

HOTLINE

1/2007



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The EWIKON news

L2X

The Drop-In hotrunner solution

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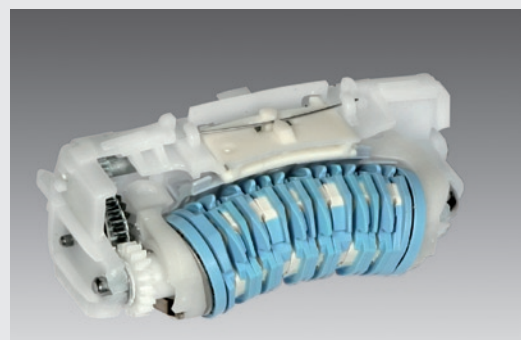
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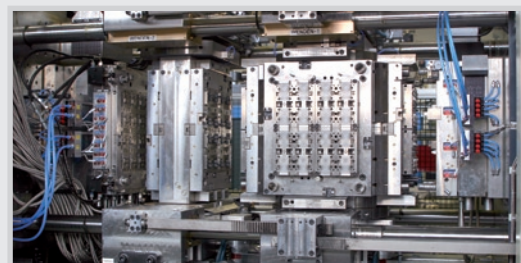


EWIKON application

Two-component tweezer discs for
Philips epilating system Pages 4-5

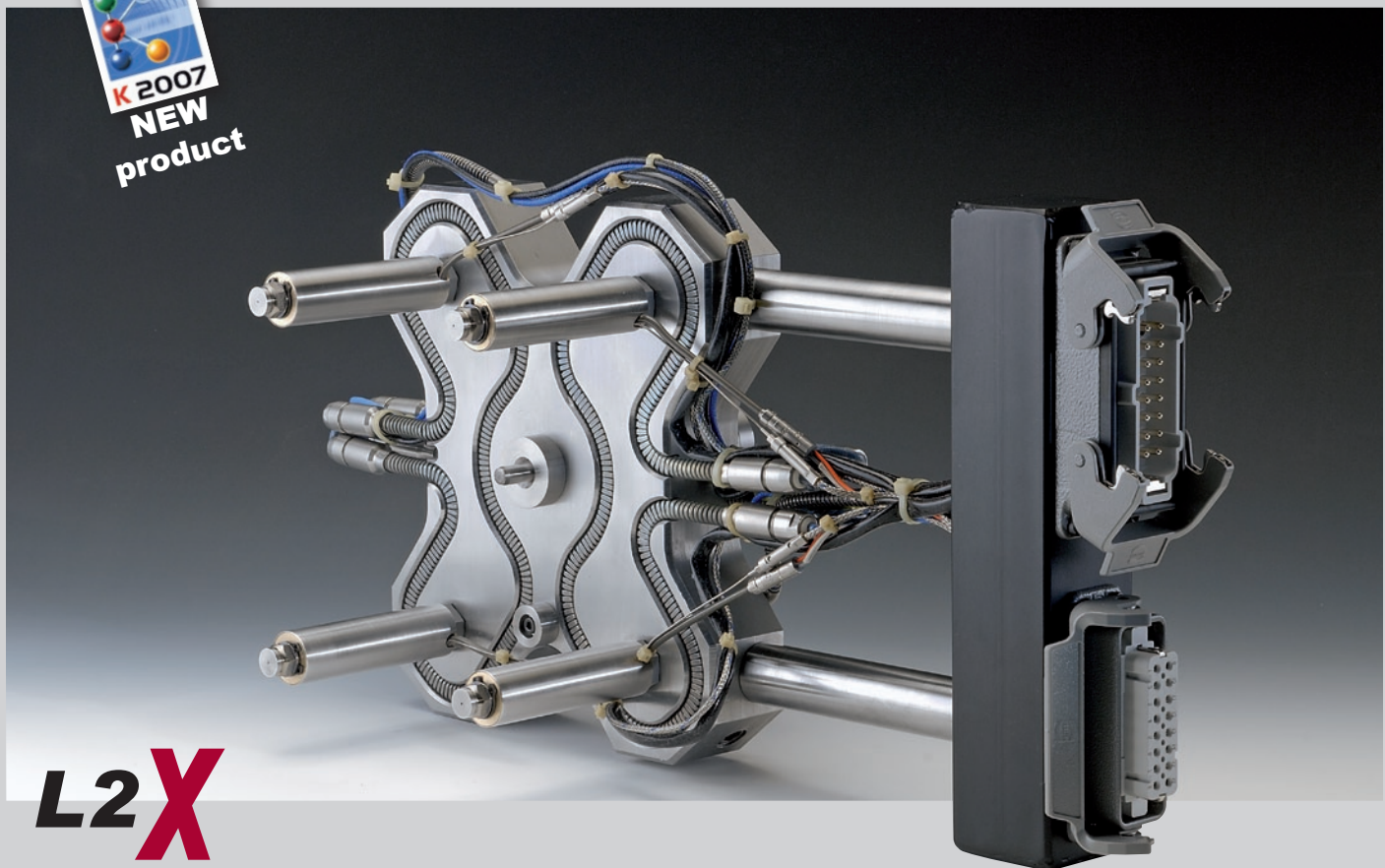
High process safety
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L2X

