Evolution of Polymers

BASF Launches Advanced Products in Difficult Market Environment

With a packed portfolio, the plastics producer aims to support users from the initial concept to the finished component. To achieve this, the company focuses on four relevant industrial sectors, offering comprehensive additional services along with ever more advanced high-performance polymers. In a rapidly and continually changing market environment, high-growth businesses take centerstage.

The curtain goes up on BASF's highlights at K fair: Dr. Melanie Maas-Brunner, Senior Vice President, and Dr. Guiscard Glück, Vice President New Markets and Products (both: Performance Materials Europe) (© Messe Düsseldorf)

The only constant is change. This maxim applies to the chemical industry more than ever in these times of globalization, volatile raw material prices, and frenetic stock trading. In this environment, BASF SE, Ludwigshafen, Germany, has long been a constant, as the company's 150th anniversary last year proved. Time and again, the company has been able to adapt to changing markets. In recent years, it has made the internal transition to a more customer- and industry-oriented corporate structure. So the Performance Materials Division is divided into the four major sectors of transport, construction, industrial applications, and consumer goods. By adopting this concept, the material producer wants to be closer to the customer and offer all its products under one roof (**Title figure**). This idea is also reflected in this year's slogan: "From initial concept to ideal solution". BASF is continually adding extra services to its product range, not just for strategic but also for quite practical reasons. For example, this year's portfolio includes not only the classic plastics products but

also new welding technology for different insulating sheets and an improved simulation mold for polyurethane systems (**Fig. 1**).

Expansion of Engineering Plastics Capacity

A trend which BASF is actually acknowledging with two product innovations at this year's K fair is the downsizing and optimization of modern combustion engines. Smaller but more powerful engines expose all components in their vicinity to higher pressures and temperatures. At the same time, these components must be available worldwide in consistent quality and compliant with the relevant standards of the auto manufacturers. BASF is continually expanding its portfolio of polyamide (PA) grades for these applications. Depending on the base polymer and stabilizer used, PA with heat resistance up to 220 °C and high bursting and weld strength are currently available. The latest development is a charge-air duct made from Ultramid B3WG6 GPX (**Fig. 2**). The polyphthalamide (PPA) portfolio for automotive and electronic components that operate under highly challenging service conditions has also been expanded with the addition of Ultramid Advanced N (for more on this, see the September edition).

In line with this trend, compounding capacity at the Schwarzheide site in Germany is to be increased by 2017. Up to 70,000 t/a polyamide (Ultramid) and polybutylene terephthalate (PBT, Ultradur) will additionally be produced there. In Shanghai, too, the compounding capacity of these two materials was more than doubled last year and capacities for thermoplastic polyurethane were stepped up. In Korea, a plant for compounding PA and PBT was commissioned at the end of October.

Since the development of Styropor in 1951, BASF has been working on advanced materials for building insulation. In June 2015, a new pilot plant for the production of sample quantities of the insulating material Slentite, based on a polyurethane (PU) aerogel, commenced operation (**Fig. 3**). In this plant, both the production process and product were further developed through customer projects and co-operation partners. Thanks to its open-pore structure, the material regulates moisture and permits a pleasant indoor room climate. In March of this year, the manufacturer exhibited this material for the first time in an application as a window reveal system, inserted in the gap between the window frame and wall, and as part of a roller blind case. Now Slentite is entering the market preparation phase and production is scheduled to commence in 2020.

