Drainage specialist Dallmer drives digitalisation forward with ENGEL

Uncompromising precision

Dallmer is investing in the future with new injection moulding machines by ENGEL. State of the art production is an important competitiveness factor for the drainage specialist from Germany. The focus is on two topics above all: Industry 4.0 and sustainability.

The Dallmer name stands for innovative sanitary technology – and a trend to understatement. The bathroom user's eye is caught by the pure design, a narrow shower channel or a fine grid made of high quality stainless steel in the floor. The technological expertise of Dallmer's engineers and technicians is not immediately apparent and certainly not fully visible. Essential parts of the drainage system are hidden in the floor, cast in the screed. The cutaway models in the meeting and presentation room reveal technological sophistication. Because reliable and quiet building drainage is not something that can be taken for granted, but the result of continuous development work. Drainage systems consist of a large number of components, most of which are produced from plastic in the injection moulding process and each of them fulfils an important function. "Sound insulation is one of our permanent development priorities," says production manager Andreas Föltz providing an insight. Insulation systems decouple the drain from the floor slab so that neighbours can continue to sleep when showers are taken at night. Dallmer develops, designs and constructs all the products itself. The in-house mould making shop is located directly next to the production floors. "Our transport routes are short, and we can implement new ideas at short notice", says Föltz.

Process stability and flexibility are decisive

DallDrain is the last innovation of the Sauerland-based company. The individual drains for dewatering the floor are used in bathrooms, spas or cellars and offered in a number of variants. For example, they can be height-adjusted to suit the installation situation and ensure reliable drainage even if the floor structure is very shallow. There are three drain housing

types that can be combined with 18 different attachments. All told, this results in a large selection and variety of injection-moulded parts for a product series.

The Dallmer machinery includes injection moulding machines with clamping forces between 800 and 13,000 kN. Their average age just dropped substantially. ENGEL has supplied a large group of new injection moulding machines to Arnsberg, together with several robots of different designs. The preferred machine type for small and medium clamping forces is the ENGEL victory, which is used for the DallDrain series components. The largest components, the housing and the ball joint, are produced on a victory 120, and the sleeve that connects the screed and the floor covering is produced on a victory 120 combi using multi-component injection moulding. The viper robot first inserts the sealing non-woven fabric in the mould. In the first injection moulding step, the fabric is back-injected with polypropylene. The mould then rotates in order to inject a TPE seal in the second step. A four-cavity mould is used for the ball joint; this ensures a torsion-free connection of the drainage system to the drainage pipe. Polypropylene is also processed here. PP the most frequently used material in the Dallmer injection moulding shop. It combines stability with durability, which makes it sustainable.

"We rely on very high quality reproduction of surface detail to ensure that the ball joint seals permanently," Föltz explains. "Precision and repeatability are our central requirements for the injection moulding machines. The victory machines ensure high process stability for us here." Among other things, this is due to the excellent parallelism of the mould mounting platens, which is also maintained during clamping force build-up and injection. Added to this are the force dividers, which distribute the clamping force evenly over the mould mounting platens.

iQ clamp control boosts quality and repeatability

To ensure additional safety benefits, Dallmer is taking a step towards digitalisation with the newly-supplied injection moulding machines. All of the machines are each equipped with smart assistance systems from ENGEL's inject 4.0 programme. "iQ clamp control was the biggest surprise for us", Föltz reports. The software determines the optimum clamping force for the respective injection moulding process on the basis of mould breathing and drops the force down from 1200 to 800 kN in some cases during production of the DallDrain components. "This helps to further improve the quality and repeatability", says Föltz. "We can safely

eliminate overmoulding and flash, and on top of that, we can improve mould venting and slow down wear."