Compact Drop-In hotrunner system increases production safety and facilitates mould construction

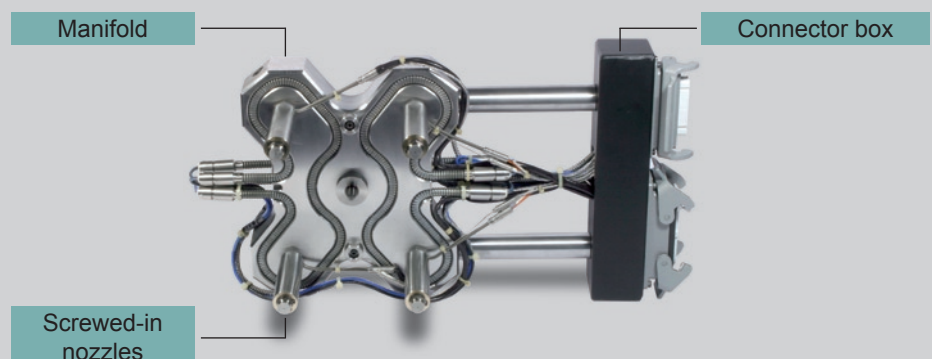
Previously the easy-to-install Drop-In construction principle was mainly used for large systems. With the L2X system EWIKON now offers a Drop-In solution for smaller moulds as well.

The system is delivered completely assembled with nozzles, manifold and sprue bush and also includes the complete wiring and the connector box. Thus, it is particularly easy integrable into the mould construction by simply inserting the complete unit into the matching pre-machined cutouts. The nozzles are screwed into the manifold making the system absolutely leakproof. This avoids downtimes due to system leakage, which for example can be caused by improper installation or operation of conventional systems with „floating“ manifold. As another advantage the height adjustment of the manifold which is necessary to create a defined

system pre-load in the mould when using single hotrunner components is no longer necessary. This makes the drop-in system particularly suitable for such applications

where the mould construction does not offer enough support areas to generate a sufficient pre-load of the hotrunner system.

Nozzles and manifold are proven components from the EWIKON standard range. The customer can choose between two fully balanced manifold versions and combine them with nozzles with flow channel diameter from 4,5 mm up to 12 mm with nozzle lengths up to 350 mm. The nozzles are designed for direct gating with torpedo tip, open gating or valve gating and can be equipped with various screw-on gate bush versions. The nozzle heaters can be exchanged without loosening the screw coupling between

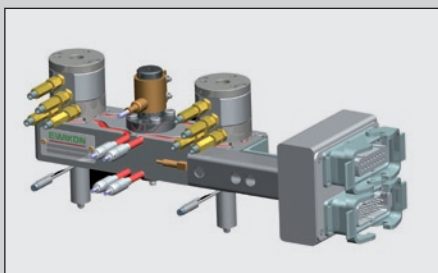


nozzle and manifold. The valve gate system comes with cooled pneumatic drive units for the valve pin which are flanged to the backside of the manifold. All EWIKON valve gate systems feature a permanent valve pin guide which is placed in the front area of the nozzle. Thus, the valve pin remains guided during the whole operation cycle. This ensures maximum operational safety and reduces valve pin wear.

