

Case Study

Truck bumpers with new material - tailor-made (PBT+PET)-blend replaces SMC



Figure 1 Truck bumpers Eurocargo by IVECO

IVECO, one of the world leaders in commercial vehicles, is using bumpers made from Pocan[®] TS 3220 for the third generation of its Eurocargo model. The glass fiber reinforced and elastomer-modified (PBT+PET)-blend from LANXESS has been tailor-made especially for this application and can be injection molded. The bumper was previously made using sheet molding compound (SMC) technology. This thermoplastic enables components to be produced without time-consuming post-molding treatment and is around 20 percent lighter. What's more, the resultant surface quality is so good that the body part can also be used without a coating. The bumper is injection molded by Martinplast S.p.A. in San Martino Alfieri, Italy.

SMC components require a great deal of post-molding treatment. For example, flashing need to be removed and holes that have become clogged need to be opened up again. The components also require a coating to achieve good surface qualities. This means they have to be pretreated with primer and often need to be polished, too. Especially when relatively high numbers of parts are involved, Pocan[®] TS 3220 is a much more cost-effective solution. It produces bumpers that require no post-molding treatment with a very low reject rate and short cycle times. Two more of the blend's strengths

OEM: IVECO
Material: Pocan[®] TS 3220
Manufacturer: Martinplast S.p.A., Italy
Industry: Automotive

compared to SMC are its outstanding toughness and good resilience at low temperatures. This makes the component extremely resistant to minor damage. The excellent flowability of the (PBT+PET)-blend comes into its own when manufacturing the very large component, which has external dimensions of 220 x 70 x 30 centimeters.

The blend's excellent coatability is a further advantage because some Eurocargo bumper models are painted. Thanks to the material's outstanding stiffness, a tread can be integrated in the component without the need for metal reinforcements. This supports the driver's entire weight, for example when cleaning the windshield. Another benefit of Pocan[®] TS 3220 is its good chemical resistance to road salt, fuel, greases, oils, coolant, insect cleaner sprays and other substances typically encountered by motor vehicles.

LANXESS provided Martinplast with a great deal of assistance when it came to designing and constructing the bumper. It calculated both the thermal expansion and how the bumper deforms under stress. This enabled "critical" areas to be strengthened using targeted localized reinforcements. The mold filling process was also simulated using Moldflow[®] analyses to optimize the gating concept and minimize component warpage.



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