High-tech for Automotive:

ENGEL presents the world's first rear-end-lights featuring clearmelt without hard coating

Schwertberg - Austria, July 2025

A new generation of decorative and functionalised rear-end-lights is about to enter series production. At K 2025, ENGEL will present the complete manufacturing process for the first time. At the centre of the exhibit is a duo 700 two-platen injection moulding machine from ENGEL, which combines the foilmelt and clearmelt processes. The result is a highly integrated and economically attractive solution for sophisticated visible parts in the automotive sector.

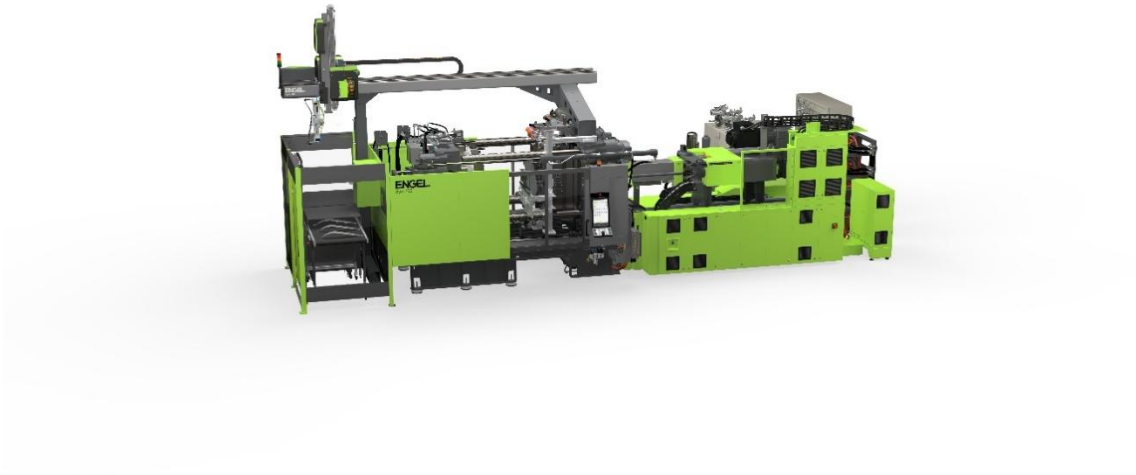

Image 1: ***Technology combination for modern automotive lighting:*** *At K 2025, ENGEL will showcase a fully automated production solution for functional rear-end-lights with PUR overmoulding.*

At the ENGEL exhibition stand, the rear-end-light module, measuring approximately 600 x 240 mm, is manufactured using a duo 700 machine and a rotary table mould from ZECHMAYER. The colour design of a foil is first transferred onto one side of the moulded part by thermoplastic back injection (foilmelt) – precisely positioned and evenly shaped. On the opposite side of the mould, clearmelt is used in the same mould to flood the surface with polyurethane, effectively creating an in-mould

coating. This gives the part a highly transparent, scratch-resistant and design-enhancing surface layer in a single production step.

Technology combination with savings potential

The decisive advantage of combining different process steps in a single cycle is that the scratch resistance provided by clearmelt eliminates the need for costly hardcoating. In addition, the polyurethane (PUR) layer offers protection against yellowing caused by UV exposure. As the overall system provider for this production cell, ENGEL has integrated a high-precision PUR unit from CANNON.

