

# Z-System

Partial dynamic temperature control



No weld line



No waste of time



No waste of energy

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## Systems

The whole is more than the sum of its constituent parts. This applies in particular to thermodynamics. The right heating element requires the appropriate thermal sensor and a suitable control unit. Is protective insulation needed? The matching plugs? A box around it? What about active cooling? If our customers pose these questions, then they need not only a component from us, but a whole, suitable system.

The new era of injection molding: Z-System

## Benefit from the new era of injection molding.

### High quality designed surfaces – more possibilities

Z-System: Selectively, the right temperature at the right time precisely at the right place in the cavity. The result: no visible weld lines, flow lines or matt points. In addition, you will be able to realize thin wall thicknesses, filigree geometries and top quality microstructures.

### The shortest top quality cycles

Z-System works in an extremely dynamic way. With a heating rate of 60 K/s (at the cavity surface), the injection molding tool is quickly heated up at the right point and above all, cooled down very quickly. Remove from the mold in the shortest possible time and manufacture top quality plastic designed surfaces in short cycles.

### With minimal energy input

Save energy, decrease costs. Due to the dynamic tempering of the mold, the Z-System works in a highly energy efficient way in connection with a thermal insulation in the mold. In practice, low heating capacities of around 100 W are sufficient. As such the Z-System stands for efficiency and sustainability in the field of plastic injection molding.

## Recommended by the expert

” With its Z-System, hotset provides tool manufacturers with an important further development on the previous variotherm tool temperature control in injection molding as a future-orientated, high-speed temperature control system. With a heating rate of 60 Kelvin per second and minimal energy consumption, cavities can thus be heated and cooled in a targeted, accurate manner in very short cycles. The results will impress any injection molder: high-quality molded parts with excellent surfaces and no weld lines or dullness, as are desired or demanded for example in automotive construction, lighting technology or the consumer industry. In addition, particularly thin walls can thus be realized, meaning that new perspectives are opened up for the manufacture of microstructures and miniature components!



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## High quality designed surfaces



### Surfaces without weld lines

With the Z-System you selectively temper in the injection molding tool exactly in the place where the weld line would otherwise arise. The flow of plastic will be optimized on the problematic



point. As a result, the plastics flow into each other and connect without visible weld line. We tailor the Z-System individually to your injection molding application and your mold.



### No matt points

In the injection molding process, a matt point has different causes. Among other things, small gates and high injection speeds play a key role.



In the case of demanding design surfaces, you avoid matt points with the Z-System.



### Fine microstructures

Functionally designed surfaces with fine microstructures require a high level of molding precision. This is conventionally achieved via high mold temperatures with longer cycle times



– or via the Z-System with partial mold tempering and constant cycle times.

### Very thin wall thicknesses

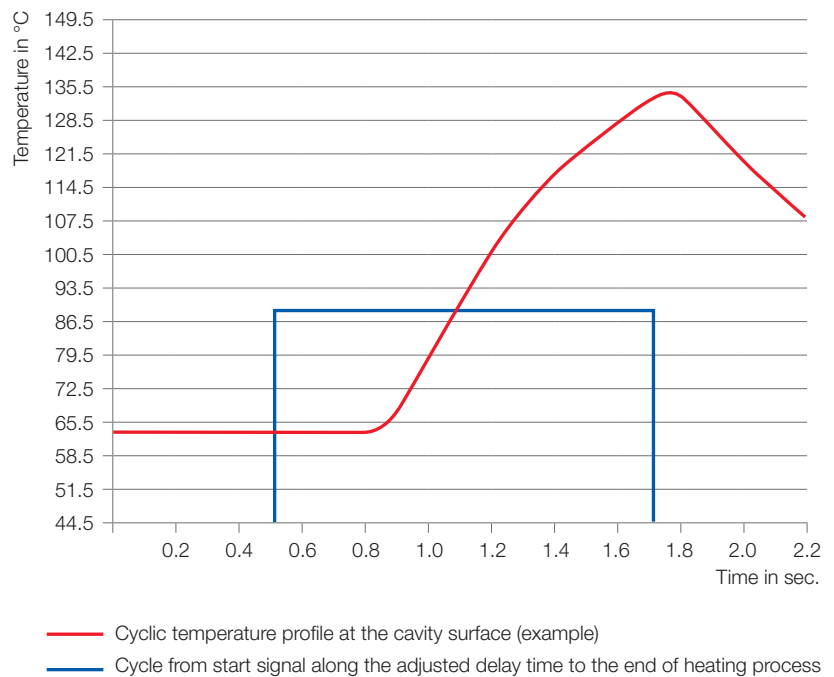
You want to manufacture filigree injection molded parts with very thin wall thicknesses at selective points? The Z-System ensures that the plastic within the cavity penetrates even into the narrow, difficult-to-fill areas.

### Partial optimization of the molding

In order to realize partial optimization of the molding, the mold wall temperature must be increased. This can be achieved through the clever use of the Z-System.

