



ENGEL at K 2010 – Inject the Future

ENGEL Innovations at the K Fair

Schwertberg/Austria – May 2010. In line with our slogan, "Inject the Future - efficient. reliable. innovative." ENGEL will be exhibiting seminal technologies and innovations from industry-specific applications at the K trade fair 2010 in Düsseldorf, Germany, between 27th October and 3rd November 2010. As automation solutions are increasingly in the injection moulder's focus, ENGEL has also integrated an automation booth in its main stand. On a floor space of 1,272 qm², ENGEL is showing eleven exhibits that clearly demonstrate its industry competence in the Automotive, Technical Moulding, Packaging, Teletronics and Medical fields.

The use of energy saving systems in particular is the highlight of ENGEL's presentation at K 2010 in Düsseldorf this year. ENGEL will once again be demonstrating our reliability as a partner with efficient technology and innovative solutions for our customers. There will be a total of 20 ENGEL machines on show at the fair: 11 at our own booth in Hall 15 (B42 and C58), and 9 at ENGEL partner booths. All told, the K Fair again hosts an impressive demonstration of performance centering on ENGEL's system competence in injection moulding machine manufacturing. And this is true for all branches of industry.

ENGEL automotive

In the Automotive field, for example, the manufacturing of an injection moulded structured component, reinforced with organic sheet, will be shown on an **ENGEL duo 2050/500 pico**. ENGEL will be demonstrating this method by producing a steering column made of PA in a complete manufacturing cell featuring sophisticated automation with three robots. This application revolutionises lightweight design in particular as it allows steel and aluminium sheets to be replaced by thin organic sheets.



They comprise a special fabric of glass or carbon fibres embedded in defined orientation in a thermoplastic matrix of PA or PP. Our project partners for this exhibit are Siebenwurst/Germany for mould making, and Bond Laminates/Germany as the material supplier.

On top of this, ENGEL will also be demonstrating flow-coating of an injected part with polyurethane on a fully electric **ENGEL e-motion 280 T** using the ENGEL clearmelt process. This involves back injecting a wood design foil with a thermoplastic carrier and then covering the part with a transparent layer of PUR. The process is characterised in particular by a visually impressive 3D effect and excellent scratch resilience. Compared to legacy approaches – such as multiple layer coating – excellent productivity and thin layer thickness are the major benefits. The advantage of the clearmelt process is that both back injection of the decor foil and flow-coating with PU occur in a single mould without interrupting the process. Fully automated insert placing, take-off and stacking of the manufactured parts is handled by an **ENGEL viper 40**. Our partners for this project are Schöfer (product idea and mould), Hennecke (PUR machine).

In addition to this, processing of solid silicon to create gaskets will be demonstrated on an **ENGEL victory 330/90 tech**. Production of the parts with a diameter of approx. 6 mm is fully automatic and post-processing free using a 64-cavity mould including cold runner technology. The machine is also equipped with the new **ENGEL roto feeder**. This new rotary conveyor ensures maximum process stability by feeding the material continuously to the plasticising cylinder, avoiding inclusions and maintaining constant pressure .

ENGEL teletronics

One of ENGEL's exhibits in the Teletronics field will feature first showing of the newly developed ENGEL e-insert – an electrified version of the ENGEL insert machine with a servoelectric rotary table and a fully electric injection unit – the clamping process and ejection use the new ENGEL ecodrive servohydraulics. An **ENGEL e-insert 310V/100** will be producing a sensor housing made of fibreglass reinforced PA with metal inserts for control electronics on a 4-cavity mould.



The process involves over-moulding of insert parts with maximum precision by the electrical injection unit and maximum rotation speeds with maximum positioning accuracy of the servo-electrically driven rotary table. This concept reduces the cycle time and both improves cost-efficiency, and ensures considerable energy savings thanks to electrification, in the production of high-precision moulded parts. Automation is handled by an **ENGEL viper 20**.

Another ENGEL highlight is the production of an electronics component on a fully electric **ENGEL e-max 200/100**. The ENGEL e-max's benefits in particular are the small space requirements along with fast and precise injection thanks to the fully electric injection unit. This qualifies the e-max series in particular for manufacturing of complex parts for the electronics industry.

ENGEL packaging

Two further innovations will be on show for the Packaging field. The new, fully electric ENGEL e-cap series successfully delivers the market requirements in cap production with respect to short cycle times, a high level of flexibility and low energy consumption. Fully electric and with a cycle time of less than three seconds. Compared to all the other machines on the market, the e-cap has by far the lowest energy consumption. This is made possible by a new premium quality injection unit, increased ejector force and a reinforced clamping drive. At the K Fair, ENGEL will be exhibiting an **ENGEL e-cap 3940/420 T** featuring a 96-cavity mould by Schöttli / Switzerland for the production of HDPE caps with a cycle time of less than 3 s. In addition, quality control is integrated in the form of a Q-Vision system.

