

PLASTVERARBEITER

REPRINT

of PLASTVERARBEITER 10/2019 by company HB-THERM, St. Gallen



Photo credit: yongheng, stockpics - stock.adobe.com

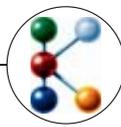


Photo credit: Stevanato Group

Temperature control technology for medical applications

One partnership for all temperature control tasks

Among other things, a **medical technology manufacturer** produces **analysis cuvettes in multi-cavity injection moulds**. However, during 24/7 production and when temperature control units with tank systems are being used, the extremely narrow, conformal cooling

channels tend to get dirty, despite good water quality. These problems could be solved by using **temperature control units** which continuously exchange the system water – without oxygen contact and contamination-free – in closed cooling circuits. **This is not the only appli-**

cation where manufacturers rely on a **close partnership** with a **temperature control equipment** manufacturer that goes far beyond the delivery of innovative technology.



▲ The ready-to-use cuvettes are supplied in this form.

When the technology specialists from Balda Medical and HB-Therm meet, it's usually in a very informal atmosphere. Not only because they've known each other for years, but because both sides know what they can expect from each other: openness and reliability describe the relationship between the two companies. At Balda Medical, they know exactly what they want: fast, efficient solutions for questions arising from client specifications or from internal process requirements. And at HB-Therm, you can rely on the briefings from Balda and know: if you give good, fast and precise answers, then the customer is satisfied. Also and especially because it concerns the highly sensitive area of medical technology.

The partnership between Balda Medical in Bad Oeynhausen, a subsidiary of the Italian Stevanato Group, and the Siegburg branch of HB-Therm (St. Gallen, Switzerland) has existed since 2011. Balda Medical's production manager Rainer Koops explains how the collaboration came about: "In the course of the validation of one of our injection moulding components, warping problems occurred with a tray after a climatic storage test, which had to be eliminated quickly due to deadline pressures at the start-up of a series production. The warping issue was ultimately due to flow problems in the temperature control circuits, which could not be solved with the existing temperature control technology. At that time, only HB-Therm had a viable solution on hand with their equipment technology, which was able to overcome our problems. Since that time we've been working very closely and trustingly together".

This will remain the case in the future as well because the ongoing use of its long-standing partner's temperature control technology is currently in full swing at Balda Medical — and also in terms of training, maintenance and the stocking of spare parts. Andrej Gossen, Head of Process Technology at the medical technology company, comments: "Our concentration on just a few trustworthy and dependable working partners like HB-Therm not only brings high-quality, reliable technology into our business, on which we're then able to build, but also saves our process mechanics and technicians having to frequently rethink in terms of operating and connecting the units. We reduce our training expenses, and spare parts only have to be kept in stock by a few suppliers. This saves us both time and money".

Medical technology requires stable processes

In medical technology, you're usually dealing with rather long-running manufacturing processes over a period of years, with production runs in the millions that above all have to be steady. "We've specified all our processes properly", emphasises Rainer Koops. "As a result, HB-Therm knows exactly what we expect from their temperature control technology in order to meet our requirements. That's a prerequisite for a smoothly running production to meet the needs of our customers, which include renowned international names from the pharmaceutical sector".

In the meantime, more than 150 units from the specialist for temperature control technology are in production at Balda Medical — and the trend is rising. In addition to the modern Thermo-5 temperature control units with Flow-5 flowmeters, a Clean-5 cleaning unit for HB-Therm mould circuits is also used to remove impurities which, as well reducing the flow rate, also lead to a deterioration in heat transfer. "We continuously check and document our water quality and the required flow rates in order to be able to demonstrate to our customers that, in this area as well, we consistently adhere to the highest quality standards", comments Andrej Gossen on the topic of QA. "Our water treatment is run centrally, separated into mould cooling and machine cooling. This is also done because there are different temperature levels and we can work much more energy-efficiently in this way".

