

Peštan relies on ENGEL victory

World class with tie-bar-less machines

To make sure that the neighbours can continue sleeping peacefully despite somebody taking a bath and flushing their toilet in the middle of the night, sound-insulated pipes and pipe fittings are increasingly being installed in new buildings. S-Line is Peštan's response to this trend. The S stands for silent and promises building drainage at less than 12 decibels. The pipe system specialist based in Aranjelovac, Serbia, 75 kilometres south of Belgrade, modernised its injection moulding production for the market launch of the innovative product line two years ago. The new tie-bar-less ENGEL victory machines make it possible to meet the increased precision requirements while maintaining low unit costs.

“We are the largest production plant for pipes and pipe fittings in Europe,” says Miodrag Petkovic proudly on a tour of the production halls. He manages the company founded by his father 30 years ago, which itself is currently a good customer of in-house products. The new administration building has almost been completed and the production halls are also being extended. The location employs more than 1000 staff.

Injection moulding and extrusion are the two major production areas that produce parts with a total material weight of 65,000 tons per year. After completing the plant expansion, the capacity will grow to 100,000 metric tons per year. “We are responding to rising demand, also from abroad,” says Petkovic. 70 percent is exported, primarily to Europe, but also to the USA and Asia. 30 percent remains in the countries of former Yugoslavia, where Peštan is a leading brand.

Focus on operating costs and availability

Innovative products such as low-noise pipes and pipe fittings are among the growth drivers. The S-Line range currently accounts for around eight percent. “In five years' time at the latest, this will be 30 percent,” says Petkovic. “We have invested heavily in sound insulation,”

as Milan Nikolić, Head of Strategic Development at Peštan, emphasises. There is a lot of expertise in the material – it's a mineral-filled polypropylene – but also in the geometry of the fittings. "The material and geometry place significantly higher demands on the injection moulding process than conventional pipe fittings," says Nikolić explaining why the company also invested in machinery.

The majority of the more than 100 injection moulding machines at the location still come from a Chinese supplier. "The capital outlay was decisive for us for a long time," says Petkovic. "But the criteria have changed. Operating costs and machine availability are more in focus today." S-line pipe fittings and other sophisticated products are now in production on 18 new ENGEL victory machines with a clamping force range from 2600 to 5000 kN, and partly equipped with integrated ENGEL viper linear robots.

Ultimately, tie-bar-less technology tipped the decision in ENGEL's favour. "We had had our eye on tie-bar-less machines for a long time. On top of this, we wanted the best possible technology," says Petkovic. It was also clear that the higher capital outlay would have to pay off in the end. As expected, this is mainly due to the far faster setup processes. The bottom line shows that other properties of the ENGEL victory machines also reduce unit costs.

Setup times cut by half

The huge mould store is particularly impressive during the tour of the plant in Aranjelovac. 7000 moulds are in active use. With a minimum occupancy time of two days specified by plant planning for large moulds, at least 15 set-ups are carried out per week. A look at the running machines quickly reveals clear why mould set-up is an essential efficiency factor in pipe fitting production. Pipe fitting moulds cannot do without core-pulls, and often these protrude laterally beyond the steel cube. "Pipe fitting moulds are extremely large and complex compared to the component surface to be created," says Franz Pressl, Product Manager for victory machines at ENGEL's headquarters in Austria. "Injection moulding machines with a tie-bar-less clamping unit are predestined for this." The moulds can be pushed into the barrier-free mould area in one piece and mounted directly from the side. "We don't need more than an hour and a half to set up even the most complex moulds," says Nikolić, pointing out the benefits. "Mounting the same mould on a tie bar machine would take three hours, because we first have to dismantle the core-pulls, and every hour without producing costs us

money. With ENGEL machines, we achieve utilisation times of over 90 percent. That's a very high value that directly affects the unit cost."

The significantly smaller machines are another efficiency factor. Since the core-pulls cannot always protrude between the tie-bars, many pipe fitting moulds are deployed on very large machines that offer more clamping force than the moulding process requires. This is different with tie-bar-less machines. "Only the cavities have to be in the area of the mould mounting platens," as Pressl explains. "But the mould edge and the mechanical system can protrude beyond the platens." This means that large moulds fit on comparatively small injection moulding machines that require less energy, coolant and floor space. "In procurement it is usual to compare machines with the same clamping force," Nikolić knows. "We have now explained to our purchasing department that this does not hold true for the victory machines. The basis of comparison for a 300-ton tie-bar-less machine is an 800-ton tie-bar machine."

