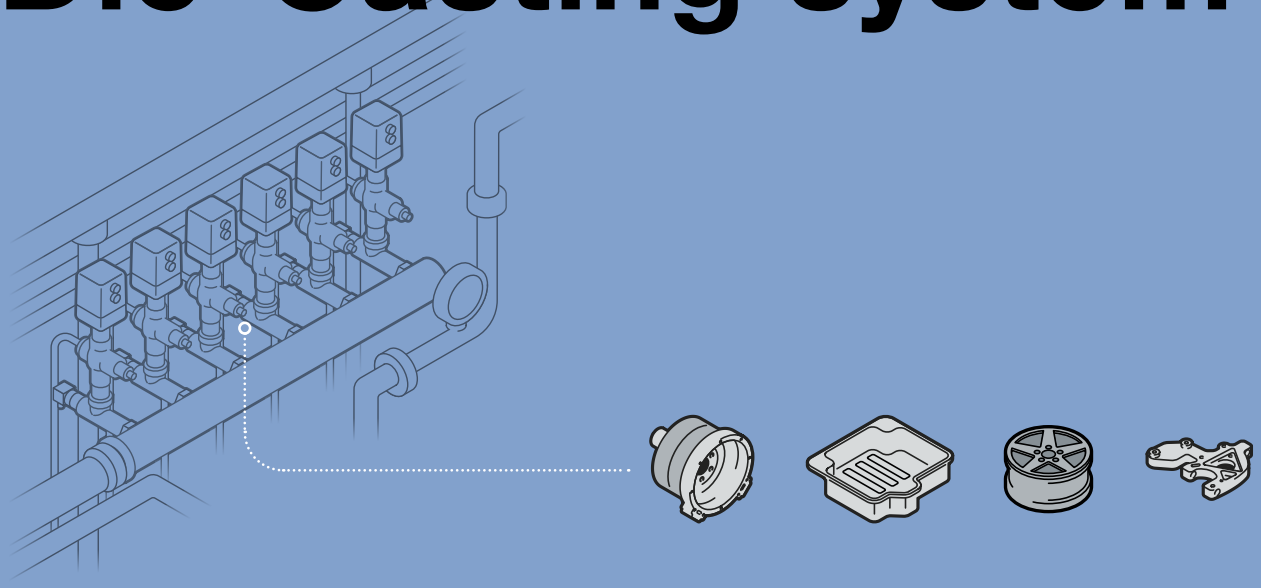
Individual process temperature control for reliable product quality for your Al-Die-Casting system

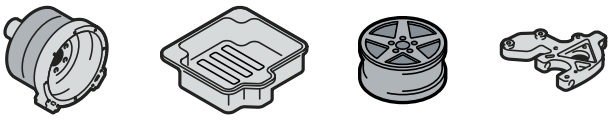


bürkert

/ Space-saving and compact solutions for your temperature control tasks / Bürkert offers the most modern technologies for the supply, control and monitoring of cooling media. We cover all the required levels of complexity – from the delivery of individual on/off valves to our compact system solutions to fully automated systems that enable the reproducibility of the processes. The individual solutions fit seamlessly into your system. This applies to the space requirements, the installation conditions and the mechanical, electrical and communication interfaces.