Cuvettes: high-precision continuous production perfectly tempered

On the machines, analysis cuvettes for use in laboratory immunology analysis are produced in multi-cavity moulds. This also revealed the problems that eventually led to the two companies working together. Despite good water quality, the conformal cooling channels of 1 to 2 mm diameter in the injection moulds tend to get dirty during 24/7 production, when temperature control units with tank systems are being used. This can result in an increased scrap rate, meaning production may have to be stopped completely in



Web-Tipp

- ▶ Marktübersicht Temperiersysteme
- ▶ Short-URL: www.plastverarbeiter.de/05791

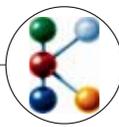
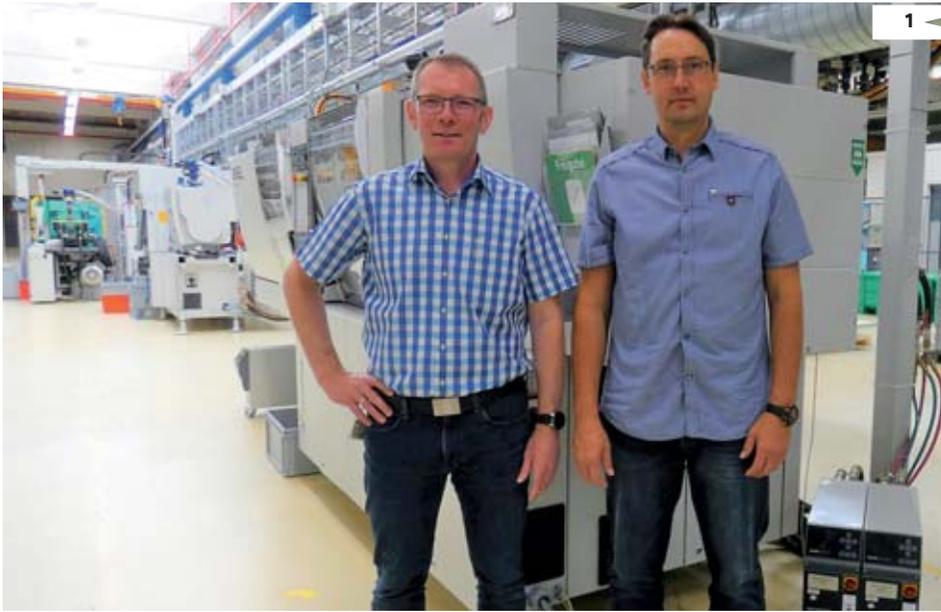


Photo credit: Stevanato Group



- 1 Andrej Gossen (r.) und Rainer Koops agree that the lower maintenance cost quickly make up for the higher purchase price of the temperature control units used.
- 2 Compact, efficient, suitable for clean rooms: the technical features of the temperature control units allow, with the appropriate equipment, both operation in Balda Medical's clean rooms as well as installation close to the machines for a compact use of space.

order to carry out early maintenance on the injection moulds. Such defects must not occur with these products, which are manufactured in millions of units.

HB-Therm with its Thermo-5, which continuously exchanges the system water in closed cooling circuits without oxygen contact and contamination-free, was able to solve the problems and bring stability to the thermal processes. Accordingly, the maintenance intervals have been extended by 100 percent, with consistently high quality results. "Due to the even distribution of the flow rates, an increased proportion of chemicals due to evaporation is also no longer an issue", is the way Rainer Koops describes the advantages of this technology.

In the case of the cuvette moulds, five Thermo-5s are in operation on the machines. A total of 18 cooling circuits are required to ensure problem-free temperature control of the complex moulds. The joining of cuvettes and segments is automated and centralised. These segments are produced on another injection moulding machine. The products are 100 percent camera-monitored, such as the diameter of the tips. Either individually or combined, the filled segments are transparently packed in foil and assembled in cardboard boxes for delivery to the OEMs. In order to keep being able to supply even in the event of bottlenecks, Balda Medical keeps many products in the form of safety stocks in its own high-bay warehouse.

Further products can be sterilised as required at external service providers after the products have been integrated manually, partially or fully automatically into complete components in Bad Oeynhau-

sen. Ready-for-sale goods are inspected by means of various testing instances, such as optical or tightness checks and spot or 100 percent checks, for instance by applying a vacuum or high voltage. These processes are documented by quality assurance per batch or per part.

