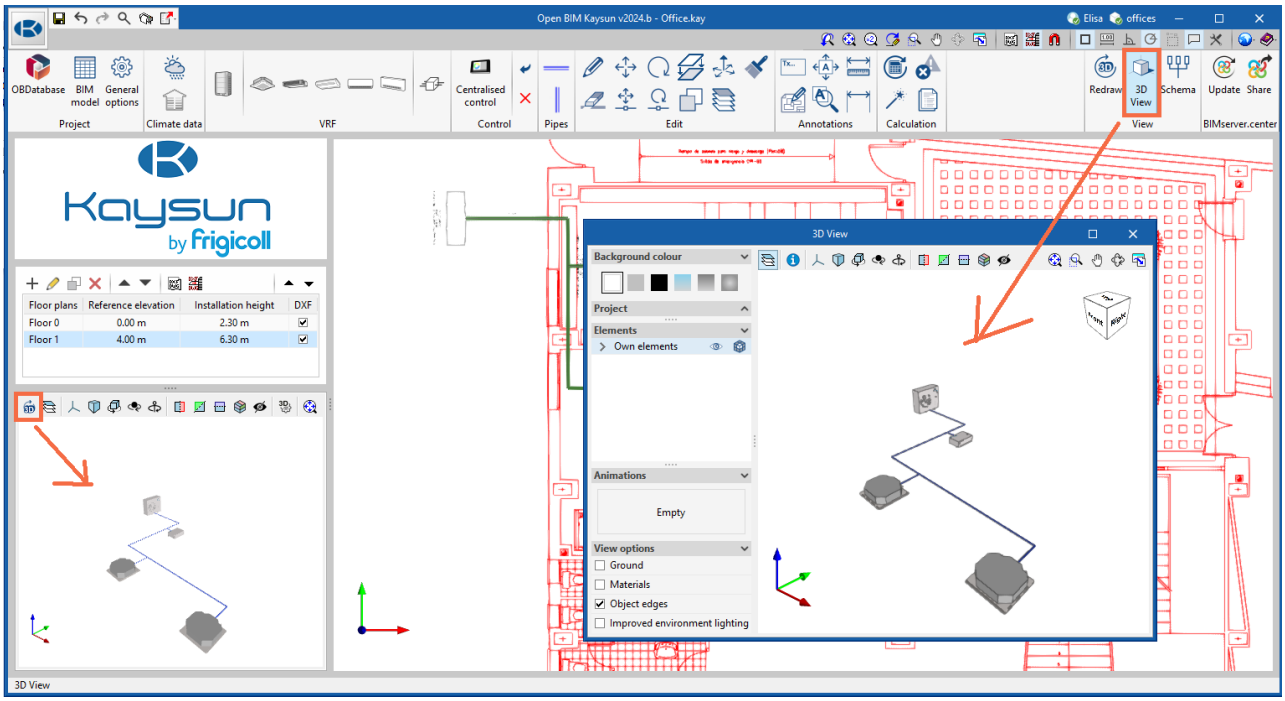


All the units are placed at *Relative installation elevation*, except outdoor units and floor units, which are placed at 0.0 m.



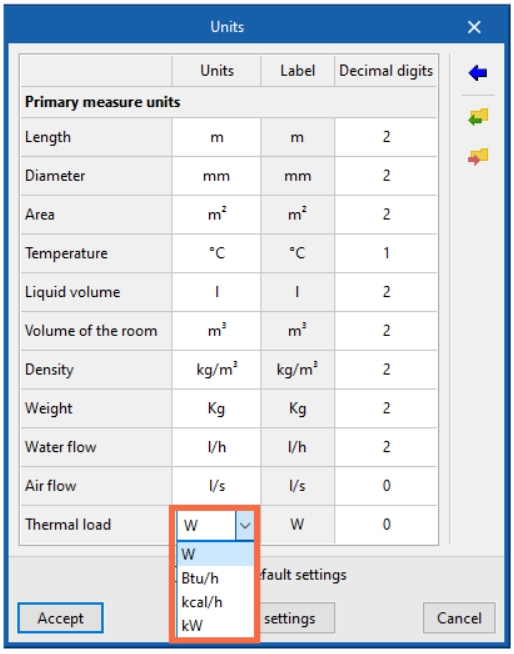


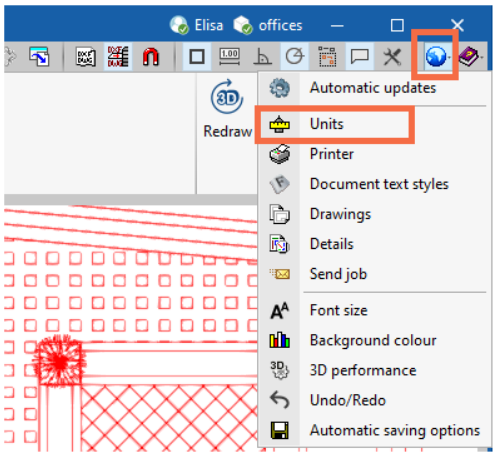
The 3D view is useful for detecting design errors: unconnected elements, leftover pipes, etc.



2.8 Units

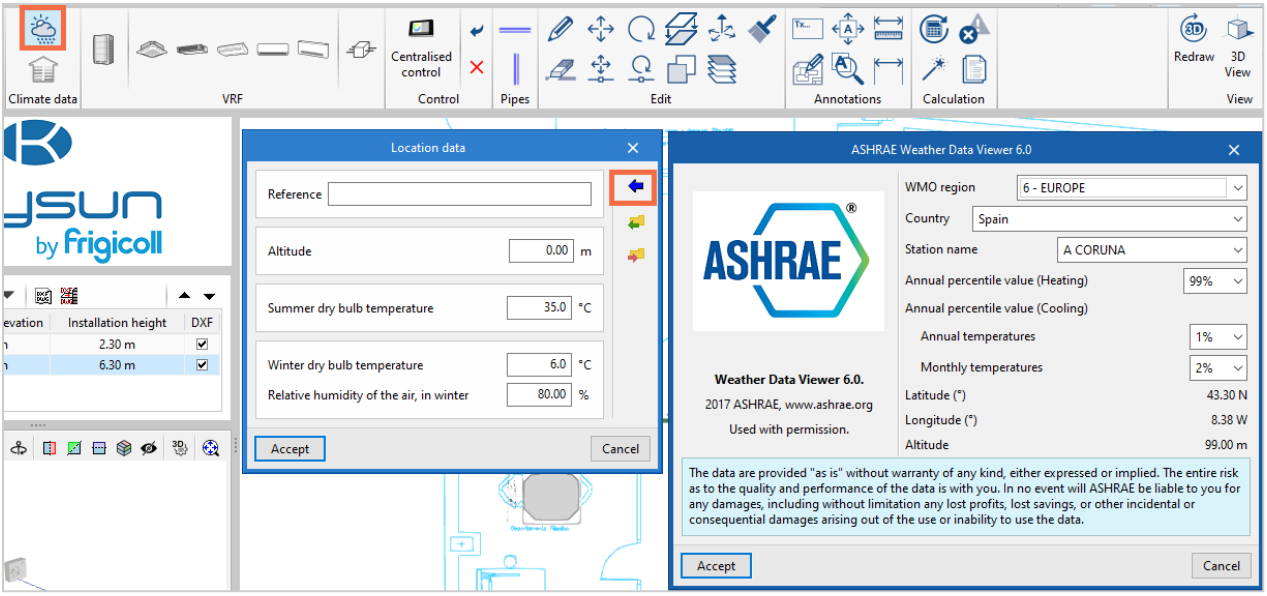
You can configure the units and the number of decimals.





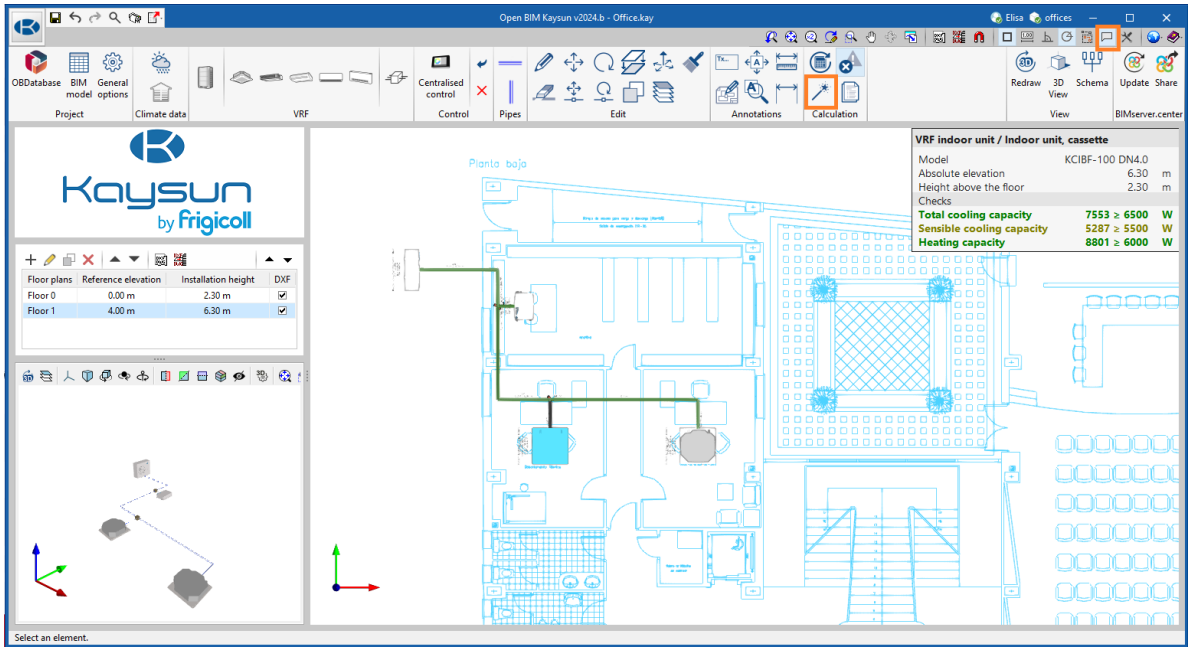
2.9 Outdoor design conditions

Enter the outdoor design conditions of your project. If you do not know them, click on the blue arrow to access the ASHRAE database.

