

ENGEL at Plast 2026

From advanced technologies to AI: innovation as added value

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At Plast 2026, ENGEL presents innovation as a dialogue with industry: not only technologies, but an integrated ecosystem of solutions, digital assistants, AI-based systems and automation designed to deliver value, efficiency and quality across manufacturing processes. For injection moulders, this means solutions that help stabilise production, reduce scrap, make better use of available resources and improve cost efficiency across a broad range of applications.

Today, in injection moulding, the real challenge is no longer just to produce, but to do so efficiently, while maintaining consistent quality and full cost control, even in the presence of increasingly complex variables. From automotive to medical, from packaging to technical moulding, companies are seeking solutions capable of transforming this complexity into measurable results. In this context, for ENGEL, innovation goes beyond technology: it becomes a language, a way to interpret industry needs and engage with an ever-evolving production environment to create tangible added value.

With this approach, ENGEL is showcasing at Plast 2026 a coherent pathway that brings together vision, application and accessibility to technology.

An ecosystem taking shape: the Expert Corner “Your Industry. Our Solutions”

At the heart of the booth, the Expert Corner “Your Industry. Our Solutions” embodies the synthesis of this approach. ENGEL’s technological offering takes the form of a broad and multifaceted ecosystem, one that cannot be fully represented within the confines of a trade show. From this awareness comes a space that goes beyond the traditional exhibition concept, positioning itself instead as a guided gateway to expertise, applications and production scenarios.

Through a focused selection of real cases and application configurations, visitors are taken inside the processes, gaining a clear understanding of how machines, automation and digital intelligence interact to deliver consistent and measurable results. For processors, the Expert Corner provides direct access to application know-how that can be transferred to their own production environment, helping them identify suitable production solutions, automation strategies and digital tools for improving efficiency, quality and process stability. One key principle stands out: value does not lie in individual technologies, but in the ability to orchestrate them with a clear focus on outcomes. This is where innovation becomes a method, and method ultimately drives performance.

Advanced process control: the role of intelligent assistants

Within this technological ecosystem, process control is one of the areas where innovation takes its most tangible form. Every project shown in the Expert Corner is built on an integrated optimization approach that involves the entire production system, from plant design through to the dynamic management of process parameters, entrusted to the digital assistants within the inject AI framework.

Digitalisation thus becomes a true enabler, simplifying machine operation while at the same time extending its performance capabilities. Intelligent assistants act directly and automatically on the process. iQ weight control helps maintain consistent part quality by compensating for material and viscosity fluctuations within the same shot, which can lead to 85% less weight dispersion. iQ clamp control automatically optimises clamping force, reducing energy consumption by up to 10% in force build-up and protecting the mould. iQ flow control stabilises mould temperature control, supporting reproducible thermal conditions and achieving energy savings of up to 18% in production.

They are complemented by iQ process observer, which analyzes more than 1,000 parameters, detects deviations in real time and recommends corrective actions which helps avoid scrap. A system that does not simply react but anticipates critical issues and proactively supports operational decision-making.

The most advanced expression of this philosophy is the first autonomous injection moulding machine, already unveiled at K 2025 and now on display at Plast 2026.



Image 1: The ENGEL autonomous injection moulding cell integrates the e-mac 80 injection moulding machine, automation system, and in-line quality monitoring.

Artificial intelligence drives the process

Based on an all-electric e-mac 80, the autonomous production cell marks a significant step forward: the system no longer simply provides support, but actively governs the process, adapting in real time to changing production conditions. Further enhancing the effectiveness and responsiveness of human-machine interaction is ENGEL Virtual Assistant (EVA), an AI-based digital assistant that supports process engineers and operators at every stage of their work. EVA recommends the appropriate actions, provides step-by-step troubleshooting guidance and enables immediate access to technical information. For production teams, this means faster troubleshooting, shorter downtimes and easier access to expert knowledge, particularly when experienced personnel are not immediately available on the shopfloor. It is not just a chatbot, but an extension of expertise, knowledge made accessible, instant and shared.

