

Hotline

October
2014



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EWIKON controllers - The next generation

The new hotrunner controllers HPS-C-PRO+ and HPS-C-SLOT+ offer enhanced performance features. Pages 6 - 7

Quick and effective. **Portable mini fluidized bed cleaning device for small hotrunner components.** Page 8



German precision gating meets Italian design

VIMAR is one of the Italian market leaders for electrical equipment, home automation systems, switches, socket outlets, chronothermostats and thermostats for the private and commercial sector, hotels and ship chandlers. For the production of a 3-component cover plate for a home automation system EWIKON supplied a high precision valve gate solution.

The Arké series of switches and controls offers a variety of stylish high-quality cover plate versions with the visible face made of aluminium, wood, zamac or - as featured in this application - coloured transparent polycarbonate. All cover plates are also available for "By-me" the VIMAR home automation system allowing a perfect integration into homes where Arké is already used. The polycarbonate version is available in many different colours and consists of three components - the transparent, coloured and high-gloss PC surface layer, a white ABS back

layer and a black support frame also made of ABS. "The polycarbonate version had to perfectly fit into the rest of the range which is produced using many different materials and technologies", explains Alessio Guadagnini, Plastic Injection Technologies Manager at VIMAR, "that means that highest optical quality and robustness is required. To achieve a reliable process with a low waste rate and especially to avoid post-molding assembly we produce the parts with 3-component injection moulding technology."

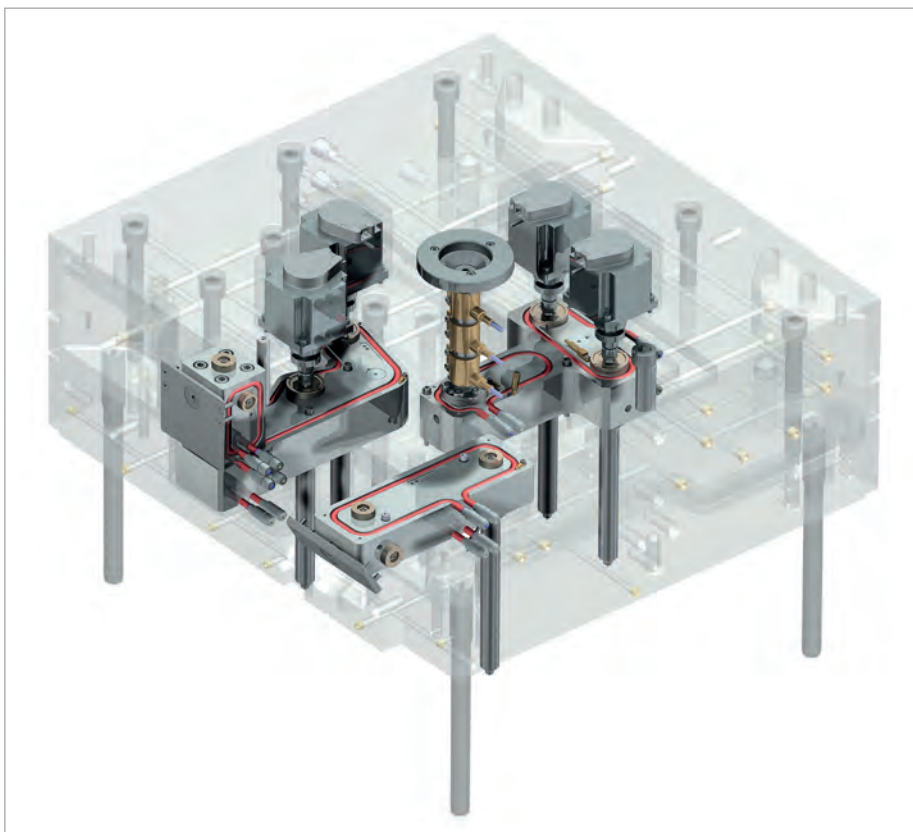
When VIMAR built a new 3-component rotational valve gate mould for the "By-me" version of the polycarbonate cover plate EWIKON was called in during the mould design stage. After repeatedly experiencing problems with the gate quality and the fine adjustment of the valve gate systems with tapered valve pin used so far VIMAR was looking for a different solution. EWIKON was able to provide the suitable technology to solve both problems. The cylindrical valve pin which is generally used in all EWIKON valve gate systems works reliably without the risk of damaging the gate. At the same time problems with

