

ENGEL creating high-end visible parts from recycled material at the K 2022

Eco-Moulding with style

Schwertberg, Austria – September 2022

In collaboration with partner companies, ENGEL is closing the material cycle for high-end visible components made of ABS at the K show 2022. Integrating Roctool induction technology and digital solutions, high-quality housing parts with state of the art surfaces are being produced from post-consumer recycled plastics.

To be able to move forward with the circular economy, it is essential to use pretreated plastic waste in a far wider range of applications. Visible components with premium surfaces have posed a particularly great challenge here thus far. To achieve premium surfaces directly from the mould surface using injection moulding without secondary operations, a high proportion of virgin material is usually required, if recycled material can be added at all.

At the K show 2022, ENGEL is collaborating with technology firm Roctool (Le Bourget du Lac, France) to demonstrate that there is a different approach from now on. Unique electronic boxes in black are being produced on an e-mac 465/160 injection moulding machine. They are made from rABS sourced from post-consumer recycled plastics. The surface is high-gloss. The cavity is laser engraved to create innovative patterns on the top side of the box, and there are fixtures for installing fans and connectors on the side surfaces. The part is also ultra-thin – 1.2 mm – in order to save material. Conventional moulding would require thicker wall sections.

Smart digital assistants compensate for raw material fluctuations

The key to the premium surface quality of this recycled component is the interaction between forward-looking machine and mould technologies.

The all-electric ENGEL e-mac injection moulding machine relies on mould temperature control, based on Roctool induction technology, to enable outstanding moulding precision and the highest surface quality. The latest energy-efficient, compact air-cooled Roctool generators are being used at the K show.

The smart assistance systems from ENGEL's inject 4.0 portfolio used in the e-mac machine make a further contribution to high quality in the processing of recycled materials. The smart assistance systems include iQ weight control, which detects fluctuations in the raw material and automatically adjusts the injection profile, the switchover point and the holding pressure to reflect the current conditions in the same cycle. In general, recycled materials are subject to greater batch fluctuations than virgin material, iQ weight control has a particularly positive impact in terms of achieving consistently high product quality in this application. At the same time, iQ melt control improves the homogeneity of the molten plastics by automatically adjusting the plasticising time to the optimum value for the application.

The application presented at the K show demonstrates the huge potential for the circular economy for manufacturers of household appliances, white goods, consumer electronics and telecommunications products. The proportion of virgin material can be significantly reduced, to zero in the best case. Already today, many manufacturers are taking back end-of-life equipment for recycling and returning it to production. Thanks to this combination of Roctool technology and ENGEL smart digital assistance, even demanding housing parts with a super thin, complicated geometry can now be produced from post-consumer recycled material in a cost effective and sustainable way.

Partnerships are the key to success

Other system partners involved in the project's success include Moldetipo (Marinha Grande, Portugal), who built the mould, Lavergne (Montréal, Canada), who provides the recycled plastic, INCOE (Rödermark, Germany) for the hot runner systems and Standex Engraving Mold-Tech (Treviso, Italy) for the tool laser texture design.

Close collaboration along the value chain is essential for establishing a circular economy. This is why ENGEL is strongly committed to networking these companies on multilateral, horizontal platforms. They include the R-Cycle Initiative whose objective it is to introduce

digital passports for plastics products. All information relevant to recycling is automatically recorded as early as the product manufacturing stage so that, for example, waste sorting plants can identify recyclable plastics more accurately and deliver single grade fractions for recycling. This approach puts an end to the downcycling that has been prevalent up to now by reusing the recycled plastics on a par or even with added value.

ENGEL at K 2022: hall 15, stand C58



The rABS used to produce the electronic boxes is sourced from post-consumer recycled plastic.



Featuring smart assistance, the all-electric e-mac injection moulding machine automatically compensates for fluctuations in the raw material to ensure consistently high part quality.

Pictures: ENGEL

ENGEL AUSTRIA GmbH

ENGEL is one of the global leaders in the manufacture of plastics processing 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 nine production plants in Europe, North America and Asia (China and Korea), 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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