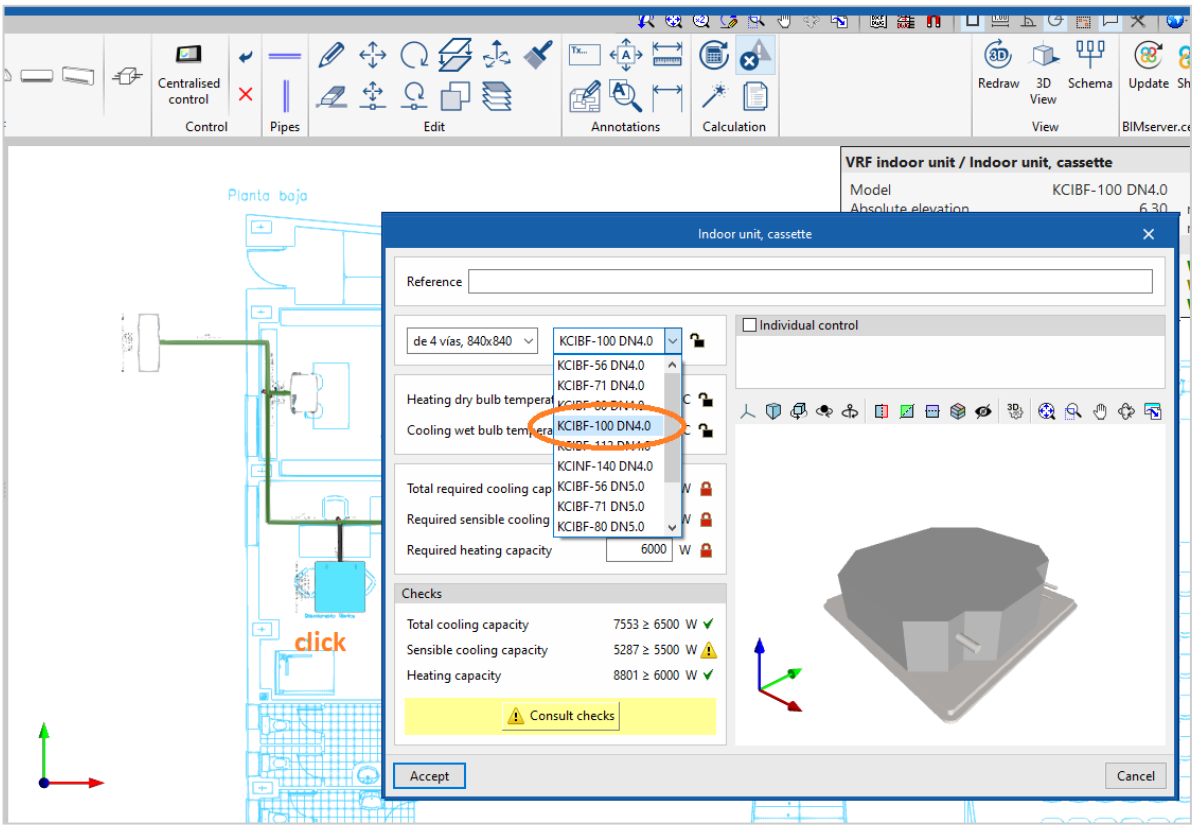


2.10 Designing the system

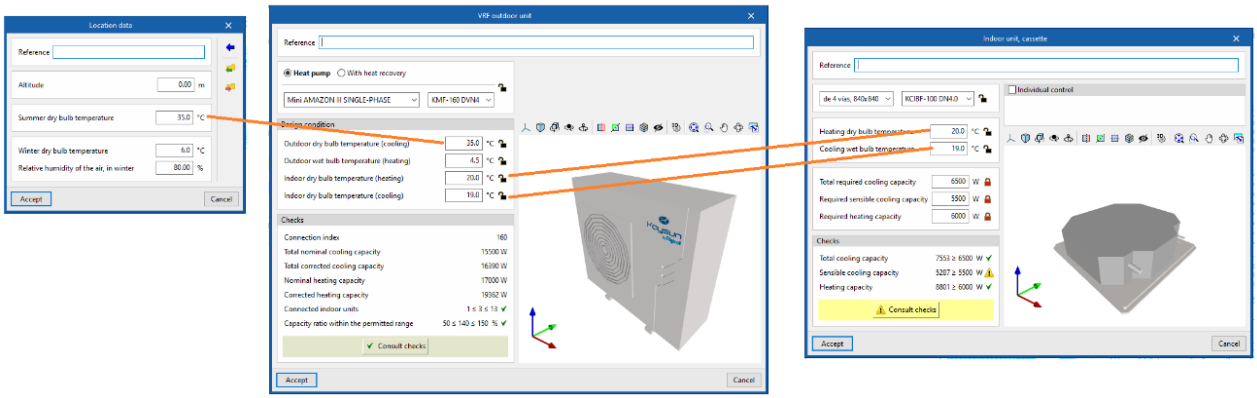
Click on the **Design** button.



Select the size of the pipes and units.

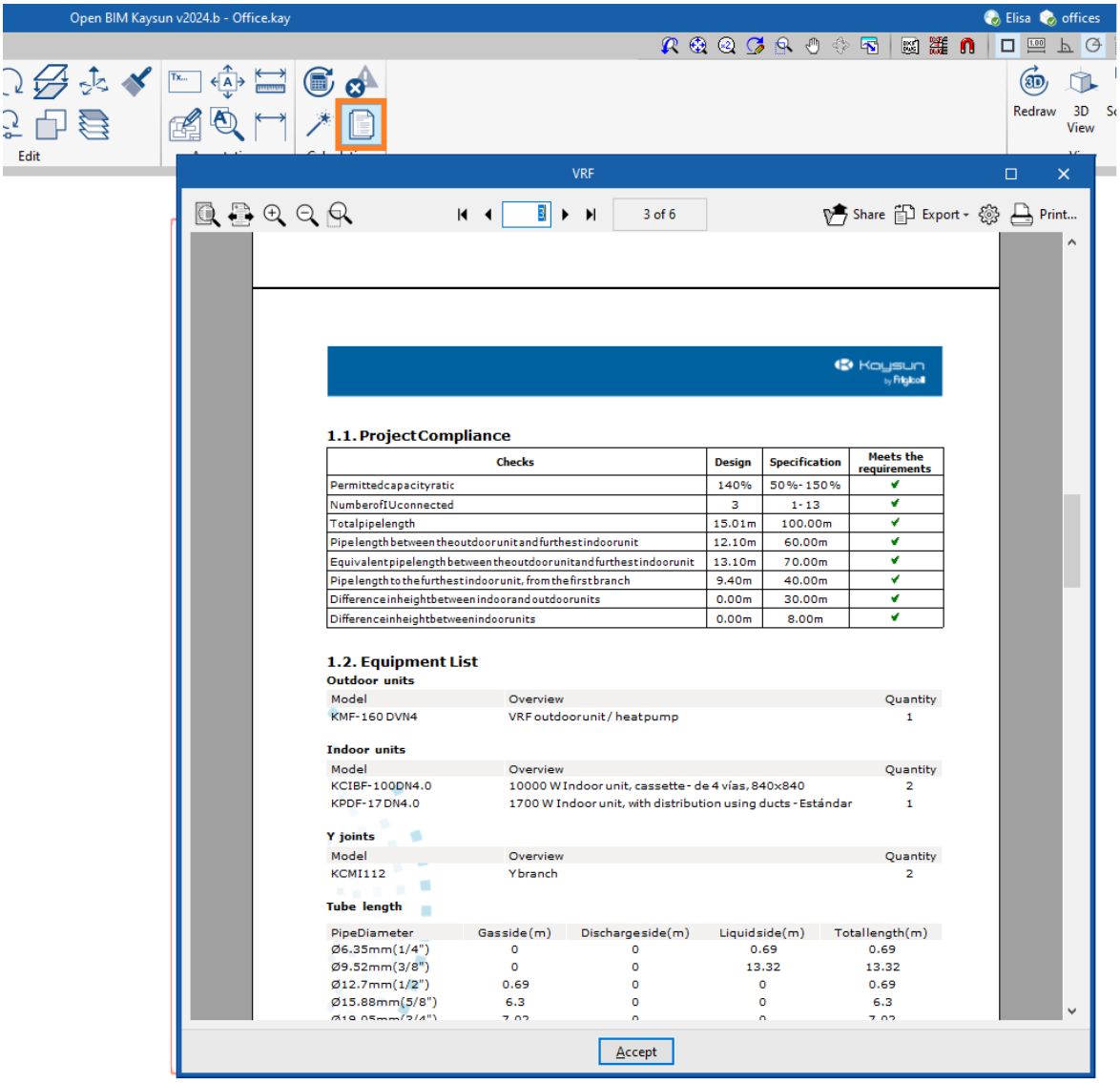


The data has been read.



2.11 Design report

Compliance, diagrams, wiring, corrected capacities: all of this information is in the project report.



1.1. Project Compliance

Checks	Design	Specification	Meets the requirements
Permitted capacity ratio	140%	50%-150%	✔
Number of IU connected	3	1-13	✔
Total pipe length	15.01m	100.00m	✔
Pipe length between the outdoor unit and furthest indoor unit	12.10m	60.00m	✔
Equivalent pipe length between the outdoor unit and furthest indoor unit	13.10m	70.00m	✔
Pipe length to the furthest indoor unit, from the first branch	9.40m	40.00m	✔
Difference in height between indoor and outdoor units	0.00m	30.00m	✔
Difference in height between indoor units	0.00m	8.00m	✔

1.2. Equipment List

Outdoor units

Model	Overview	Quantity
KMF-160 DVN4	VRF outdoor unit / heatpump	1

Indoor units

Model	Overview	Quantity
KCIBF-100DN4.0	10000 W Indoor unit, cassette - de 4 vías, 840x840	2
KPDF-17 DN4.0	1700 W Indoor unit, with distribution using ducts - Estándar	1

Y joints

Model	Overview	Quantity
KCMI112	Y branch	2

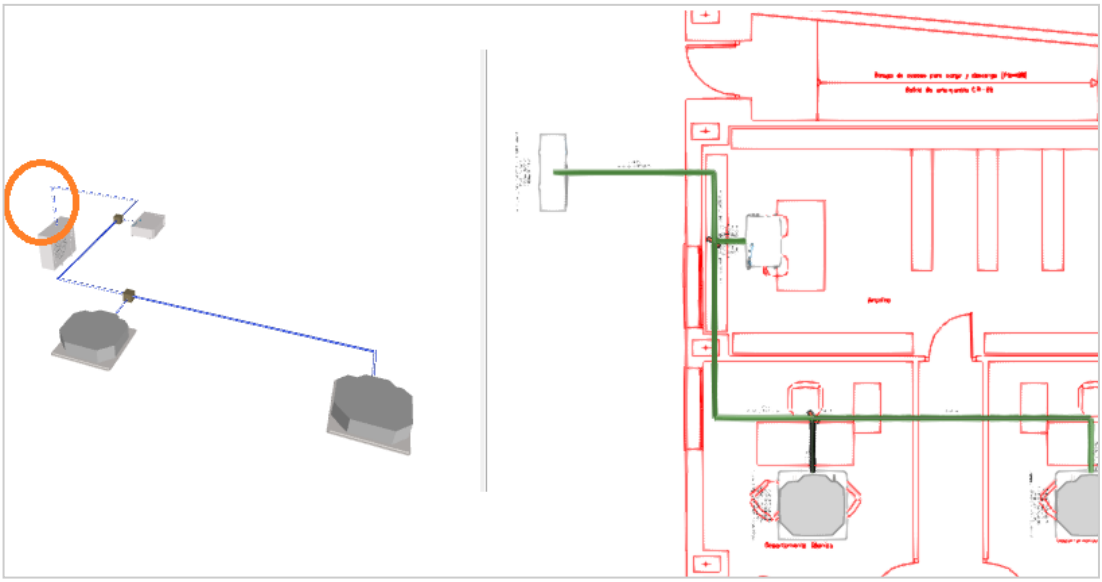
Tube length

Pipe Diameter	Gas side (m)	Discharge side (m)	Liquid side (m)	Total length (m)
Ø6.35mm(1/4")	0	0	0.69	0.69
Ø9.52mm(3/8")	0	0	13.32	13.32
Ø12.7mm(1/2")	0.69	0	0	0.69
Ø15.88mm(5/8")	6.3	0	0	6.3

2.12 Vertical pipes

On the same floor plan

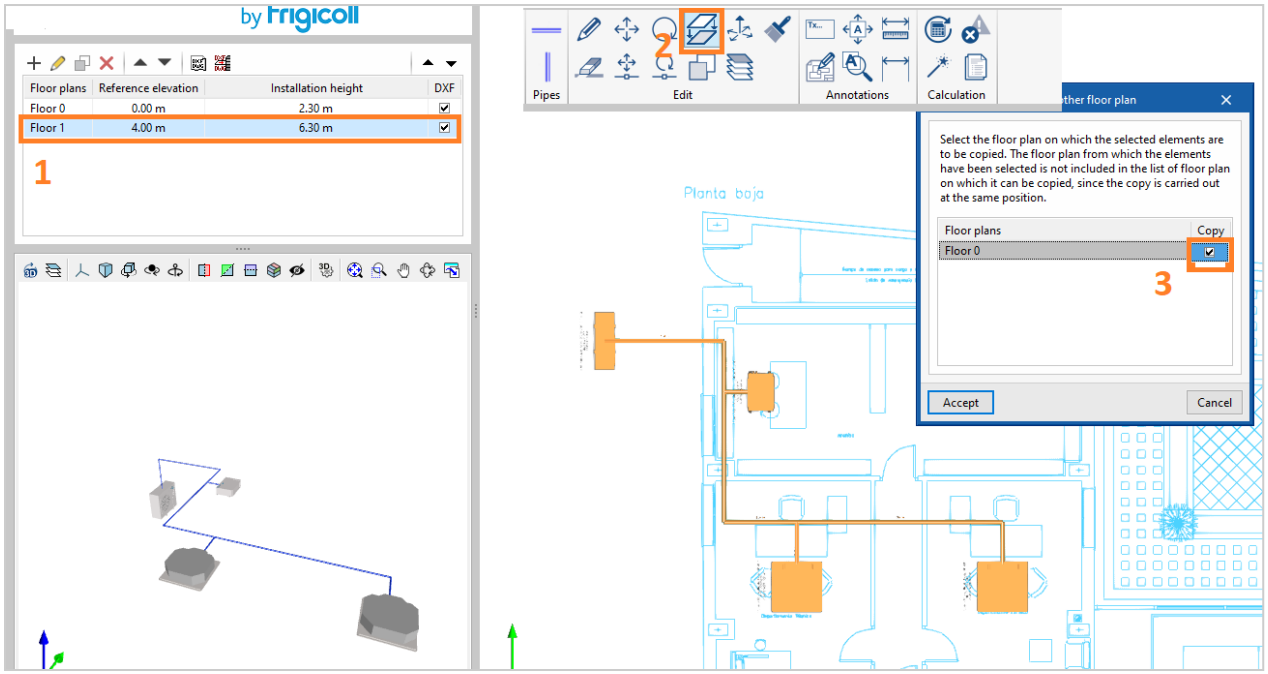
Vertical pipes are always generated automatically when connecting elements on the same floor plan.