The iQ systems are only one aspect of Dallmer's very comprehensive digitalisation strategy. "Our goal is more transparency. We seek to centrally manage all components of production, and record and evaluate quality-relevant process parameters shot by shot in order to continuously improve the process," says Föltz. It is particularly important to the production manager to bring all data together centrally in the course of digitalisation. The ENGEL injection moulding machines' CC300 control units give him precisely this overview of the overall process, because both the smart assistance systems and the automation are fully integrated into the machine control unit. The entire production cell can be controlled via the machine control panel, and data can be retrieved remotely via an internet connection as needed. Not least, control integration makes it easier for the machine operators to familiarise themselves with the new systems.

Dallmer also made a leap in terms of digitalisation during the start-up of the new machines and the associated employee training. Due to the Corona pandemic, many meetings were virtual, and training was held online. Using the remote maintenance tool e-connect.24, the ENGEL trainer remotely controlled the machines in Arnsberg from their home office and was able to very clearly demonstrate to the Dallmer team how additional quality and efficiency potentials can be leveraged with the support of the new smart assistance systems, even without a face-to-face meeting.

Energy requirement clearly lower

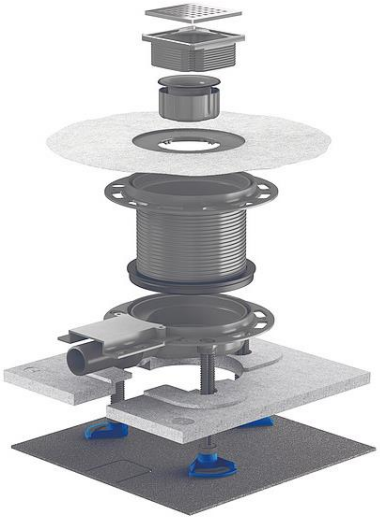
Besides Industry 4.0, sustainability is the second major strategic topic that defines Dallmer's route. It comes as little surprise that the high energy efficiency of ENGEL injection moulding machines was the original reason for the cooperation between the two family-owned companies. Thanks to ecodrive, the ENGEL servo-hydraulics system that has been part of the standard scope of delivery of victory machines for several years, Dallmer is now saving a great deal of energy in some applications compared to the previous hydraulic machines without ecodrive. "This is what makes ENGEL machines so interesting in terms of cost effectiveness," as Managing Partner Johannes Dallmer emphasises.

"We monitor the market and new developments very closely. As soon as more sustainable alternatives become available, we evaluate these for our products", says Andreas Föltz. One example of this is the use of recycled materials. Building protection covers, which protect the drainage systems from contamination during the building phase, are already being produced from recycled plastic. All new ENGEL machines are equipped for processing recycled materials. They are equipped with particularly resilient plasticising screws in order to ensure versatile use of the machines in the long term. "Thanks to ENGEL we are always state of the art in terms of technology", says Johannes Dallmer. "ENGEL is a totally reliable partner and always easily accessible for us. The Hagen location is right next door."

"We are more efficient and, above all, more sustainable with the new injection moulding machines. They require considerably less energy than the old machines."
Johannes Dallmer, Managing Partner at Dallmer

"We always look to be at the forefront of new technologies, especially if they help us produce in a more sustainable way."
Andreas Föltz, Head of Production at Dallmer