Within this framework, injection moulding evolves from a process requiring constant monitoring into a self-regulating system. The operator defines the quality requirements, while the machine automatically adjusts the parameters to ensure they are consistently met, reducing scrap, energy consumption and set-up times. The result is a new balance between human expertise and digital intelligence, where resources can focus on higher value-added activities.



Image 2: At Plast, visitors will be able to test the performance of the ENGEL autonomous production cell live through dedicated sessions and one-to-one meetings with an ENGEL Italy Master Trainer.

From technology to first-hand experience

Experiencing this transformation live means fully understanding what injection moulding can achieve today. For this reason, at the booth, an ENGEL Italy Master Trainer will host scheduled sessions as well as tailored one-to-one meetings dedicated to the digital assistants of the inject AI framework, offering the opportunity to explore applications in depth, discuss real-world cases and discover how to immediately translate these advantages into their own production environment. This gives visitors a practical basis for assessing where digital assistance can reduce operator workload, improve process stability or support faster troubleshooting in their own plants.

High-tech cell for lightweight design

Within the booth, the innovation pathway is further demonstrated through two fully automated production cells, designed to translate the principles outlined so far into concrete applications. The first one is dedicated to lightweight design, featuring a system for manufacturing rotor blades for drones made of thermoplastic composites using tape-sandwich technology. This application brings together several key aspects: the production of high-performance components, integrated noise reduction and sustainability. Life cycle analyses have demonstrated a significant reduction in CO₂ footprint compared to conventional processes based on thermoset materials. The NeoBlade project is funded by the Federal Ministry for Innovation, Mobility and Infrastructure as part of the RTI programme 'Take Off' and is administered by the Austrian Research Promotion Agency (FFG).



Image 3: Rotor blades for drones made of carbon-fibre-reinforced composite, produced using tape-sandwich injection moulding technology.

At the core of the system is a tie-bar-less ENGEL victory 120 injection moulding machine, with a clamping force of 1,200 kN, equipped with an easix articulated arm robot. The robot manages all production steps in a continuous in-mould cycle through to the extraction of the near-net-shape part. At the heart of the process is a structural sandwich design consisting of carbon-fibre-reinforced thermoplastic tapes and an injection-moulded short-fibre compound.

The tapes form the load-bearing outer layers of the rotor blade and are positioned precisely in the mould and secured using vacuum fixation. This allows the reinforcements to be aligned exactly along the load paths – material is used only where it is needed for structural performance. In the next step, the core material made of a short-fibre thermoplastic is injected between the pre-positioned tapes and bonded to the outer layers to form a near-net-shape component structure. To further increase the lightweight potential, the core is foamed chemically, reducing component weight while maintaining structural performance. The result is a lightweight yet highly durable rotor blade in which shaping, structural function, noise-reduction and material bonding are realised in an automated cycle, eliminating the need for secondary machining operations.

The tie-bar-less design of the ENGEL victory improves accessibility in the mould area, simplifies the integration of automation and, in many cases, it is possible to choose a smaller machine size, which helps keep investment costs down. The optimised automation access enables cycle times of less than 60 seconds per rotor blade in this production solution.



Image 4: Injection moulding cell with tie-bar-less ENGEL victory and easix six-axis robot – basis of the fully automated production solution for thermoplastic composite rotor blades (front view).