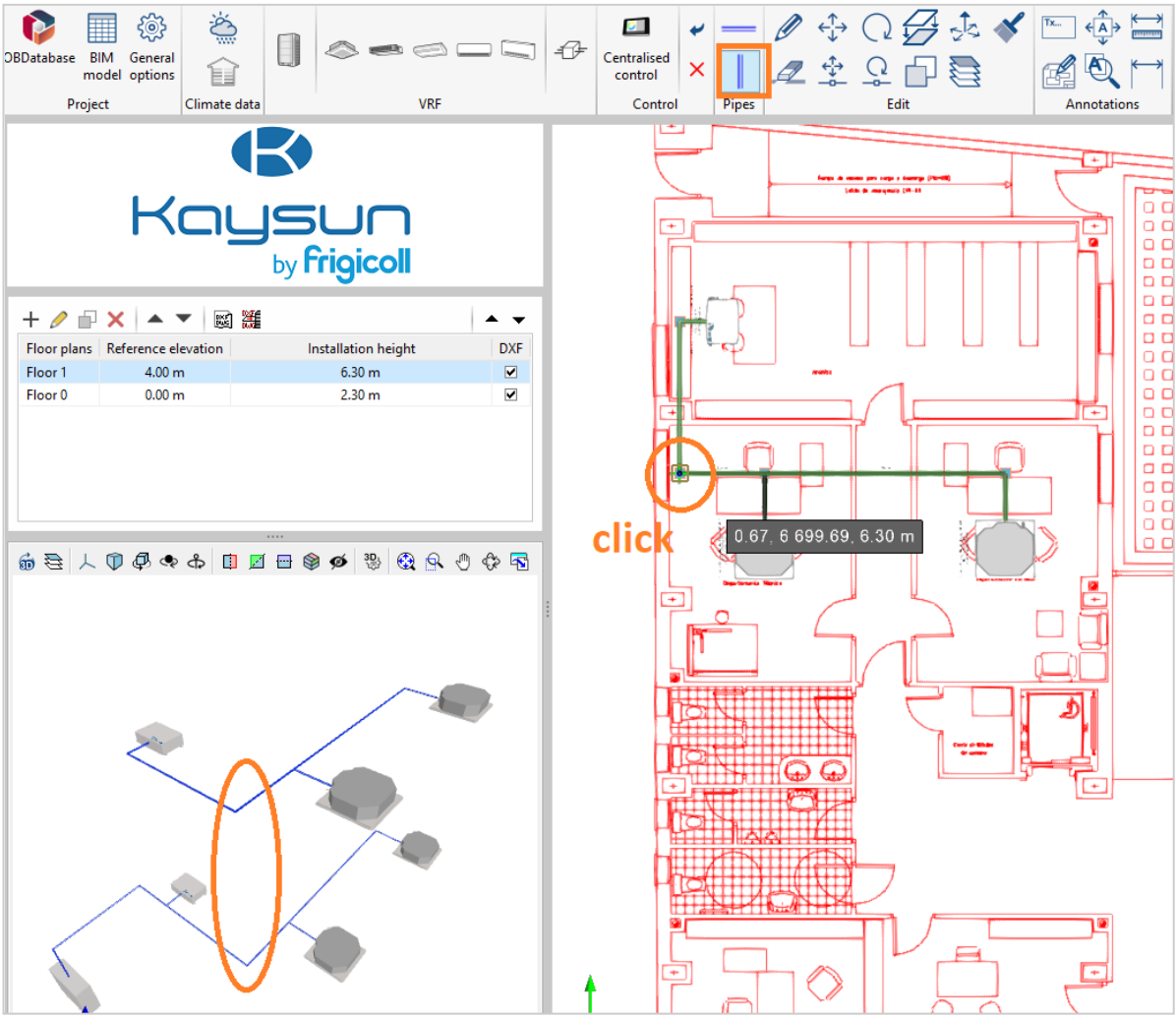


Connecting elements on different floors

Place new units on floor 1 and then place a vertical pipe connecting several floors. To create a vertical pipe, you must be able to “view” the other plans.

To place a vertical pipe, two intersecting horizontal pipes must also be placed. In other words, two pipes intersect when they both have one end that meets at the same (x, y) coordinates.





Zoom in.

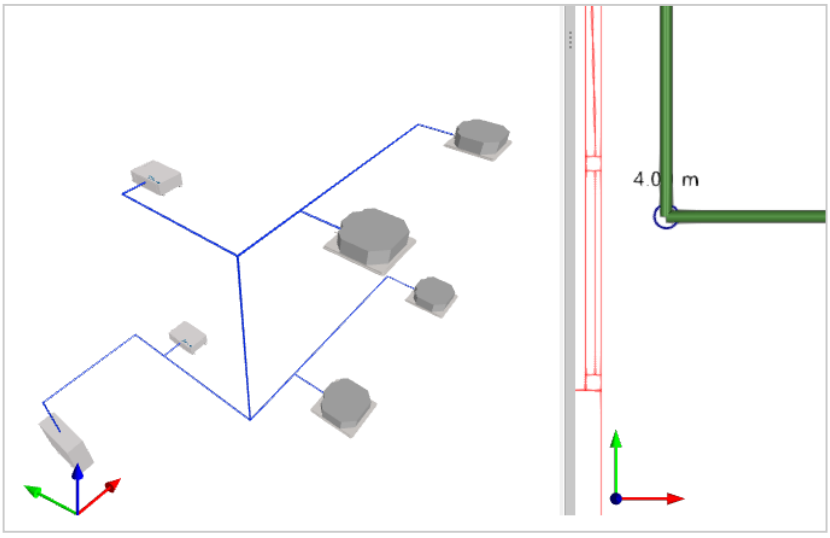
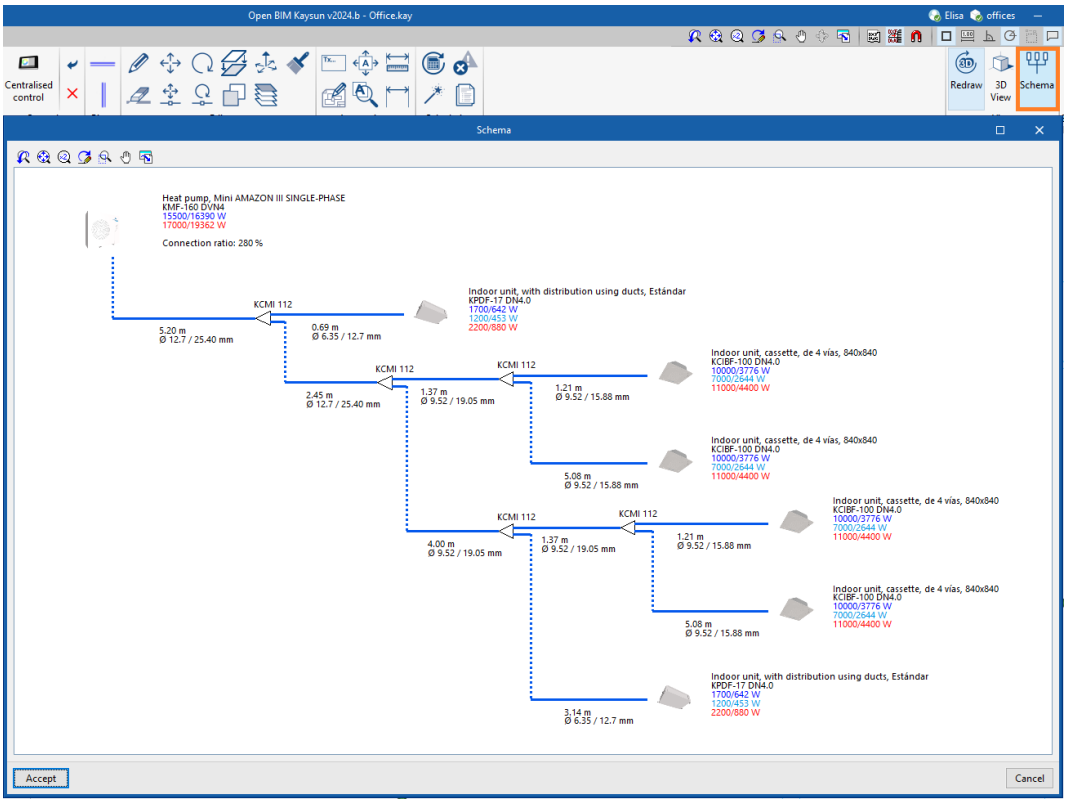
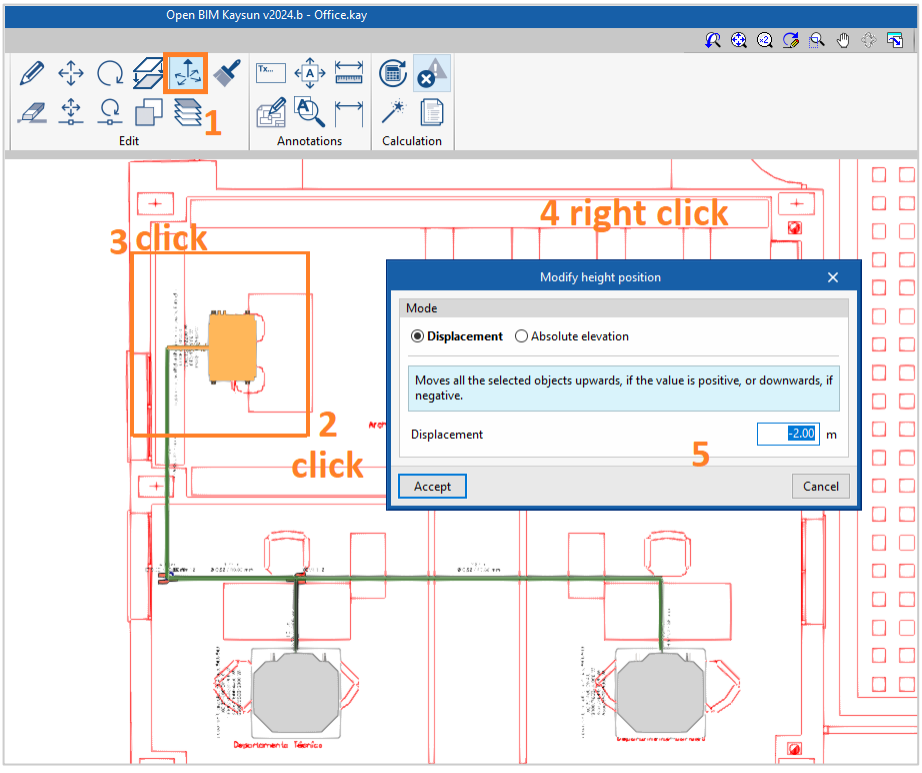


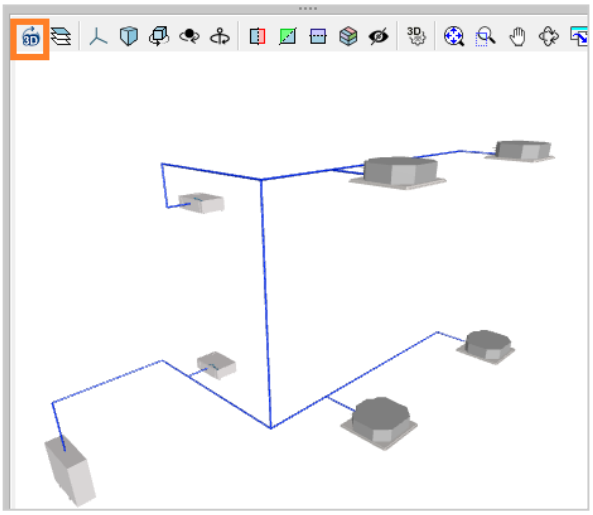
Diagram and design reports are always generated according to the drawing.



