In-mold decoration for composite fiber components

Forming, back injecting or overmolding, and decorating of light components in a single step

Fürth/Germany, 10 October 2016: Hybrid lightweight construction using fiber-reinforced plastics is growing in importance in automotive manufacturing, and is also a future-oriented technology for other industrial components, for example in the consumer electronics area. A currently established method of manufacturing composite fiber components is the hybrid molding process in which the forming and overmolding of the semi-finished composite occurs in a single injection molding cycle. Leonhard Kurz, in collaboration with Bond Laminates and Engel Austria, has developed a process that enables the component to also be decorated in the same processing step. The Tepex continuous-fiber-reinforced thermoplastic semi-finished composite from Bond Laminates is formed and overmolded with plastic in the injection mold, and the component is then decorated with in-mold foil in the same shot. This efficient one-shot process significantly shortens the time required to decorate composites, as the customary lacquering and polishing steps are no longer required.

Challenging mold and foil technology

A particularly challenging aspect of the new manufacturing process is the mold technology, which needs to provide the necessary preconditions for perfect bonding of the Tepex and plastic material. The integration of the in-mold decoration process also places additional requirements on the overall process and the mold technology. Injection molds had to be developed that would ensure a stable injection molding and coating process under these conditions. The foil-feeding unit, too, needed to be tailored to the specific process requirements.

Kurz also developed a new IMD (In-Mold Decoration) coating system with a special formulation to suit this new process. Its lacquer package bonds permanently, and in accordance with customer specifications, to the materials of the composite
component. The company has also produced fashionable designs with a matt finish or a slightly textured surface, for example with a brushed metal or structured look, that are especially suitable for decorating composite fiber components. Designs with semi-transparent areas that accentuate the carbon look of the composite material can also be implemented.

“Thanks to the comprehensive process and foil know-how of our team of experts, they have been able to master these most difficult surfaces and technically demanding requirements, thereby achieving a quantum leap in the economical decoration of thin-walled components,” summarizes Nick Wagner, Head of Plastics Decoration Sales and Marketing at Kurz.

Kurz will be presenting a variety of components and surface designs at its booth A19 in Hall 5 at K 2016. Visitors will be able to see a live demonstration of the new IMD process on a manufacturing cell with an Engel insert 500V/130 single injection-molding machine at the Engel booth C58 in Hall 15.
About KURZ: The KURZ Group is a global leader in hot stamping and coating technology. KURZ develops and manufactures decorative and functional layers applied to carrier foils for a large variety of applications. The range includes metallized, pigmented and holographic stamping foils for packaging or print products, surface finishes for electronic devices or automotive parts, protective and decorative lacquers for furniture or household appliances, authenticity features for brand name items, metallic applications for textiles, and different types of coatings for many other applications. With 4,700 employees in twelve production plants in Europe, Asia and the USA, 24 international subsidiaries and a global network of agencies and sales offices, the KURZ Group manufactures and sells a comprehensive range of products for surface finishing, decoration, marking and counterfeit protection, rounded off by an extensive range of stamping machines and stamping tools. KURZ also continuously invests in new technologies, and is developing innovative solutions for integrating functionality into surfaces.

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