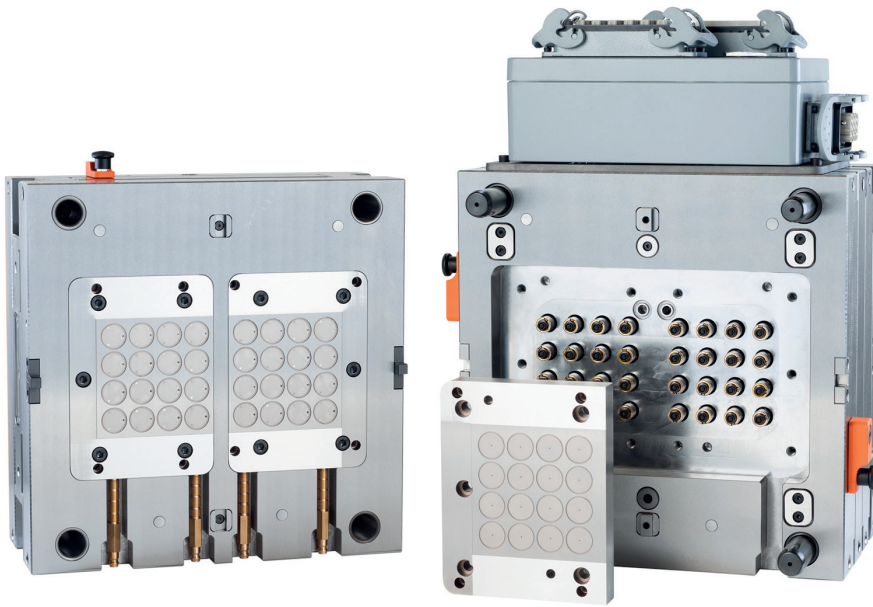


Compact mould with additively manufactured hot runner system

For the further development of the Streamrunner and also for customer demonstration purposes, HASCO hot runner has manufactured a new and innovative 32-cavity injection mould. The compact mould, that will produce shopping trolley tokens, will be trialled in our in-house injection moulding technical centre.



1/ Token mould with additively manufactured hot runner manifold and disassembled mould insert



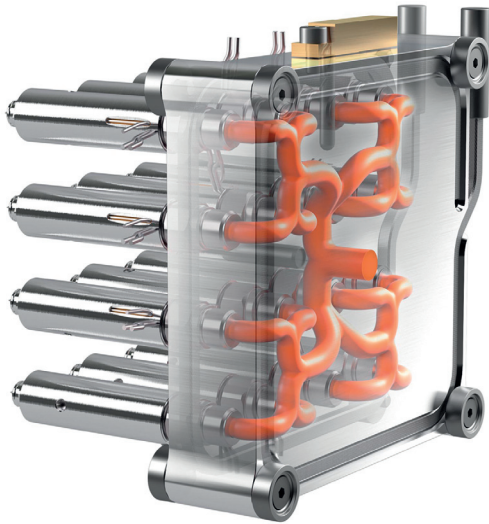
2/ Assembly in the in-house injection moulding technical centre

Streamrunner offers maximum design freedom

The special feature of the mould is the innovative 32-cavity HASCO Streamrunner. The additively manufactured hot runner manifold offers unprecedented freedom in design and opens the door to new design possibilities in mouldmaking. The 100 % leak-free manifold offers particularly gentle passage of the melt and speeds up colour and material changes. Through the use of the additive manufacturing process, very compact designs can be produced with a nozzle pitch down to 18 mm and minimum manifold height of 26 mm. This is all installed in a very compact mould with a size of only 346 x 346 mm.

Special filling studies trialled

The injection moulding tool, which features two cavity plates each with 4 x 4 cavities, is used for the production of shopping trolley tokens. "The round shape of the tokens offers us certain advantages for carrying out specialised filling studies," says Product Manager Sebastian Hohenauer from the HASCO hot runner team. The first of the interchangeable mould inserts are initially not labelled so that the flow front is not hindered in the cavities during the filling process by the engravings, and the balancing can be documented as accurately as possible.



