

Injection moulding for creative minds

Koziol, a company based in Erbach, Germany, takes responsibility very seriously. The manufacturer of design products for home and household invested in two new ENGEL victory machines with integrated ENGEL viper robot, in order to further improve energy and resource efficiency during injection moulding processes.

If the injection point is in plain view, it does not necessarily mean that the component is poorly devised. It could also be a particularly clever design. Last time we visited Koziol, we were unable to find the injection point on the cutting board that had just been produced – while in fact, we were staring right at it. Because the knothole in the kitchen utensil's wood-resembling design had struck us as very original right from the start. "Here at Koziol, an experienced injection moulder needs to start rethinking", Michael Kredel, head of application technology, tells us.

Creativity and innovative strength are two of the main ingredients in the Erbach based plastics manufacturer's recipe for success. Founded in 1927 as an ivory carving shop, Koziol switched to using the new polymeric materials as early as 1932 and in the 1950s became known for its plastic snow globes. Today, design is the driving force and the product range is diverse.

The know-how required for the entire spectrum spanning conception, design development, construction, injection mould production, manufacturing, assembly, and worldwide distribution is concentrated at a single location, the company's head office in Erbach in the Odenwald region. Koziol is very committed to the region and the people who live there, which impacts even its injection moulding.

Tie-bar-less design facilitates automation

In 2013 Koziol put two new ENGEL victory injection moulding machines into operation. The two 400-tonne machines were delivered by ENGEL as a system solution complete with an electronic temperature control water distributor, conveyor belt, and linear robot. Cutting

boards in various designs and many other products are being produced by these machines with minimum waste and maximum energy efficiency. Investing in the new production cells has cut the energy needed for producing these products by an average of 40 percent thanks to the ENGEL ecodrive servohydraulics.

Another decisive factor in favour of the ENGEL victory series was its tie-bar-less technology. "Our production hall ceiling is rather low," Kredel explains. While robots of other machines in the traditional tie-bar design require a telescopic arm, ENGEL victory machines use standard handling. This makes the new production cells very future-oriented, because "automation will become increasingly more important," stresses Daniel Koziol, junior managing director. "Automation opens up opportunities to achieve even higher and reproducible product quality. This becomes ever more important, the more process steps we integrate."

The first process step to be integrated is labelling. Also cutting boards receive a label right after injection moulding. The ENGEL viper robot transports the boards to the labelling station after they are removed from the mould. "Only automation can ensure that the labels are placed on exactly the same spot," says Kredel. "This is very important to us at the point of sale." The adhesive labels are en vogue. They replace outer packaging for more and more products.

Shorter set-up times even for bulky moulds

Every spring and autumn Koziol presents 15 to 20 novelties at the world's main trade fairs for consumer goods. "Currently our product range includes a total of 1970 products," says Daniel Koziol. Production is carried out on demand, which means small batch sizes and frequent mould changes.

"Some of our moulds are very large," says Michael Kredel. "However, here the tie-bar-less design helps us to be efficient during set-up." The magnetic clamping technology further speeds up the set-up process and improves safety together with the new integration in the ENGEL machine control unit. "The holding force of the magnetic holding plate communicates with the machine control unit of the injection moulding machine," explains Falk Boost, sales engineer at ENGEL Deutschland Technologieforum Stuttgart. "Thus, the opening and ejecting force of the injection moulding machine is always limited to the minimum holding force of the magnetic holding system."

The use of ENGEL flomo is also supposed to ensure a higher level of process reliability. The electronic temperature control water distributor constantly monitors all temperature and cooling control circuits. "We know that once with an older machine this system would have saved us an entire batch," Kredel reveals. "Therefore, we want to equip any new machines by default with flomo."

Efficiency has many faces. With the two new injection moulding system solutions Koziol has pulled out all the stops. "In order to use efficiency potentials to the fullest, you need the right partners," stresses Michael Kredel. "Our contact partners at ENGEL have a particularly thorough understanding of the process. 'That's impossible' – words we have never heard from ENGEL."



From left to right: Daniel Koziol, Falk Boost (ENGEL Deutschland), Michael Kredel (Head of application technology, Koziol) and Katrin Bode (Corporate communications, Koziol). // From right to left: Daniel Koziol, Katrin Bode (Corporate communications, Koziol), Michael Kredel (Head of application technology, Koziol) and Falk Boost (ENGEL Deutschland). (Picture: ENGEL)

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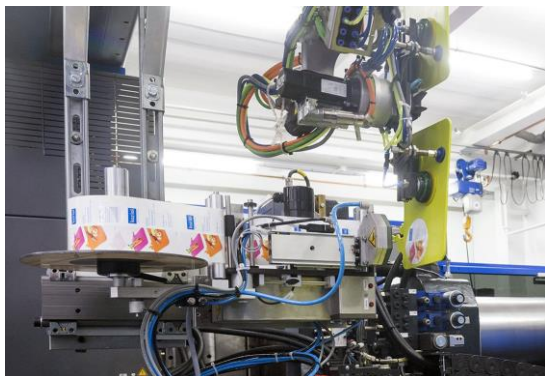
In plain view, yet indiscernible: The injection point has been integrated into the kitchen board Snap's design. (Picture: Kozioł)



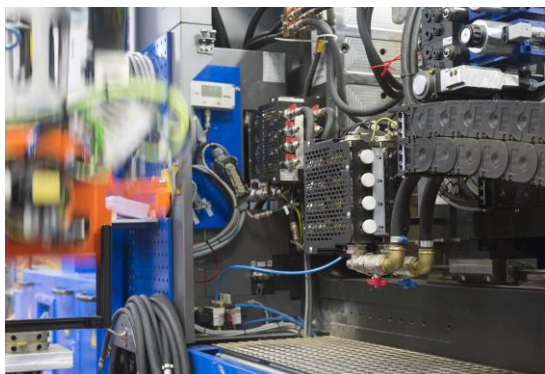
The two 400-tonne machines were delivered by ENGEL as a system solution complete with an electronic temperature control water distributor, conveyor belt, and linear robot. (Picture: ENGEL)



Thanks to the tie-bar-less design the robot arm reaches from the side directly into the mould space. (Picture: ENGEL)



Label instead of outer packaging: The label is attached automatically. (Picture: ENGEL)



The temperature control water distributor flomo is located very close to the mould and therefore minimises head loss. (Picture: ENGEL)