2.13 Moving elements in the z axis

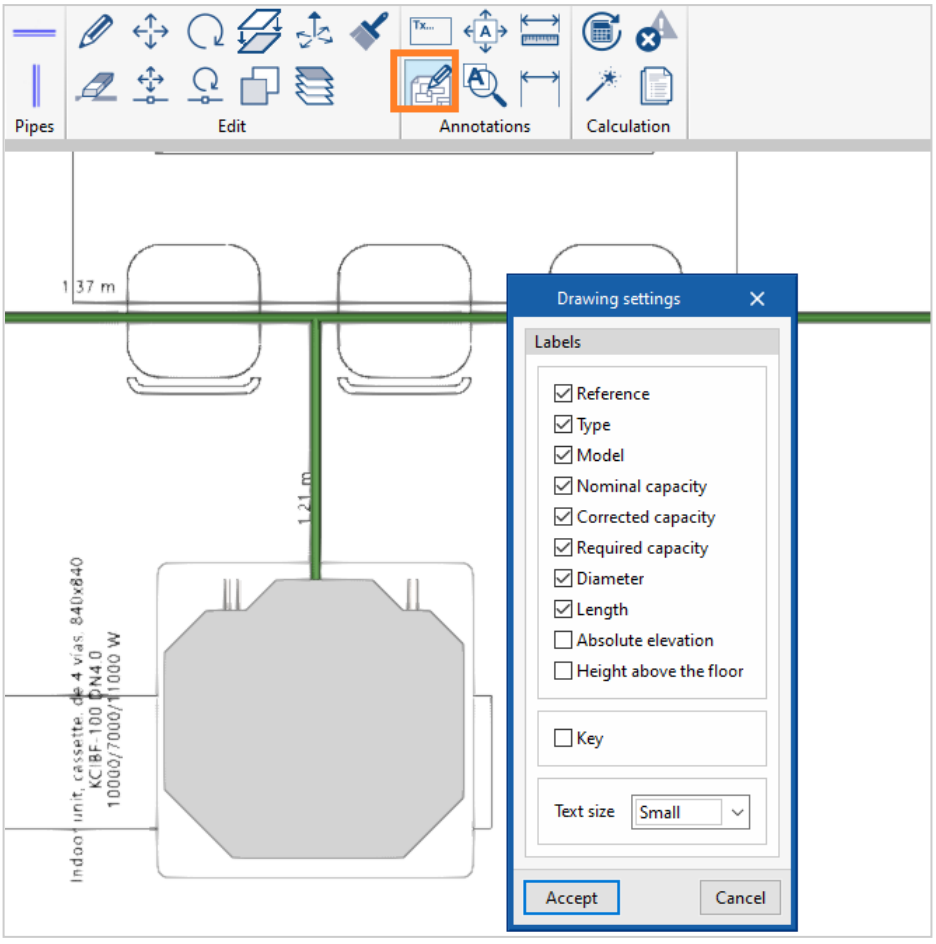
Even when moving units vertically, the vertical pipes are created automatically.



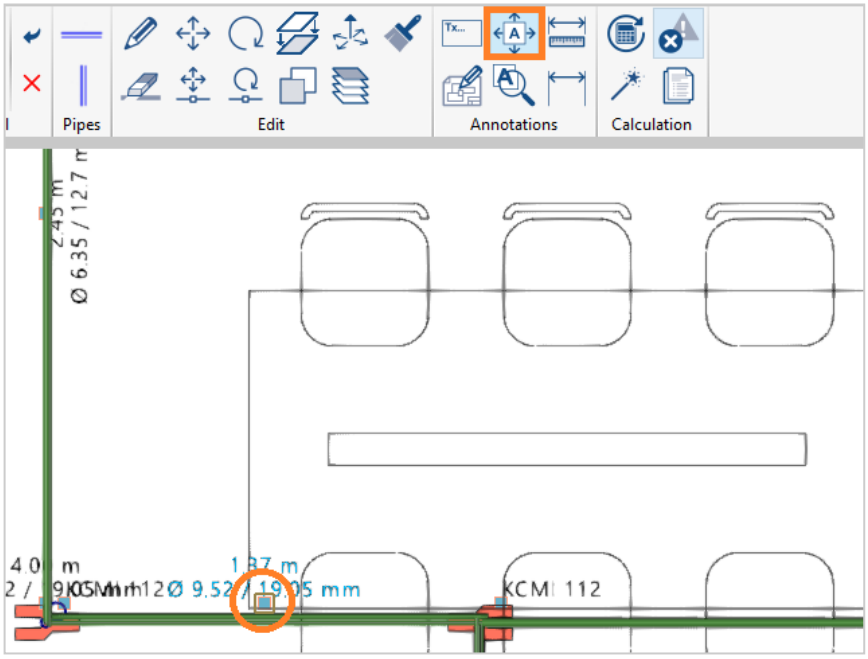


2.14 Tags

The information displayed on the drawing can be configured.



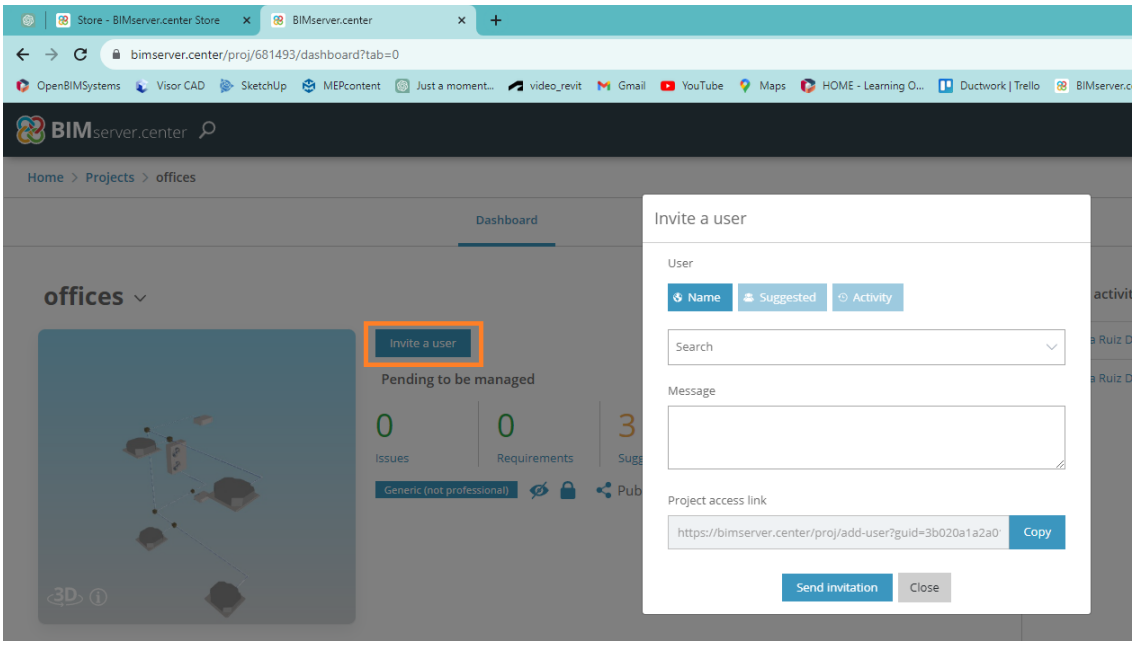
Move the tags so that the pipes and the texts do not overlap.



2.15 Sharing the project

Share your project (3D view and results) with a contact.

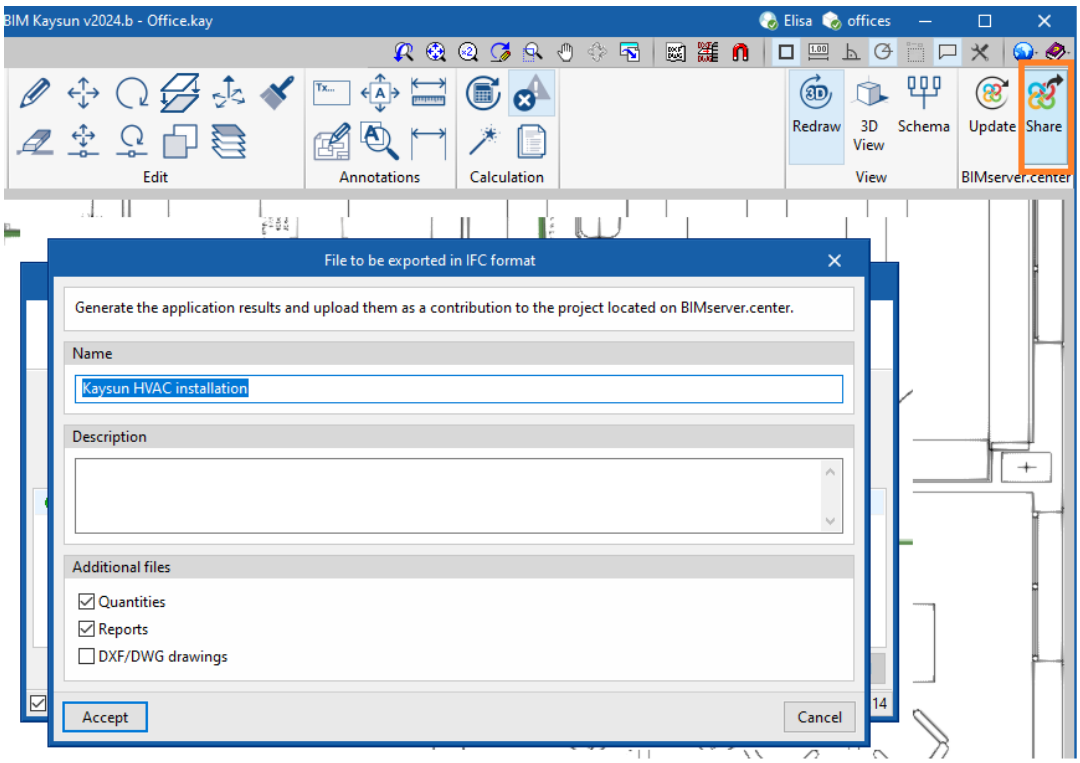
1. Add the person to your *Contacts*.