3/ Streamrunner enables perfect balancing and gentle melt passage

A floating manifold of type H4010/... feeds the Streamrunner (each with 16 nozzles and a pitch of 25 mm) evenly with melt. The proven Techni Shot nozzles H33205/... are individually heated and controlled, which not only enables precise adjustment but also has advantages for various trials.

Perfect balancing

The flow channels in the Streamrunner can be optimally designed rheologically using the additive manufacturing technology so as to completely avoid sharp edges and areas that inhibit perfect flow. Even with a com-

plex nozzle arrangement, natural balancing is possible.

Particularly gentle passage of the melt

In the Streamrunner, the splitting of the melt and the diversion of the material are carried out via generously sized radii. This gentle passage of the melt makes for considerably lower shear in the material, resulting in better quality mouldings. The flow-optimised design also speeds up colour changes.

For the laboratory trials, heat sensors additionally integrated into the system show a highly uniform temperature profile and confirm the previously carried out thermal simulations.

Compatible with standard mould units

In addition to the Streamrunner, numerous standard quality mould components are used in the token mould.

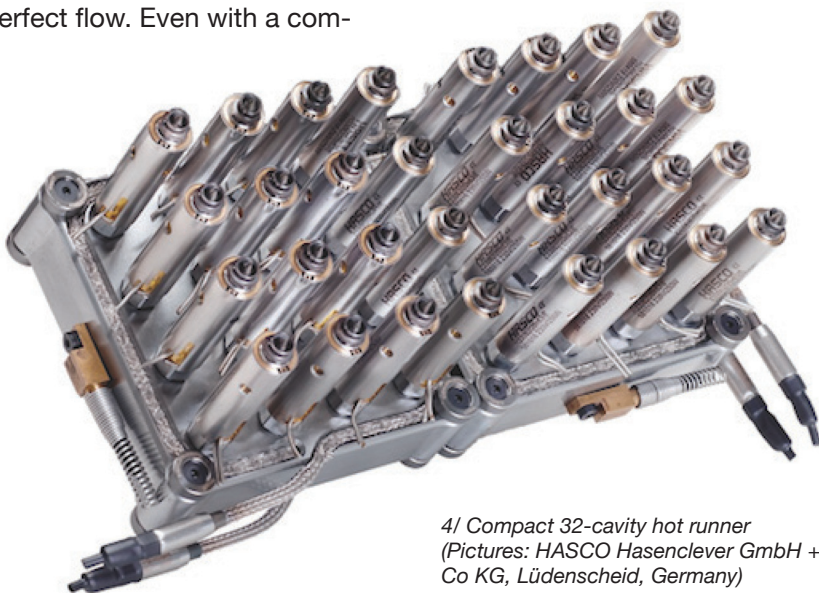
So that the injection moulding tool cannot open during assembly or dismantling or during transport, and so that moving plates such as ejector assemblies cannot shift about, they are secured against unintended move-

ment. The new tool locks Z730/... secure the mould from unintended opening, whereby the smaller variation of the lock secures the ejector plate. The cycle counter A57300/... integrated from the left side counts every shot. The overall moulding tool is coordinated precisely through corresponding pressure plates. Numerous DLC-coated components ensure accurate and low-wear guiding and centring.

Ideal for high-cavity systems

With the new test mould, the hot runner specialists at HASCO hot runner now have additional possibilities to obtain further knowledge in the application of additively manufactured hot runner manifolds, especially in the high-cavity segment. The first series of tests have confirmed all the advantages in the balancing of the Streamrunner. A filling study showed from the very beginning a very uniform opening behaviour of all 32 nozzles and synchronous filling of the individual cavities. In the coming months, further trials will be carried out with a wide variety of different thermoplastics. Furthermore, special tests are also planned in the field of colour change as well as individual maximum load tests.

The interchangeable inserts already represent the preparation for a second expansion stage in which the mould is extended by a needle valve system with plate control in order to be able to demonstrate the advantages of the Streamrunner also with needle valve mechanisms. Apart from the above-mentioned tests, other innovative product ideas for the extended use of the Streamrunner will be tested very soon with the new injection moulding tool. These product ideas are already at the preparation stage.



4/ Compact 32-cavity hot runner
(Pictures: HASCO Hasenclever GmbH + Co KG, Lüdenscheld, Germany)