**We solve problems**

thermobiehl Apparatebau GmbH exists for over 50 years now. Our world-wide reputation is due to a company policy emphasising quality, highest technical standards, long-lived and unproblematic products, safety, service and intensive customer support. Our products are used by well-known companies in many countries around the world.

We are especially proud of the development of our heating and cooling devices regulating the temperature of moulds within diecasting, gravity die and low-pressure die casting.

Only constant temperatures enable ideal production results for these production processes. Today, customary thermal control methods are basically no longer appropriate to meet the high demands required by the production process.

thermobiehl's heating and cooling devices close this gap. For many years, we have specialised in the development and production of technically well-engineered heating and cooling devices achieving absolutely constant temperatures and thus enabling ideal production conditions.

**The thermal control system**

**Heat transfer medium water**

Maximum temperature

160 °C, 180 °C

**Options**

- Mould temperature regulation before the commencement of work
- Exact, identical castings due to a constant mould temperature
- Increasing the useful mould life by carefully heating the mould and reducing the time spraying its surface
- Reduction of the cycle time
- Integrated injection system for rust protection
- Leaks stopping the operation with leaky moulds up to 80 °C
- Heating and operating temperature control, manually or via the production cycle, changing over by selecting the rate of shots
- Exact temperature control via supply, return and mould probes
- Control via microprocessor
- Operation manually via machine control
- Interface RS 485/Profibus
- Through-flow indicator/measurement
- Environmentally friendly due to temperature regulation medium water
- Cost efficient
- CE symbol

**Heat transfer medium oil**

Maximum temperature

250 °C, 350 °C

**Options**

- Mould temperature regulation before the commencement of work
- Exact, identical castings due to a constant mould temperature
- Improving useful mould life up to 200 % by careful heating
- No considerable production failure by leaks stopping the operation in case of leaky moulds
- Increasing the output
- Heating and operating temperature control, manually or via the production cycle, changing over by selecting the rate of shots
- Exact temperature control via supply, return and mould probes
- No calcification of the tool channels
- Control via microprocessor
- Operation manually via machine control
- Interface RS 485/Profibus
- Environmentally friendly due to leak-free systems and overfill safety device, manually or via automatic filling
- No calcification of the tool channels
- Extractor for mould change
- Through-flow indicator/measurement
- Precooling for water discharge reducing the output temperature
- GS/CE symbol
**Control**

Single-circuit as well as double-circuit [thermobiehl](#) heating and cooling devices are constructed extremely narrow, tried and tested with a large number of heating/cooling devices especially with large diecasting machines.

The microprocessors used by [thermobiehl](#) are especially designed for foundry operation requirements, providing an easy but nonetheless convenient operation. All functions observe the work sequence and are solely based on practicality.

The application options of both controls range from simple manual operation to automatic control within the overall system. With regard to operation and configuration they are, as far as possible, designed for the operation with oil as well as with water, in order to ensure a simpler handling for combinations of oil and water for mould temperature regulation.

The new control generation [thermobiehl toppy](#) enables a quicker handling and monitoring of the mould temperature regulation process due to plain text display and colour-highlighted work sequences.

**Functions of TF 2000 and thermobiehl toppy**

- Mould temperature regulation via an integrated switch timer before the commencement of work
- Regulation using supply/return flow or mould probes
- Regulation using supply probe, heating and operating temperature selection, manually or via the production cycle, changing over by selecting the rate of shots
- Counting system for operating hours/working hours
- Operation through interface
- After-running with automatic end deactivation
- Selectable automatic optimisation
- Through-flow report via software
- Through-flow measurement l or %
- Convenient decalcification system for the cooling cycle

**Option**

- Profibus
- Through-flow measurement % or 1
- Precooling for water discharge reducing the output temperature

**TF 2000 and thermobiehl toppy for oil**

- Additional display optionally displaying through-flow or oil supply or return and/or plain text display
- Selectable additional cooling stage for types HK 2000, 3002
- Suction operation for leaky moulds up to maximum temperature
- Error messages directly via LEDs and/or plain text display on the control: through-flow (option), overheating protection, motor protection, no water, oil max., oil min., no oil, and loss of oil

**Option**

- Extractor for mould change

**TF 2000 and thermobiehl toppy for water**

- Additional display optionally displaying through-flow or oil supply or return and/or plain text display
- Suction operation for leaky moulds up to 80 °C
- Error messages directly via LEDs and/or plain text display on the control: through-flow (option), overheating protection, motor protection, no water, oil max., oil min., no oil, and loss of oil
- Integrated injection system for rust protection

**Option**

- Leakage monitoring from 0.5 l on
**Heating and cooling devices for medium oil**

**Leak-free systems up to 350 °C**

Environmentally friendly and low-maintenance design is important to **thermobiehl**. Our specially designed system replaces the traditional sealants in which leaks can develop for technical reasons. Leak-free operation is thus possible even at high temperatures.

