

LANXESS at NPE 2006

Motor Oil Pans Made of Polyamide 6 and 66

Self-supporting Oil Pans are also Feasible

Chicago, IL – June 19, 2006 – A few years ago, the first vehicles came onto the market with transmission oil pans made of polyamide 66. Experts from LANXESS recently took up the challenge of also producing engine oil pans from polyamide. The attraction of such a solution is the enormous potential of integrating different functions, and the considerable savings in terms of the number of parts, investment in machinery, logistics, assembly work and production space compared with the corresponding steel or aluminum designs. Apart from that, better use can be made of the available build volume due to the greater design freedom afforded by plastic compared with metal.

"In simulations, we have been able to show that highly integrated engine oil pans can also be made from polyamide. We succeeded in expanding the concept to include self-supporting pans, which are subjected to much higher dynamic and mechanical loads. The ideal material for this application is our new, highly filled Durethan® DP BKV 60 EF H2 polyamide 6," explains Frank Krause, an expert in engine components in the LANXESS Semi-Crystalline Products business unit.

At the present time, the results of the tests are being incorporated in various development projects with European transmission and engine manufacturers as well as OEMs.

"A highlight of our concept is the direct integration of the oil suction pipe into the oil pan. Until now, both components were manufactured separately and then assembled. Our analyses show that the entire subassembly can be manufactured in one step. The pipe can be blown by the gas injection technique (GIT) directly after injection molding the pan," says Krause. The result is a highly compact component that takes up little space.

Apart from the thread for the oil drain plug and the opening and tube for the oil dipstick, the new design also has integrated clips to fasten the oil separator, places to accommodate a large-area plastic magnetic comb filter for metal separation and two engine sump baffles. The latter stabilize the flow of oil in the pan and prevent the oil from foaming. For the simulations, these, too, were made of polyamide. Depending on whether the engine oil pan is mounted transversely or longitudinally, the surfaces facing the road can additionally be provided with ribs to afford stone chip protection. The ribs also increase the overall stiffness of the pan. It means that, during repair work or during assembly, it can support the entire engine without suffering any damage.

Self-supporting engine oil pans must have much higher structural rigidity than non-self-supporting ones in order to ensure that power is transmitted from the transmission bell housing to the engine block. Polyamide is not

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normally stiff enough for this, but thanks to design improvements, it can still be used for this application, as is proved by the LANXESS simulations. Two hybrid struts (plastic-metal composite) have been added to the polyamide oil pan to ensure that the power is transmitted by friction. "This solution offers an opportunity to save weight, because the actual part consists of lightweight polyamide, and the comparatively small struts make only a minor contribution to the overall weight," explains Krause.

Durethan® BKV 60 EF H2.0 is the first polyamide six that is suitable for the injection molding of both the engine oil pan and the transmission oil pan. The material, which is filled with 60 percent by weight glass fibers, has an elasticity modulus that is twice as high at room temperature as standard polyamide six grades of Durethan®. Even at 170°C (338°F), the elasticity modulus is still 6,700 megapascals. The stiffness is so high that the oil pans need far fewer screw connections to the engine than their counterparts made of polyamide 66. Apart from its resistance to the chemicals typically found in the engine compartment, another advantage of the material is its high creep strength at elevated temperatures. This ensures that the oil pans do not leak at the flanges.

About LANXESS

The LANXESS-Group manufactures high-quality products in the areas of chemicals, synthetic rubber and plastics. The companies' portfolio comprises basic and fine chemicals, color pigments, plastics, fibers, synthetic rubber and rubber chemicals, leather, textile processing chemicals, paper chemicals, material protection products and water treatment products.

LANXESS Corporation was formed when the Bayer Group combined most of its chemical businesses and large segments of its polymer activities. The company began operating as a legal entity in the United States on July 1, 2004. LANXESS Corporation is a member of the German LANXESS-Group that was spun-off from Bayer in January 2005.

Information for editors:

All our news releases can be found on our home page at www.lanxess.com under the "Press" button. Visual material can also be downloaded from there.

Forward-looking statements

This news release contains forward-looking statements based on current assumptions and forecasts made by Bayer Group management. Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future consolidated results, financial situation, development or performance of the company, and the estimates given here. These factors include those discussed in our public reports filed with the Frankfurt Stock Exchange and with the U.S. Securities and Exchange Commission (including Form 20-F). The company assumes no liability to update such forward-looking statements or to adapt to future events or development.

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