

Tepex from LANXESS in lightweight automotive design

Local reinforcement of injection-molded SUV front ends

- **Around 50 percent lighter than steel inserts**
- **Material bond provides greater mechanical load resistance**

Cologne – The continuous-fiber-reinforced thermoplastic composites Tepex from LANXESS have many potential applications as inserts for the local reinforcement of injection-molded components. While metal inserts only interlock with the injection-molded material, the composites have a material bond that increases the components' mechanical strength. Above all, Tepex is significantly lighter. This is evident in the front ends of Volkswagen's Atlas and Teramont SUVs, which are manufactured in the United States and China respectively. "Both front ends use Tepex inserts, which are around 50 percent lighter than comparable inserts made from steel sheets. In addition, the reinforced areas can endure much higher strain," explains Harri Dittmar, an applications developer for Tepex.

The Atlas front end is manufactured by Arkal Automotive, located in the Kidmat Galil Industrial Park, Galilee, Israel. The company, which specializes in high-tech thermoplastic solutions for lightweight vehicle design, also developed both front ends in cooperation with Volkswagen. The Teramont front end is produced by Changchun ENGLEE Automobile Industry Co., Ltd., Changchun, Jilin province, China.

Smart production process

The front ends of both SUVs are made from injection-molded polypropylene. In the area around the hood lock, they are reinforced with a thin, one-millimeter-thick piece of Tepex dynalite 104-RG600. The matrix of this semi-finished composite is made from polypropylene and contains 47 percent by volume continuous glass

LANXESS AG

Contact:
Michael Fahrig
Corporate Communications
Spokesperson Trade & Technical
Press
50569 Cologne
Germany

Phone +49 221 8885-5041
michael.fahrig@lanxess.com

Page 1 of 5

fiber rovings as a fabric. On both sides of the front end, the “Z struts” are reinforced with a shaped insert from the same composite material.

The injection molding process with the three inserts is highly efficient. The side inserts are heated, shaped outside of the mold, reheated to 140 °C, and then placed in the mold from the side. At the same time, the middle insert is heated and then overmolded together with the two outer inserts. “Despite the complex assembly of the components, the result is an efficient manufacturing process with short cycle times,” Dittmar explains.

Advantages in processing

The positioning and reshaping of Tepex in the mold is easily reproducible. In addition, drill holes in the composite material demonstrate the necessary structural integrity of the fabric. Both features represent an improvement over the thermoplastic materials with a unidirectional fiber orientation that were originally intended for strengthening the front end.

A variety of potential applications

There are a wide range of potential applications for Tepex in the local reinforcement of injection-molded parts. Dittmar states: “In auto manufacturing, Tepex could be used in the center consoles, center armrests and rear shelves, as well as the door trims and their supports.”

Growing number of mass production applications

Tepex is developed and produced by the LANXESS subsidiary Bond-Laminates GmbH based in Brilon, Germany. Underbody cladding, seat backs, module supports, battery consoles, front-end components, brake pedals and bumper crossbars are all made from the composite material. “Because of Tepex’s growing success in

LANXESS AG

Contact:
Michael Fahrig
Corporate Communications
Spokesperson Trade & Technical
Press
50569 Cologne
Germany

Phone: +49 221 8885-5041
michael.fahrig@lanxess.com

Page 2 of 5

lightweight automotive design, we've established a separate project group that supports our worldwide partners throughout all stages of the development of Tepex components, right up to the start of mass production," explains Henrik Plaggenborg, head of Technical Marketing & Business Development, Tepex Automotive.

For more detailed information on Tepex properties, applications and processing technologies, go to www.bond-laminates.com.

LANXESS AG

Contact:
Michael Fahrig
Corporate Communications
Spokesperson Trade & Technical
Press
50569 Cologne
Germany

Phone: +49 221 8885-5041
michael.fahrig@lanxess.com

Page 3 of 5

LANXESS is a leading specialty chemicals company with sales of EUR 7.7 billion in 2016 and about 19,200 employees in 25 countries. The company is currently represented at 75 production sites worldwide. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives, specialty chemicals and plastics. Through ARLANXEO, the joint venture with Saudi Aramco, LANXESS is also a leading supplier of synthetic rubber. LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World) and FTSE4Good.

