



MHT MOLD & HOTRUNNER  
TECHNOLOGY AG

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## IMPRESSUM

MHT Mold & Hotrunner  
Technology AG

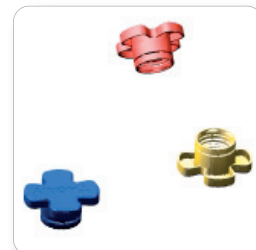
Dr. Ruben-Rausing - Str. 7  
D-65239 Hochheim/Main  
Tel. +49 (0) 61 46 - 906 - 0  
www.mht-ag.de

Dr. Sabine Kob  
Tel. +49-9254-953796  
Fax: +49-9254-953797  
skob@mht-ag.de

### WINGED INNOVATION ■

It created a sensation in Switzerland, received **numerous awards** and will probably soon be available in other countries as well: Thomy's winged closure.

MHT is part of the team ... ➤



Winged closure for Thomy

### FROM 48 TO 72: MORE PREFORMS FOR COCA-COLA ■

A 50% increase in preform output and lower machine costs than usual. A **lucrative and individual package** has been tied up by MHT for its customer Solibra on the Ivory Coast.

Based on so much service the technical director even changed his clothes ... ➤

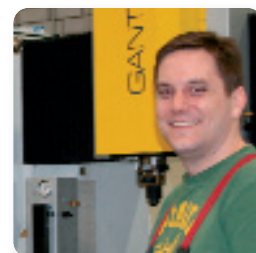


Alain Bancod, Technical Director of MHT customer Solibra

### NEW MHT-MOLD CENTRE STREAMLINED PRODUCTION PROCEDURE ■

From the start it was an **ambitious plan**: The **reduction of eroding time by 20 %** when manufacturing neck rings by use of the latest up-to-date machinery.

At the end the MHT team achieved even more ... ➤



MHT employee Alexander Plass in front of the new mold center

### LIGHTWEIGHT FOR MEDICAL SCIENCE ■

A blood test tube required for medical use needs to be **perfectly smooth, transparent and dimensionally exact**. For this reason glass has long appeared to be the only suitable material.

Up to now ... ➤



Cores for blood test tubes

## WINGED INNOVATION

It created a sensation in Switzerland, received **numerous awards** and will probably soon be available in other countries as well: Thomy's winged closure.

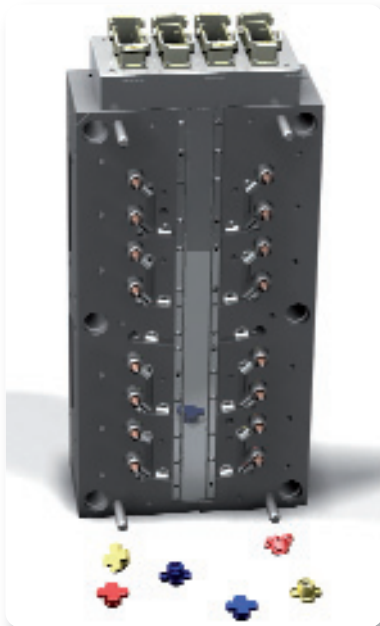
With its hot runner specialists, MHT delivers a naturally rheologically balanced hot runner system which was fitted into their tools by the Swiss **closure manufacturer, Herrmann AG**. Using two 2.000 kN machines, the winged closures are injection molded from HD PE in the colors red, blue and yellow. The **unproblematic color change** was therefore one of the important requirements of the hot runner technology. The melt channels are specially laid out accordingly.

The **spraying point** lies directly **in the centre of the O of the Thomy name label** and is carried out using a conical valve gate. The cycle time of the 16-fold tool lies at 13.7 sec.

For Thomy the winged closure has proven to be an **innovation in three respects**: Optically it stands out from its competitors, it serves as a stand for the tube and is – for the elderly consumers as well – easier to open.

### Winged closure – Statistics

- **Mold: 16-cavity, conical valve gate**
- **Cycle time: 13,7 seconds**
- **Material: HD PE (MFI 1,9g/10min; 190°C/2,16kg)** ◀



16-cavity mold with closures



Jérémié Cuny (MHT Sales Manager)



Second-hand machine with increased productivity

## FROM 48 TO 72: MORE PREFORMS FOR COCA-COLA

A 50% increase in preform output and lower machine costs than usual. A **lucrative and individual package** has been tied up by MHT for its customer Solibra (Société des Limonaderies & Brasseries d'Afrique) on the Ivory Coast.

When **Solibra, producer and bottler for Coca-Cola and Fanta**, decided to manufacture their own preforms, MHT Sales Manager Jérémié Cuny and his team demonstrated true resourcefulness.

A second-hand Husky-machine TYPE XL300 (built in 1992) was organized, thoroughly overhauled before being transported to Africa – and put into operation. **Originally designed for 48-cavity molds**, the machine would **now produce 72 preforms per cycle** – an increase of 50%. This was made possible by means of a self-designed and built mold (pitch 50x120). The complete project included a 72-cavity and a 48-cavity mold, plus cold halves and 2 sets of cores for each.



