

Service offer: WALK-IN CLIMATE CHAMBER

The walk-in climate chamber can be used as a research or testing environment to investigate hygrothermal behaviour in complex structures and building connections. It consists of two rooms which are independently air-conditioned, and allows to test building and installation components (e.g. HVAC) and other assemblies, under different environmental conditions.



Service

The climate chamber is divided into three parts:

- A. fixed part in which “outdoor conditions” can be simulated: -20 until +65°C with adjustable relative humidity above 10°C;
- B. mobile part in which “indoor conditions” can be simulated: +10 until +40°C and 20 to 90% relative humidity;
- C. movable intermediate part in which the test panel of ca. 1m70 by 1m70 can be built up.

The fixed and mobile part are independently air-conditioned. The movable intermediate part holds the building component under investigation, or is left open to generate a larger test room. When a test panel is placed, the heat transport through the building component (e.g. window assembly) may then be measured, as well as the temperature gradient, local humidity level and air tightness.)

A wide range of sensors (air and surface temperature, relative humidity, air velocity, heat flux and air pressure difference) is available for monitoring during test phase. The test conditions in the climate chamber can be controlled via dynamic profiles in dedicated lab software, for example using weather data from the Belgian climate as input. An example of such input and the achieved conditions, is given in the graphic.

Partners we search for

The walk-in climate chamber allows companies to optimize the design of their products (installations and/or components) during the development phase under a wide range of environmental conditions. These products can consist of building components (such as heat losses through multi-layered wall components) or installation components (such as heat pump efficiency tests). Product design as well as performance assessment aiming at improving your product’s technical performance (e.g. airtightness of window to wall connection) can be performed. The climate chamber also allows to verify measurement protocols (e.g. building infrared thermography) under extreme climatic conditions.

About the researchers

The research group Energy and Materials in Infrastructure and Buildings (EMIB) focuses on research in the field of infrastructure, buildings and heat applications wherein quality, durability and energy are integrated aspects. EMIB is a complementary team of researchers within the field of applied sciences: built environment and electro-mechanics. Within EMIB, the research domain Buildings and Installations: Retrofit and Design (BiRD) is the main user of the walk-in environmental chamber. BiRD focuses on the (re-)design and performance assessments to obtain a sustainable built environment, by applying an integral approach in both design and retrofitting of buildings and design and control of comfort systems and installations.

