

CYPETHERM EPlus



Energy simulation of buildings with EnergyPlus™
Energy demand and consumption

CYPETHERM EPlus It is an application for modeling and simulation of buildings with **EnergyPlus™**.

This application is integrated into the [Open BIM Workflow](#) Through the standard **IFC**.

Index

1. [Description of the program](#)
2. [Work environment](#)
 - a. [Building](#)
 - b. [Calculation](#)
 - c. [Graphic Introduction](#)
3. [Characteristics and output of results](#)
 - a. [Climatic data](#)
 - b. [predefined Data and libraries](#)
 - c. [Calculation results](#)
 - d. [Listings and complementary calculations](#)
4. [Include in the Open BIM workflow](#)
5. [Use license](#)

Description of the program

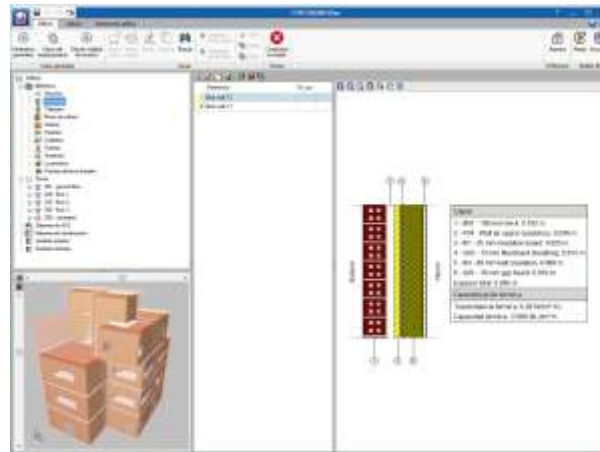
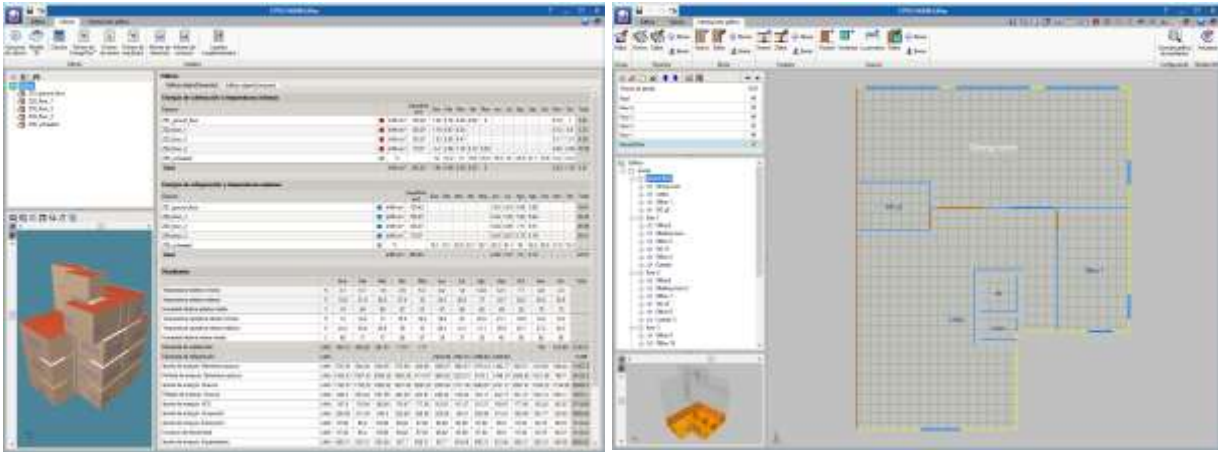
CYPETHERM EPlus It is an application for modeling and simulation of buildings with **EnergyPlus™**.

EnergyPlus™, a calculation engine developed by the **Department of Energy of the United States of America (DOE)**, is one of the most widely used, powerful and recognized energy simulation engines of today. Thanks to its integration into CYPETHERM EPlus (always updated to the latest available version), the application becomes a powerful tool for the energetic simulation of buildings, allowing to determine the energy demand of the same, as well as the Energy performance of the systems of air conditioning arranged, determining the energy consumption by system of contribution and energetic vector used.

Work environment

The "CYPETHERM EPlus" environment is divided into three sections identified by the tabs located at the top:

1. [Building](#)
2. [Calculation](#)
3. [Graphic Introduction](#)



Building

This section defines the general parameters, site data and the building model, in a tree scheme formed by three main branches:

1. **Library**
The library introduces all types of enclosure and constructive elements of the work (enclosures, partitions, glazing, doors and linear thermal bridges).