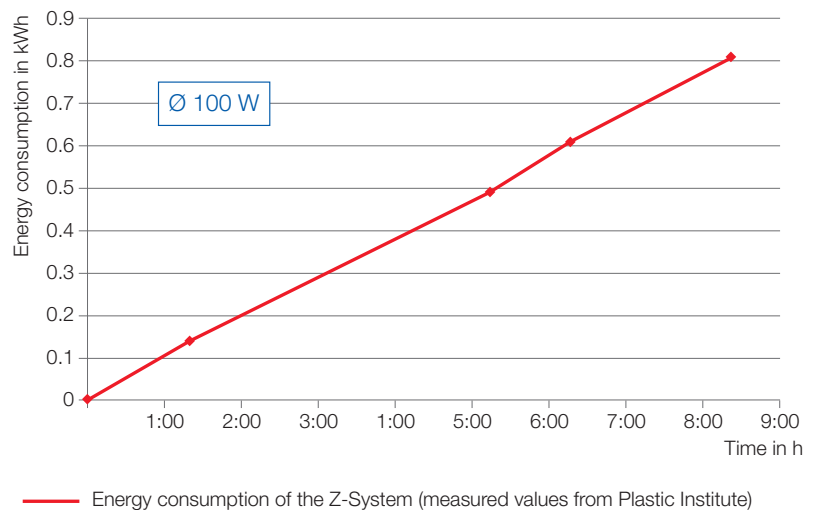
## No waste of time

With the Z-System you achieve particularly high quality designed surfaces without longer cycle times – or, in part, even with shorter cycle times. With the partial mold tempering, you can quickly bring heat energy into and out of the mold. The Z-System partially tempers tools with a heating speed of 60 K/s. The main advantage, in addition to rapid heating, there is the rapid removal of heating energy and/or rapid cooling.



## No waste of energy

With the Z-System, you save energy and costs as well. This is because the system heats up to improve quality, not the entire mold. The dynamic mold tempering only takes place where additional heat is actually needed in the injection molding process. The Z-System partially introduces small heat quantities at the right points. No unnecessary, excessive mold tempering! Per hour, this equates to a heating output of around 100 W. With optimized quality of parts and high quality designed surfaces.



## Further advantages



### High process reliability

Numerous sensors control and monitor the dynamic tempering.



### No additional personnel requirements

No additional effort required to operate the Z-system.



### Easy operation

Controllers are set on commissioning – easy to adapt to different machines.



### Individual solution & implementation

Customer-tailored development by hotset Engineering.



### Can be used anywhere

Works with every injection molding machine – even with older systems.



### Easy commissioning

Professional support on installation of the system.



### Standardized technology

System completely ready for installation with standardized technology.



### Secure data portal

Maximum security regarding data exchange.



### Industry 4.0

Communication with other devices possible via the open interface.



### Competitive advantages

Clearly set apart from the rest through clear quality and cost advantages.



### No license costs

No subsequent costs after commissioning.



### Support

Intensive training and support.

## Process handling



### Feasibility check

Individual, non-binding inspection of practicability and preparation of offer. Free of charge.



### Design and construction of the tool

Customer-tailored implementation based on the process parameters and manufacture of the system ready for installation.



### Installation & commissioning

Execution of controller settings and brief employee training.

## Range of services

### Control and regulation

The basic concept of the Z-System is always developed as an individually designed complete solution. Based on this the required control technology for the specific application will be worked out.

It is made up of various hardware and software components and is provided ready for use for integration into the tool – similar to the hot runner system.



Technical data	Z-System Control Cabinet 2.0
Number of regions	8
Nominal voltage	400 V AC, 3P/PE, 50 Hz
Power supply, 3 m	CEE 32 A
Max. power output	12 kW (1.5 kW each region)
Dimensions (H x W x D) [mm]	700 x 500 x 250
Permissible temperature	Operation: 0 ... 45 °C, transport, storage: -20 ... 70 °C
Permissible humidity	Relative humidity < 75% as an annual average, no condensation
Sound pressure level	< 50 dB
Protection type	IP4X
Electrical safety	Protection class I, overvoltage category II
CE labelling	The device complies with the guidelines for electromagnetic compatibility (complies with EN 61326-1) and the low-voltage directive (complies with EN 61010-1) which underlie the CE-labelling.
Display/operation	Comfort Touch Panel, 9" widescreen TFT swivelling on mobile stand
Interface with IMM	4 independent signals for start heating (e.g. turntable moulds); readiness, error, standby, e-stop, injection
Control modes	Time and temperature controlled (up to 8 x cavity sensors)

### Cavity sensor

Temperature measurement in the dynamic zone requires an extremely fast reacting temperature sensor with a minimum response time. Based on our internal development and engineering expertise in the field of sensor technology, we have developed our own temperature sensor strategy.

Oriented towards the mold, the individually designed cavity sensor is brought as close as possible to the area in the cavity wall to be tempered. The sensor sits directly in the zone of the partial-cyclically tempered mass, which is decisive for the surface quality of the injection-molded part.







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