When operated with state-of-the-art EWIKON hotrunner controllers, EWIKON offers a 2-year warranty for the system, covering defects in design, material, workmanship and function under normal use.

L2X system features

- Delivered completely assembled and wired. Easy integration into the mould
- Leakproof system, nozzles screwed into the manifold, high production safety
- Manifolds in T or TE version, available as straight manifold, cross manifold or manifold plate
- Available for direct gating with torpedo tip, open gating or valve gating
- Flow channel diameters of nozzles 4,5 mm, 6 mm, 9 mm and 12 mm



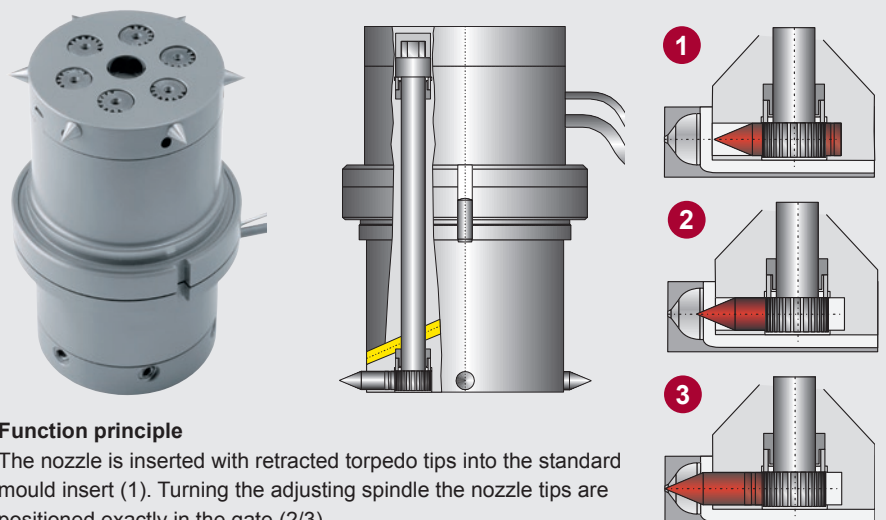
Valve gate version with cooled pneumatic drive units



HPS III-MH *Vario* - for direct side gating in standard mould inserts

HPS III-MH *Vario* is the innovative multi-tip solution for direct side gating with tip in compact moulds. The torpedo tips can be retracted completely and adjusted continuously, thus allowing a cost-efficient mould

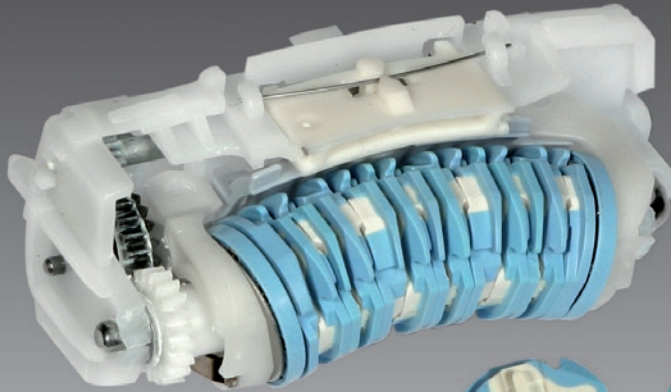
design with standard mould inserts. Furthermore, it is possible to adjust the pitch diameter within a defined area. The nozzle is available with 1, 2, 3, 4 or 6 tips as system nozzle or single tip.



Function principle

The nozzle is inserted with retracted torpedo tips into the standard mould insert (1). Turning the adjusting spindle the nozzle tips are positioned exactly in the gate (2/3).

