

CONDUCTIVITY OF MATERIALS TEST UNIT



Experimental capabilities

- Comparison of performances of different types of building materials
- Thermal characterization of various materials
- Measurement of the thermal conductivity of various materials
- Measurement of the thermal resistance of various materials
- Measurement of the thermal conductivity for the series coupling of several samples of materials

Operating principle

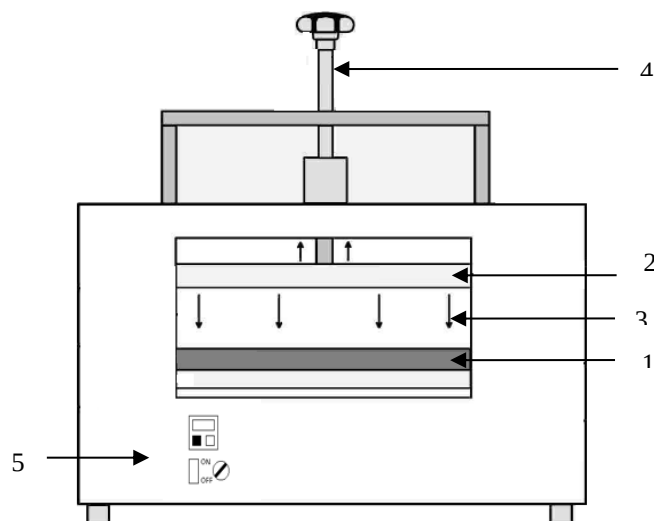
The PCT 030 is a bench dedicated to assessing the performances of construction materials used in housing.
The bench is thermally isolated. Several types of samples of materials of construction are provided.
The bench consists of an electrical box with control pushbuttons, digital display, and regulator allowing to perform the complete study of the developed pedagogical themes.
The unit is delivered complete, instrumented with means of measures and means of data acquisition and processing

The robust design of this equipment makes it perfectly suited for use in schools.
Its anodized aluminum structure on wheels makes it extremely robust as well as great flexibility of integration into your premises.
The manufacturing of this equipment meets the European machine directive.

This equipment can be used alone or with other compatible devices in our range (see last section of this document).

Illustrations

Technical details



1. Cold plate with water cooling

Power by circulating water
Electronic flowmeter for measuring the flow rate of cold water
Equipped with a thermocouple T type for measuring the surface temperature

2. Hot plate

Internal plate equipped with a heating system
Equipped with a thermocouple T type for measuring the surface temperature

3. Samples provision room

7 samples of building materials to put between the cold and hot plate of 180 x 180 mm (BA13, PVC, Polycarbonate, Pressed wood of different thicknesses, cardboard, microthermoverstitched)

4. A clamping system

Pressure and reproducible thermal contact with this clamping system

Control box including

An electronic regulator of temperature of the hot plate
7" touch screen display for viewing measurements

- Temperature of the cold plate
- Temperature of hot plate
- Temperature input / output cold water
- Cooling cold water flow rate in L / min
- Electrical consumption power

Start-up switch of heater
Double push-button for general start / stop
Emergency stop button
Wifi connection for data acquisition on PC

Supervision software and recording of data included

Services required

Documentation

- Power supply: 230 V mono - 50Hz - 20A
- Water supply : 3 to 5 L/min – 3 bars
- Dimensions: (LxWxH mm): 500 x 500 x 600
- weight (Kg): 20

- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Certificate of conformity CE

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

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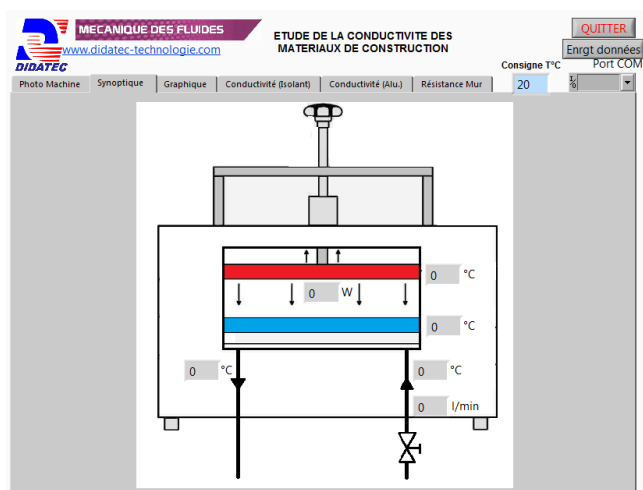
The bench also features an original supervision and setting software. The connection to the PC is made by a standard USB port. The software is divided into five parts:

MACHINE PHOTO:

Included in this window the picture of the machine with the location



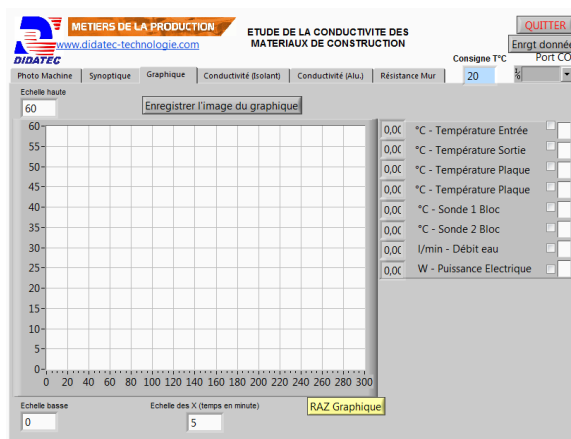
BLOCK DIAGRAM:



Included in this window the block diagram of the machine with the location of the different measures of the process and their values.

GRAPH:

Included in this graph window, the possibility of drawing the measurements curves depending of time by selecting the desired quantities



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CONDUCTIVITY INSULATOR AND WALL:

We find in these windows, the possibility of calculating instantaneous the heat flow, the thermal resistance of materials, the thermal conductivity and the temperature difference between the hot and cold source.

It suffices for the user to inquire the surface as well as the thickness of the sample placed in the test area.

The user can also perform a series arrangement by placing two different types of materials and measure the characteristic quantities of the wall.