**Overfill safety device with manual or automatic filling**

With the overfill safety device we solved the problem of overfilling due to improper handling. In order to avoid oil slicks and entailing unnecessary loss of heat transfer oil, all **thermobiehl** units can be equipped with an overfill safety device, which makes it impossible to overfill the units.

**Pumps**

In addition to the standard gear pumps, **thermobiehl** developed a special pump for multi-moulds or smaller moulds not requiring a differentiated temperature control. Here the same power supplies two heating/cooling cycles.

**Gear pumps**

<table>
<thead>
<tr>
<th>Type</th>
<th>l/min</th>
<th>bar</th>
<th>heating/cooling channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0013</td>
<td>13</td>
<td>5 – 10</td>
<td>12 Ø</td>
</tr>
<tr>
<td>0013D</td>
<td>2 x 13</td>
<td>5 – 10</td>
<td>12 Ø</td>
</tr>
<tr>
<td>0016</td>
<td>16</td>
<td>5 – 10</td>
<td>16 Ø</td>
</tr>
<tr>
<td>0016D</td>
<td>2 x 16</td>
<td>5 – 10</td>
<td>16 Ø</td>
</tr>
<tr>
<td>0020</td>
<td>20</td>
<td>5 – 10</td>
<td>20 Ø</td>
</tr>
</tbody>
</table>

Higher supply performances possible if required.

**Important note**

In order to determine the required flow rate of the pump a profound knowledge of the individual data of your system is required, since with an excess nominal output the pumps no longer operate within the ideal range. This leads to power losses and early wear.

**Heating and cooling devices**

<table>
<thead>
<tr>
<th>Type</th>
<th>Heating 9 kW</th>
<th>Heating 12 kW</th>
<th>Cooling I</th>
<th>Cooling II</th>
<th>Overall cooling surface*</th>
</tr>
</thead>
<tbody>
<tr>
<td>HK 15-9</td>
<td>1,7 W/cm²</td>
<td>2,3 W/cm²</td>
<td>0,19 m²</td>
<td>–</td>
<td>0,19 m²</td>
</tr>
<tr>
<td>HK 2000</td>
<td>1,7 W/cm²</td>
<td>2,3 W/cm²</td>
<td>0,19 m²</td>
<td>0,47 m²</td>
<td>0,66 m²</td>
</tr>
<tr>
<td>HK 3002</td>
<td>1,7 W/cm²</td>
<td>2,3 W/cm²</td>
<td>2 x 0,19 = 0,38 m²</td>
<td>2 x 0,47 = 0,94 m²</td>
<td>1,32 m²</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
<th>Width</th>
<th>Height</th>
<th>Depth</th>
<th>Connection</th>
<th>Connected load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single circuit</td>
<td>370 mm</td>
<td>850 mm</td>
<td>1070 mm</td>
<td>1/2”</td>
<td>1 x 0,45 + heating capacity</td>
</tr>
<tr>
<td>Double circuit</td>
<td>370 mm</td>
<td>1065 mm</td>
<td>1070 mm</td>
<td>1/2”</td>
<td>2 x 0,45 + heating capacity</td>
</tr>
<tr>
<td>Triple circuit</td>
<td>790 mm</td>
<td>1115 mm</td>
<td>1070 mm</td>
<td>1/2”</td>
<td>4 x 0,45 + heating capacity</td>
</tr>
</tbody>
</table>