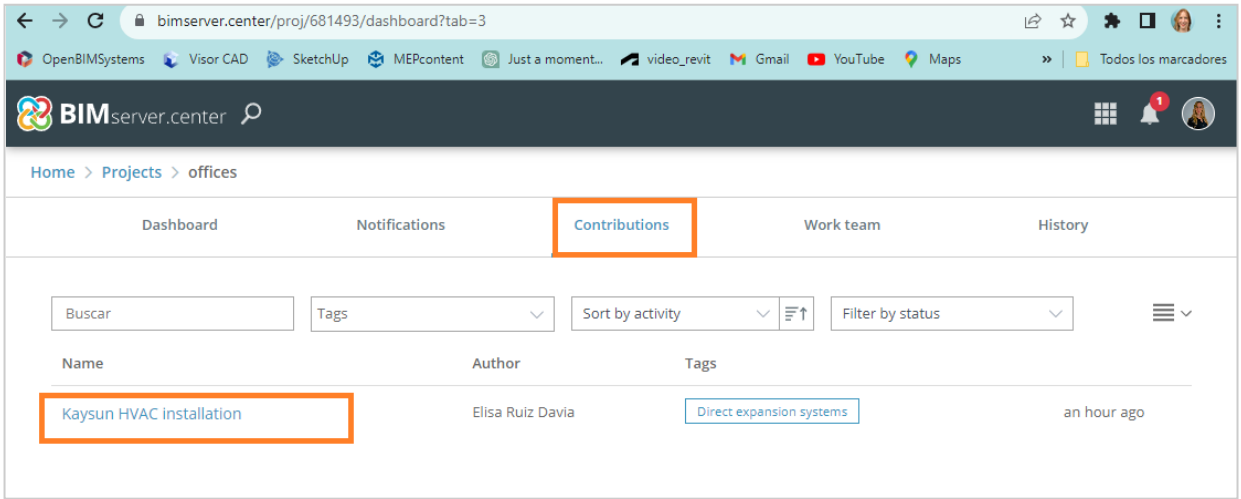
2. Add the contact to your project.

2.16 Exporting

Click **Export** to upload the 3D view and PDF reports to the BIMserver.center.



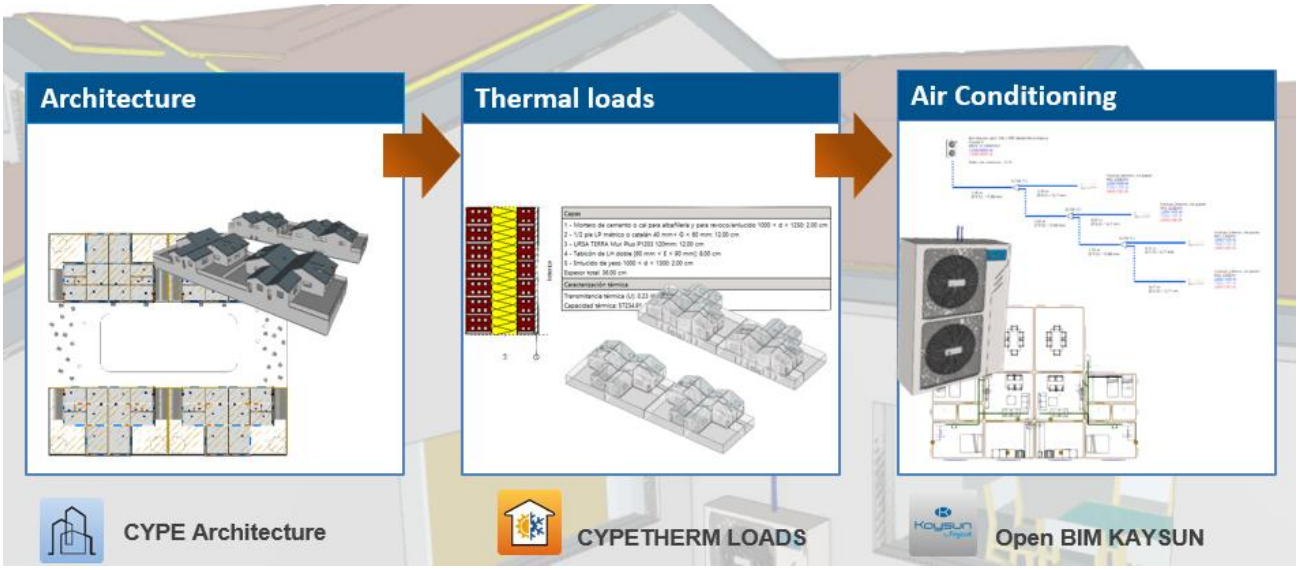
Check that they are available on the BIMserver.center (Google Chrome).



3 PART 2. BIM workflow

3.1 Aim

In this part, you will create a BIM project including the building geometry design, thermal loads calculation, and VRF selection tool.



3.2 Installing the program

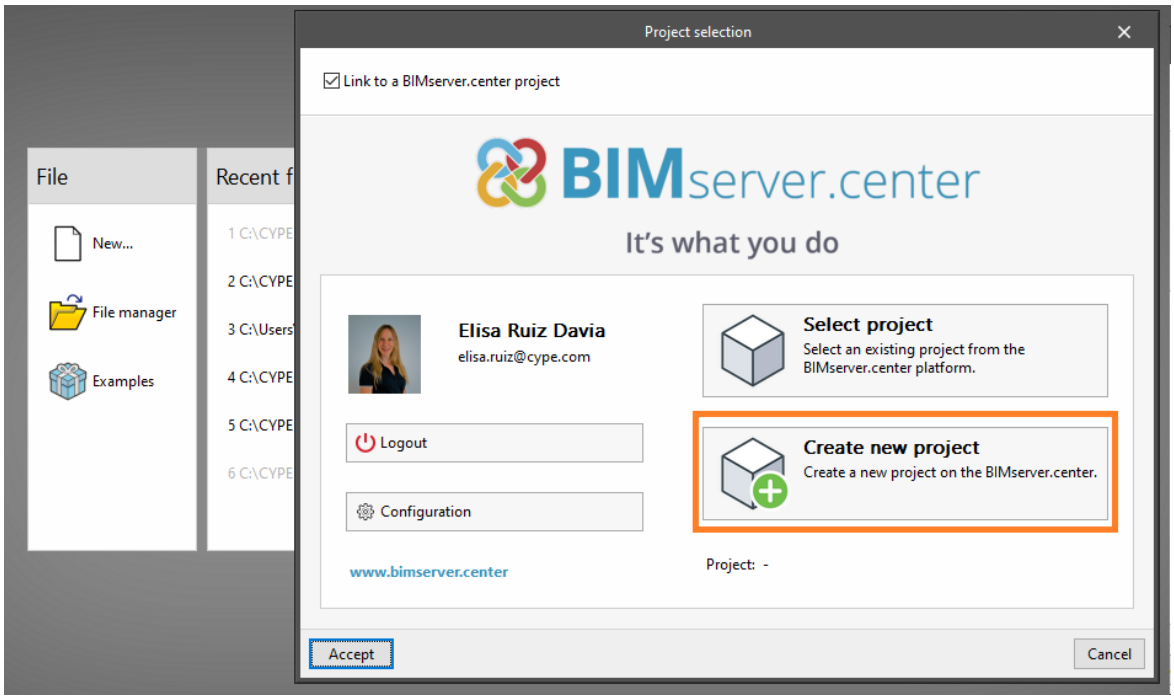
Go to the store and download IFC Builder and CYPETHERM LOADS.

Download and unzip the files with a suitable program (we recommend WINZIP).

Once the program has been installed, two icons will appear on the desktop.

3.3 CYPE Architecture

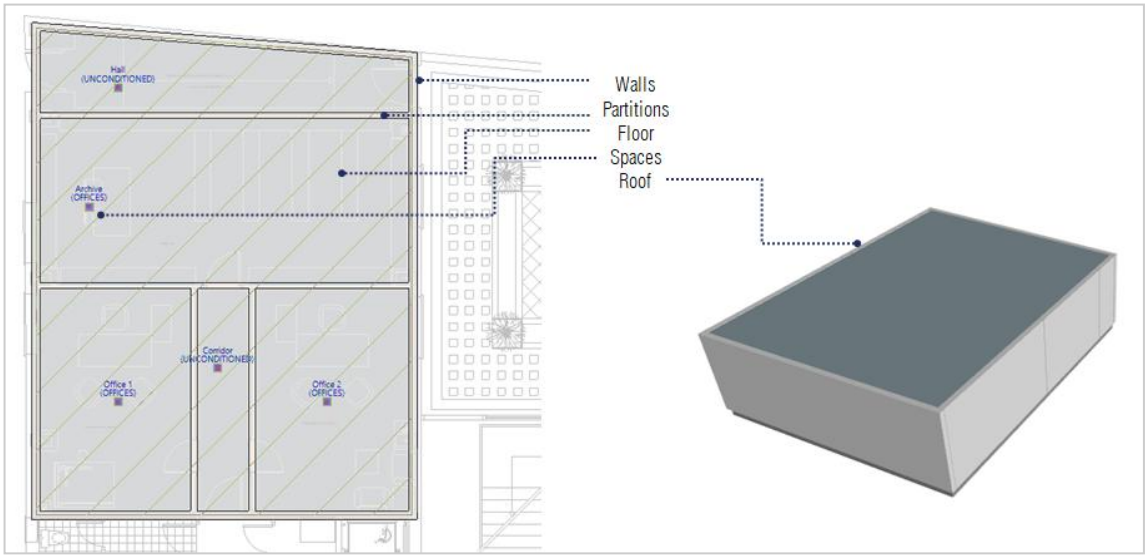
3.3.1 *New file*



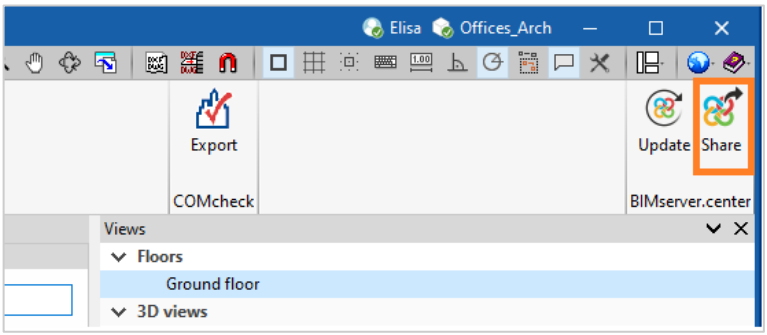
3.3.2 *Development*

Develop the geometry of your building. Import the templates like in part 1.

