

# HIGH PRECISION TEMPERATURE CONTROLLERS



TRP

## PROFILE

The **TRP** series of **Thermogel** units are pressurized water temperature controller with indirect cooling. **TRP** have been made to condition molds and cylinders in the plastic and rubber sector, as an alternative to the traditional diathermic oil units.

The TRP guarantee high precision and production quality, a maximum process repetitiveness and efficiency, minimum operating costs, practicality and safety of use.

- The **TRP** are equipped with sophisticated electronics and a particular hydraulic circuit which allow a **high precision** to be obtained in controlling the operating temperature ( $\pm 0.3^{\circ}\text{C}$ ).
- Heat exchanger with “cold” operation to eliminate the problem of scale inside the exchanger itself.
- The control panel is characterised by a simple and easy-to-use interface with a display for reading the temperature with large characters and a large alphanumeric management screen.
- Various parameters and **the machine status** can be controlled by means of a **powerful microprocessor** and **the operating parameters and alarm messages can be visualised continually**. All the messages are displayed **in the language selected by the operator**, amongst the five available.



mod. TRP140/12

- The **TRP** can be interfaced with the production machines with which they can communicate. Various serial communication software protocols are available of the most famous brands.
- All the models have **high performance pumps** capable of providing the process with sufficient flows and pressure to guarantee an excellent temperature distribution. The **pressure is constantly monitored and may be regulated** by the operator by means of the regulation by-pass in order to obtain the best results for the utility. The pumps have special seals and can operate in environments with temperatures of up to  $+60^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ ).
- The **Thermogel** units are fitted with **automatic loading**.
- All the piping, the tank and the connection parts used are made **100% of rust-resistant materials** to guarantee the maximum lifetime. The parts used are all of prime quality and designed to operate in a continuous cycle in the most stressful environmental and process conditions.
- The **Thermogel TRP** unit is available with heating powers of 6, 12 and 18 kW by means of low surface load incoloy heating elements.
- The **Thermogel TRP** have been designed paying maximum attention to the **safety of the operator and the process** against all possible hazards.

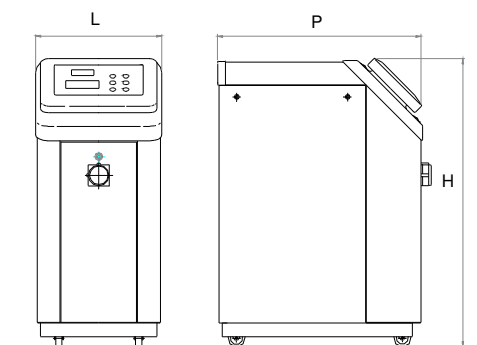
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## TECHNICAL DATA

| Thermogel   |                           | TRP          |        |        |     |
|---|---------------------------|--------------|--------|--------|-----|
| Model   |                           | 140/6        | 140/12 | 140/18 |     |
| Circulating medium  | -                         | water        |        |        |     |
| Maximum temperature   | °C                        | 140          |        |        |     |
| Temperature accuracy  | °C                        | ± 0,5        |        |        |     |
| Heating capacity  | kW                        | 6            | 12     | 18     |     |
| Step  | N°                        | 2            | 2      | 2      |     |
| Cooling system  | D/I                       | Indirect     |        |        |     |
| Cooling capacity (*)  | kW/°C                     | 0,5          |        |        |     |
| Control valve   | -                         | Proportional |        |        |     |
| Process pump  | kW                        | 1,5          |        |        |     |
|   | l/min                     | min          | 30     | 30     | 50  |
|   |                           | nom          | 50     | 70     | 100 |
|   |                           | max          | 100    | 100    | 160 |
|   | bar                       | max          | 3,0    | 3,0    | 3,1 |
|   |                           | nom          | 2,9    | 2,8    | 2,9 |
| min   |                           | 2,4          | 2,4    | 2,3    |     |
| Nominal Values  | kw (50Hz)                 | 7,5          | 13,5   | 19,5   |     |
|   | <sup>A</sup><br>400V 50Hz | 14           | 23     | 32     |     |
|   | <sup>A</sup><br>220V 60Hz | 25           | 41     | 56     |     |
|   | <sup>A</sup><br>380V 60Hz | 15           | 24     | 33     |     |
| Sound level   | dB(A) 10mt.               | 20           |        |        |     |
| Connections to process  | in/out                    | 2 x 1/2"     |        |        |     |
| Connections to cooling  | in/out                    | 1/2"         |        |        |     |
| Net weight  | Kg                        | 75           | 85     | 95     |     |
| Lenght  | L mm                      | 360          |        |        |     |
| Depth   | P mm                      | 590          |        |        |     |
| Height  | H mm                      | 840          |        |        |     |
| (*) Cooling capacity each °C of temperature difference between process and cooling water at 2 bar of pressure |                           |              |        |        |     |
| Power supply = 400 Volt ± 15% 50Hz (available 220V±15%60Hz; 380V±10%60Hz; 460V±15% 60Hz UL Listed)            |                           |              |        |        |     |