improper closing or surface blemishes both caused by plastic residues in the gate area are avoided. However an even more convincing factor for VIMAR were the high-tech electric drive units EWIKON offers. The step motor technology with permanent valve pin position monitoring allows a most precise adjustment and operation with separate control for each valve pin. "These features were very important for us because the application requires an extremely accurate control of the valve pin actuation. During mould setup and operation fine adjustments must be possible within a very short time", Guadagnini says, "by using the electric drive units with the touch screen control unit it is possible to modify the closing position in 1/100 mm steps directly on the machine. Compared to previous solutions we could reduce the adjustment times significantly."

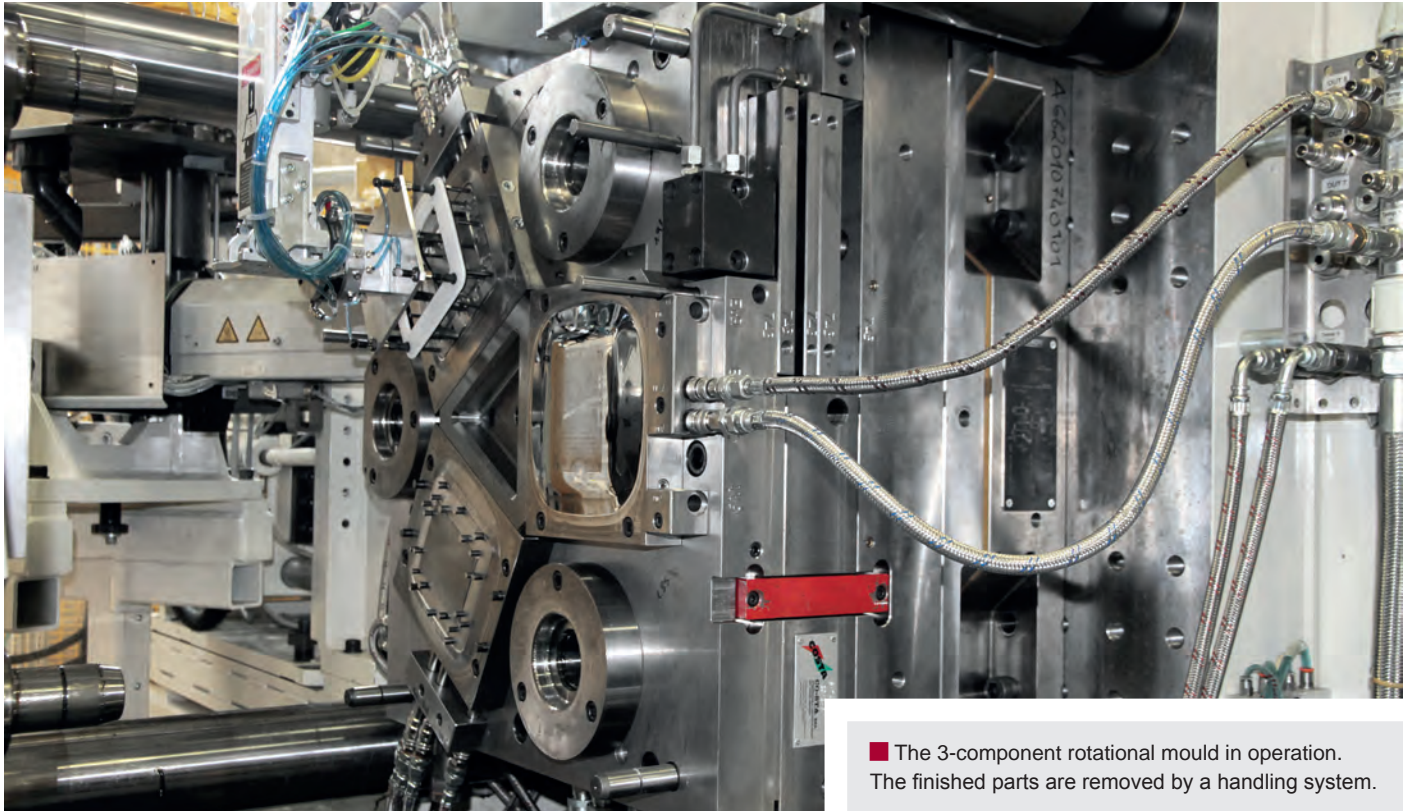
Furthermore, the valve gate nozzles with 9 mm flow channel diameter that EWIKON supplied turned out to be the ideal compromise to achieve a low pressure drop on the one hand and an optimized shear rate within the system on the other hand. The latter is impor-