* Cooling surface = surface in direct contact with the water

We reserve the right to make technical modifications.
## System Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Type</th>
<th>Temperature range</th>
<th>Cooling capacity</th>
<th>Heating capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single circuit</td>
<td>HK 15-9</td>
<td>20 °C - 250 °C</td>
<td>65 kW</td>
<td>9 kW</td>
</tr>
<tr>
<td></td>
<td>HK 15-9 D</td>
<td>20 °C - 350 °C</td>
<td>75 kW</td>
<td>12 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 °C - 250 °C</td>
<td>85 kW</td>
<td>9 kW</td>
</tr>
<tr>
<td></td>
<td>HK 2000</td>
<td>20 °C - 250 °C</td>
<td>105 kW</td>
<td>12 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 °C - 350 °C</td>
<td></td>
<td>18 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 kW</td>
</tr>
<tr>
<td>Double circuit</td>
<td>HK 1502</td>
<td>20 °C - 250 °C</td>
<td>2 x 65 kW</td>
<td>2 x 9 kW</td>
</tr>
<tr>
<td></td>
<td>HK 1502 D</td>
<td>20 °C - 350 °C</td>
<td>2 x 75 kW</td>
<td>2 x 12 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 x 85 kW</td>
<td>2 x 18 kW</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2 x 105 kW</td>
<td>2 x 24 kW</td>
</tr>
<tr>
<td></td>
<td>HK 3002</td>
<td>20 °C - 250 °C</td>
<td>2 x 9 kW</td>
<td>2 x 12 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 °C - 350 °C</td>
<td>2 x 12 kW</td>
<td>2 x 18 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 x 18 kW</td>
<td>2 x 24 kW</td>
</tr>
<tr>
<td></td>
<td>HK 1504</td>
<td>20 °C - 250 °C</td>
<td>4 x 65 kW</td>
<td>4 x 9 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 °C - 350 °C</td>
<td>4 x 75 kW</td>
<td>4 x 12 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 x 85 kW</td>
<td>4 x 18 kW</td>
</tr>
<tr>
<td>Quadruple circuit</td>
<td>HK 2004</td>
<td>20 °C - 250 °C</td>
<td>4 x 105 kW</td>
<td>4 x 9 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 °C - 350 °C</td>
<td></td>
<td>4 x 12 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 x 18 kW</td>
</tr>
<tr>
<td>Single circuit for preheating hydraulic fluids</td>
<td>HT 3</td>
<td>20 °C - 70 °C</td>
<td></td>
<td>36 kW</td>
</tr>
</tbody>
</table>

### Optional Features/Unit
- Flowmeter installed
- Overflow safety device

### Optional Features/Installation/maintenance
- Separate flowmeter
- Pipeline
- Heat transfer oil hoses
- Hydrostatic compactor
- Decalcification pump
- Heat transfer fluid

We reserve the right to make technical modifications.

### Additional Notes
- Operating voltage of all standard units: 400 V, 230 V, 50 Hz, 3p
- Circulation medium for mould temperature regulation units: approx. 8 l/circuit
- Cooling capacity: temperature of medium 200 °C, cooling water 20 °C
Safety

Since an operation with a pressure exceeding 80 °C increases the risk, heating and cooling devices with the medium water are equipped with precision safety devices. These ensure an immediate reduction of the pressure even in extreme situations.

Leak detector

As an option the units can be equipped with a leak detector, sending a signal for leaks from 0.5 l on, which is acceptable to the control of the diecasting machine.

Heating and cooling devices with medium water

Data

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<th>Cooling capacity</th>
<th>Heating capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single circuit</td>
<td>HK 2000 W</td>
<td>20 °C - 160 °C 20 °C - 180 °C</td>
<td>50 kW</td>
<td>12 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 °C - 160 °C 20 °C - 180 °C</td>
<td></td>
<td>18 kW</td>
</tr>
<tr>
<td></td>
<td>HK 3002 W</td>
<td>20 °C - 160 °C 20 °C - 180 °C</td>
<td>2 x 50 kW</td>
<td>24 kW</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>2 x 12 kW</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Operating voltage of all standard units 400 V, 230 V, 50 Hz, 3p.
Circulation medium for mould temperature regulation units – water, flow rate 45 l/min.
Cooling capacity: temperature of medium 120 °C, cooling water 20 °C.

We reserve the right to make technical modifications.

Pumps

Filling pump
A special filling pump fills the unit automatically at the start as well as during production.

Circulation pump
The circulation pump with a flow rate of 46 l and a maximum pressure of 6 bar provides ideal through-flow even in case of narrowing of the supply line and the mould.

Heating and cooling devices with medium water

thermobiehl
Apparatebau GmbH
Brüggenstraße 7 - 45968 Gladbeck
Phone +49 20 43 / 3 24 94
Fax +49 20 43 / 7 15 82
E-Mail: info@thermobiehl.de
Internet: www.thermobiehl.com