2. Areas

In each zone the enclosures that compose it are introduced by means of the definition of the constructive elements that make it up.

3. Systems

The building systems are defined for heating, ACS and refrigeration, allowing to choose between a wide range of systems usually used in building.

Calculation

This section launches the simulation of the energetic model of the building and obtains the listings with the results of the same. In addition, it is possible to view the input files of the calculation engine and the results obtained by it.

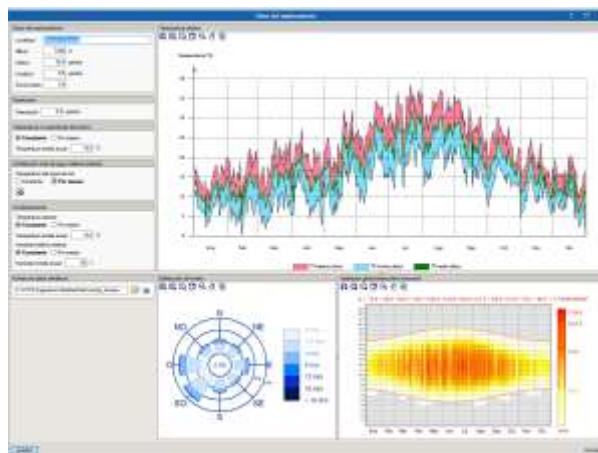
Graphic Introduction

If the work has been created from BIM files This section contains the plans of each floor with the corresponding constructive elements. From here it is also possible to edit the characteristics of the constructive elements.

If on the contrary, the work has been introduced manually, this section is empty being the user in charge of designing the plants of the building indicating the enclosures and the constructive elements that form it, in order to be able to print the drawings of the work .

Characteristics and output of results

Among the main features of CYPETHERM EPlus highlight those that are developed in the following sections.



Climatic data

The program allows to work with any climatic data file type EnergyPlus weather Format (EPW), available on the official website of EnergyPlus™.

Predefined Data and Libraries

1. Materials

Materials of the library incorporated in the Unified tool LIDER-inlener and of different libraries of international materials (France, Portugal, Italy or ASHRAE, among others).

2. Thermal bridges

Import of values of linear thermal transmittance from different international libraries, among which are the Atlas of thermal bridges of the supporting document DA DB-he/3, ISO 14683 or those defined in the French standard RT2012, as well as the Calculation of the linear thermal transmittance by numerical analysis according to ISO 10211, integrating the calculation carried out by the program CYPETHERM BRIDGES.

Calculation Results

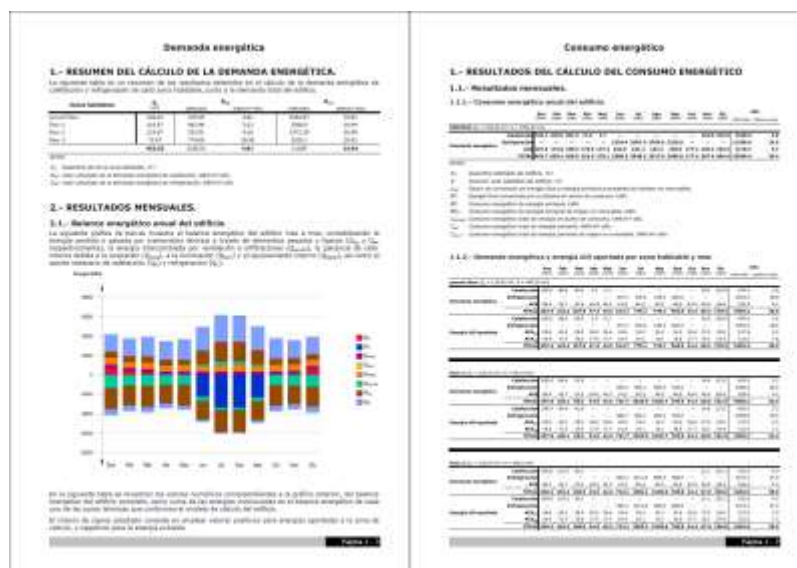
The calculation results offered by the program include:

1. Demand report

Results of the calculation of the energy demand detailed by thermal zone.

2. Consumer Report

Results of the calculation of the energy consumption detailed by thermal zone and energetic vector.