Manufacture and operation of die-casting systems

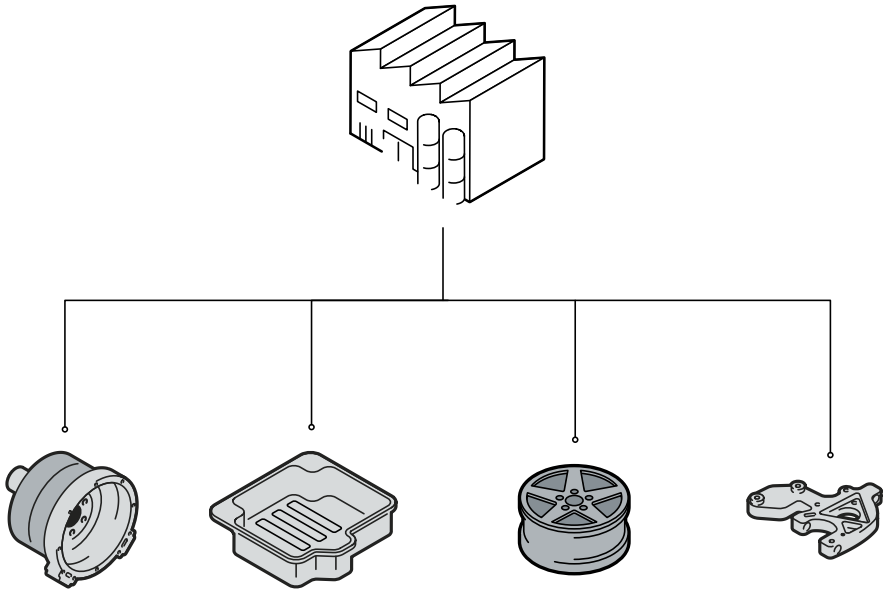
The quality of the end results is always in the foreground, regardless of whether you operate or manufacture aluminium casting systems. In the automotive and aerospace sectors, the highest demands are placed on dimensional accuracy and strength. Precisely adapted cooling plays an important role in this. Thanks to our experience in this area and a broad portfolio, Bürkert can offer you the right solution. Find out how Bürkert can support you in the development, production and operation of aluminium casting systems.



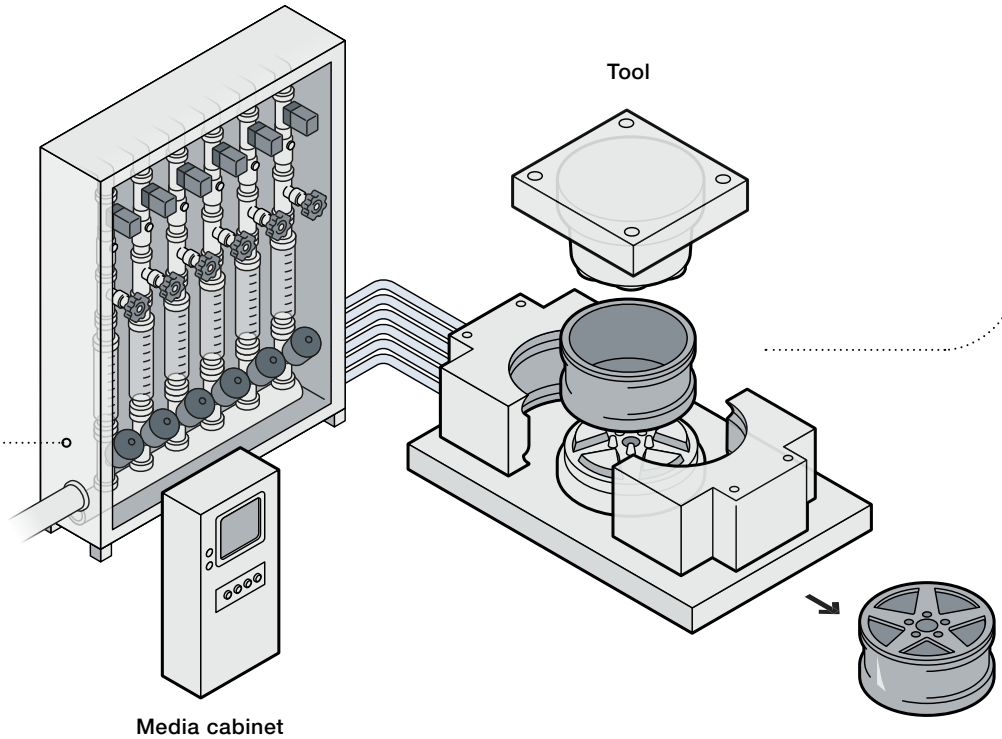
Automated cooling solution for your Al-Die-Casting system

/ Automated cooling solution for your Al-Die-Casting system /

In aluminium die-casting systems, reproducible and exact cooling plays an important role in addition to many other points. The temperature control of the moulded parts, such as rims, must not only be reliable and precise, but also repeatable in order to ensure the high quality of the end products. An automated control system facilitates the entire process. It masters cooling quickly and reliably and minimizes the risk of user errors. The result: automated and precise temperature control as well as complete documentation and traceability. With the individual system solutions from Bürkert, you can keep a cool head when cooling your industrial processes.