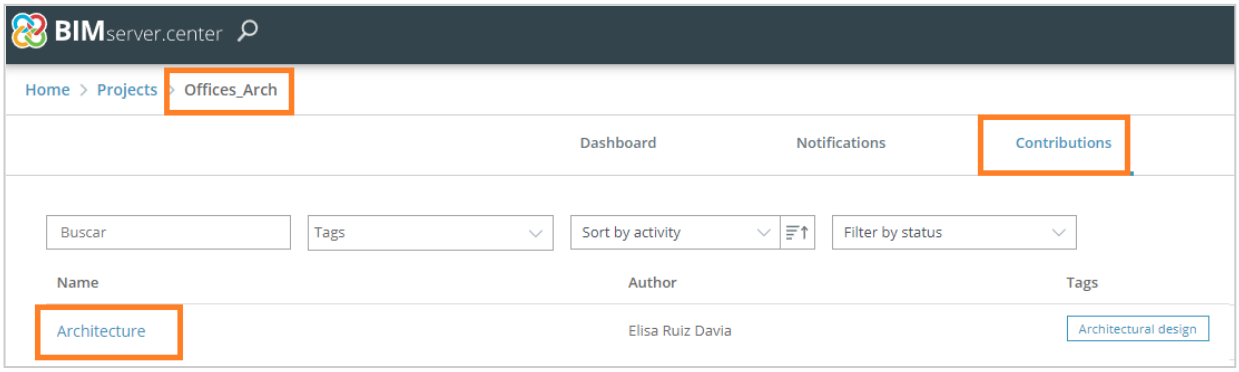
Design the building:



3.3.3 *Sharing*

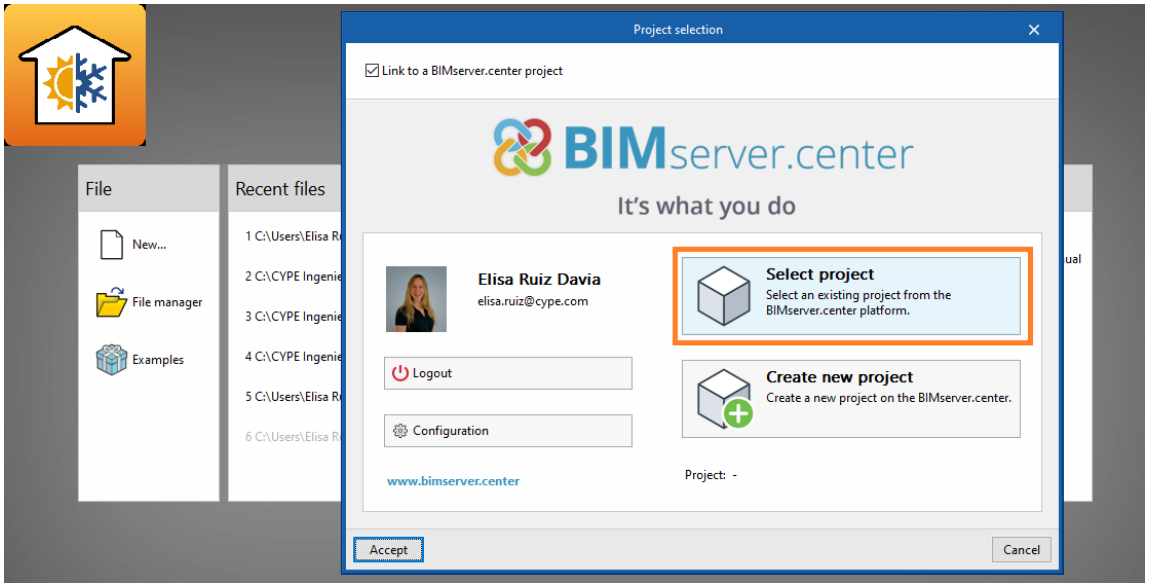


Check that the files have been uploaded correctly in **BIMserver.center**.

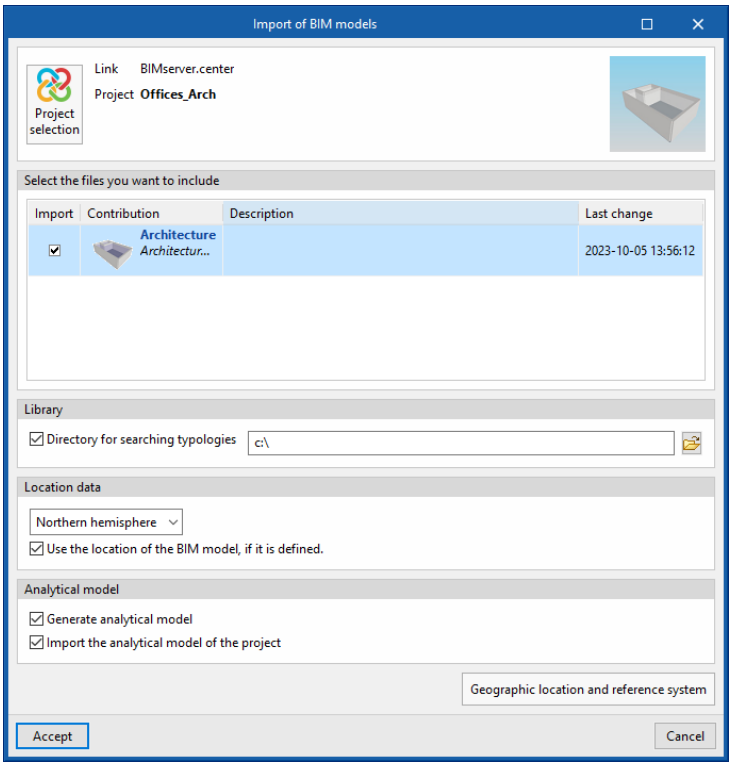


3.4 CYPETHERM LOADS

3.4.1 *New file*

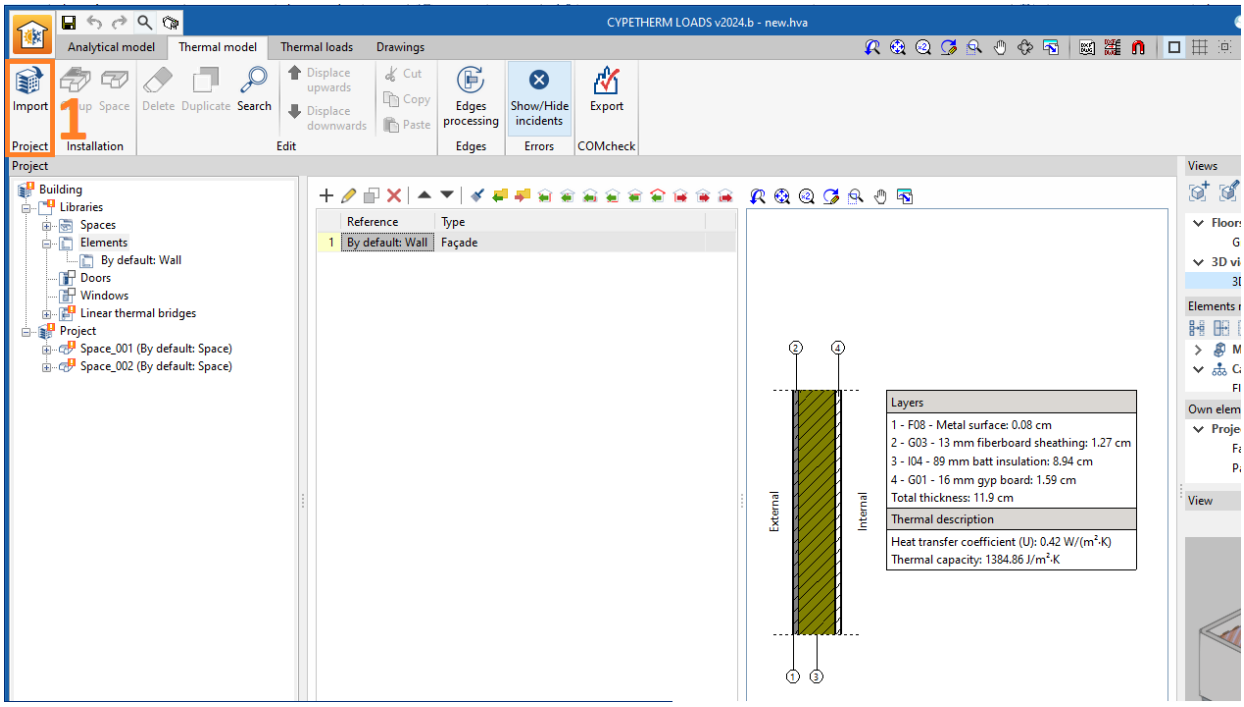


Select the BIM project named *Offices_Arch*.



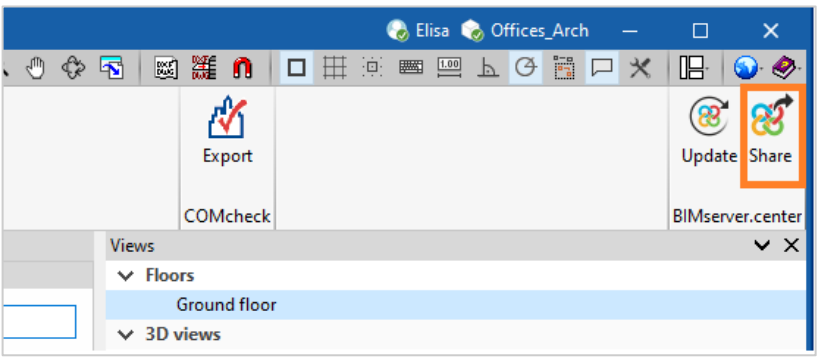
3.4.2 *Thermal load calculation*

Carry out the thermal calculation of the 3 spaces. Read the *User manual* to learn how to use this program.

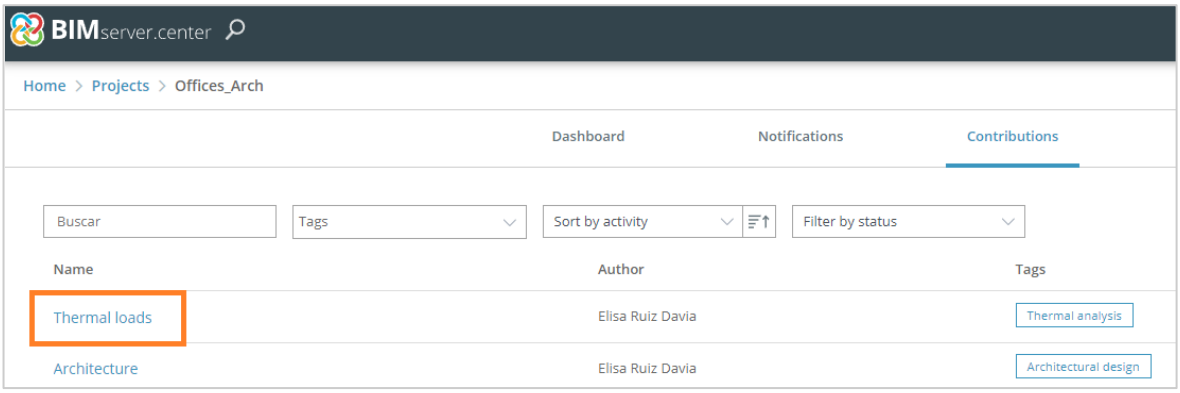


3.4.3 *Sharing*

After the analysis, click on **Share**.

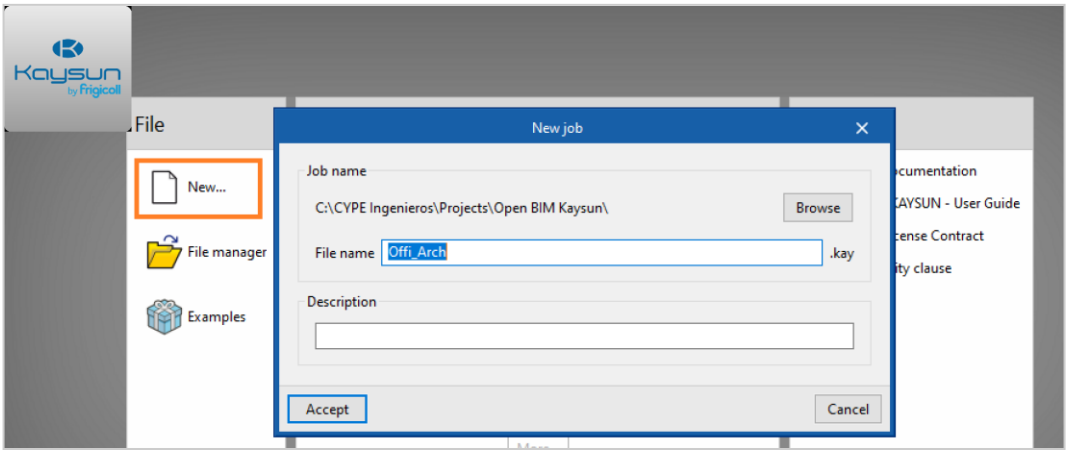


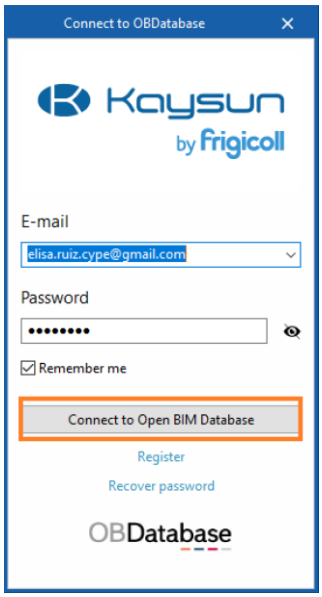
Check that the files have been uploaded correctly in **BIMserver.center**.