Highly filled plastic replaces metal - two-component tweezer discs for Philips ceramic epilator head



1. component:
Polyamide filled with teflon

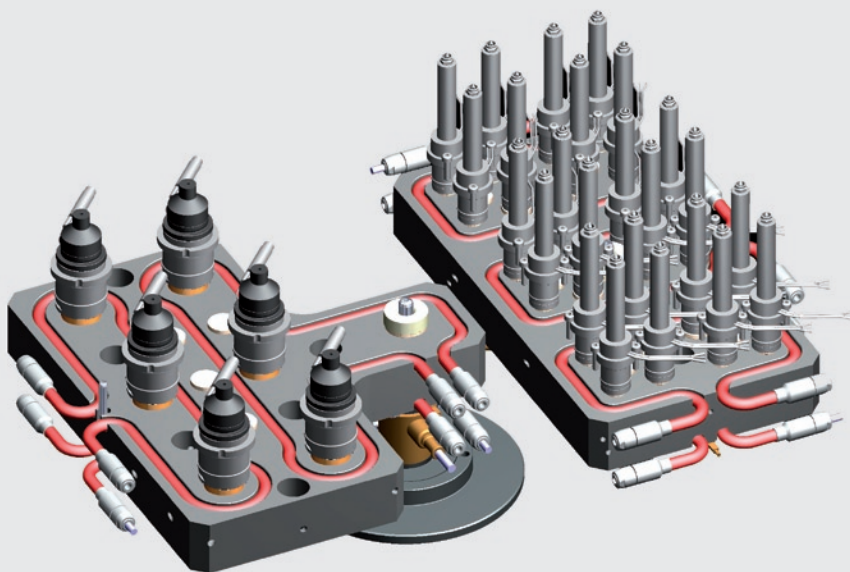
2. component
Polyamide filled with
ceramic and glass fibre

In 2005 Philips decided to use newly developed plastic tweezer discs for the top series epilating systems “Satinelle”. With this system the hair can be gripped better in comparison to metal tweezers and therefore, the epilating process becomes more effective. EWIKON supplied the hotrunner system for this demanding multi-component application.

The tweezer roller is part of the “epilator head”, a highly complex assembly group, consisting of 13 tweezer discs with a diameter of 14 mm in total, two of which are end discs. The discs are manufactured in a two-component rotary mould with a combination of full and partial hotrunner. A 16 and a 24 cavity mould were built in close cooperation with EWIKON. The 16 cavity mould produces end and middle discs, the described 24 cavity mould only produces middle discs.

Demanding materials

The body of the tweezer disc consists of polyamide with a teflon additive. After turning the mould into the second injecting position it is overmoulded with the second component, a highly ceramic and glass fibre filled polyamide. This component forms the tweezer blade, gripping and removing the hair during the epilating process. The high percentage of ceramic is due to the demand for a permanently sharp blade and maximum wear resistance of the component.



The two-component hotrunner system. The body (component 1) is gated directly, the tweezer blade (component 2) is gated onto a 4-drop subrunner

Slim nozzles for direct gating

The body with a shot weight of 0,18 grams per nozzle is gated directly using slim, compact nozzles with torpedo tip and a flow channel diameter of 4,5 mm. The second ceramic filled component is gated using a partial hotrunner onto 4-drop subrunner due to the expected high abrasion of the tips, the shot weight per nozzle including subrunner being 1,05 grams, the part weight being 0,1 grams. The used nozzles with a flow channel diameter of 6 mm are equipped with a gate bush. For maximum wear resistance tip inserts and gate bushes are coated. Both nozzle types are used in front instal-

lation version. Therefore, there is no need to disassemble the manifold in case of maintenance work. It is sufficient to pull the contour plate to the ejector side to make the nozzles accessible for replacement of torpedo tips or the entire nozzle, if needed.

Full balance required

Due to the small shot weights a fully balanced melt distribution was a main criterion when selecting the hotrunner system. In order to guarantee an even filling of all cavities the used HPS III T manifolds are fully balanced in general. Furthermore, the temperature constancy

at a level of more than 300°C is guaranteed by a finely structured heat distribution.

The manufactured parts are removed by a handling system and undergo a 100% quality control by a camera system. These were crucial production requirements, as the manufactured component has direct contact with skin and thus any risk of injury needs to be excluded.

