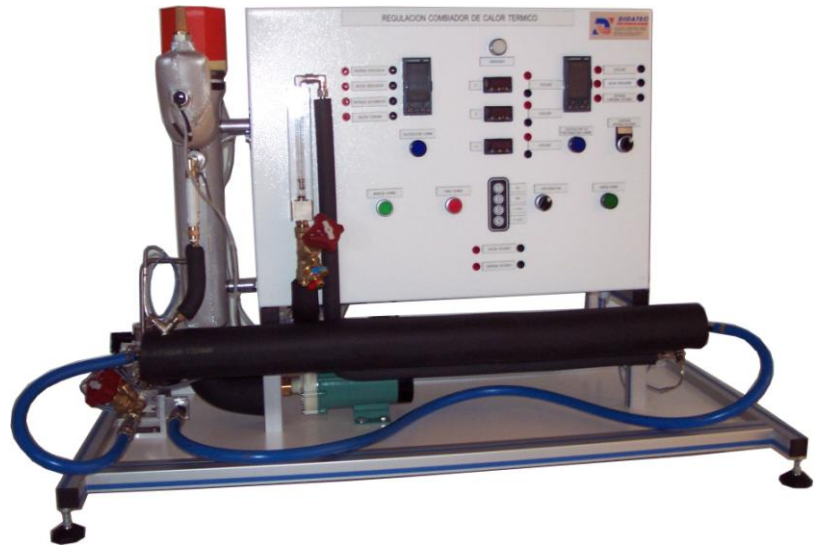


Regulation of a Heat Exchanger

DESCRIPTION

- The unit is delivered complete with instrumentation, technical documentation, and instructions.
- Designed and manufactured to industrial standards.
- This unit is designed for various levels and fields of study
- Inlets and outlets are connected using \varnothing 4 mm female safety sockets -
 - Options:
 - Interface and software for PC
 - Utilities module
- It is possible to connect this unit in series with another regulation unit and to use the valve as a main control.



SUGGESTED APPLICATIONS

- Technical data for the elements of a regulation loop
- Sensor – regulator – actuator – perturbing element
- PID or self-adaptive
- Configuration of the regulator
- Characteristic curves (temperature, valve opening, time of response, etc...)
- Study including advantages of regulation in cascade
 - Co-run
 - Back-run
 - Laminary/turbulent flows

TECHNICAL CHARACTERISTICS

- A. Compressed air
- B. Water return
- C. Water supply

T1-T2-T3-T4 : Temperature probes

Pt 100 Ω – class A
Stainless steel 304 L

① Temperature indicator

Display 0.1 °C
Recopy of the measure (4-20 mA) on jack - \varnothing 4 mm

② Electromagnetic flow meter

PFA covering, stainless steel electrodes
Local display, outlet 4-20 mA

③ Thermoregulator group

Capacity : 5 litres
Adjustment from +20°C to +100°C
Power 1600 W
Incorporated regulation at $\pm 0.5^\circ\text{C}$
Circulation pump

④ Exchanger

Monotubular – stainless steel
External tube covered by a thermal insulator
Hot water into the internal tube
Cold water into the external tube
Quick and interchangeable connections on the cold-water network for the lead through in co or back-run

⑤ Regulation valve

Stainless steel body
Variable Cv
Pneumatic positioner and actuator

R1 – R2 : PID type regulator with microprocessor

Accuracy class 0.2
Configurable scale range
Continue, logical, relay outlet
– Proportional band from 0.5 to 1000%
– Integral action time from 0.1 to 100 min
– Derived action time from 0.01 to 10 min
Self-adaptive: the PID parameters are calculated by the regulator for an optimized regulation
Numerical outlet : MODBUS RS 232
One of the regulators has an external control inlet for regulation in cascade

⑥ Variable section flow meter

Rotameter : accuracy $\pm 3\%$ of the full scale

⑦ Perturbation valves - 1/4 turn

On hot and cold circuit

⑧ 1/4-turn valves for connection in series (S)

RCT 101

PRINCIPLE SCHEME

Erreur! Liaison incorrecte.

UTILITIES

Electricity : 230 Vac – single-phase
Water : 10 L/min – 3 bar (44 psi)
Compressed air : 6 bar (90 psi) maximum

DIMENSIONS AND WEIGHT

Length : 780 mm
Width : 570 mm
Height : 590 mm
Weight : 50 kg