



Open BIM **Kaysun**

User's Manual

How to create a project step by step





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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

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File	Recent files	Help	
New	1 C:\CYPE Ingenieros\Examples\Open BIM Kaysun\Restaurant.kay	Program documentation	
	2 C:\CYPE Ingenieros\Projects\Open BIM Kaysun\new.kay	🤣 Open BIM KAYSUN - User Guide	
File manager	2 CVCVDE Ingenierer Verampler Onen PIM Kaurun Nieu kau	Program License Contract	
	5 C.(CTPE ingenieros/examples/Open bitvi kaysun/ivew.kay	About	
Examples	4 Without file		
	5 Without file		
	6 Without file		
	More		

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.

	New job	×
Job name		
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Description		
_		-
Accept		Cancel





Database

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E-mail
elisa.ruiz.cype@gmail.com 🗸 🗸
Password
····· Q
🗹 Remember me
Connect to Open BIM Database
Register
Recover password
OBDatabase

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







Interface



2.2 Floor plans

Create 2 levels.

Kaysun	New X
by Frigicoli	Reference Floor 1
+ ∧ × ▲ ▼ Floor plans Reference elevation Installation hei DXF Floor 0 0.00 m 2.30 m □	Reference elevation 4.00 m Relative installation elevation 2.30 m
:	Installation height 6.30 m
	Accept Cancel





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:

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Now the templates have been loaded into the project.

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Floor 1 Model (1).pdf Flo	oor 1 Model (1)		
R & Q S & O P			
Accept		Car	ncel

Choose which template will be visible on each floor:

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

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Horizon by frigical + Image: Construction installation height DXF Roor plans Reference elevation installation height DXF Roor 1 4.00 m 6.30 m V	View Selection X Selected View Roor 1 Model (1) Roor 1 Model (1) Accept Cancel	



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	Floor plans Reference ele	vation Installation	on height DXF						noor r moder (i)	- 1			
	Floor 0 0.00 m	2.3	0 m 🗹										
	Hoor 1 4.00 m	6.3	0m 🗹					Accept	C	ancel			

• 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.

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	Displacement in Y 0.0000	
	Scale in X 1.0000 🖄 Width: 0.210	
	Scale in Y 1.0000 Height: 0.297	
	Accept	Cancel

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.



Open BIM Kaysun/13





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.

Indoc	or unit, cassette X
Reference	
de 4 vías, 840x840 v KCIBF-56 DN4.0 v 1	Individual control
Heating dry bulb temperature20.0°CCooling wet bulb temperature19.0°C	人 ① 孕 � ゆ 目 図 田 ⊗ 夕 恐 愛 全 心 ಘ 15
Total required cooling capacity6500WRequired sensible cooling capacity5500WRequired heating capacity6000W	
Checks Total cooling capacity 3299 ≥ 6500 W ▲ Sensible cooling capacity 2003 ≥ 5500 W ▲ Heating capacity 3489 ≥ 6000 W ▲ ▲ Consult checks	
Accept	Cancel





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.





Indoor unit, wit	h distribution using ducts	×
Reference		
Estándar V KPDF-17 DN4.0 V	Individual control	
Heating dry bulb temperature 20.0 *C Cooling wet bulb temperature 19.0 *C	人 ⑰ 尋 � & ┃ ፬ ☲ ֎ ቃ ቃ ଅ ଊ ଊ ଊ ♥	ə 🔁
Total required cooling capacity 1500 W % Required sensible cooling capacity 1000 W % Required heating capacity 900 W %		
Checks	1	
Total cooling capacity 1002 ≥ 1500 W	- Alexandre	
Sensible cooling capacity 707 ≥ 1000 W Heating capacity 1219 ≥ 0 W ✓		
Consult checks		
Accept	Ca	incel

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.

+ 🥖 🖃	× • • 🖾		• •	Edit	×
Floor plans	Reference elevation	Installation height	DXF		
Floor 0	0.00 m	2.30 m	✓	Reference Floor 1	
Floor 1	4.00 m	6.30 m	✓		
				Reference elevation	4.00 m
				Relative installation elevation	2.30 m
う 合 人	🗊 🖗 🗣 🛱] 🗹 🖶 💱 💋 🤻	8 🕄	Installation height	6.30 m
				Accept	Cancel

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.

	Units		
	Units	Label	Decimal digits
Primary measure uni	ts		
Length	m	m	2
Diameter	mm	mm	2
Area	m²	m²	2
Temperature	°C	°C	1
Liquid volume	I	1	2
Volume of the room	m³	m³	2
Density	kg/m³	kg/m³	2
Weight	Kg	Kg	2
Water flow	l/h	l/h	2
Air flow	l/s	l/s	0
Thermal load	w ~	w	0
	W Btu/h kcal/h	fault settin	gs
Accept	kW	settings	







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.

