

BOB - The Bottle Buddy

Smart consumer article – entirely developed and manufactured in Westphalia

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That plastic consumer goods do not necessarily have to come from Asia is demonstrated by a nifty new product where all the parties involved in the process chain – from development, design, provision of the standard mould units, building of the moulds to the ready-assembled injection-moulded part – are based in the Westphalia region of north-western Germany. BOB the Bottle Buddy is, as a local daily newspaper put it, a "real man's thing". At second glance, BOB certainly has the potential to give the returnable bottle a new lease of life and thus help to conserve the environment.

The idea for the Bottle Buddy came from Alexander Brock, a product and mould designer from Schloß Holte-Stukenbrock, who, when working behind the bar at the local tennis club, became fed up with having to take every bottle out of the crate individually. This finally gave rise to a bottle carrier that takes six bottles at once out of the crate and can also collect up the bottles individually. The glass bottles are suspended safely in the BOB, with or without caps. The sophisticated mechanism is made entirely of plastic without any screws. With the aim

of minimising the amount of work involved in assembling the device, the makers have since reduced the initial 30 parts to 14. Another ingenious touch with the device is that up to four BOBs can be left on the bottles in the crate, even if the crates are stacked. Together with his friend Markus Landmann, a professional marketing expert who worked for many years for various discount stores, he turned the prototype into a business idea. Landmann first asked himself which target groups could be of interest for the bottle buddy. "Apart from

private consumers, that would certainly be restaurant owners, drink retailers and the beverage producers themselves." And, after initial talks with the latter group, a large brewery immediately wanted to place an order for 800,000 of them, for delivery within less than a year. "That was a little too hot for both of us," says Alexander Brock, "but it certainly showed us that the idea was good." Overall, the feedback was enormous, "because people recognised its potential, not merely as an advertising article," adds Markus Landmann.

In order to turn the idea into a truly marketable product, the team was joined by a third person, Uwe Merschbrock, Managing Director of Kunststoff-Spritzguss GmbH in Verl, who had been highly enthusiastic about the idea from the very beginning. And to give the idea a sound basis from the start, the three partners immediately set up a company called Click-It-Systems GmbH, named after the noise uttered by BOB when someone picks it up.



1/ Bottle Buddy – an innovative idea

Design and construction of the moulding tools

The inventor of the Bottle Buddy, Alexander Brock, operates an independent design office that his



2/ Holding project discussions (from the left): Uwe Merschbrock/Merschbrock GmbH, Volker Wittmer/HASCO, Alexander Brock/Design office Brock, Andreas Kaersch/HASCO

father had founded in his cellar with one drawing board in 1978. Brock designs injection moulding tools among other things for white goods but also for the aircraft and automotive industries. The moulds are, however, built elsewhere. In addition to injection moulding tools, the firm's portfolio also includes article development, which, he emphasises, must always be "mould-friendly". During the course of the develop-

ment, Brock made some initial sketches and CAD drawings and presented the idea to Andreas Kaersch, a technical sales engineer at HASCO, a leading manufacturer of standard mould units. Kaersch, too, was immediately taken by the idea and offered to accompany and support the development at HASCO. Because HASCO was involved very early in the CAD design phase of the series-manufactured

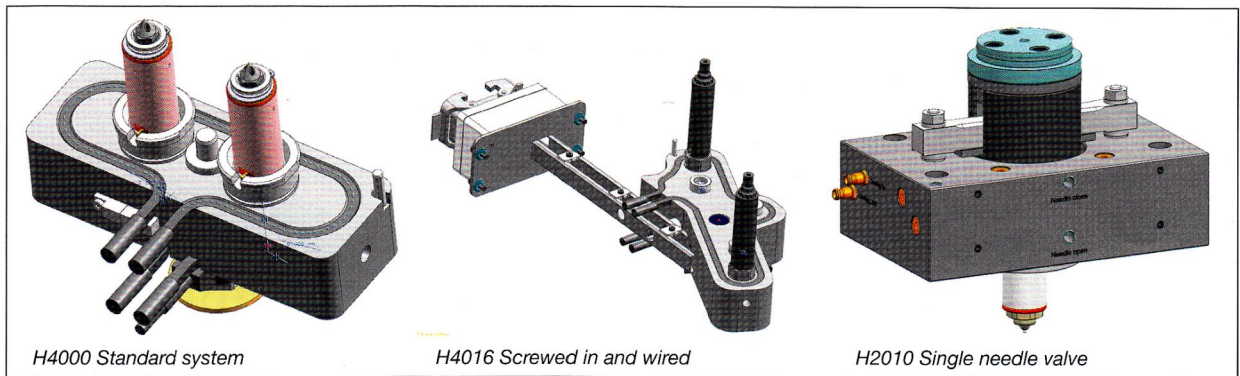
product, explains Axel Fehling, HASCO Business Development manager West Germany, it was possible to make optimum use of the company's portal and the digital data could flow directly into the CAD. As part of the process chain, HASCO then supplied the mouldmakers with standard mould components and stress free annealed plates to ensure minimum distortion during machining, as well as the hot runner systems too. The company also provided support with cycle time optimisation and problem-free operation of the moulds in the injection moulding plant. In other words, says Fehling, "Enabling with System". A key role in the success of the project was played by four local mouldmakers: B&K, FUKS, Strohdiek and Vollmer in cooperation with the Brock design office.