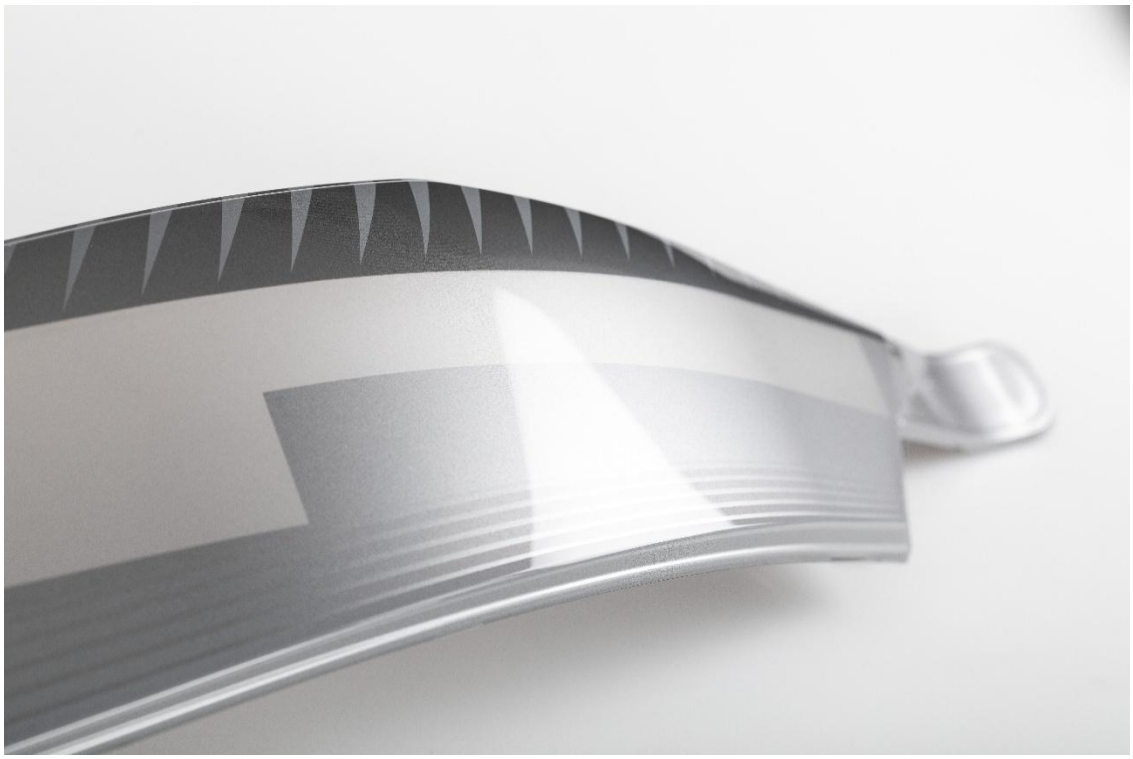

Image 2: ***The result of the new production cell:*** *Innovative rear-end-lights with decorative foil and PUR protection using clearmelt – without the need for costly hardcoating.*

Another cost advantage compared to conventional three-component injection moulding lies in the upstream foilmelt technology, in which only a colour design is transferred to the component using in-mould decoration (IMD) with a foil. This is achieved through the heat of the plastic melt – the carrier foil itself is removed, which saves material while allowing for highly precise optical design.

Compact, efficient and future-proof

The production cell showcased at K 2025 is based on an ENGEL duo two-platen injection moulding machine with 7,000 kN clamping force and a vertical rotary table. Thanks to its compact design, the machine requires only a small footprint despite the high level of process integration. Compared to complex index platen solutions, this setup not only reduces mould costs but often also the required machine size – a key advantage in terms of energy efficiency and investment costs.

A new version of the ENGEL viper 40 linear robot is integrated for part removal. The automation is both space-saving and fast, further increasing the overall efficiency of the production cell.

Collaboration for function and design

The plastic carrier material used for the rear-end-light is PMMA Plexiglas® 8N, and the corresponding polyurethane is supplied by VOTTELER. In the application presented, ENGEL handles the entire moulding production process, which requires high dimensional accuracy and melt quality to ensure that the design of the foil is reliably transferred and that the PUR layer is defect-free.

The transfer foil is supplied by surface specialist LEONHARD KURZ, who also provides the associated foil unwinder. At the LEONHARD KURZ stand (Hall 5 / A19), the component produced on the ENGEL system receives additional integrated electronics in the form of foil LEDs through bonding with a functional foil on the inner surface. This solution enables an unprecedented level of design and variant flexibility: Power LED foils are applied only to inspected components, light functions can be customised individually, and coloured light signals – for example, to identify autonomous vehicles – can be implemented without changing the mould. This represents a clear alternative to conventional multi-component injection moulding.

ENGEL at K 2025: Solutions for the Mobility of the Future

With this solution, ENGEL demonstrates how decorative and functional requirements can be combined economically in a single, highly efficient, integrated process. The combination of decoration, protective coating and process integration on the duo 700 makes clearmelt an efficient key technology for modern automotive lighting. This production cell exemplifies ENGEL's expertise in the development of complete modular manufacturing solutions for the automotive industry. Visitors to K 2025 will have the opportunity to witness the potential of this new generation of rear-end-lights live in action.

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

Images: ENGEL

ENGEL AUSTRIA GmbH

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