tant because especially for the first (PC) component frequent colour changes are required. The fully balanced manifold technology used for injecting the PC and the white ABS component features a streamlined flow channel design without dead spots where material can accumulate and degrade. This facilitates colour changes, avoids local shear rate peaks and adds to the general process reliability.

In the first injection position the transparent, coloured PC surface layer with a shot weight of 34 g is gated with two valve gate nozzles with 9 mm flow channel diameter. After turning into the second position the white ABS layer is injected, again by using two 9 mm valve gate nozzles. The shot weight is 18 g here. Injecting these first two components is challenging because the white ABS layer is visible through the transparent PC surface. During ABS injection the polycarbonate has to melt up again to a defined degree to guarantee proper bonding of both components. Especially in the areas in direct proximity to the gates the shearing causes increased heat input. Therefore, the determination of the gating



■ Hotrunner design in the 3-component mould (left). The high precision electric drive units (upper pic) allow the positioning of the valve pins with an increment of 1/100 mm. By using the external **EDC (E-Drive Control)** touch screen control (below) the system can be operated comfortably.



■ The 3-component rotational mould in operation. The finished parts are removed by a handling system.

point positions for the second component was most important. Is it too close to the one for the first component the second component will melt too far into the first one causing visible white spots. Is it too far away the gating point of the first component might remain visible through the transparent material. During the mould trials an ideal distance between the gating points was found. The quick setup and fine adjusting options offered by the electric drive valve gate added extended convenience. The system allows to control process parameters such as valve pin stroke length, valve pin speed and opening and closing time individually

for each gating point with an easy to use and comfortable touch screen control unit. During setup several valve pin operation parameters for the first and second component were fine adjusted until a perfect optical appearance was achieved. Once in operation also readjustments - for example in case of valve pin prolongation caused by deviation in mould temperature - are possible at any time.

Turning again the last injection position is reached and the black ABS support frame with a shot weight of 8.5 g is overmoulded. For this component a single nozzle which is gating on a

subrunner is used. However, for further moulds a direct side gating solution will be used to realize a fully runnerless and waste-free process.

The finished parts are picked up by a robot and arranged in special crates before moving them to the packing area.

