

Press release

High output from a minimal footprint: the ENGEL e-mac for medical applications

The validation assistant provides greater flexibility and shortens the path to series production.

Schwertberg/Austria – September 2026

At Fakuma 2026, ENGEL will demonstrate the series production of auto-injector components: millions of parts with no margin for rejects. In cleanrooms in particular, every square metre is a significant cost factor. The all-electric e-mac 200 therefore combines an exceptionally small footprint with high output. During live operation, assistance systems from the inject AI family monitor and control the process. They compensate for fluctuations before rejects occur and reduce the required clamping force by up to 33 per cent.

Precision in the tenths-of-a-gram range

At the heart of the exhibit is an all-electric e-mac 200 with a clamping force of 2,000 kN. Its generous tie-bar spacing provides ample room for sophisticated moulds. The dynamic injection unit ensures repeatable processes even with very small shot weights. Options developed specifically for medical applications and the enclosed toggle mechanism support cleanroom-compatible production. The machine produces a component for a medical auto-injector from PP random copolymer with white masterbatch. The 32-cavity mould produces parts weighing just 0.396 grams each, with a cycle time of less than ten seconds. iQ weight control optimises the injection volume in real time: fluctuations in melt viscosity are compensated for within the same shot, thereby ensuring consistent part quality.

Greater flexibility in validation

The ENGEL [validation assistant](#) uses data from the iQ assistance systems to assess not only a single operating point, but a robust process window. This provides a clear picture of process stability within defined limits, increasing confidence in process stability, significantly reducing the validation effort and accelerating approval for series production. All regulatory qualification and validation steps remain in place, with the ENGEL validation assistant adding a transparent, data-driven and digitally supported process assessment.

Four assistants, one goal: stable processes

Additional functions from the inject AI family stabilise the process and support the operator:

- **iQ clamp control** automatically regulates the clamping force, reducing it by up to 33 per cent. This protects the mould, extends its service life and lowers energy consumption.
- **iQ flow control** keeps mould temperature control stable by adjusting the pump speed. This ensures consistent thermal conditions, reduces rejects and cuts energy consumption by up to 18 per cent – with a direct impact on costs and the carbon footprint.
- **Parameter Limits** prevent settings outside the approved process window, reducing the risk of operator error – even when personnel change.
- **iQ process observer** uses artificial intelligence to analyse more than 1,000 process parameters, identify deviations at an early stage and provide specific recommendations for corrective action.

Two demoulding steps in one synchronised mould movement

The mould partner for this project is Braunform GmbH, a specialist in high-precision multi-component, multi-cavity and stack moulds, including solutions for medical and pharmaceutical applications. With the Lift&Strip² system used in this application, the component is lifted and stripped from the mould simultaneously in a synchronised sequence. The fully mechanical, horizontal demoulding system requires no additional drives and enables direct gating with valve-gate technology.

Different speed profiles support the gentle demoulding of thin-walled parts and components with complex geometries. A mechanically coupled ejector stage actuates two miniature slides, enabling a compact design. Scaling from eight to 32 cavities while retaining the same process logic facilitates a low-risk transition from pilot production to series production.

ENGEL compact cell: more output per square metre of cleanroom space

An ENGEL viper linear robot removes the finished components. Combined with the ENGEL compact cell and its integrated box transfer system, it forms a fully automated, space-saving production cell. The box transfer system features a reject position and a good parts drawer; alternatively, a tray transfer system can be used. The compact cell can be moved aside to provide unrestricted access to the mould area. The machine and automation are operated via a common control system using a consistent data set. iQ motion control automatically synchronises robot movements with the machine cycle, reducing both cycle time and energy consumption.

A joint debut in Medical: Billion meets ENGEL

The exhibit will be on display at the stand of French injection moulding machine manufacturer Billion SAS – the perfect setting in which to showcase the [strategic partnership](#) between the two companies. Going forward, Billion will focus on servicing its installed machine base, while ENGEL will become the recommended supplier of new injection moulding machines. Customers will benefit from complementary machine technologies and a coordinated portfolio.

Experience it live at Fakuma 2026: Hall B3, Stand 3104.

Please send us a proof link to susanne.schroeder@engel.at upon publication, or alternatively a hard copy to: ENGEL Austria GmbH, Susanne Schröder, Ludwig-Engel-Straße 1, A-4311 Schwertberg, Austria.

Images: ENGEL

Image 01



Precision in the tenths-of-a-gram range: the all-electric e-mac 200 delivers repeatable processes even with the smallest shot weights. Options developed specifically for medical applications and the enclosed toggle mechanism support clean, cleanroom-compatible production.

Alt text: The image shows a white ENGEL injection moulding machine equipped for cleanroom production and featuring an exceptionally small footprint.

Image 02

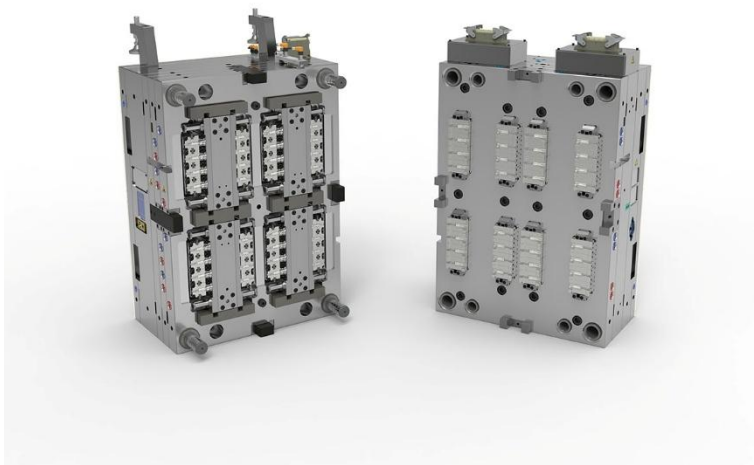


Auto-injector component, precision-manufactured in volumes of millions on the ENGEL e-mac.

Alt text: The image shows several white, cylindrical plastic components for an auto-injector against a light grey background.

Image: Braunform

Image 03



Two demoulding steps in one synchronised mould movement: Braunform's Lift&Strip² system lifts the component and strips it from the mould at the same time. Its compact design enables efficient production with 32 cavities.

Alt text: The image shows the two open halves of a compact 32-cavity injection mould for auto-injector components.

ENGEL AUSTRIA GmbH

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 twelve

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.

Contact for journalists:

Susanne Schröder, PR-Manager, ENGEL AUSTRIA GmbH,
Ludwig-Engel-Straße 1, A-4311 Schwertberg/Austria
Tel.: +49 (0)160 96 29 0536, email: susanne.schroeder@engel.at

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