First plastic gear housing for the DeWALT hammer drill made from Ultradur®

Case Study

The new hammer drill made by DeWALT – a worldwide developer and manufacturer of professional power tools and part of the Stanley Black & Decker corporate group – has a plastic housing that is a combined part, enclosing both the electric motor and the gear. The engineering plastic used here is BASF's Ultradur® B4300 G6.

The sophisticated part inside the power drill replaces two separate housings, one of which – the gear housing – used to be made of die-cast magnesium. The new plastic housing now accommodates the electric motor and the gear along with the chain drive; consequently, it has to be dimensionally accurate and ensure that the axes of the gear components are parallel and that they remain so, even at high operating temperatures. BASF's PBT (polybutylene terephthalate) Ultradur® B4300 G6 provides the requisite stiffness and dimensional stability, even in a humid environment. The very good flow properties of this plastic make it easy to create filigree contours and, not least of all, to reduce the weight of the hammer drill when compared to the version with the metal housing.

DeWALT also makes use of BASF engineering plastics in other special applications in the new hammer drill: Ultramid© A3WC4, a BASF carbon- fiber-reinforced polyamide, is employed for the very rigid connecting rod, which joins the piston to the crank wheel. The yellow and black exterior housing parts are made of the especially impact-resistant Ultramid® B3ZG6, whereas the components situated close to the motor that come into contact with hot and live parts are made of Ultramid® A3EG6 or Ultramid® A3EG7.