

In-mold decoration of household appliances: Swiss manufacturer V-ZUG AG implements sustainable series production with three partners

Fürth/Germany, 11 May 2020: Using the know-how from four industries to drive innovation in the area of household appliances: that was the objective of the Swiss kitchen specialist V-ZUG AG when it took three companies on board for a joint project. Included were the coating specialist Leonhard Kurz in Fürth, Germany, the injection molding experts at A. & J. Stöckli AG in Switzerland, and the machinery maker KraussMaffei in Munich, Germany. Their task: to create a new look for the control panel of V-ZUG's new premium oven. As already customary in the automotive industry, the aim was to visually enhance the panel while at the same time making it more efficient to produce. This was expected to be achievable using In-Mold Decoration (IMD) technology – a method that combines two processing steps (injection molding of the part plus decoration) into one. IMD technology is already being employed in many industries. The joint project by V-ZUG was the first of its kind in the Swiss household appliances industry.

IMD technology offers manufacturing and economic advantages

V-ZUG is the premium kitchen specialist in Switzerland. The company manufactures and sells design-oriented appliances for the home. The people at V-ZUG were convinced that the functionality and look of their high-end household appliances would benefit from IMD technology. IMD makes a wide variety of designs possible, even metallization. What is particularly important for household appliances is that IMD has a built-in surface protection. Thanks to highly resistant topcoats, the surfaces are easy to clean, and the decoration is resistant to cleaning agents or moisture.

The economic advantages of the IMD process are indisputable. Oven control panels are generally lacquered or made from a pure material such as aluminum. Or the desired surface look is only produced after additional processing. Manufacturing steps such as lacquering or galvanizing are mostly performed in Asia or Eastern Europe; they are costly and also have a net negative impact on the environment. IMD not only enables injection molding and decoration to occur in a single step, it is also suitable for recycled plastic materials and brings the decoration process in-house, which makes it more efficient and sustainable.

Kurz delivers IMD coating and IMD mold

V-ZUG included the German expert in thin layer technology, Kurz, in the project because of its expert knowledge of IMD technology. Both companies have a clear design focus. Kurz develops and produces custom IMD decorations; the necessary molds and foil feeding units for the injection molding machine also come from Kurz. The IMD carrier foil is introduced into the injection molding machine via the foil feeding unit and applied under pressure in the cavity by the injection molding material. The temperature of the material ensures that the decorative layer is released from the carrier and bonds to the plastic part. This eliminates all post-molding decoration, intermediate storage and other work steps. How the process works is shown in a video from Kurz:

www.plastic-decoration.com/en/decoration-processes/inmold-decoration-imd/

But IMD delivers more. Using the so-called dead front effect, IMD applications can completely hide operating elements for integrated touch functionality. These only become visible when backlit. Kurz also combines In-Mold Decoration with In-Mold Labeling (IML), whereby conductive sensor foils from Kurz subsidiary PolyIC are applied to a part during injection molding. This process is used for control panels in the automotive, home appliances, and consumer electronics industries. In all cases it can be said that combining the two in-mold processes allows cost-effective series production.

A. & J. Stöckli AG molds and decorates parts using a machine from KraussMaffei

V-Zug AG's second partner was A. & J. Stöckli AG in Switzerland. This company manufactures high-quality plastic parts, for example for the household appliances industry. In the project, Stöckli was responsible for producing the oven panels using the IMD process and for coordinating the overall project. Stöckli is therefore the first company in Switzerland to combine injection molding and IMD technology and to implement a customer-specific part of this kind. Stöckli installed a new IMD-capable manufacturing machine especially for this task.

This injection molding machine was provided by the third partner in the project – the German machinery maker KraussMaffei. Their engineers found a neat production cell solution that allowed the oven panels to be produced in a virtually particle-free environment to guarantee the flawless appearance of the control panels for the high-end oven. The electronic and mechanical interfaces are clearly defined in the machine. A

versatile articulated robot ensures that the system is ready to accommodate future parts or other process steps. A foil feeding unit from Kurz was used in combination with the KraussMaffei machine for the in-mold decoration. Thanks to its highly accessible two-platen construction, the foil changeovers for the three different panel designs are easy to perform. This setup enabled the panel for the V-ZUG oven to be series-produced fully automatically.

V-ZUG AG uses In-Mold Decoration for other series production runs

Everyone at V-ZUG, Leonhard Kurz, Stöckli and KraussMaffei is proud of how well the collaboration in this complex project went. The Combair V200, V400 and V600 oven series has been on the market since spring 2019. The folks at V-ZUG are currently working on further variants; dishwashers will also be decorated using the in-mold process and thereby taken to the next design level. The Swiss kitchen appliances manufacturer plans to launch these new appliances on the market before the end of this year.

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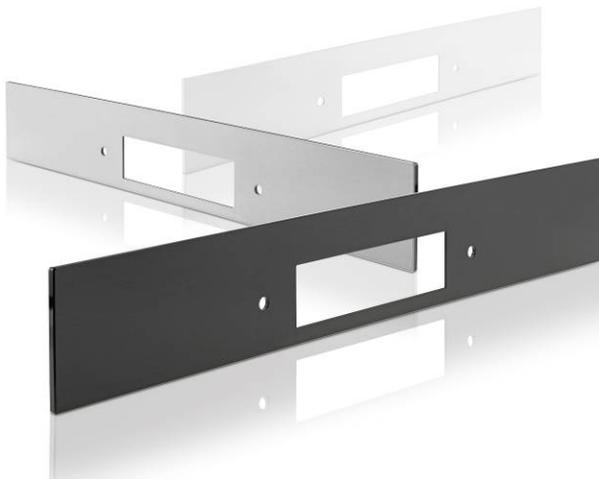
A KraussMaffei production cell equipped for In-Mold Decoration

(Photo: KraussMaffei)



The articulated robot moves the panel to the next process step.

(Photo: KraussMaffei)



The kitchen appliance panel has been decorated using the IMD process and provided with a scratch-resistant coating.

(Photo: KraussMaffei)



V-ZUG oven with a panel decorated using the IMD process

(Photo: V-ZUG)

About KURZ: The KURZ Group is a global leader in thin film technology. KURZ develops and manufactures decorative and functional layers applied to carrier foil for a wide range of industries, from the packaging and printing industry through to the automotive, electronics, card and textile sectors. KURZ offers a comprehensive portfolio of products for surface finishing, decoration, labeling, and counterfeit protection, rounded off by an extensive range of stamping machines and stamping tools. The company is also continuously investing in new technologies and developing innovative solutions for integrating functionality into surfaces. The KURZ Group has more than 5,500 employees at over 30 sites worldwide and produces under standardized quality and environmental standards in Europe, Asia, and the USA. A global network of subsidiaries, representatives and sales offices ensures short paths and individual, on-site consulting.

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Press Contact:

Lucie Mengel

LEONHARD KURZ Stiftung & Co. KG

Schwabacher Straße 482, 90763 Fürth/Germany

Phone: +49 911 71 41-96 38, Fax: +49 911 71 41-96 40

E-Mail: lucie.mengel@kurz.de

www.kurz.de