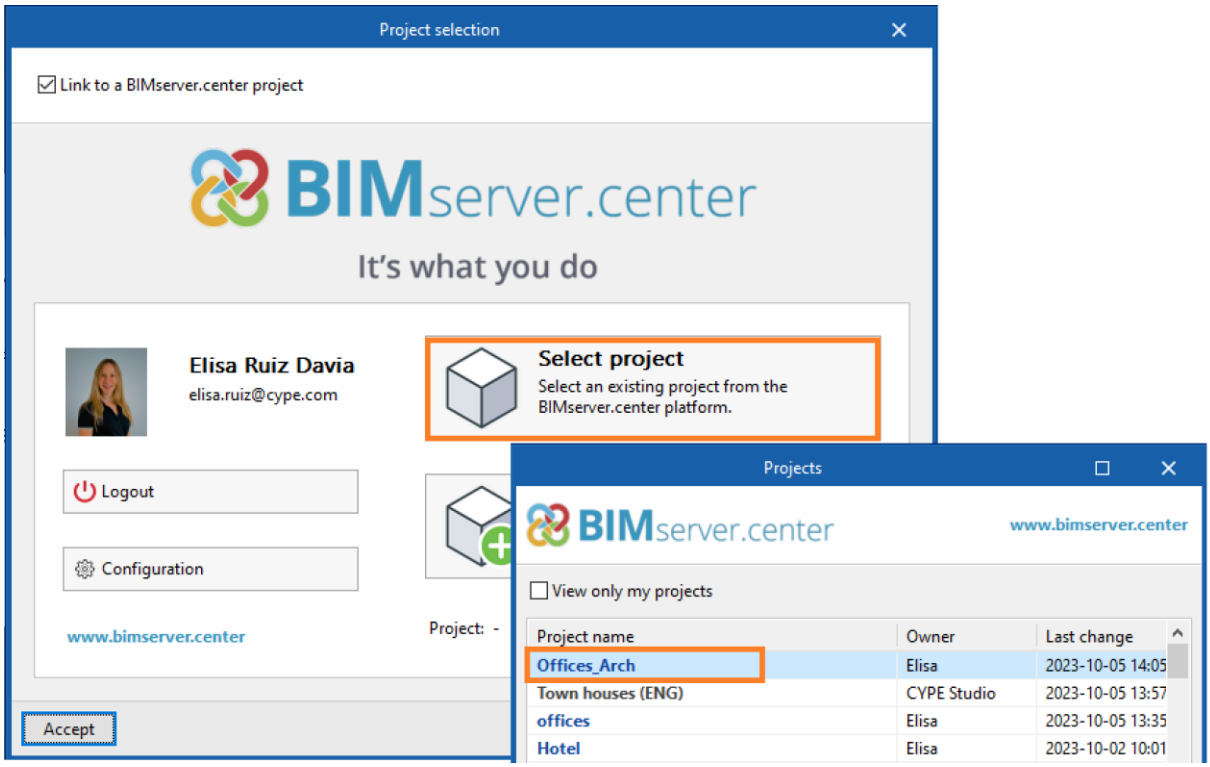
3.5 Open BIM Kaysun

3.5.1 *New file*

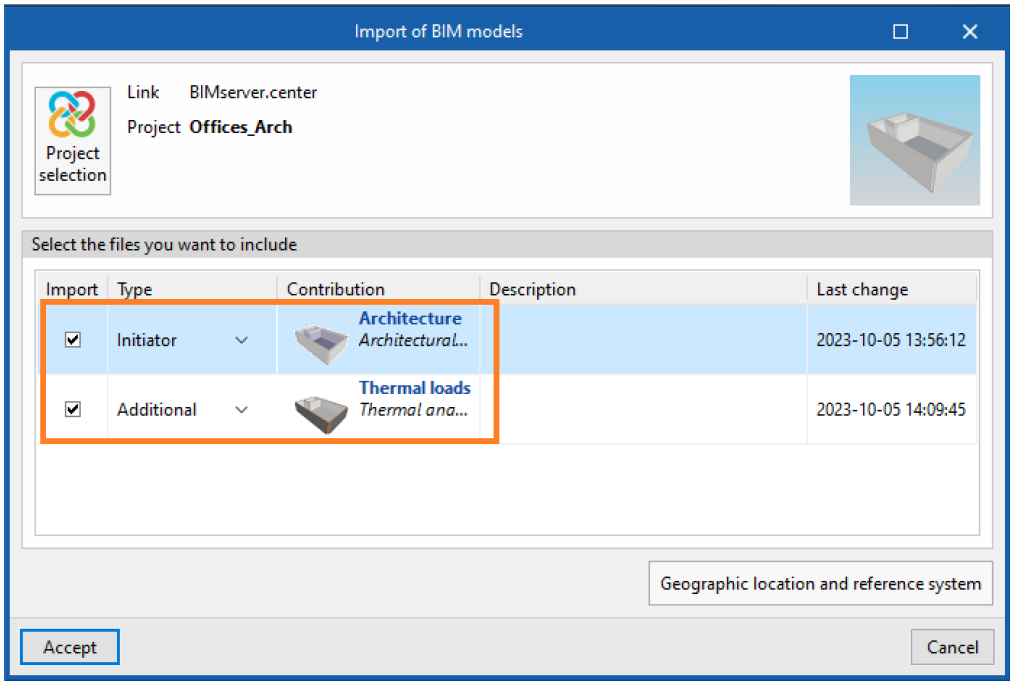




Select the BIM project named *Offices_Arch*.

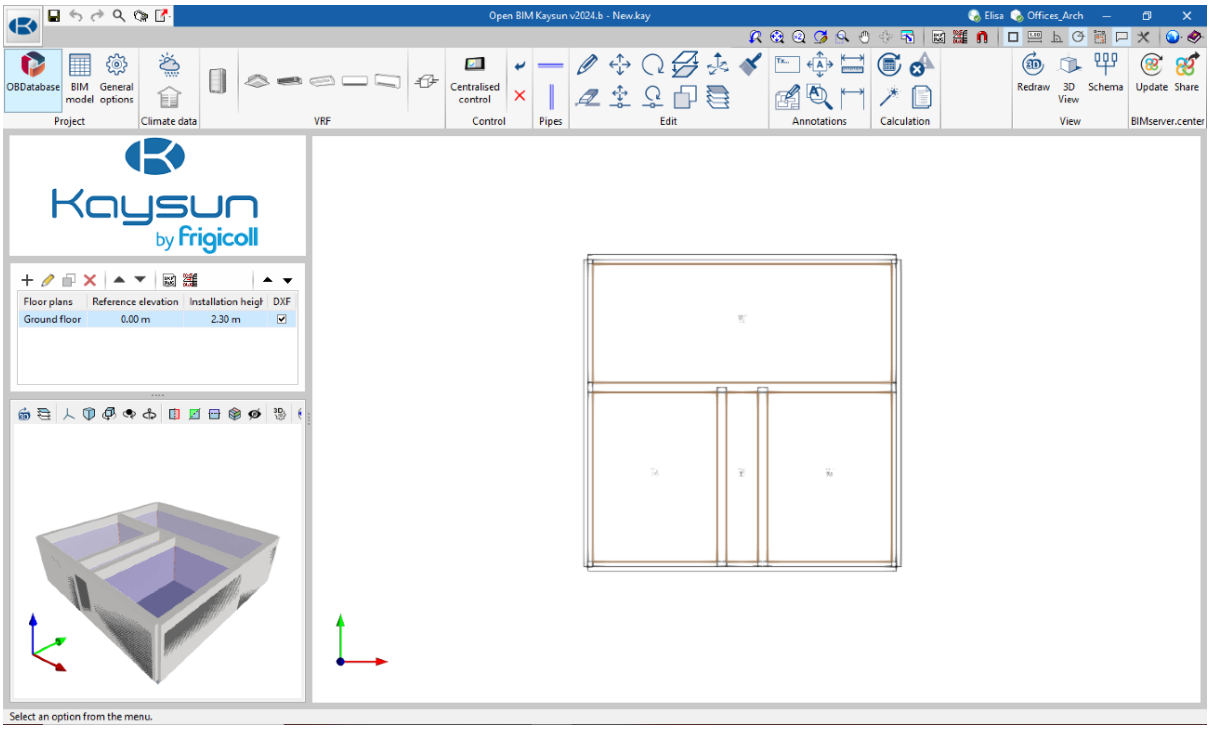


Also select the thermal loads file.