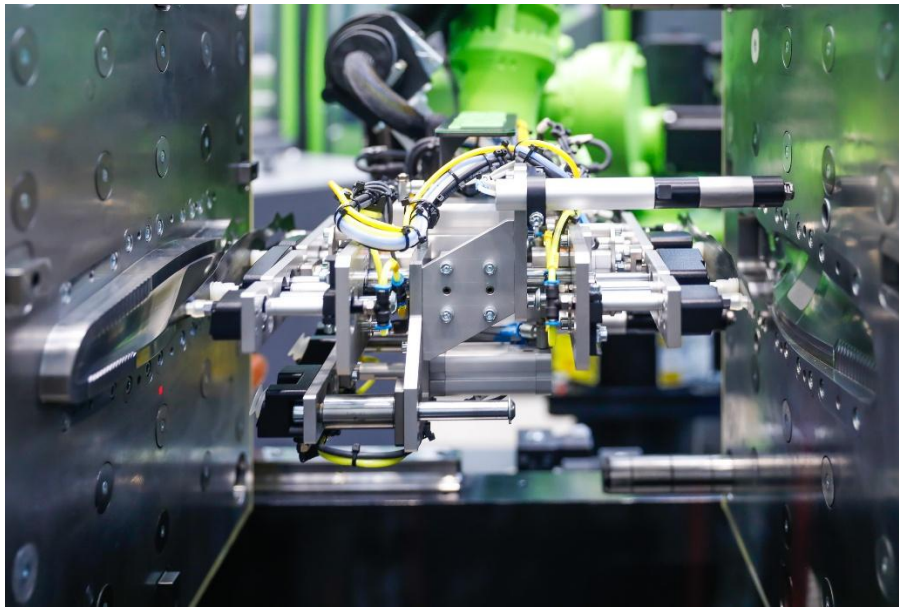


Image 5: Automated handling in the mould area: precise process steps directly in the injection mould.

A scalable technology

Alongside the drone propeller blades, another component produced using tape-sandwich technology is featured: a cover for high-voltage automotive batteries made of flame-retardant thermoplastic material, measuring 1.3 × 1.8 metres. Selected as a finalist for the JEC World Innovation Awards 2026, this application confirms the scalability of the process, which can be extended from small-sized components to large-format structural parts. For injection moulders, this opens the potential to manufacture large, lightweight functional components in an automated process, combining structural performance, flame-retardant material properties and efficient series production.

Cost-effective technology

Completing the exhibition area is a WINTEC t-win 5500 with a clamping force of 5,500 kN, equipped with an ENGEL viper 40 linear robot and a single-cavity mould developed by S.C.S. Società Costruzione Stampi (Monsano, Ancona). The machine produces transparent crates in Borealis RJ378MO random polypropylene, with a part weight of 232 grams in a cycle time of approximately 11-12 seconds. The application demonstrates how a standardised two-platen machine concept, short cycle times and integrated automation can support high output and competitive unit costs in packaging and logistics applications.

With this application, the ENGEL Group highlights another dimension of its portfolio: pragmatism and accessibility. WINTEC machines are designed to meet the requirements of a market demanding high

competitiveness without compromising reliability and precision. The key strength lies in the balance between standardisation and performance: a robust, optimised engineering platform that translates technological complexity into operational simplicity and production efficiency. For processors, this means production solutions with reliable technology, straightforward operation and a favourable cost-performance ratio, especially where high-volume production requires stable output, short cycles and consistent part quality.



Image 6: The WINTEC t-win 5500 two-platen injection moulding machine with integrated viper 40 robot will produce transparent PP crates weighing 232 grams, with a cycle time of 11-12 seconds, demonstrating high-output production with reliable automation and competitive unit costs.

The future is not something you wait for: it's something you build

Today, as the industry enters a new era of digitalisation and artificial intelligence, ENGEL reaffirms its role as a pioneer. From advanced process technologies to WINTEC machines, from software solutions to data utilisation, every element contributes to transforming manufacturing into a more stable, more efficient and more transparent production environment. For processors, the focus is on practical improvements: lower scrap rates, shorter set-up and troubleshooting times, more consistent part quality and better control over production costs.

For ENGEL, innovation is not merely a response to current needs. It is the ability to anticipate scenarios, interpret change and create the conditions for it to happen. A journey that evolves with consistency and vision and that finds its expression in the combination of engineering expertise, technological evolution, and industrial culture

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ENGEL is one of the global leaders in the manufacture of injection moulding machines. Today, the ENGEL Group offers a full range of technology modules for plastics processing as a single source supplier: injection moulding machines for thermoplastics and elastomers together with automation, with individual components also being competitive and successful in the market. With eleven production plants in Europe, North America, Mexico and Asia (China, Korea and India), and subsidiaries and representatives in more than 85 countries, ENGEL offers its customers the excellent global support they need to compete and succeed with new technologies and leading-edge production systems.

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