From left: Alain Bancod (Technical Director, Solibra), Jérémie Cuny (MHT Sales Manager), Patrice Mirlin (Technician, Solibra), Sie Mamadou Coulibaly (Production Manager, Solibra)

Based on so much service, Alain Bancod, the technical director of Solibra, slipped into an MHT-polo shirt right away for the photo ...

### Project Solibra – Statistics

- **Machine: Second Hand Husky XL 300 – refurbished**
- **Mold: 72-cavity (instead of 48), pitch 50x120**
- **Output: increased by 50%**



### NEW MHT-MOLD CENTRE STREAMLINED PRODUCTION PROCEDURE

From the start it was an **ambitious plan**: The **reduction of eroding time by 20 %** when manufacturing neck rings by use of the latest up-to-date machinery. At the end, the optimization team consisting of Marek Hönisch, Alexander Plass, Klaus Wegmann and Matthias Brinzing created a fully automatic mold centre, shortened the production procedure – and were happy to **achieve a lot more saved time**.

Electrode milling, neck ring measurement, precisely adjusted thread eroding, neck ring marking. These production steps are performed in the mold centre which was individually planned and completed with Ingersoll. Thereafter, only the smoothing (on two sides) and polishing follows. These **four production steps** are what **remain of the original ten steps**. Through the streamlined structure alone, around 5-6 days wait time have been saved which previously accumulated as a result of the extensive coordination.

A substantial part is played by the new palette with data chip on which the neck rings are tightened, measured and eroded. It increases production precision and **leaves five different mounting and clamping procedures superfluous**.

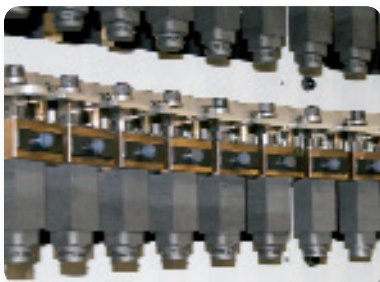
Fully loaded, the mold centre can run for about 72 hours without external control – for example, over a weekend. The **biggest challenge** when starting was posed by the **software** which, due to the individual solution, was still in the (error-prone) development stage. After all, with the production of a 96-cavity mold there are **about 2500 programs successively active**. The optimization team worked meticulously for a number of weeks until the plant “was a lot of fun” and they can now look forward to even more fun: The second mold centre has been ordered.

### Mold centre – Statistics

- **Production steps neck ring: 4 (previously 10)**
- **Investment volumes: 650T €**
- **Time saved per tool: > 5 days**
- **Maximum running time after loading: 72 hours**



Finished neck ring



Graphite electrodes



From left: Marek Hönisch (Head of Eroding Department), Klaus Wegmann (Production Manager), Alexander Plass (Employee of Eroding Department)

## LIGHTWEIGHT FOR MEDICAL SCIENCE

A blood test tube required for medical use needs to be **perfectly smooth, transparent and dimensionally exact**. For this reason glass has long appeared to be the only suitable material. However, **PET-blood test tubes** produced by MHT molds now fulfil all the necessary requirements – and offer additional advantages such as low weight and infrangibility.

The tool development presented certain challenges as, production-wise, the ratio of **small diameter** to **considerable length** is rather unfavourable.

Particular attention was therefore paid to the achievement of an optimal injection point and a **uniform melt flow**. The narrow wall thickness can only undergo process-stable manufacture by means of a thermally and rheologically **precisely balanced hot runner**. In addition, the MHT team has developed a special **needle duct** (locking needle with pre-alignment), to take into account the high sprue quality requirements.

The **close-contoured tool cooling** at the core and along the cavity guarantees, in addition to the necessary dimensional exactitude, low crystallinity, and with it, absolute transparency of the blood test tube. A smooth surface (average roughness value  $RA < 0,05 \mu m$ ) is achieved by means of **mirror finish**. Even during prefabrication utmost surface quality has to be taken into consideration.

Where plastic is injection molded, there's a sprue. Should ridges or edges appear in the case of the blood test tubes, these could damage the protective gloves worn in the laboratory. For this reason, MHT has **sunk** the **sprue** into the base of the test tube.

The aperture of the blood test tube is provided with a **curved lip** which later secures the sealing plug. This retaining ring is dimensioned in such a way that an enforced demolding is made possible.

With **less than 4g** the PET blood test tube is a true lightweight, and yet, in comparison to its glass competitor, absolutely equal in its function. And it even survives a fall onto the tiled floor.

### Blood test tubes – Statistics

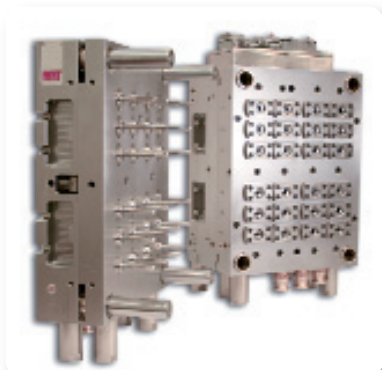
- **Part weight:** < 4g
- **Average roughness value:**  $RA < 0,05 \mu m$
- **Dimensions:**  $\varnothing 12,8 \text{ mm} / 75 \text{ mm}$  resp.  $100 \text{ mm}$



Blood test tubes



Blood test tubes with mold parts



24-cavity mold for blood test tubes