RCT200

TEMPERATURE CONTROL STUDY UNIT

Experimental capabilities

- **Study of a temperature regulating loop**
- **Identifications of the elements: Sensor - Regulator - Actuator - Disruptive element**
- **Setting the regulating parameters P, I, D**
- **Configuration of the regulator**
- **Visualization of different signals by software (setpoint, measurement)**
- **Characteristics curves**
- **Wiring of the regulating loop on synoptic**
-

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Operating principle

The RCT 200 bench enables the study of temperature control. A pump ensures the water supply in the test circuit. A digital PID controller receives the temperature information and should adjust the power of resistance to achieve the set point.
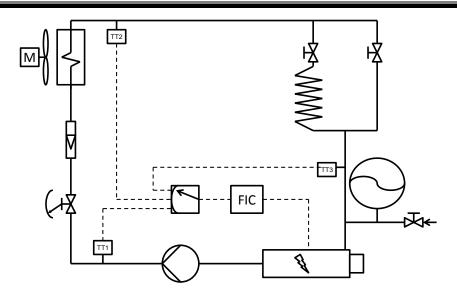
It is also possible to create several event of disturbance for the temperature control (using a study module of the water-air exchanger for dissipating of the heat and a coil circuit allowing to create a delay and acting on the parameter I)

The unit comes complete with instrumentation, technical and pedagogical documentation in French as well as all the accessories required for proper operation (Included supervision software)

The robust design of this equipment makes it perfectly suited for use in schools.

Its anodized aluminum profile structure on multidirectional wheels with brakes makes it extremely robust as well as great flexibility of integration into your premises. The manufacturing of this equipment meets the European machine directive

Illustrations
Technical details

The bench has the following characteristics:

- A water circuit expansion vessel of 8 L, pump, heating device and two controlled systems with different lengths of delay

- A three-stage pump: power of 25 to 60W

- A screwed heating resistance (2000 W) with protection against the dry running and temperature limiter

- A heat exchanger air water with fan

- Three temperature measurements with Pt100 probe with length 150 mm Ø = 6 mm in several places

- A generation of disturbance variables by ball valve with calibrated scale in water circuit

- A power regulator

- A digital controller of PID type with configurable microprocessor with regulator On/Off or continuous (P, PI or PID)
- 4-20 mA analog output
- Mounting of the elements on a robust chassis in aluminum profile on multidirectional wheels with brakes

- Processes variables X and Y are accessible as analog signals via dual sink sockets

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Synoptic resuming the bench diagram

- Sensor and actuator signals are brought back on the sockets of the diagram
- Two power supplies 24 VAC for two LEDs alarms
- A status indicator, the input and output sockets and indicator

Monitoring software enabling:

- Representation of relevant data on PC
- Operator and regulator configuration acting on the regulation process
- Recording and storing of changes over time

System requirements: Windows 7 or higher

Services required	Documentation
• Power supply: 230 VAC – 50 Hz – 20 A • Power supply type : 1 phase + Neutral + Earth • Water supply: 15 L/min – 3 bar (filling) • Dimensions: (LxWxH mm): 1000 x 800 x 1600 • weight (Kg): 75	• 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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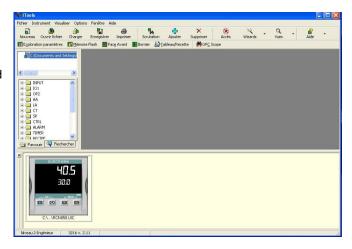
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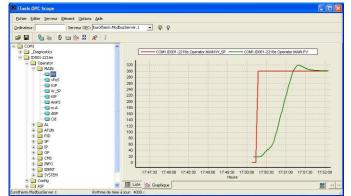## Supervision: Configuration, Plotting of curves

The bench is also equipped as standard with a monitoring and configuration software. The connection to the PC is made via a standard USB port. The software is divided into two parts:

CONFIGURATION:

This part allows you to display the parameters directly via data explorer similar to that of Windows.
The front face of regulator is reproduced on the PC screen and the operator can actuate the buttons and controls as if it were on the pilot.

PLOTTING THE CURVES:

This section allows you to draw curves with the signals of the regulator. For example on this image below we visualize the setpoint and the real-time measurement, but it is possible to add other parameters such as the output signal.....
The data stored during the plot can then be saved in a file in excel format.