

## WATER THERMOREGULATORS



## NTC TES



### TES (Total Energy Saving)

The TES water temperature controllers not only allow low electric power consumption for the heating function (the electric heaters, controlled by the static relays, are switched off during normal operation), but even allow the refrigerating power required for cooling to be limited. This is done by means of a process called "AUTOTUNING".

### PRECISION $\pm 0,2$ °C

In service, the effective temperature fluctuations of the fluid around the set level are limited within  $\pm 0,2$  °C. The PID logic microprocessor and the technical solutions adopted in the fluid circuit guarantee this high precision.

The resulting advantage is a very strict control of the product, allowing process repeatability at a very high standards of quality. In addition, the process temperature is independent from the fluctuations in return from the user (e.g. moulding cycles).



### COOLING CIRCUIT WITH DIRECT OR INDIRECT EXCHANGE

In DIRECT exchange temperature controllers (mixing of cooling and heat control circuit water), the characteristics of the water into the thermoregulating circuit are the same as the cooling water, including any impurity, antifreeze (glycol) and hardness (limestone). In the simplifications of the hydraulic circuit, the other advantage lies in the possibility of eliminating thermal heads between the cooling and the heat control circuits, delivering water at the same temperature as the cooling water one, as a limit condition.

In INDIRECT exchange temperature controllers (separation between cooling water and heat control fluid) the heat exchange takes place through a large surface heat exchanger. This heat exchanger produces a thermal load of just a few degrees between the circuits. In all cases, connecting the temperature controllers in series with a chiller makes it possible to obtain a closed circuit resulting in zero water consumption.



### HIGH PRODUCTIVITY EVEN UNDER CRITICAL CONDITIONS

When there is need to reduce the pressure in the primary circuit (from the temperature controller to the user), the TES models allow this reduction to be executed gradually and to be adjusted by the operator.

The resulting advantage is the ability to maintain flow rates and pressures at values which are enough to guarantee a good production level.

In addition, the pump is not subject to changes in operation, with no consequent reduced risk of injuries.

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### TECHNICAL DATA

Model (1)	Type of fluid	Max temp.	Electrical heaters		Cooling capacity (2)		Pump		Type of cooling	Sound level (3)	Dimensions			Net weight	
			n°	kW	kW	kcal/h	kW	l/min			bar	L mm	P mm		H mm
NTC 18 A	water	90	2	18,0	55,8	48.000	1,5	50 - 200	3,7 - 2,6	direct	56	500	1.000	910	140
NTC 27 A	water	90	3	27,0	76,7	66.000	2,2	110 - 280	3,6 - 3,0	direct	57	500	1.000	910	165
NTC 36 A	water	90	4	36,0	85,4	73.500	2,2	110 - 280	3,6 - 3,0	direct	58	500	1.000	910	175
NTC 18 PD	water	140	2	18,0	57,6	49.500	1,5	50 - 200	3,7 - 2,6	indirect	56	500	1.000	910	180
NTC 27 PD	water	140	3	27,0	79,0	68.000	2,2	110 - 280	3,6 - 3,0	indirect	57	500	1.000	910	190
NTC 36 PD	water	140	4	36,0	89,5	77.000	2,2	110 - 280	3,6 - 3,0	indirect	58	500	1.000	910	210

- (1) - Standard electric alimentation 400V-3Ph-50Hz - Special on request  
 (2) - With  $\Delta=5^{\circ}\text{C}$  between set-point temperature and cooling water temperature  
 (3) - Sound pressure level at 10 metres

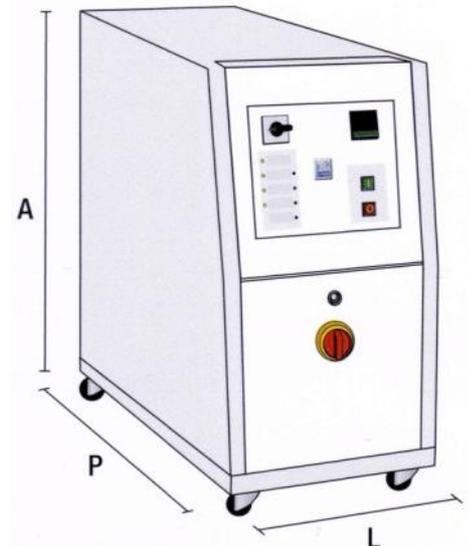
### OPERATION AT LOW PRESSURE (worn moulds) OR IN DEPRESSION (leaking circuit) - "PD" MODELS

Users have always expressed the need to maintain a sufficient production rate even in the presence of worn or damaged moulds with minor leaks in the connections between the temperature controller and the user and in situations which eventually lead to failure of the mould or connections. The measures adopted consist in "adjusting" the pressure in the circuit, up to and only when necessary, negative pressures are reached in the return circuit from the user. Temperature controllers fitted with this option also allow the delivery pressure to be continuously adjusted until all leaks are eliminated.

In turn, this allows sufficient flow to be maintained to grant a good production rate. The so-called operation in depression, during which outside air may be sucked into the temperature controller circuit, is a limit condition necessary to solve the most serious conditions of damage in the moulds or connections.

### LIQUID RECOVERY FUNCTION

This function is used to carry out the recovery of the fluid inside both the mould and the temperature controller and store it into a tank for its future re-use (water, water/glycol mixtures) or for its disposal in line with environmental protection regulations. This function allows mould change operations to be carried out without any trouble of dirtiness and under the best safety conditions for the operators.



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