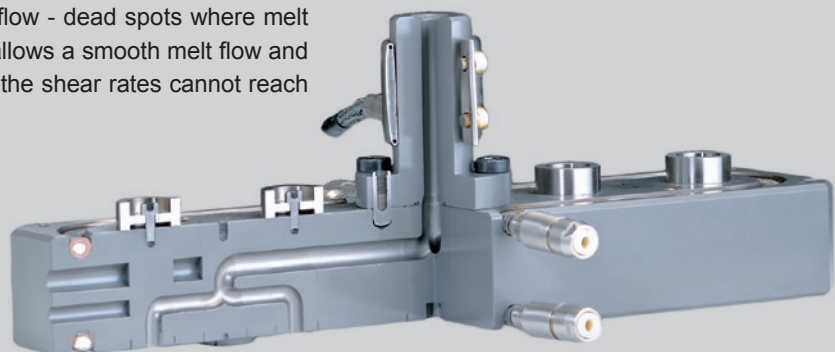
Philips started production with the 16 cavity mould in 2006. Due to the high demand for the "Satinelle" epilators the 24 cavity mould has been in operation additionally since 2007. Both moulds run absolutely reliably.



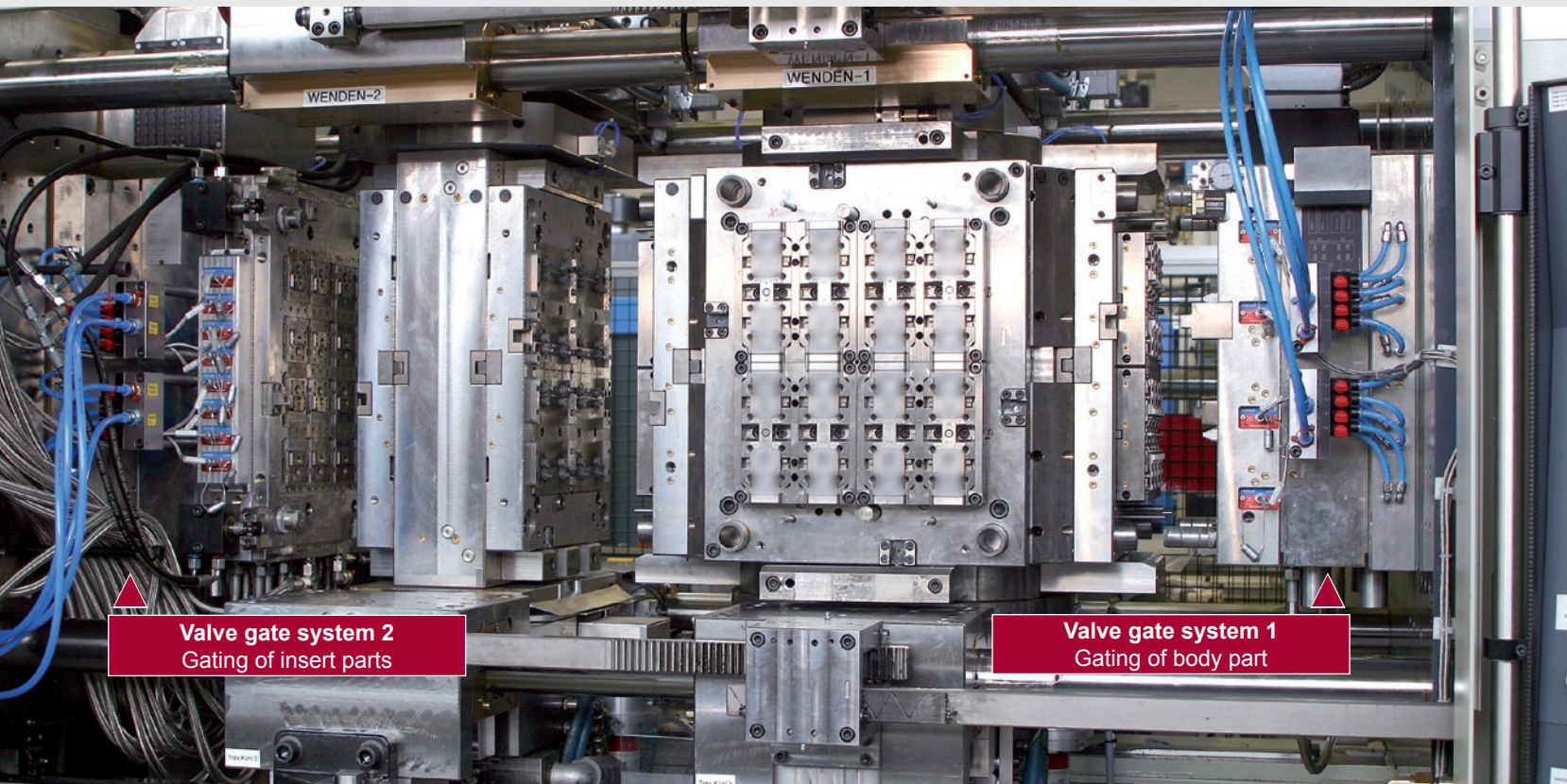
HPS III-S nozzle with 4,5 mm flow channel diameter in front installation version