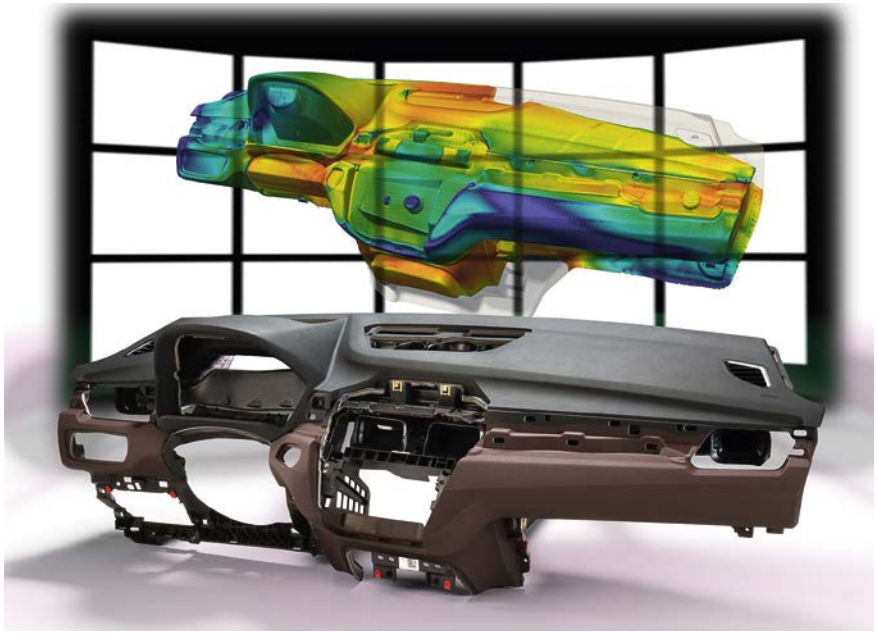

Fig. 1. The Ultrasim simulation mold predicts the foaming behavior of PU systems in the mold. Automotive supplier Yanfeng Automotive Interiors uses this virtual process design for dashboards, e.g. for the BMW X1 (© BASF)

"Internet of Things" Using the Example of Logistics

Also in the polyurethane product range, BASF – together with the Dutch start-up company Ahrma Holding B.V. – will present a novel pallet concept for the logistics market at K 2016. The two companies have developed a "smart" yet robust hybrid pallet produced from medium-density fiberboard and the polyurethane foam Elastocoat C. The PU is sprayed directly onto the pallets in continuous, automated spraying units, so sealing them, while also allowing them to be 25 % lighter than conventional pallets. The clever feature of this development is a track-and-trace system integrated into each pallet, which can indicate its position and movement, ambient temperature and load state as well any possible impact or dropping. The software for this system can optimize use, detect interruptions, e.g. in the cold chain, and identify damage. After about ten years, the transponder must be changed. According to Ahrma, this offers huge market potential, bearing in mind the 9 billion or so pallets currently in circulation worldwide.

A little less "smart" but definitely an eyecatcher on the BASF booth at K fair will be a sparkling, brilliant green pigment with a gold lustre and glitter effect. The new effect pigment Lumina Royal Dragon Gold is showcased in packaging, household appliances, and sports articles. The color is marketed under the recently announced corporate brand »

Fig. 2. In response to further developments in current engine models, the polyamide portfolio has been expanded. One grade is suitable for producing a charge-air duct for modern combustion engines (© BASF)

Fig. 3. Dr. Marc Fricke, Slentite Project Manager at BASF Polyurethanes (left), and Jesper Bjerregaard, Manager Marketing Construction (right), in the pilot plant for sample quantities of the new insulating material (© BASF)

name "Color & Effects" for the global pigments business. The latter includes the whole portfolio of colored and effect pigments that serve users from the paint, plastics, printing, and cosmetics industries, as well as the agricultural sector.

Economic Forecasts in Difficult Times

2015 proved to be rather a mixed year for BASF and once again Board Chairman Dr. Kurt Bock is not forecasting an easy year. In 2015, the company finished with a turnover of EUR 70.4 billion (-5 %). Selling prices dropped in almost all areas and were significantly influenced by the sharp fall in raw material prices. The decline in oil and gas prices also contributed in no small way to the lower result (EBIT) of EUR 6.2 billion, which was around 18 % below that for the previous year.

For the current year, those responsible expect that the global economy will grow at about the same rate as in 2015. While the EU will remain at the level of the previous year (forecast before Brexit), it is expected that growth will slow down somewhat in the USA and will continue to decrease slightly in China; the recessions in Russia and Brazil will ease slightly. "The start to the year with the turbulence in the commodities and stock markets underlines how uncertain the outlook is for 2016," said Bock. "The year began slowly, mainly because of weak demand in China." So far, the predicted global economic outlook has proved correct. Owing to the divestment of the gas trading and gas storage businesses, sales in the first quarter of 2016 decreased by 29 % to EUR 14.2 billion. The Performance Products, Functional Materials & Solutions, and Agricultural Solutions divisions achieved a higher result before special items.

Despite the volatile economic environment, BASF is showcasing a range of further developed and new, advanced products. The company's industry-oriented structure enables it to pick up customers directly from their application and provide them with a full consultation service. The areas in which the company has invested and on which it is focusing, such as engineering plastics and poyurethanes, offer potential for specialized, higher-performance products. Some of these will be on display in Düsseldorf, Germany, in October. ■

Franziska Gründel, editor

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