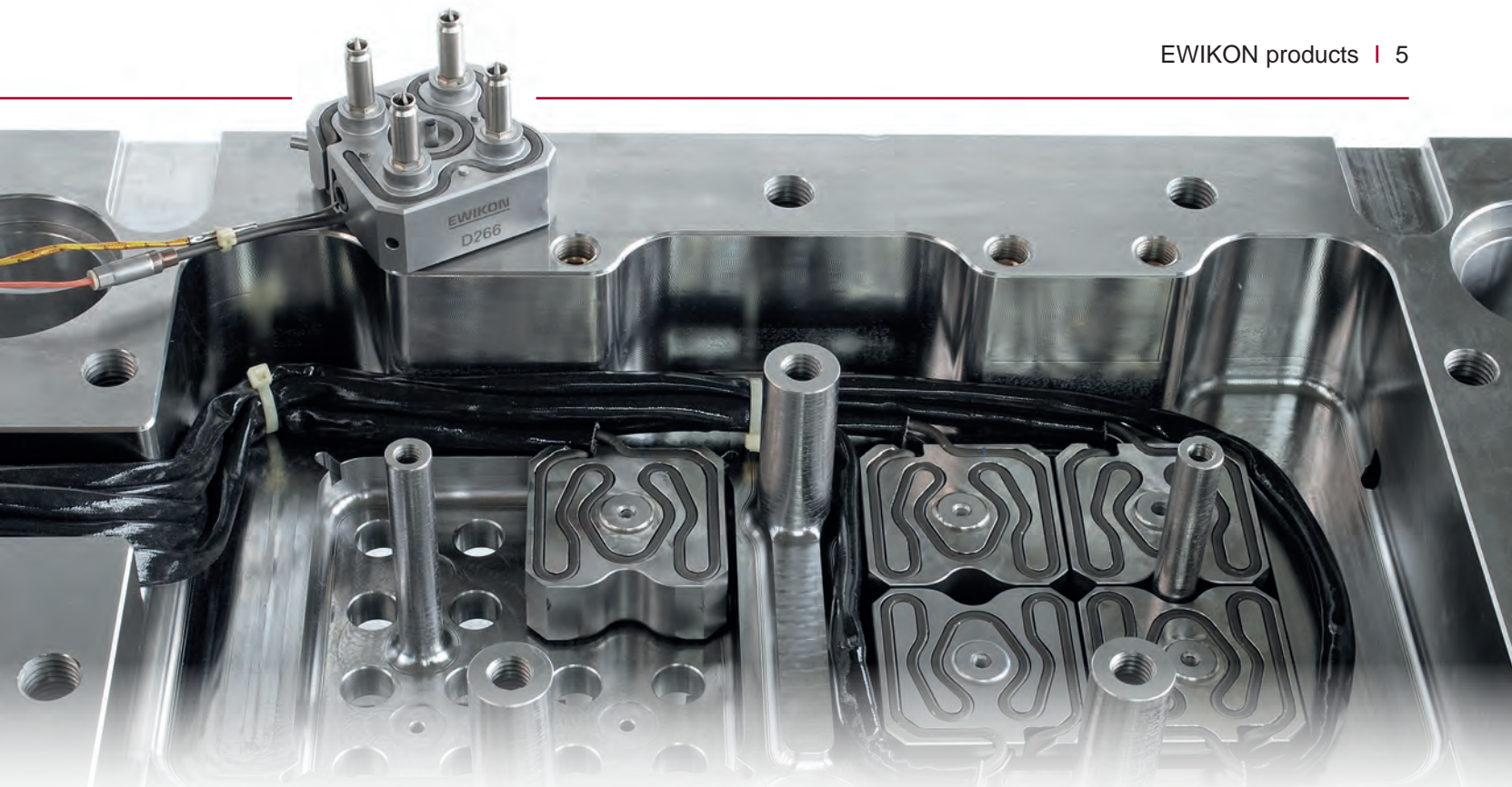
The close cooperation between VIMAR and EWIKON has resulted in a process-reliable serial production which has started in June 2013 on a 300 t Netstal Synergy 3000 machine with three injection units. Since then the mould has produced without any problem. "EWIKON has not only proven to be a reliable and highly capable partner with great know how and innovative solutions", Alessio Guadagnini resumes, "we are especially impressed by the excellent service provided during all stages of the project ranging from resin tests over fill simulations to extensive support during the mould trials. Due to the excellent results achieved with the electric drive valve gate system further applications with this technology are planned."

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NEW technology!

Micro-manifold technology for high-cavitation applications

Since many years EWIKON successfully uses micro-manifold technology, for example as the core-component of hot halves for micro-injection-moulding machines. Based on this technology EWIKON now offers a new solution for moulds with an extremely high number of cavities which is designed for the processing of polyolefines in applications with small shot weights. Target branches are the packaging and medical industry where a cost-effective large scale production of parts is required. The micro-manifold concept is already used successfully in several moulds. A 192-drop mould for a medical application recently reached a total of 9 million shots before the first routine maintenance took place.