An **ENGEL e-motion 740H/440M/280 WP** will be demonstrating the production of a tube including a PP cap with a 4-cavity mould. Production relies on a rotary cube and a second moving unit on the moving mould fixing platen. The tubes are produced in the first cycle with the cap injected in the second - all in a single step. The trade fair machine also features an in-mould labelling system.



ENGEL technical moulding

Our Technical Moulding division will be presenting the new **Multitube** mould system. Multitube supports the production of hollow, complex (labyrinthine) parts in a single step. This is achieved by means of a two or multiple stage injection process that integrates picking & placing and over-moulding in a single cycle. The major advantage is that this removes the need for finishing, such as bonding multiple components. Compared with legacy gas injection technology the good interior surfaces and consistent wall thicknesses impress. This mould technology will be demonstrated using a 2-component part with an inserted threaded bushing on a compact, tie-bar-less **ENGEL victory 1050H/500W/220 combi** machine with a piggyback unit and fully automated take-off implemented via a six armed robot within the safety gate.

The second exhibit in technical moulding – an **ENGEL e-victory 200/50** - will be demonstrating the production of an LED lens made of PMMA for architectural illumination. The production cell is optimised for the manufacturing of thick-walled optical parts and includes online quality control. Parts handling is effected by an **ENGEL viper 6** – the smallest version of the new ENGEL viper robot series.

ENGEL medical

Our competency in the medical technology field will be demonstrated on an **ENGEL e-motion 1340/280 T** using the production of a petri dish as an example. ENGEL will be demonstrating fully automatic, fully electric production of a polystyrene petri dish with a cycle time of less than 4.5 seconds using an 8 + 8-cavity mould by Plasticsud/France. The automation is provided by Hekuma / Germany. The system supports fully automated take-off, quality assurance, corona treatment in the gripper, stacking and foil wrapping of the parts.



An **ENGEL victory 330H/120 combi** will be demonstrating the production of a 2-component valve for the medical industry. Production uses an 8+8-cavity mould and is designed for clean room conditions. Take-off is effected by a six-arm robot by Stäubli, which uses a camera to inspect the parts and deposits them sorted by cavity. The machine is equipped with a laminar flow box with the ability for "safe" evacuation of the parts out of the clean room.

To demonstrate our system competency at the K fair, the complete ENGEL viper robot series will not just be exhibited with the machines but also in a special exhibition. The focus here is on presenting mass identification and vibration control; fields in which the viper robot series have made their mark with respect to precision and low vibrations.

**ENGEL at K 2010 in Düsseldorf:
Hall 15 Booths C58 and B42**



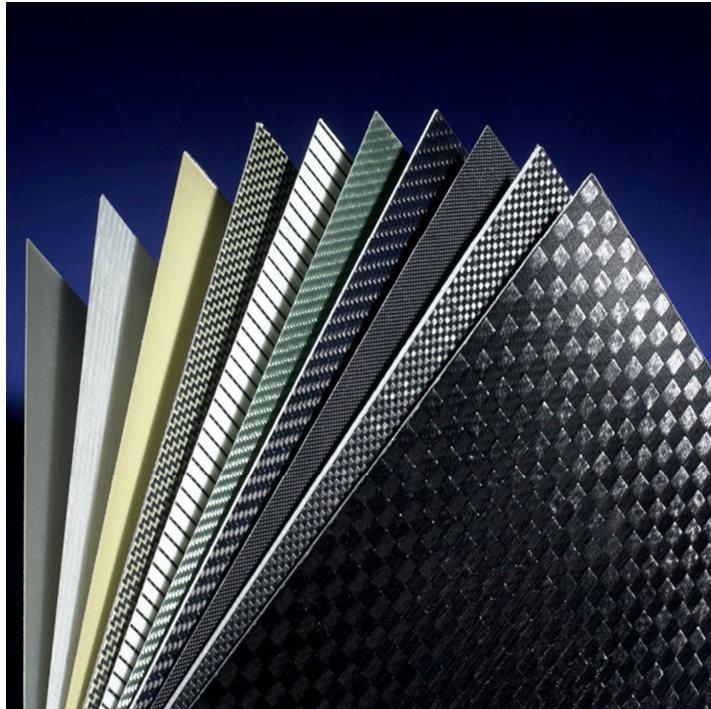
Picture 1: Extension of the ENGEL viper-robot series by sizes 6, 12, 20 and 60



Picture 2: The new ENGEL e-cap machine – the first fully electric cap-production solution

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ENGEL
be the first.



Picture 3: New: Application of organic sheets in the automotive sector (picture: Bond Laminates)



Picture 4: New rotary feeding unit ENGEL roto feeder



ENGEL AUSTRIA GmbH

The ENGEL brand denotes the world's biggest manufacturer of injection moulding machines and, at the same time, one of the world's leading plastics processing machine manufacturers. 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, and automation, with the assurance that individual components are also competitive and successful in the world markets. With eight production plants in Europe, North America and Asia (China, Korea) as well as subsidiaries and representatives in over 85 countries, ENGEL offers its customers the optimal global support they need to compete and succeed with new technologies and leading-edge production systems.

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