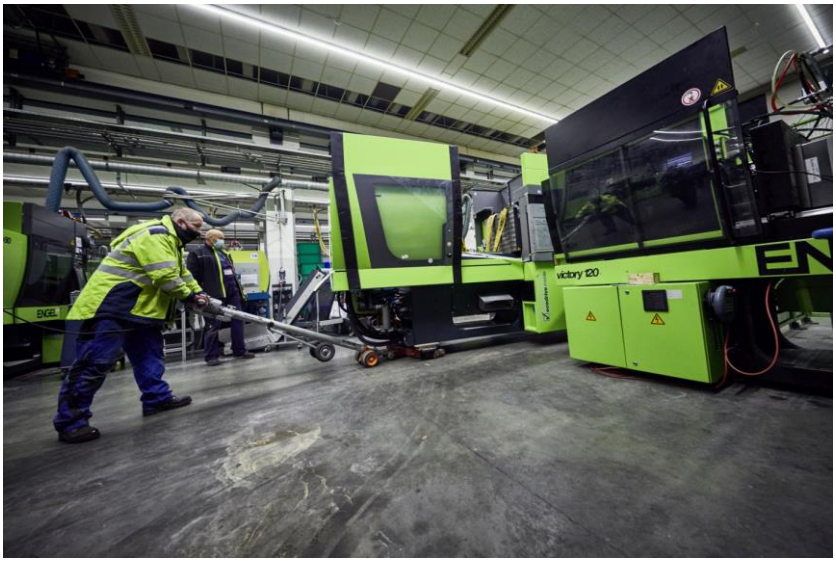
Viewed superficially, the design is the dominant factor. Dallmer's technological strength is, to a large extent, hidden in the floor, cast in the screed. (Picture: Dallmer)



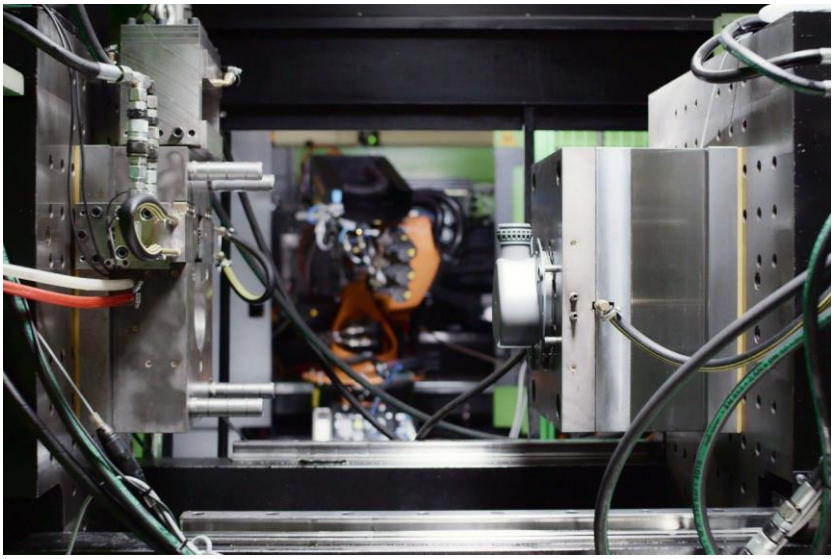
The drainage systems consist of a large variety of injection moulded parts, all of which are developed and produced in-house. (Picture: Dallmer)

With a clamping force range of between 800 and 13,000 kN, Dallmer is optimally equipped with machinery for a wide variety of component requirements. (Image: ENGEL)

ENGEL delivered several new injection moulding machines to the Dallmer plant in Arnsberg. (Picture: Dallmer)



Old for new: Dallmer has further significantly reduced its CO_2 footprint with the new, even more energy-efficient injection moulding machines. (Picture: Dallmer)



Precision and repeatability are the central requirements for the injection moulding machines. The tie-bar-less victory machines ensure high process stability for Dallmer. (Picture: Dallmer)

Meeting in Arnsberg: Rolf Saß, Managing Director at ENGEL Deutschland at the Hagen location, Dominik Cordes, Sales ENGEL Deutschland, Johannes Dallmer, Managing Partner of Dallmer, Andreas Föltz, Head of Production at Dallmer, and Christoph Steger, CSO of ENGEL (from left to right). (Image: ENGEL)

Alternative photo:

Meeting in Arnsberg: Johannes Dallmer, Managing Partner of Dallmer, Christoph Steger, CSO of ENGEL, Andreas Föltz, Head of Production at Dallmer, Dominik Cordes, Sales ENGEL Deutschland, and Rolf Saß, Managing Director at ENGEL Deutschland at the Hagen locate (from left to right). (Image: ENGEL)