Cologne, October 17, 2017
mfg/rei (2017-00081e)

Forward-Looking Statements

This company release contains certain forward-looking statements, including assumptions, opinions, expectations and views of the company or cited from third party sources. Various known and unknown risks, uncertainties and other factors could cause the actual results, financial position, development or performance of LANXESS AG to differ materially from the estimations expressed or implied herein. LANXESS AG does not guarantee that the assumptions underlying such forward-looking statements are free from errors nor does it accept any responsibility for the future accuracy of the opinions expressed in this presentation or the actual occurrence of the forecast developments. No representation or warranty (expressed or implied) is made as to, and no reliance should be placed on, any information, estimates, targets and opinions, contained herein, and no liability whatsoever is accepted as to any errors, omissions or misstatements contained herein, and accordingly, no representative of LANXESS AG or any of its affiliated companies or any of such person's officers, directors or employees accept any liability whatsoever arising directly or indirectly from the use of this document.

Information for editors:

All LANXESS news releases and their accompanying photos can be found at <http://press.lanxess.com>. Recent photos of the Board of Management and other LANXESS image material are available at <http://photos.lanxess.com>. TV footage can be found at <http://globe360.net/broadcast.lanxess/>.

News Release



You can find further information concerning LANXESS chemistry in our WebMagazine at <http://webmagazine.lanxess.com>.

Follow us on Twitter, Facebook, LinkedIn and YouTube:

<http://www.twitter.com/LANXESS>

<http://www.facebook.com/LANXESS>

<http://www.linkedin.com/company/lanxess>

<http://www.youtube.com/lanxess>

LANXESS AG

Contact:

Michael Fahrig

Corporate Communications

Spokesperson Trade & Technical

Press

50569 Cologne

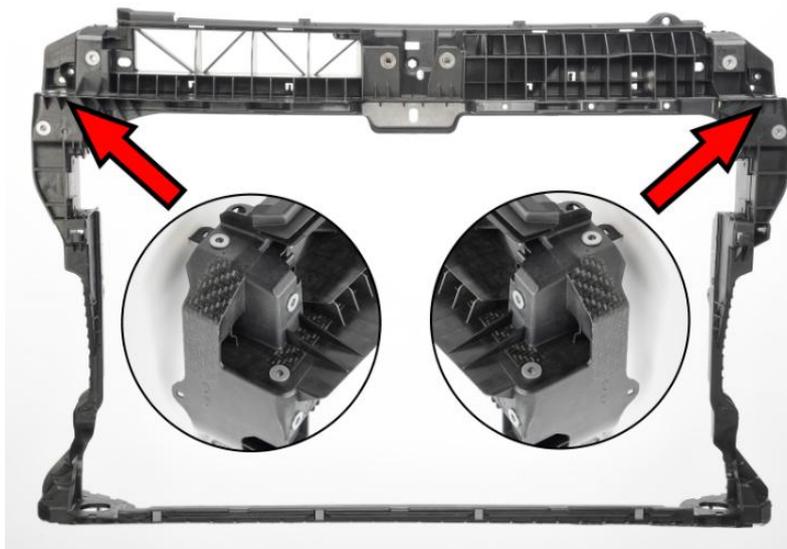
Germany

Phone: +49 221 8885-5041

michael.fahrig@lanxess.com

Page 4 of 5

Picture



On both sides of the front end, the “Z struts” are reinforced with a shaped insert made from Tepex dynalite 104-RG600.

Photo: LANXESS AG

LANXESS AG

Contact:
Michael Fahrig
Corporate Communications
Spokesperson Trade & Technical
Press
50569 Cologne
Germany

Phone: +49 221 8885-5041
michael.fahrig@lanxess.com

Page 5 of 5