In a pre-project phase, the design of nearly all the components was discussed at a joint meeting and flow analyses were carried out by HASCO. Based on this, it was decided which components could use the hot runner technology and how the feed gates would look like. With some components it was also important, for example, where to position the weld lines. Because of the particularly tight space situation, the decision with some moulds fell to the new HASCO Vario Shot hot runner nozzles. "Depending on the particular application, the optimum hot runner series and gating systems were selected from HASCO's large portfolio," says Volker Wittmer, technical sales engineer for hot runner systems at HASCO. "This included among other things gates on the lower distributor manifold, direct gating with torpedo tip and direct gating with needle valve."

One mould in which several plastics components are assembled in the mould to form a movable unit,



3/ The project participants presenting their injection moulds

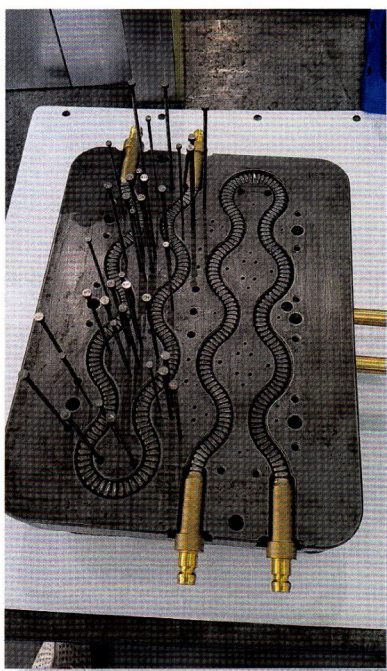


4/ HASCO Hot runner

was particularly demanding. "We used a mould with hot runner, three platens, collapsible cores, latch locking units and two-stage ejectors," explains Alexander Brock proudly. Volker Wittmer attaches major importance to the fact that, in this project, HASCO has not just been a supplier of components but also an important partner that has helped to enable the product's development. The big challenges were not only the different types of thermoplastics, but also the required easy colour change and service friendliness. For the demoulding operation, use is made of two-stage ejec-

tors, latch locking units and inclined sliding carriers. The two-stage ejector Z1691 and the latch locking unit Z174 have been further optimised by HASCO in recent years, which means that these mould units are now coated as standard with DLC for outstanding wear resistance. For guiding and centering, HASCO supplied square guide bars Z071 and centering units Z085. For mould cooling, HASCO's Tempflex Z976 flexible mould temperature control was a real delight for Alexander Brock. Particularly with parts having so many ejectors – as is the case with BOB, for example, with the base plate – the Tempflex unit allows optimum conformal cooling. Equally helpful is the Cool Cross Z99, which Brock uses for the hood-type mould. The Cool Cross allows cooling lines of different circuits to simply cross over each other on the same plane. "All these ingenious solutions have made my life very much easier when designing the moulds," says Alexander Brock with a smile on this face. "Just like this diverting plug ...". What he is referring to is the Z9675 with which an ejector pin or core pin can travel through the cooling system.

There are also a number of other simple but very useful aids that HASCO has added to its program fairly recently and are now enjoying ever-increasing popularity. These include the new Screw Memory A5805, an information memory that is simply screwed into the mould via an M20 outer thread and allows the archiving of all mould and/or article-specific data. The new nameplate A6500 in a sophisticated white design is rugged and durable. It can, in the HASCO portal, be configured and designed for easy reading with a text and photo (or a CAD image) as desired. This makes it possible to recognise at a glance what the mould is. Furthermore, a QR code on the nameplate leads directly to the HASCO portal. The new and innovative 360° rotating lifting eye bolt Z725 offers a real bonus in extra safety. It is simply tightened by hand and can then be aligned in any desired load direction. The bolt thus offers maximum dynamic loading in all directions. Another important reason why Alexander Brock likes to use HASCO's standard mould units is that, in the event of wear and tear or if repairs are needed, spare parts are available immediately.