Thermo-5 equipment is suitable for clean rooms

In addition to the standard closed temperature control circuit, the clean room package for the water-based Thermo-5 consists of fibre-free insulation, abrasion-resistant PUR rollers and a high-gloss finish. Equipped in this way, the emission of vapours or particles into the environment of the temperature control units and thus into the controlled environment is effectively prevented. In order to ensure reliability from the very first use of the temperature control units, all Thermo-5 units are subjected to detailed internal quality testing and calibration prior to delivery. The most important data is recorded in a protocol which is enclosed with the units and certifies successful testing. The clean room-compatible version achieves ISO Class 6 (Class 1000) in the "at rest" functional state and ISO Class 7 (Class 10 000) in the "in operation" functional state, thus exactly complying with Balda Medical's specifications, who produce both in docked-on clean rooms and directly in encapsulated clean rooms of the ISO Classes 8 to 5.

Precision also required in maintenance

"When high-temperature applications, even high-precision ones, run three shifts, seven days



Photo credit: HB-Therm

◀ State-of-the-art temperature control unit with fully closed circuit and active pressure superposition as used at Balda Medical in Bad Oeynhausen.

a week, you also have to take very good care of their maintenance and repair”, says Andrej Gossen knowingly. “That’s why we have so-called ‘backup moulds’ which allow us, after a short set-up time, to continue production during a mould maintenance phase”. Balda Medical does not (yet) have its own mould shop, but machines and moulds are maintained in their own departments. “Since our customers invest in the moulds used”, Gossen goes on to say, “we implement the most efficient solution for them by using mould makers from all over the world.” Rainer Koops also dares to take a look into the future: “Due to our affiliation with the Stevanato Group, we are also working on synergies, such as the combination of glass and plastic to distinct products. In the long run, this will also include setting up our own mould making department.”

The partnership is characterised by a high level of satisfaction

As cooperating companies, Balda Medical and HB-Therm have known each other both for a long time and very well. “HB-Therm’s German team in particular has now become just the right expert partners for us — they know exactly where our problems lie and how to solve them. As a result, lengthy briefings and solutions have long become a thing of the past”, Rainer Koops says calmly. “We rely on that which distinguishes HB-Therm from other manufacturers: the high precision of their units, the closed cooling circuits with no oxygen contact in the system as well as the cyclic system water exchange. It’s also important to mention this again here because in our

business we don’t want to rely on estimates or ‘trial and error’ in order to achieve high-quality series production, but rather on meaningful calculations, such as pressure drop, flow measurement and, associated with that, mould cooling design. The faster we can solve such tasks together, the faster we can start with design, implementation, ramp-up and series production. Which in turn has a tangible economic impact.” Their cooperation is well-established, their partnership is working — that’s the tenor of the statements on both sides. Information sharing is now set up, delivery times, offers and also the provision of test equipment suit. But there is also another dimension, as Rainer Koops notes: “The Thermo-5s are of course in the upper price range. But we’ve found that the maintenance cost over the life of the HB-Therm products are lower than for other brands. As a result, the price difference quickly pays for itself with the same operating times”. ■

Author

Uwe Becker

is the owner of Ubcom Kommunikationsmanagement in Bad Endbach.

Contact

Roland Huber, Marketing/Communication
HB-THERM AG, 9006 St. Gallen, Switzerland
info@hb-therm.ch

Hall/Booth

10/G57

HB-THERM AG
Spinnereistrasse 10 (WU 3)
Postfach
9006 St. Gallen
Switzerland
Phone +41 71 243 6-530
info@hb-therm.ch, www.hb-therm.ch

Subsidiaries

HB-THERM GmbH
Dammstraße 78
53721 Siegburg
Germany
Phone +49 2241 5946-0
info@hb-therm.de, www.hb-therm.de

HB-THERM S.A.S.
5378 Route du Pou du Ciel
ZI de Reyrieux
01600 Reyrieux
France
Phone +33 4 74 00 43 30
commercial@hb-therm.fr, www.hb-therm.fr