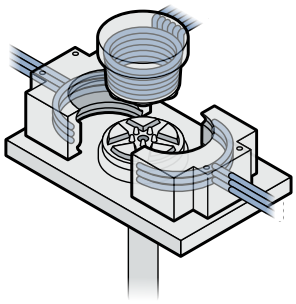
/ Lengthy processes and hardly reproducible / **A correctly designed coolant circuit is decisive for the quality of the end products, regardless of whether you are developing a new aluminium die-casting system or optimizing an existing one. Fluidics know-how is required in any case. With conventional solutions, the flow rate of the cooling water is adjusted manually. Therefore, the cooling process is difficult to reproduce and leads to defective end products. Any contamination that occurs in the cooling channels and pressure fluctuations in the cooling water supply also affect the cooling and thus have negative effects on the products.**



Time-consuming retraction of the tools

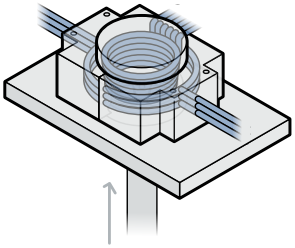
The components to be produced often change in shape and design. The cooling parameter must be adapted before starting a new batch. This is the only way to produce products of the high and required quality. Manual control of the cooling parameters requires many attempts to determine the correct setting values. This takes a lot of time and increases scrap.

1.



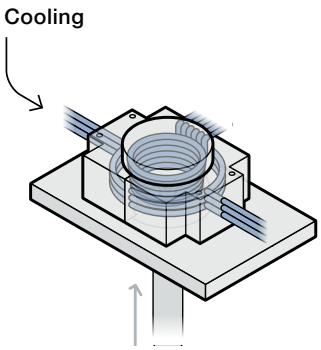
Closing form

2.



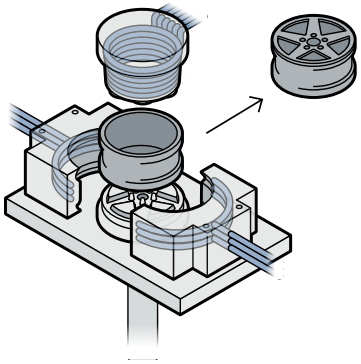
Filling

3.

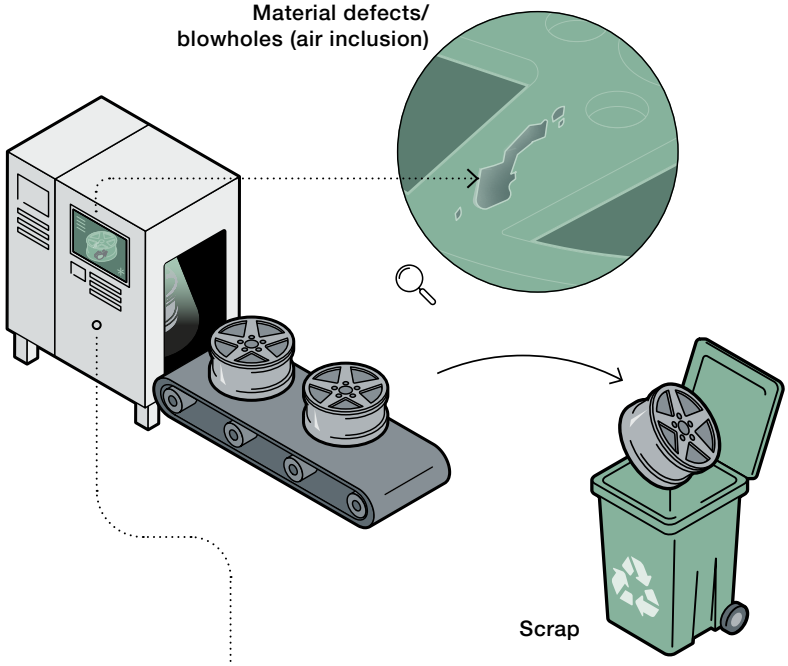


Holding pressure

4.