Listings and complementary calculations

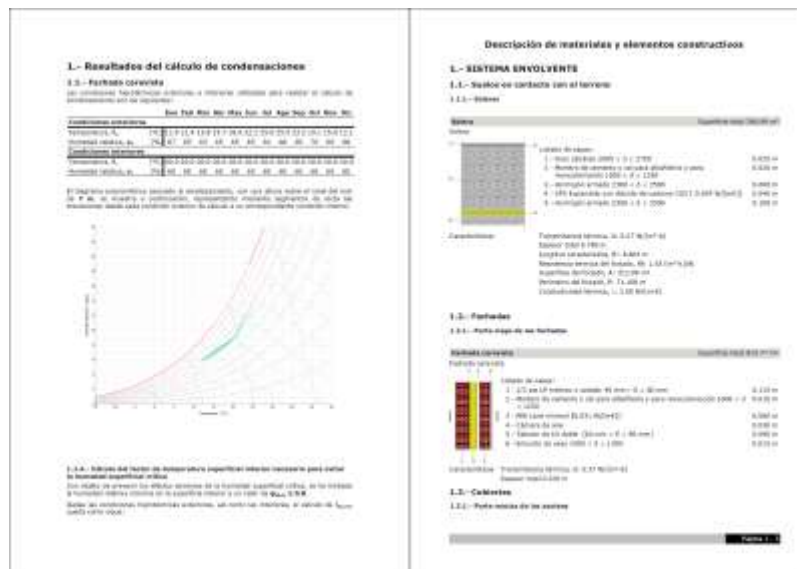
In addition, CYPETHERM EPlus offers a number of additional capabilities to extend the results obtained by the program:

1. Condensation limitation

It allows to check the existence of superficial and interstitial condensation according to ISO 13788, integrating the calculation made by the program CYPETHERM HYGRO in each constructive solution of the thermal envelope of the building.

2. Description of materials and constructive elements

List of the different constructive elements present in the work together with their materials, quantities, transmission coefficients, etc.



Include in the Open BIM workflow

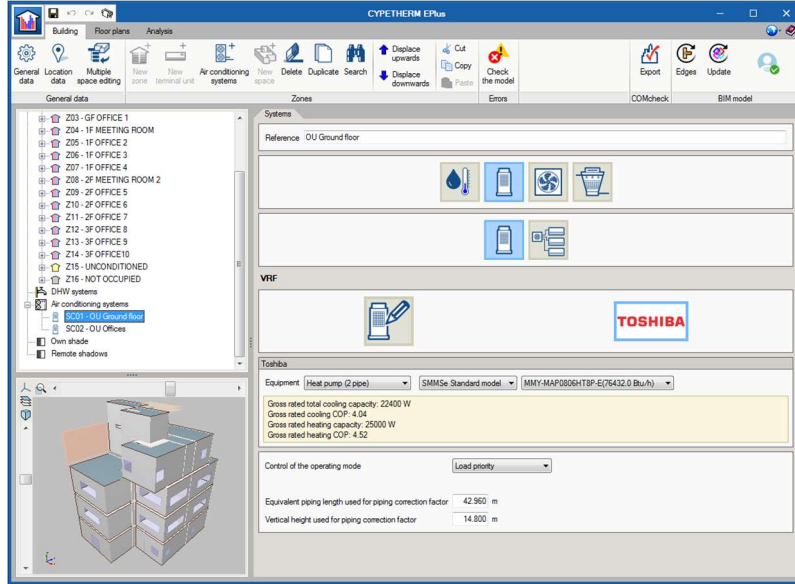
CYPETHERM EPlus is an application integrated into the Open BIM workflow. In this sense, it allows the importation of software-generated BIM geometric models such as IFC Builder, as well as other IFC information files, including:

1. Those generated by CYPELUX and CYPELUX CTE with information regarding the installed power of lighting and the energy efficiency of lighting installations, necessary for the calculation of buildings of use other than residential.
2. Those generated by CYPETHERM HVAC, with the definition of air conditioning systems VRF, Airthermal, Multisplit and split 1x1.



Software for Architecture, Engineering and Construction

Modelling and energy simulation of buildings with EnergyPlus™ version 8.9.



Modelling and energy simulation of buildings with EnergyPlus™, integrated in the Open BIM workflow via IFC and gbXML.

Required user license permits

To be able to work with CYPETHERM HVAC, users must have the corresponding permission to use the program.

For project consultancy and detailed information; cype@cype.ist or cype@cype.ae