Climate of	data	VRF	Control Control Control	C 2 C [Edit	Image: Second	Redraw 3D View View
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	ടപറ		Reference	◄	WMO region 6 - EUROPE	`
by	Frigicoll		Altitude 0.00 m	₽ ₽	ASHRAF Station name A CORUNA	<u> </u>
•	*	• •	Summer dry bulb temperature 35.0 °C		Annual percentile value (Heating) Annual percentile value (Cooling)	99% ~
evation า	Installation height 2.30 m	DXF			Annual temperatures	1% ~
ו	6.30 m		Winter dry bulb temperature 6.0 °C Relative humidity of the air, in winter 80.00 %		Weather Data Viewer 6.0. Latitude (°)	2% ~ 43.30 N
	F D & A	D (70)		_	2017 ASHRAE, www.ashrae.org Used with permission.	8.38 W
CP L	µ ∎ \$ 9 7	8 9 4 :		cei	The data are provided "as is" without warranty of any kind, either expressed or implied as to the quality and performance of the data is with you. In no event will ASHRAE be any damages, including without limitation any lost profits, lost savings, or other incide consequential damages arising out of the use or inability to use the data.	. The entire risk liable to you for ental or
100					any damages, including without limitation any lost profits, lost savings, or other including consequential damages arising out of the use or inability to use the data. Accept	

2.10 Designing the system

Click on the **Design** button.







Select the size of the pipes and units.



The data has been read.





Kaysun Migical

2.11 Design report

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

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	Permittedcapacityratic			140%	30%-130%	•		
	NumberofiOconnected			3	1-13	•		
	l otalpipelength			15.01m	100.00m	•	-	
	Pipelength between theo	utdoorunitandfurthe	stindoorunit	12.10m	60.00m		- 1	
	Equivalentpipelengthbe	tweentheoutdooruni	andfurthestindoorunit	11210m	70.00m			
				13.100	70.000			
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	Pipe length to the furthest Difference inheightbetwe	tindoorunit, from the een indoorand outdoo	ìrstbranch units	9.40m 0.00m	40.00m 30.00m	* *		ľ
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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.

Open BIM Kaysun/23





2.13 Moving elements in the z axis

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



Open BIM Kaysun/24







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*.

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2. Add the contact to your project.





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

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

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Kaysun HVAC installation	Elisa Ruiz Da	via	Direct expansion systems	an hour ago





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

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		Link to a BIMserver.center project	
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New	1 C:\CYPE	lťs	s what you do
File manager	2 C:\CYPE 3 C:\Users' 4 C:\CYPE 5 C:\CYPE	Elisa Ruiz Davia elisa.ruiz@cype.com	Select project Select an existing project from the BIMserver.center platform.
	6 C:\CYPE	Configuration	Create new project Create a new project on the BIMserver.center. Project: -
		Accept	Cancel

3.3.2 Development

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

Design the building:







3.3.3 Sharing

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3.4 CYPETHERM LOADS

3.4.1 New file

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Kaysun Migical

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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**.

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3.5 Open BIM Kaysun

3.5.1 New file

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E-mail elisa.ruiz.cype@gmail.com ~
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Remember me
Connect to Open BIM Database
Register Recover password
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3.5.2 VRF system design

The building geometry and thermal loads have now been imported.

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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.

		Indoor unit, cassette						
		Reference						
Space Reference Espacio_004		de 4 vías, 840x840 v KCIBF-56 DN4.0 v						
Thermal load Total cooling load	1321 W	Heating dry bulb temperature 21.0 °C \checkmark \checkmark \bigcirc	0 💠 🗟					
Sensible cooling load Heating load Design parameters	1321 W 3331 W	Total required cooling capacity 1321 W % Required sensible cooling capacity 1321 W % Required heating capacity 3331 W %						
Cooling temperature Relative humidity Heating temperature	24.0 *C 50.00 % 21.0 *C	Checks Total cooling capacity 3299 ≥ 1321 W ✓ Sensible cooling capacity 2003 ≥ 1321 W ✓						
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3.5.3 Exporting

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

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	Architecture			Elisa Ruiz Davia		Architectural design				
	Thermal loads			Elisa Ruiz Davia		Thermal analysis				





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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CYPE em Portugal (TOP Informática, Lda.) Tel. (+351) 253 209 430 geral@top-informatica.pt CYPE Italia Tel. (+34) 965 922 550 supporto.italia@cype.com North America & United Kingdom Contact: USA (+1) 252 495 6740 UK (+44) 203 769 3089 <u>support@cype.com</u>

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