Withdrawal



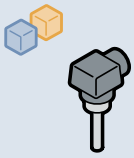
Fluctuations in quality

The manual setting of the cooling parameters has several disadvantages: It is not possible to control the functionality of the individual cooling lines. Changed coolant flows affect the quality of the end products. In addition, it can lead to errors in the operation. The late detection of errors results in dead times until optimum product quality is achieved. These disadvantages have a negative impact on the OEE (Overall Equipment Effectiveness).

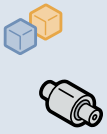
Late error detection due to lack of digitalisation

Since there is no digital connection, a continuous monitoring of the production process is not possible. As a result, errors in the process are not recognised in good time. If these occur in the first process step, they cannot be corrected immediately and influence subsequent steps. The documentation of the process data is also incorrect.

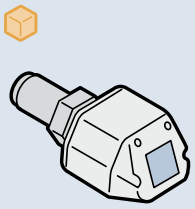
/ Flexible and compact / **The cooling during the production of AL die-cast parts requires special system know-how and a broad product portfolio that allows a wide variety of configurations. With Bürkert you get both. This allows us to offer you a cooling system perfectly tailored to your requirements, whether you are working with air, water or mixed cooling. Even if additional parameters play a role, we will find you a holistic complete solution adapted to your die-casting system.**



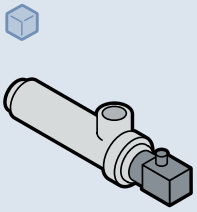
Temperature sensor



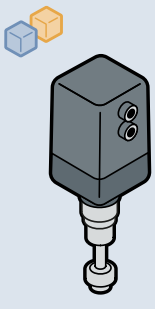
Pressure sensor



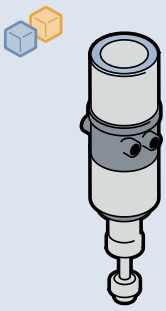
Flow sensor



Flow sensor



Electromotive actuator

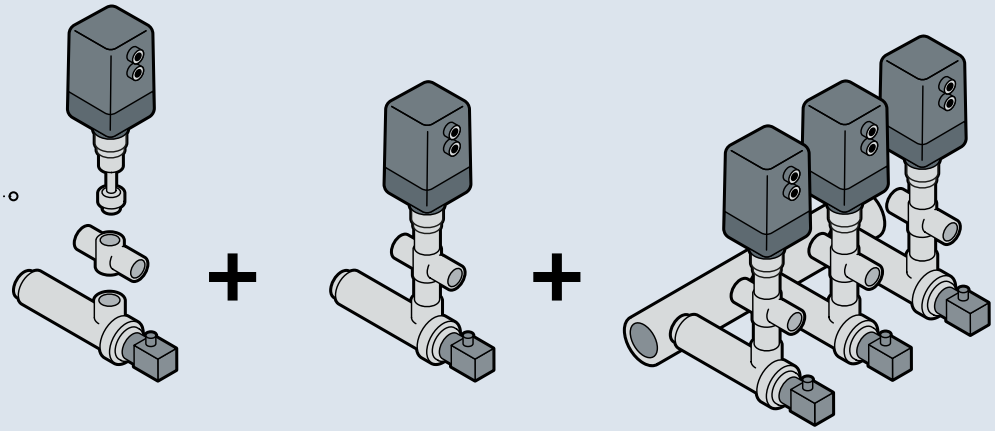


Pneumatic actuator

Manual actuator

Suitable for water cooling

Suitable for air cooling



Single-channel solution

Multi-channel solution

System-specific design

With our comprehensive product portfolio, we can take into account all your requirements and specifications and offer you a precisely fitting temperature control solution.

Reduced commissioning costs

Thanks to the digital connection of the cooling sections, the cooling parameters can be taken directly from the CAD/CFD simulation. This reduces the start-up effort while at the same time manufacturing products of the highest quality right from the start.

Reproducible processes

The fully automatic Bürkert cooling solution enables the production of 100% identical Al castings.

