Maximum Productivity with All-Electric Efficiency:

ENGEL Presents Fully Automated Production Solution for the Diagnostics Market at K 2025 with Significant Cost Savings

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At K 2025, ENGEL is presenting an integrated, fully automated production solution for the diagnostics market. The system achieves an increase in overall efficiency of approximately 25 % compared to conventional production methods. In a single cell, well plates and lids are produced and packaged in a validated manner. At the heart of the solution is an all-electric ENGEL e-motion 280 WP combi MW injection moulding machine with 2800 kN clamping force.

Image 1: ***Efficient, cleanroom-compatible production in a compact footprint:*** *Fully automated manufacturing of well plates and lids with an 11-second cycle time on the ENGEL e-motion 280 combi MW.*

Two machines in one – in just 11 seconds

ENGEL's compact system concept combines with the innovative high-performance Variotwinstack mould technology from HACK Formenbau GmbH to implement the principle of two machines in one. The mould is designed for the simultaneous production of up to four polystyrene well plates with 24 wells and their matching lids. For optimal media connection, the e-motion features a movable centre platen. The two injection units operate in parallel – not sequentially – reducing the cycle time to just 11 seconds. The shot weight for the well plates is 42.6 grams, and 13.2 grams for the lids.

Image 2: ***Maximum precision for diagnostics:*** *Well plates with lids, manufactured to meet the highest standards in quality, dimensional accuracy, cleanliness and cost efficiency.*

The angled arrangement of the moving injection unit brings the nozzle closer to the hot runner, reducing its volume and thus increasing process reliability. Valve gate hot runner injection without a sprue optimises material usage while completely eliminating weld lines and flow marks. A multi-stage demoulding process with intelligent cooling and optimal part orientation further provides a particularly wide process window. In addition, integrated HACK® moldlife® sense sensor technology continuously monitors the mould mechanics, increases system availability and detects faults at an early stage. This system also supplies data to support digitally assisted process validation.

Premiere for shortened validation times

ENGEL is premiering its new validation assistant in this cell – a system for digitally assisted qualification and validation of injection moulding processes. Developed in collaboration with HACK Formenbau and Professor Thomas Seul, the solution combines ENGEL's iQ assistance systems, moldlife® sense technology and structured software modules. It supports all validation phases from DQ to PQ, accommodates future release methods such as parametric release, and simplifies the transfer of validated processes to additional machines or sites. As a result, both time and staffing requirements for validation are significantly reduced, leading to a much shorter time to market.

Compact, precise and cleanroom-ready – with cost savings

One of the key advantages of this production solution lies in its reduced system height, made possible by the newly designed layout. The overall footprint of the production cell is reduced by 40 percent – a significant cost-saving factor in cleanroom environments, where floor space comes at a premium.

ENGEL's e-motion series has been specifically developed to meet the most demanding requirements in injection moulding for medical technology and sets new standards in precision, efficiency and long-term cleanroom performance.

Automated post-processing and quality assurance

After demoulding, a side-entry robot from Ilsemann removes the moulded parts. Two arms simultaneously grip the parts from both sides of the mould and transfer them either to a sampling station or to a laser marking station where a QR code is applied. The parts are then automatically assembled, stacked and sealed in sterile packaging.

Conclusion: Setting new standards for the future of diagnostics production

With this compact and scalable production solution, ENGEL demonstrates how maximum productivity, reduced validation times and low operating costs can be combined in diagnostics manufacturing – within a small footprint and with maximum process reliability.

Visit us at K 2025 in Düsseldorf, Hall 15, Stand B42 & C58

Images: ENGEL

ENGEL AUSTRIA GmbH

ENGEL is one of the world's leading manufacturers of plastics processing machinery. 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, but also individual components which are competitive and successful in the market. With ten production plants in Europe, North America and Asia (China and Korea) as well as subsidiaries and representatives in more than 85 countries, ENGEL offers its customers worldwide the optimum support which they need to compete and succeed with new technologies and leading-edge production systems.

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