

## Crash-active headrests made by ITW using Ultradur®

### Case Study

BMW has recently started using crash-active headrests whose kinematic skeleton is made primarily of BASF's engineering plastics. The plastic framework is manufactured by ITW in a fully automated assembly plant in Röttingen, Germany and the headrest is subsequently assembled at the Grammer company in the Bavarian town of Amberg. In this process, BASF provided ITW not only with the materials, namely, Ultradur® B4300 G6 (PBT), Ultramid® B3EG3 (PA 6), Ultramid® A3K (PA 66) and Elastollan® (TPU), but also with CAE-calculations and head-impact tests.

The part is designed to provide even greater protection to passengers against whiplash trauma: in case of a rear impact at a speed of more than 12 km/h, an actuator in the headrest is automatically triggered. A pre-tensioned spring moves the front half of the headrest forward and upward almost instantaneously. This reduces the distance between the back of the head and the headrest, thus lessening the risk of neck injury due to an overextension of the cervical vertebra.