Digital analysis

Due to the digitized cooling systems, individual process steps are analysed and corrected automatically if errors occur. This means that no rejects are generated and the overall system efficiency (OEE) increases.

Easy tracking and documentation

With the help of digitised cooling, the documentation of your processes and their parameters is automatically taken over by the system. This enables traceability at all times. In addition, you can prove your flawless processes to your customers.

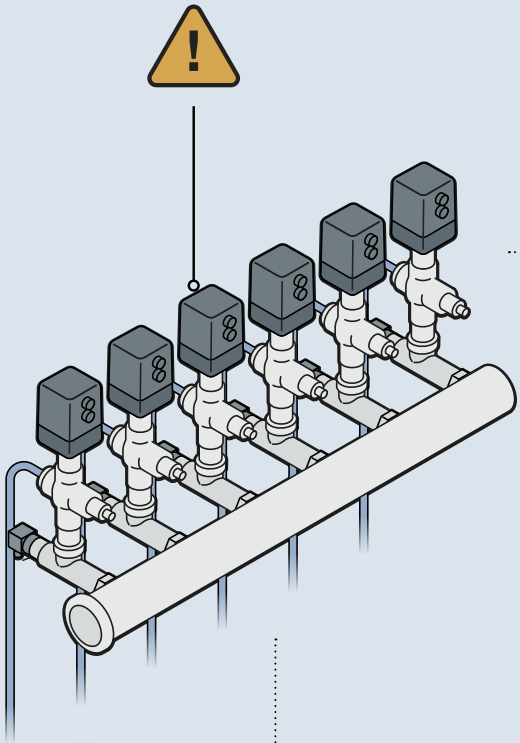
Maintenance- and installation-friendly

The ready-to-install Bürkert solution minimizes the installation effort for the piping of the complete system. In addition, thanks to the maintenance-friendly design, you can quickly replace the single components in the event of service.

Compact and space-saving

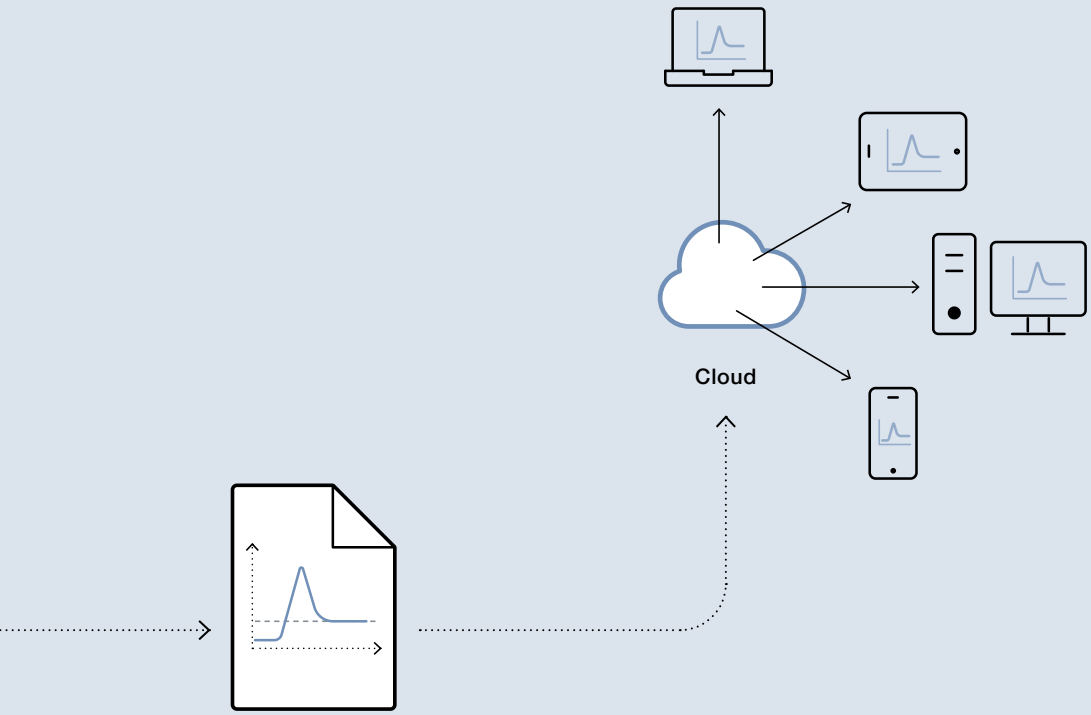
The modular and compact design of the Bürkert systems leaves room for individual designs and requires less space than conventional systems. In the case of multi-channel versions, we tailor the system to your specific add-on dimensions.