Info Fully balanced manifold technology from EWIKON

The streamlined direction and distribution elements of the HPS III T manifold system enable a fully balanced and very compact manifold layout at several levels. Even in critical areas of the flow channel - changes of flow direction or distribution of the melt flow - dead spots where melt can stay for a long time are avoided. This allows a smooth melt flow and avoids thermal damage to the material, as the shear rates cannot reach critical values.



EWIKON valve gate systems for assembly moulding with double cube technology

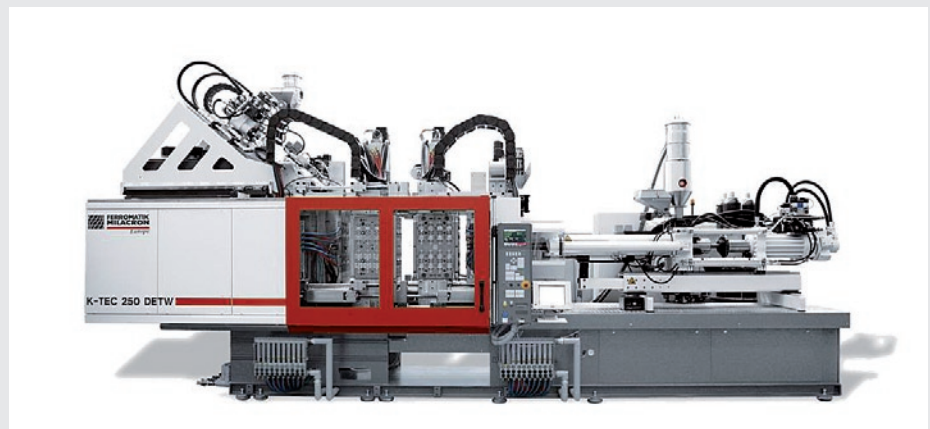


Assembly moulding with double cube technology is a highly efficient manufacturing technology. Using two cavity cubes rotating around their vertical axis allows the gating of basic components as well as their assembly to a complete assembly group within one moulding cycle. Due to appropriate coordination of cavity cube size and the rotating angle the required cooling times can be considered as well. For moulding of an assembly group consisting of a body part and two movable insert parts EWIKON supplied the hotrunner technology. Since highest process safety is the key requirement of this demanding application the complete hotrunner is designed as valve gate system. Valve gate technology allows defined opening and closing of the gate,