Plasticising consistency reduces raw material consumption

Before deciding on ENGEL and tie-bar-less technology, Peštan visited reference customers and, with the support of Neofyton, ENGEL's sales partner in Serbia, took a mould for testing to another ENGEL customer. "We received very good advice from ENGEL and Neofyton right from the start," reports Petkovic. "The victory machines were designed with a special mixing head specifically for our special compound." A further central topic in the planning of the system was injection control, as S-Line pipe fittings can quickly exhibit light spots at the injection point. "The victory machines help us to achieve very high repeatability, which allows us to operate at faster speeds," as Nikolić emphasises. "On top of this, we have been able to reduce the use of raw materials by five percent because of our plasticising precision."

Parallel to modernising the machinery, Peštan launched an extensive Lean and WCM project. The investment in ENGEL machines set a first milestone on the way to World Class Manufacturing (WCM). "When customers visit us, they are always impressed by our production," says Petkovic. "ENGEL is also a respected brand among our customers."

Partners Peštan and ENGEL also have some plans for the future. "ENGEL not only has a huge amount of experience in injection moulding, but also very good insights into future trends," says Nikolić. He has his sights firmly set on process integration and multi-component injection moulding. For example, seals will be injected directly into the fitting thread in two-

component injection moulding in future, immediately before the barcode is automatically printed. Tie-bar-less victory machines have already been designated for this task. After all, multi-component processes and the integration of upstream and downstream steps can also be implemented far more easily and efficiently thanks to free access to the mould installation space. ■

<<Text box>>

30 years in a double billing

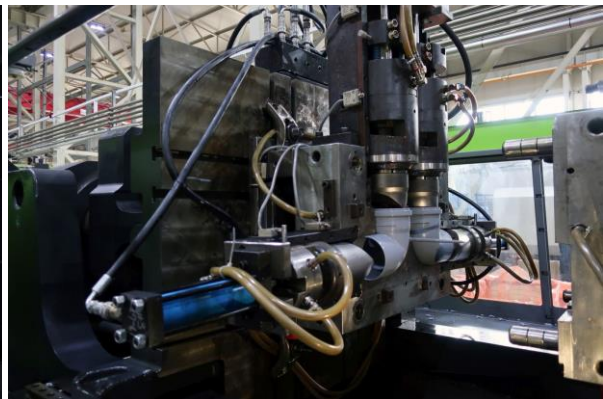
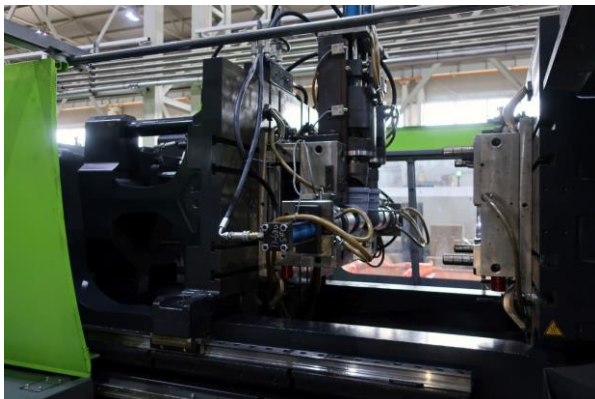
In exactly the same year in which Pešťan was founded, 1989, ENGEL introduced the world's first injection moulding machine with a barrier-free, tie-bar-less clamping unit. Interest from the industry was soon so great that the tie-bar-less machine became the predominant design at ENGEL's main production plant in Schwertberg, Austria. Because of its unstoppable march to triumph, it was given the name victory. ENGEL now offers three tie-bar-less machine series, the servo-hydraulic victory, the e-victory with an electric injection unit and the all-electric e-motion TL. All of them combine excellent cost-effectiveness and efficiency with maximum resource protection.



S-Line pipe fittings for quiet building drainage place higher demands on the injection moulding process than conventional fittings. They triggered the investment in ENGEL victory machines.



18 ENGEL victory machines are available at the plant for the production of sophisticated moulded parts.



If the cavities are in the area of the mould mounting platens, the core-pull mechanism can project beyond the edge of the platen.



Even with complex moulds, the clamping force required for the moulding process and not the mould volume determines the size of the injection moulding machine used.



Process control centrally via the machine display. The very high repeatability of ENGEL victory machines enables short cycle times and improved material efficiency.



From right to left: Milan Nikolić and Miodrag Petkovic from Peštan, Franz Pressl from ENGEL AUSTRIA and Dusan Bunovic from Neofyton.



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