/ Digital, repeatable and documentable / A digital and automated cooling system brings you many advantages: You can precisely regulate and reproduce cooling flows, optimize the entire cooling process with the help of diagnostic information, adjust your processes promptly and track your process data at any time. This prevents rejects and also saves valuable time, as manual flow settings are no longer necessary. You can save data at any time and easily transfer it to follow-up processes.
A modern PID control and communication technology enable you to use these added values for your aluminium die-casting system.

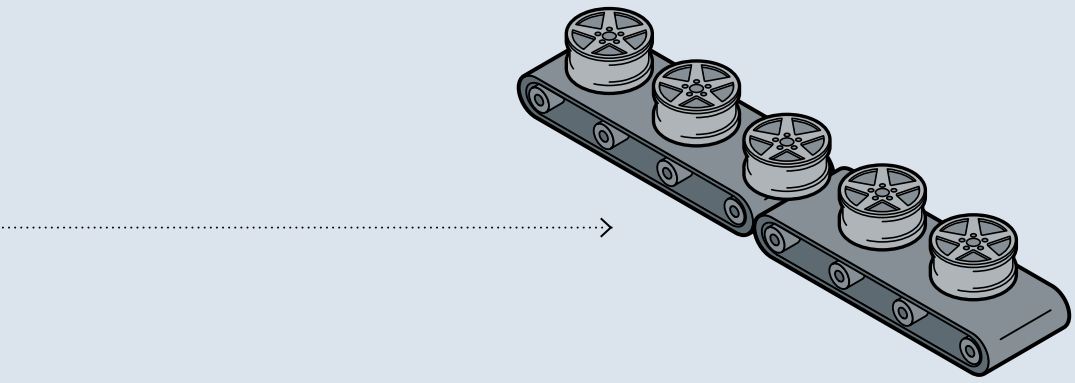


Your advantages:
- Complete traceability
- Comprehensive documentation
- Reproducible and constant cooling flows
- Connection to the process control system
- Trend analysis
- Optimisation of the overall process
- Conservation of resources
- Easy changeover to new tools

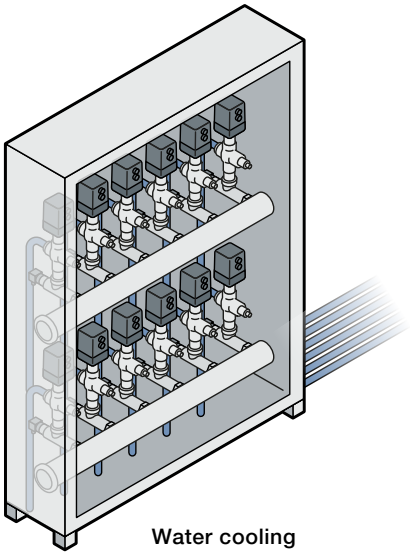
– The system corrects automatically,
– thus prevents fluctuations and
– ensures the correct flow rate



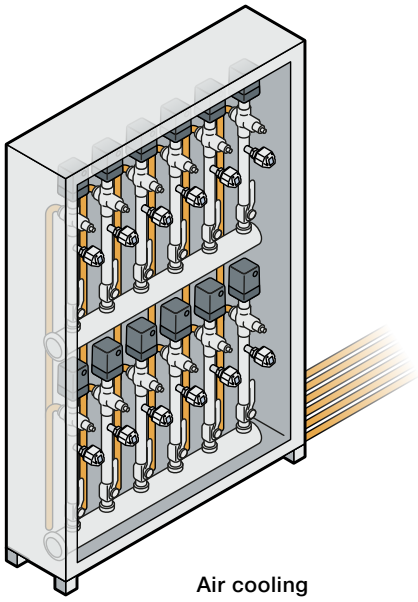
The process data are stored
digitally in order to:
– document or
– optimize processes or
– create trend analyses