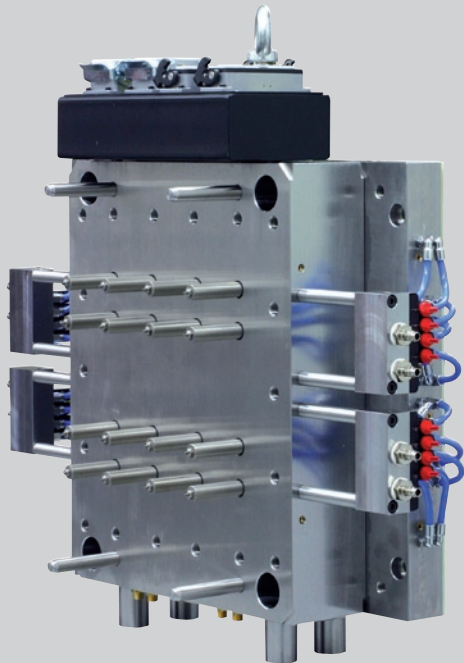
optimised holding pressure and a perfect gating point quality. Safe processing of the used materials - POM for the body part and glass fibre reinforced PA 6.6 for the insert parts - which are critical to process under aspects of residence time and wear-potential was ensured by a special valve gate system layout.

The even filling of all cavities which is an important factor for the process safety is monitored by pressure sensors in each cavity.

Injection moulding machine for the double cube technology
Photo: Ferromatik Milacron

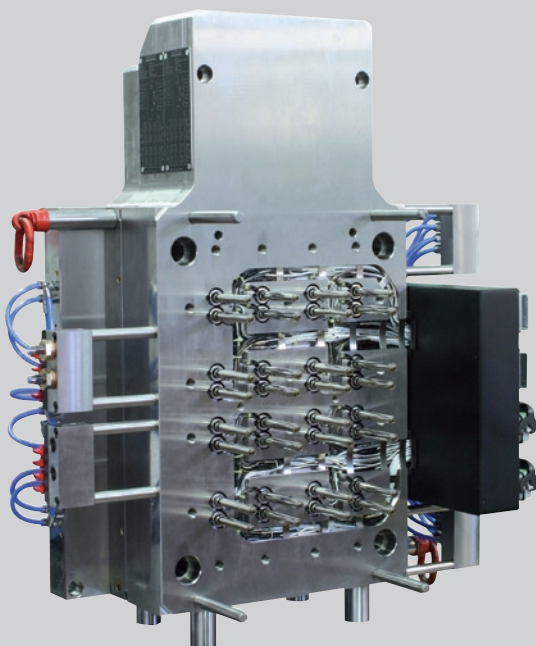


EWIKON valve gate systems for the double cube technology



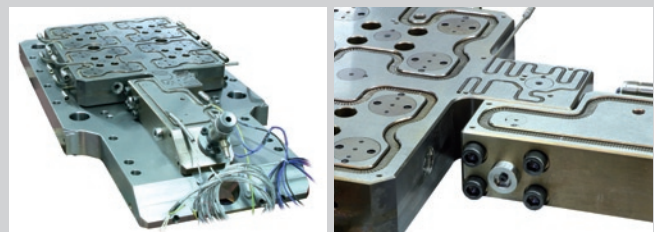
Valve gate system 1 for body part

- 16-drop system
- Pneumatic valve pin drive in the clamping plate
- HPS III T manifold system with element technology
- Flow channel diameter of nozzles 6 mm



Valve gate system 2 for insert parts

- 16+16-drop system
- Joint drive for 2 valve pins each with actuator plate with pneumatic actuation
- HPS III T manifold system with element technology
- Flow channel diameter of nozzles 4,5 mm



The angled position of the injection unit required a special inlet manifold. It is connected with the main manifold by using a special flange technology which allows compensation of the thermal expansion of the manifolds (above)



Actuator plates with guide pins (left)

Each drive unit of valve gate system 1 and each actuator plate of valve gate system 2 can be deactivated separately. Thus, in case of malfunction of one cavity it is possible to continue the manufacturing process with a reduced number of cavities.

EWIKON 3D-CAD data base on the internet – quick access to latest design data

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Select EWIKON hotrunner components fast and easily in our 2D/3D data base on CD-ROM and on the internet, configure and import them via direct interfaces into the most common CAD systems. The selected components including all negative geometries are available as 2D or 3D data and can be downloaded free of charge by our customers.

These data as well as our main catalogues which are available in PDF format are updated by our CAD team at regular intervals.

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