5/ The HASCO Tempflex permits optimum, conformal cooling

Production

Once all the moulding tools had been designed and finally built,

the sampling procedure for the first prototype series could begin. After all, most problems can only be recognised when everything has been assembled and a functional test has been carried out. Any faults can then be eliminated. In addition, the matter of colouring or colour combinations needed to be discussed. Putting the advertising on the panel is done by In-Mould Labelling (IML) in order to save further work steps that would arise during a printing process.

Merschbrock Kunststoff-Spritzguss GmbH in Verl is responsible for production. The family-owned company of father and three sons was founded in 1978 and now employs 80 people. On 50 injection moulding machines with clamping forces ranging from 52 to 10,000 kN, the company produces not only smart bottle carriers but also a variety of products for a large number of different industry sectors.

In the automotive segment, these include interior components such as arm rest supports, cover flaps, and small components for seats and seat adjustment. "At Volkswagen, we are allowed to deliver directly to the production line," explains Uwe Merschbrock, who has the function of Managing Director together with his father. Other examples include parts for steering rods and safety-relevant airbag components, including fully automatic post-finishing and assembly. "We subject all our automotive products to a 100 % control with state-of-the-art camera systems," says Merschbrock. In addition to seat back covers, foot rests, lumbar supports etc. for the office furniture industry, Uwe Merschbrock has the most enjoyment with the packaging and food industries. One example is the salt and pepper shaker with two flip-lids, of which the company manufactures around

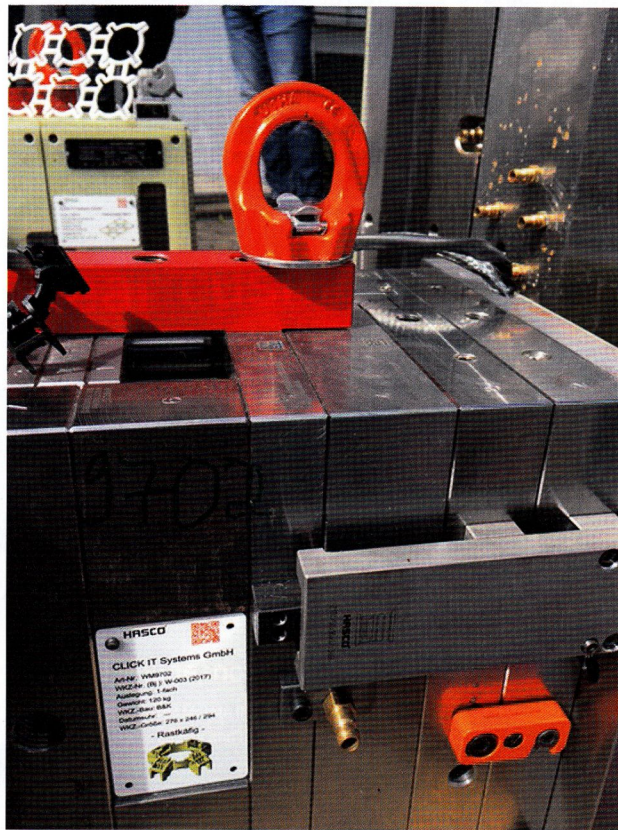
30 - 35 million pieces a year, and the various spice mills with plastic or ceramic grinding units. "Here, up to 7 parts are assembled fully automatically," says Merschbrock smiling.

One market for plastic injection-moulded parts that might not spring to mind straight away is the rail industry. Track and sleeper construction is a field of application whose size is often underestimated. However, the demand in this segment is enormous because, for every sleeper, four dowels, four angled guide plates and two rail pads are needed. "Here, an order starts at 25 km," says Uwe Merschbrock. The company, which is certified for the German Railways (DB), manufactures, for example, angled guide plates weighing around 190 g in 8-cavity moulds. Other markets include the door, window and electrical industries. Around 15 moulds are produced

a year in the company's own tool and mould-making department, which is normally responsible for repair and maintenance work. This service is rounded off by a plant and equipment manufacturing department that employs two designers.

Quality from Westphalia

Summarising, the three partners are confident they are on the right track with their Bottle Buddy. "Unfortunately, we hadn't made enough progress in time for the European Soccer Championships last year, but we will certainly be able to make the big breakthrough next year for the World Cup," they say, egging each other on. By then, the aim is to have the first BOBs on the market, but initially only via selected marketing channels. After that it should not take long until everybody wants one.



6/ Injection mould with latch locking device, lifting eye bolt, mould safety device and nameplate (Pictures: HASCO Hasenclever GmbH + Co KG, Lüdenscheid, Germany)