Distributors

Australia (AU)

Comtec Australia Pty Ltd, Keysborough VIC 3173

Austria (AT)

Luger Gesellschaft mbH, 3011 Purkersdorf

Belgium (BE)

AJ Solutions BVBA, 2240 Zandhoven

Brazil (BR)

HDB Comércio e Indústria Ltda., Cotia (SP) 06705-110

China (CN)

ARBURG (Shanghai) Co., Ltd., 201100 Shanghai
ARBURG Machine & Trading, 518108 Shenzhen
Dongguan Cenglary Trading Co., Ltd., 523845 Dongguan City
Tianjin Cenglary Trading Co., Ltd., 300452 Tianjin City
Jiangsu Cenglary Engineering & Trading Co., Ltd.,
215300 Kunshan Devel. Dist.

Croatia (HR)

Luger Gesellschaft mbH, 3011 Purkersdorf

Czech Republic (CZ)

Luger spol. s.r.o., 251 01 Ricany

Denmark (DK)

SAXE Hansen, 3500 Værløse

Estonia (EE)

Telko Estonia OU, 13522 Tallinn

Finland (FI)

Engel Finland Oy, 00380 Helsinki

France (FR)

HB-THERM S.A.S., 01600 Reyrieux

Germany (DE)

HB-THERM GmbH, 53721 Siegburg

Hong Kong (HK)

ARBURG (HK) Ltd., Quarry Bay

Hungary (HU)

Luger Kft., Budapest 1147

India (IN)

Salnik Solutions, 400072 Mumbai

Indonesia (ID)

ARBURG Indonesia, Jakarta 10150

Ireland (IE)

KraussMaffei (UK) Ltd, WA5 7TR Warrington

Israel (IL)

SU-PAD Ltd., 4809102 Rosh Ha'ayn

Italy (IT)

Nickerson Italia Srl, 24030 Brembate di Sopra (BG)

Japan (JP)

ARBTECHNO Ltd., Iwaki 973-8406

Korea, Republic of (KR)

IMTS, 1449 Bucheon-si

Latvia (LV)

Telko Latvia SIA, 1026 Riga

Liechtenstein (LI)

HB-THERM AG, 9006 St. Gallen

Lithuania (LT)

Telko Lietuva UAB, 51183 Kaunas

Luxembourg (LU)

AJ Solutions BVBA, 2240 Zandhoven

Malaysia (MY)

ARBURG Sdn Bhd, 46150 Petaling Jaya

Mexico (MX)

Engel Mexico S.A. de C.V., 76246 El Marques, Querétaro

Netherlands (NL)

ROBOTTECH bv, 4824 AS Breda

New Zealand (NZ)

AOTEA MACHINERY LTD., Auckland 1145

Poland (PL)

ELBI-Wroclaw Sp. z o.o., 53-234 Wroclaw

Portugal (PT)

KraussMaffei HighPerformance, S.A., 08100 Mollet del Vallès

Romania (RO)

Plastic Technology Service Srl, 032451 Bucuresti

Singapore (SG)

ARBURG PTE LTD., Singapore 139965

Slovakia (SK)

Luger spol. s.r.o., 251 01 Ricany

Slovenia (SI)

Luger Gesellschaft mbH, 3011 Purkersdorf

South Africa (ZA)

GREEN TECH Machinery Ltd, 1709 Quellerina

Spain (ES)

KraussMaffei HighPerformance, S.A., 08100 Mollet del Vallès

Sweden (SE)

K.D. Feddersen Norden AB, 511 54 Kinna

Switzerland (CH)

HB-THERM AG, 9006 St. Gallen

Taiwan (TW)

Morglory International Co., Ltd., Taichung City 40757

Thailand (TH)

ARBURG (Thailand) Co., Ltd., Samutprakarn 10540

Turkey (TR)

ARBURG Plastik Enjeksiyon, 34524 Yakuplu-Büyükkçekmece/Istanbul

United Kingdom (GB)

KraussMaffei (UK) Ltd, WA5 7TR Warrington

United States (US)

Frigel North America, East Dundee, IL 60118