

SINGLE Intermittent temperature control



Compact water-operated temperature control system K

The EcoTemp from SINGLE makes changing to variotherm mould temperature control especially easy. With EcoTemp, temperature control systems operating with user-defined performance data and operating temperatures can be combined to create an intermittent flow through the mould.

Variotherm temperature control, i.e. a systematically graded mould temperature over cycle time, provides a variety of benefits for the process, the part surface and strength as well as for the economic efficiency. The temperature of the pre-heated cavity wall rises as the hot polymer melt is injected into the mould. Mould cooling begins after the cavity has been filled. Only then is the part temperature reduced to the level required for demoulding.

Benefits of variotherm temperature control vs. conventional mould temperature control

- ▶ Longer holding pressure even in areas away from the gate
- ▶ Requires less injection pressure and clamping force
- ▶ Reduces internal stress during injection compression moulding of optical parts
- ▶ More accurate reproduction of surface details of micro- or nanostructures, surfaces with piano finish
- ▶ Better reproduction of surface effects such as self-cleaning or anti-reflection effects
- ▶ Ensures a more homogenous orientation of glass fibres in technical components
- ▶ Increases the welding time for melt fronts and reduces the occurrence of weld lines
- ▶ Less risk of warpage caused by shrinkage
- ▶ Better dimensional stability and shot-by-shot consistency
- ▶ Does not require any changes to the mould construction
- ▶ Optimised cycle times due to lower-temperature cooling

Benefits of SINGLE EcoTemp

- ▶ Durable valve technology
- ▶ Short control signal response times
- ▶ Optimised ramp up times thanks to two temperature settings per circle: standby and automatic temperature
- ▶ Lower energy consumption than classic constant temperature control

STANDARD EQUIPMENT

- ▶ SCT controller with EcoTemp functional range
- ▶ High-quality pump materials with hydraulic equipment
- ▶ Automatic filling and replenishing
- ▶ Switch box to IP54

OPTIONAL FEATURES

- ▶ Connection for various analogue and digital interfaces
- ▶ Pneumatic continuous control valves
- ▶ Runner system for individual flow measurement and monitoring can be mounted on the injection moulding machine or the mould platens

single
first choice
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EcoTEMP – MODE OF OPERATION

EcoTemp uses cycle-dependent signals from the injection moulding machine to control starting and stopping of the cooling fluid circulation. There is no fluid circulation inside the cavity wall during the injection phase. The heat input of the polymer melt increases the temperature of the cavity wall. During the cooling phase, cooling fluid circulates within the cavity wall.

The cooling fluid temperature can be adjusted as required. Thanks to the intermittent flow, EcoTemp can operate with lower fluid temperatures than conventional systems working with constant temperatures. Practical tests have shown that EcoTemp generally achieves cycle time reductions in the double-digit percentage range while delivering the same, if not better part quality. EcoTemp produces repeatable and reliable results and is easy to operate.

TEMPERATURE CONTROL SYSTEMS SUITABLE FOR EcoTEMP

EcoTemp can be operated with all SINGLE temperature control systems. In practice, EcoTemp is frequently operated with lightweight and compact water-operated systems for temperatures up to 90 °C or 150 °C.

EcoTEMP WITH MOULD INSERTS FOR CONTOUR-ALIGNED COOLING

Moulds with an effective thermal conductivity, a good heat transfer to the cavity, contour-aligned cooling channels as well as a low melt volume to be cooled or heated are prerequisite for optimum efficiency and economy of the EcoTemp system. Frequently, the melt volume is kept low by using only small inserts to be cooled or heated. Generative manufacturing methods such as laser-cusings build up these inserts layer by layer from steel powder so that the integrated cooling channels closely follow the surface contour and run very close to the cavity wall to be cooled.

EcoTemp can significantly reduce injection moulding cycle times