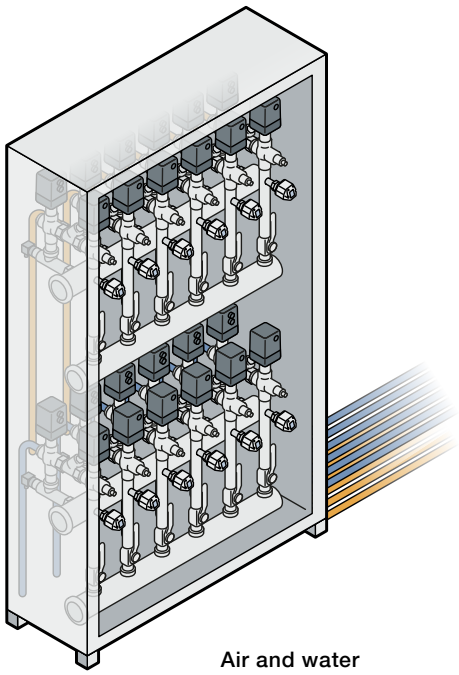
/ From the simple cooling section to the complete media cabinet / Thanks to its many years of fluidics expertise and Bürkert's own components, Bürkert can offer you an individual cooling solution based on your needs. We plan and implement complete and compact media cabinets for you. Depending on your requirements, these are equipped with coordinated actuators, sensors and future-proof interfaces. Bürkert is at your side as a reliable partner at all times, from advice through planning, installation and start-up to maintenance.



Water cooling



Air cooling

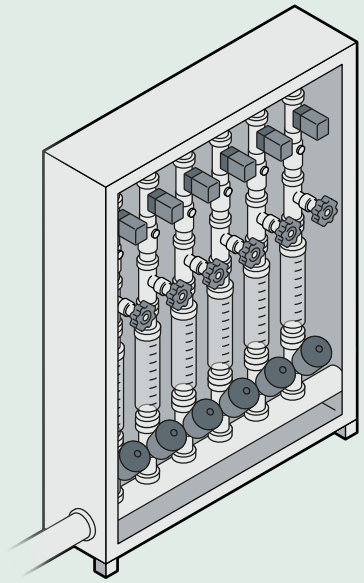


Air and water cooling

Sample calculation

Reduction of cycle time and associated hourly rate savings
The conventional solution is based on pure air cooling and optional minimum quantity mixed cooling. The cooling and production times are too long and the energy costs too high. With the Bürkert solution you can reduce the cycle time by up to 15%. We show you the benefits of this in the calculation example.

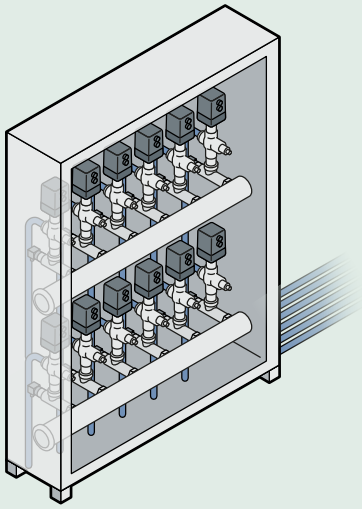
Conventional solution



Producing machines: 150
runtime per day: €16
hourly rate: €30.00

150 x €30.00 = **€4,500.00** /h

Bürkert solution



Reduction of cycle time
per machine by 15%
= at least €4.50

150 x €25.50 = **€3,825.00** /h

Investment:
Media cabinets for 150 aluminium casting systems : 3.450.000 €

Savings:
per hour: €675
per day at 16 h: €10,800
per year for 200 days: €2,160,000

Payback period:
18 months

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Bürkert Fluid Control Systems
Christian-Bürkert-Strasse 13–17
74653 Ingelfingen
Germany

Phone: +49 7940 100
Fax: +49 7940 1091204

info@burkert.com
www.burkert.com