Audi uses Ultramid® for first passenger airbag housing of plastic for its high-end models

Case Study

Key Safety Systems, an international automotive supplier headquartered in Sterling Heights, Michigan, U.S.A., ZF Boge Elastmetall of Damme, in the German state of Lower Saxony, and BASF have joined forces in developing the housing for the passenger airbag used in the new Audi Q7. This is Audi's first passenger airbag housing made of plastic for its high-end models. In its capacity as the module supplier, Key Safety Systems bears responsibility for the overall system while ZF Boge Elastmetall is contributing its know-how in the development, construction and processing of the housing. With its polyamide Ultramid® B3ZG8, BASF is providing the appropriate material for this, and is also instrumental in the simulation of the mechanical strength by supplying the characteristic values of the material under highly dynamic load. As a sport utility vehicle, the Q7 has been designed specifically for the American market and it was launched there in May of 2006.

Polyamide versus Magnesium
So far, Audi had employed the light metal magnesium for the passenger airbag in this vehicle class. However, when it came to the Q7, a new plastic concept has gained the upper hand: the material used here is a polyamide 6 grade specially developed by BASF for airbags. Ultramid® B3ZG8 contains 40 percent glass fibers and it has also been impact-modified. As a result, it is sufficiently elastic under cold conditions but also rigid enough at high temperatures. This plastic is easier to process than magnesium and exhibits good flame-retardant behavior.

BASF's new computation method for parts, the "integrative simulation", was successfully integrated into the computation method employed by ZF Boge Elastmetall. The high-speed measured data is contributing considerably to a better assessment of the strength of the materials under dynamic stress, thus allowing a greatly improved understanding of the material.