# HIGH PRECISION TEMPERATURE CONTROLLERS



## TECHNICAL FEATURES

TRP

### • HEATING CIRCUIT

- low surface charge **incoloy electric resistances**

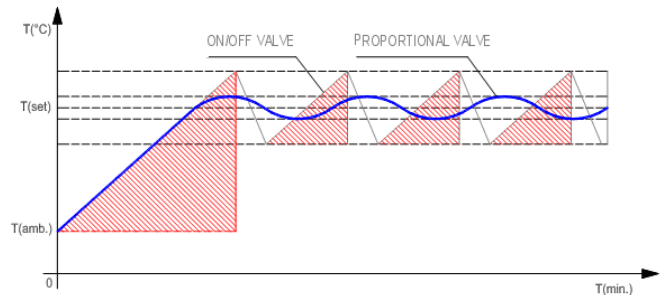
### • WATER CIRCUIT

- hydraulic circuit designed to provide constant pressure and flow to the process
- high performance electric pump in terms of flow/head, with a special mechanical seal and tropicalized motor (maximum ambient temperature +60 °C)
- stainless steel water/water plate heat exchanger
- temperature control system by means of motor driven regulation valve
- safety valve
- pressure regulation by-pass
- automatic loading
- rustproof and insulated pipes and connecting parts
- stainless steel insulated tank

### • DIRECT COOLING WITH MODULATING VALVE:

Cooling control is carried out by means of a **motor driven proportional valve** which not only allows the **set temperature to be maintained perfectly constant** but also **the consumption of electrical energy to be optimised**.

The proportional valve, controlled by a microprocessor, allows the amount of cooling water that flows in the process circuit to be controlled with extreme precision, ensuring that excessive flow (typical of the use of on-off type solenoid valves), does not require the intervention of the heating elements to bring the temperature back to the set value (see graph).



#### “cold” exchanger:

The **particular** hydraulic circuit guarantees heat exchanger operation with temperatures which do not promote the formation of lime scale, thus guaranteeing a longer lasting and more efficient cooling system.

### • ELECTRIC AND CONTROL

- switchboard in line with the European Standard EN 60204/1 in IP 55 with door locking main switch
- Microprocessor controller
- Proportional-integral regulation logic for controlling the temperature with a precision of  $\pm 0.3^\circ\text{C}$
- permanent digital reading of the pressure and temperature of the water to the process
- complete visualization on the back-lit display of the messages, in the selected language, with precise instructions of the procedures, of the troubles and the possible solutions
- Main alarms: no flow, high and low pressure on the circuit, incorrect phase, short circuit or disconnection of each probe, temperature warning for protracted deviation from the set point
- audible alarm
- prepared for installation of optical alarms, even remote controlled ones
- possibility of installation of the most common interface systems for communication with the machines and with centralised production and supervision system

### • FRAME

- made of steel, painted with epoxy powder
- removable panels
- fitted on rotating wheels

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**TRP**

## Thermogel options and accessories

| Description  | code | TRP | TRH    | options  |
|--|------|-----|--------|----------|
| Remote temperature probe kit (6 meters Cable)      | KTP  | ✓   | ✓      | option   |
| Interface kit with connector (5 meters Cable)      | KSL  | ✓   | ✓      | option   |
| Timer kit  | KTM  |     | ✓      | option   |
| Drain kit  | KSM  | ✓   |        | option   |
| Depressurization function kit                      | KAF  | ✓   |        | option   |
| External by-pass kit 1/2"                          | KBP  | ✓   | ✓      | option   |
| Visual alarm                                       | KAV  | ✓   | ✓      | option   |
| Remote start/stop function                         |      |     | ✓      | standard |
| Auto-cooling function                              |      | ✓   | ✓      | standard |
| Automatic venting                                  |      | ✓   | ✓      | standard |
| Delivery and return tempature visualization        |      | ✓   | ✓      | standard |
| Delivery and return pressure visualization         |      | ✓   | ✓      | standard |
| 5 languages selection (ITA-ING-FRA-TED-SPA)        |      | ✓   | ✓      | standard |
| Automatic filling                                  |      | ✓   | ✓      | standard |
| Centrifugal pump with special seal                 |      | ✓   | TRH140 | standard |
| Magnetic drive pump                                |      |     | TRH160 | standard |
| Pressure By-pass regulation                        |      | ✓   | ✓      | standard |
| Cooling control with proportional modulating valve |      | ✓   | ✓      | standard |
| Safety valve                                       |      | ✓   | ✓      | standard |
| Flow alarm   |      | ✓   | ✓      | standard |
| High and low pressure alarm                        |      | ✓   | ✓      | standard |
| Probe alarm  |      | ✓   | ✓      | standard |
| Audible alarm                                      |      | ✓   | ✓      | standard |
| Set point alarm                                    |      | ✓   | ✓      | standard |



|   |  |                     |   |
|---|--|---------------------|---|
| <b>Ordering code</b><br>Example:<br>TRP140/12 | <div style="border: 1px solid black; padding: 2px; display: inline-block;">TRP</div> | /                   | <div style="border: 1px solid black; padding: 2px; display: inline-block;">12</div> |
|   | --- Serie  | --- Max temperature | --- Heating capacity  |