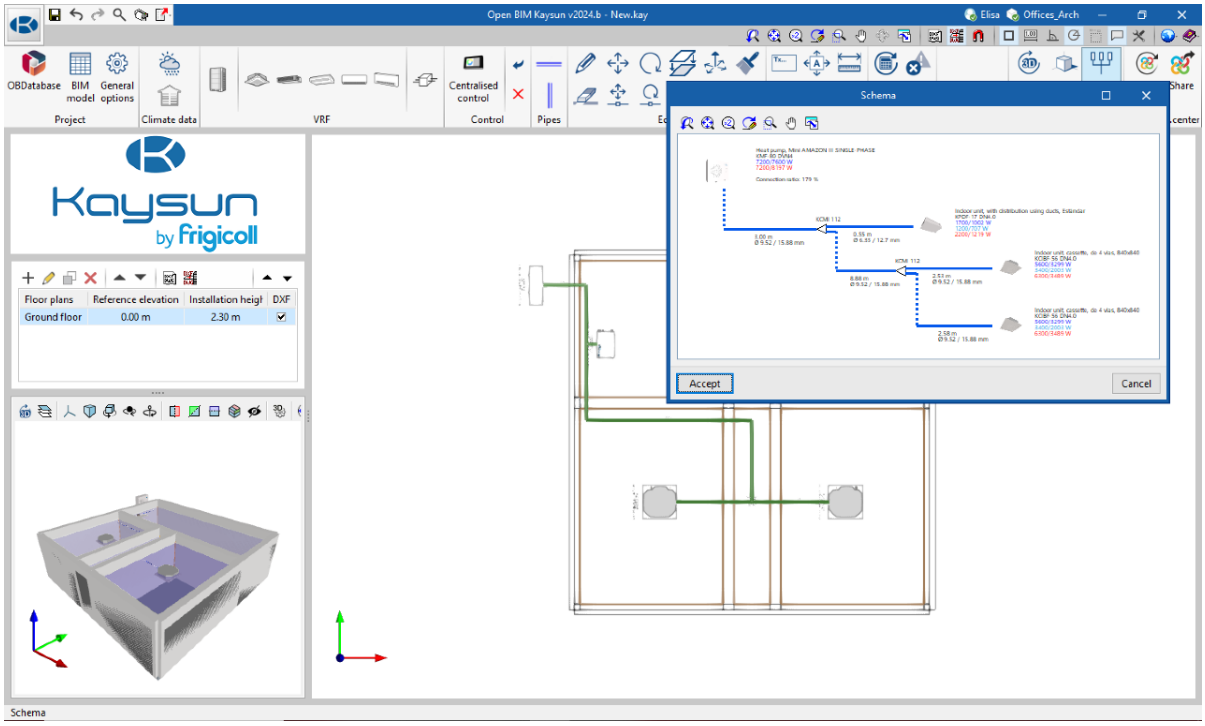


3.5.2 *VRF system design*

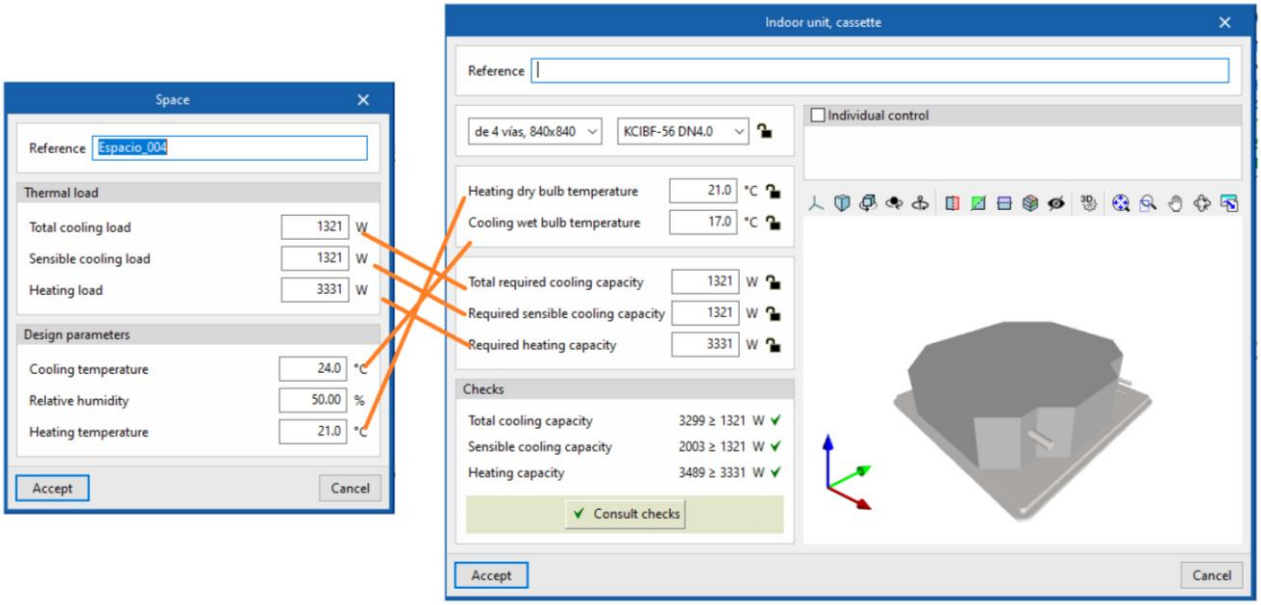
The building geometry and thermal loads have now been imported.



Design the same VRF system as you did in part 1 of this user manual.

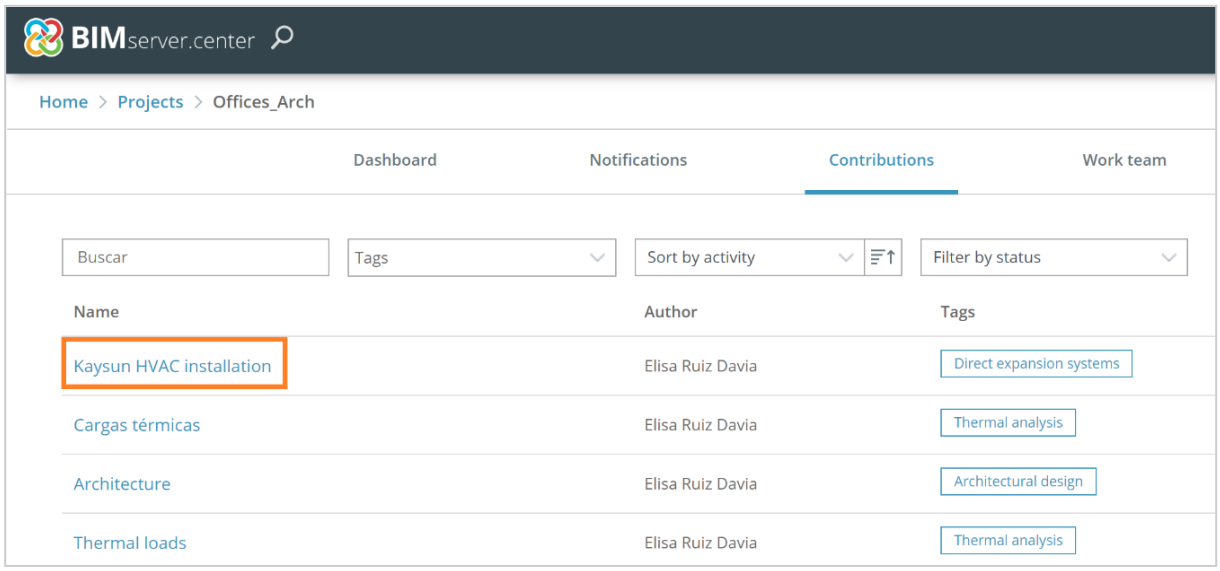


After the design, the program transfers the thermal loads and indoor design conditions data from the spaces to the indoor units.



3.5.3 *Exporting*

Export and check that the HVAC part of the project has been updated correctly.

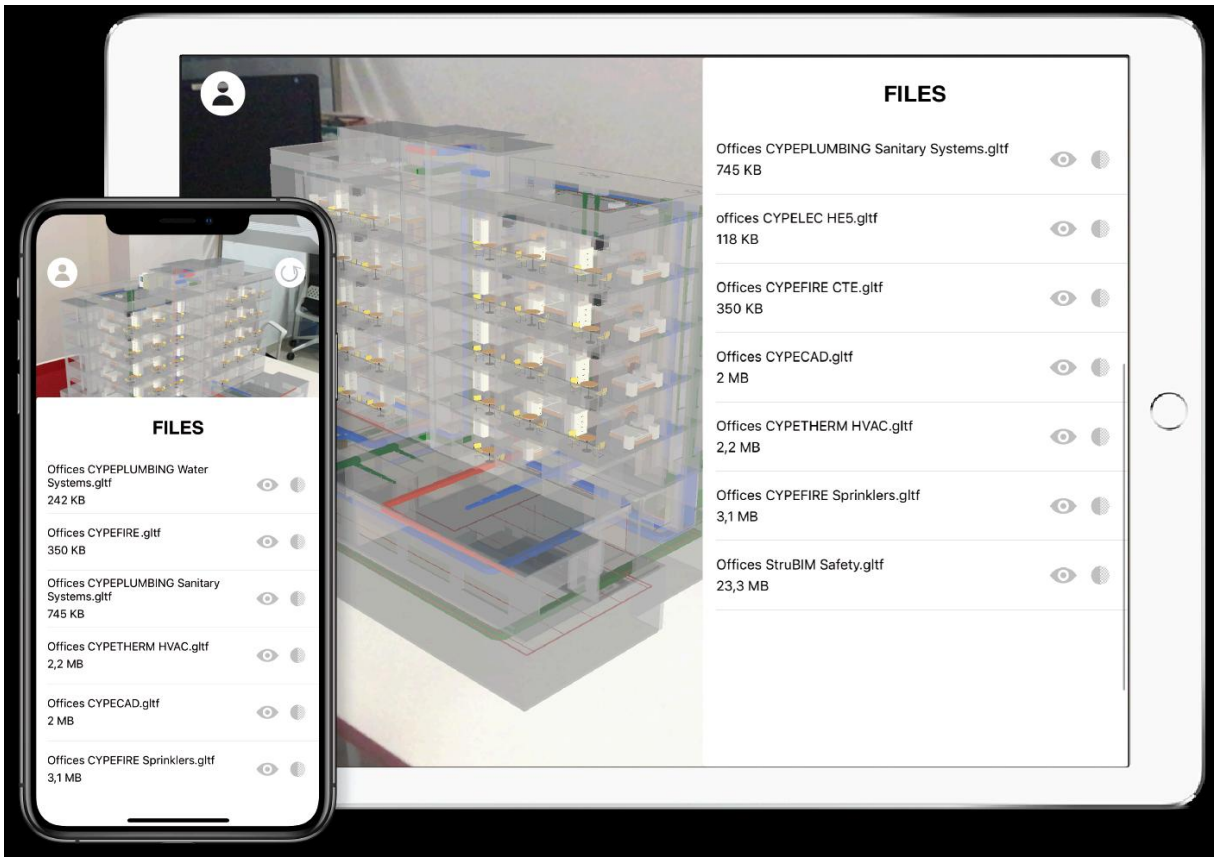


4 Augmented reality

The free AR app, available for iOS and Android, allows users to view any BIM project stored in BIMserver.center.

This greatly expands the possibilities for visualising and reviewing the project, as it allows three-dimensional models from all the analysed disciplines in the project to be displayed, and all the elements in the project to be selected in order to access the associated information.

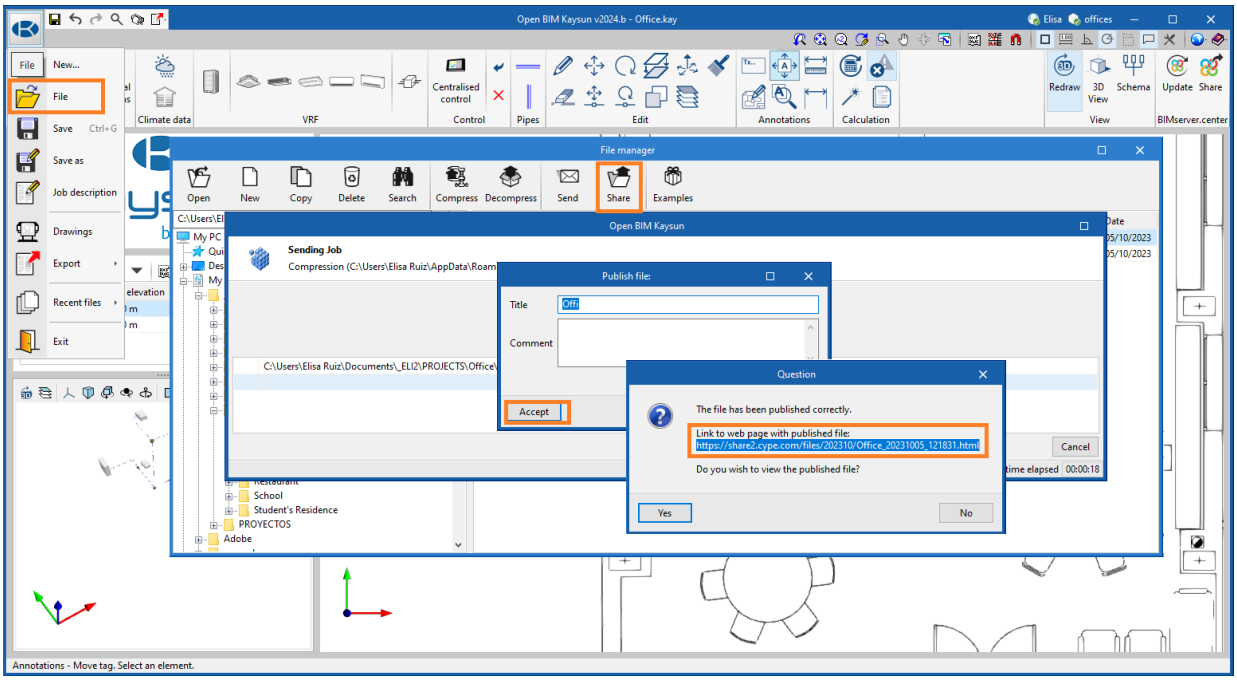
These models, that are synchronised with BIMserver.center so that they do not take up space on any devices, allow the immediate display of all the user's BIM projects and are updated with the latest version of all the files that make up the Open BIM projects. Issues and coordination reviews will also be updated in this virtual model in real time, and will be connected to a mobile phone notification system.



5 Contact

Sharing files

Sometimes users may wish to send the "File.kay" to other colleagues (due to illness, leave, etc.). In addition to the traditional methods, (email, We Transfer, etc.) CYPE programs have a more direct method for sending files, (regardless of their size):



Support

This Open BIM Kaysun user manual will make it easier to use the program, browse through the user interface, design with the program, and obtain the finished model. If you still have any questions, queries, or need any more information, please visit our website or contact CYPE.

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