

Case Study

Ford cooling-water pipe in gas injection technology



Figure 1 Cooling-water pipe

Over the last few years, plastics have been gaining an ever-growing market share as a substitute for metals in under-the-hood applications. Cooling-water pipes made of Durethan® are one example. UK-based Eaton Corporation manufactures cooling-water pipes from Durethan® DP 2-2224/30 H2.0, a heat stabilized PA 66 with 30 % glass fiber and mineral, for Ford-Werke AG in Germany using the gas injection technology (GIT).

Due to the complex geometry of the part, the manufacturer opted for the blow-out process, which involves first filling the mold, and then, with the aid of an inert gas (generally nitrogen), forcing the core (which is still plastic) either into an overflow cavity or back into the injection molding cylinder. In this way, tubular parts with several bends and branches and

OEM: Ford

Material: Durethan® DP 2-2224/30 H2.0

Manufacturer: Eaton Corporation, England

with integrated functions such as molded-in fixing elements can be produced in one step.

The specifications for such components are very stringent indeed. The material must have good hydrolysis resistance when exposed to coolants (a mixture of glycol and water) at service temperatures up to 130 °C. For this, optimized PA 66 grades with 30 - 35 % glass fibers already exist. At the same time, the pipes also need to have a very smooth interior surface to ensure minimal flow resistance. Intensive optimization work carried out jointly by the processing engineers and material specialists led to the development of Durethan® DP 2-2224/30 H2.0, which represents an excellent compromise between good interior surface quality and hydrolysis resistance.

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