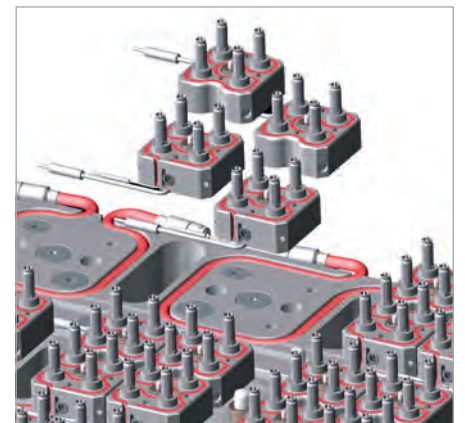
The fully balanced micro-manifolds feature four screwed-in heat conductive tip inserts each which have a flow channel diameter of 3 mm and a melt seal directly at the gate. The distance between the gating points is 30 mm. A manifold / four tip cluster requires only one coil

heater and one control zone. Nevertheless - due to the relatively large mass of the manifold body - a very homogeneous temperature profile is achieved. The micro-manifolds are fed by a main manifold placed on a second level.

When designing high-cavitation moulds the micro-manifold technology offers decisive advantages. Due to the fully balanced flow channel layout in a most

compact body the total flow path length in the system is reduced and the pressure loss as well as the residence time is minimized.

Furthermore, the design is very service-friendly. The tip inserts can be exchanged easily after removing the contour plate without the need to dismantle the manifold system. Since 4 tip inserts need only one control zone the expenditure for control technology as well as the space requirement for electric wiring is considerably reduced. The latter adds to a very compact mould layout. As an example the total wire length in a 192-drop customer mould was 200 m. In case of a separate control zone for each tip insert a comparative calculation resulted in approx. 600 m of wiring.



■ **Compact multi-cavity design:** 192-drop mould with micro-manifold technology (left), Positioning of micro-manifolds under the main manifold (right)



12 - 192 control zones HPS-C-PRO+

High-performance controllers with comfortable touch screen operation. Available in different versions as tower or table housing.



+ Plus offers more! - New HPS-C controllers

More performance, more ease of use, more safety functions. With HPS-C-PRO+ and HPS-C-SLOT+ EWIKON introduces the next generation of the HPS-C controllers.

Thanks to their extremely fast and precise temperature control the HPS-C hotrunner controllers are the number one choice - not only for standard applications but also for demanding high-cavitation systems using slim and low mass hotrunner nozzles which are difficult to control. Moreover, they feature an easy and intuitive operation with comprehensive diagnostic, protocol and error detection functions as well as a five year warranty. HPS-C controllers are available in different versions and housing types.

2 - 24 control zones HPS-C-SLOT+

Cost-efficient and fully featured slot controller.
Available with optional touch screen offering additional functions.



New and enhanced controller functions at a glance

Controller functions	HPS-C-SLOT+	HPS-C-PRO+
"Mold Wizard" for easy, intuitive start-up and configuration	-	■
Sequential start with compound heating	○	■
Adaptive PID ² control algorithm with Power-Priority [®]	■	■
Fast temperature scanning, 20 x per second	■	■
Phase angle control (1000 steps)	■	■
Kilowatt monitor (actual value, average, max, min)	-	■
Drying-up only if heating elements are humid	■	■
Operator identification	○	■
Comprehensive process monitoring	■	■
Early leak detection	○	■
Auto mode in the event of thermocouple failure	■	■
Mold ID, automatic mould recognition / mould memory	○	■
Mold Doctor [®] , mould defect analysis	○	■
Data recording, logging and error logging	○	■
Thermocouple "Rewire" for rectification of wiring errors	○	■
Acoustic und optic alarm signal	-	■

○ Optional touch screen required



EWIKON

Quick and effective cleaning

The EWIKON MWB 100 portable mini fluidized bed cleaning device allows quick cleaning of small hotrunner components and facilitates hotrunner maintenance.

The device consists of a heated cleaning chamber in which sand is set in motion by blowing air in. The maximum operating temperature is 400 °C. The cleaning procedure is a combination of thermal degradation of the contaminations and mechanical cleaning by the sand. It takes place in an easy to remove basket with a capacity of 25 cm³. The device is particularly suitable for cleaning of tip inserts (for

example HPS III-MH tip inserts, torpedo tips or valve gate tip inserts) as well as other small parts, such as screw-on gate bushes. Depending on the material the cleaning duration varies between 1 h and 2.5 h. The compact design and low weight makes the device usable at any work station with exhaust system. For power supply only a standard 230 V plug socket is required.



■ View into the cleaning chamber (left). The capacity of the basket is 25 cm³ which is enough to clean for example 24 HPS III-MH tip inserts (right).

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