

GE Plastics tops in SPE judging for best automotive application



A SymalITE composite sheet material is used for production of the underbody closure system on the BMW 5 Series.



The Renault Megane load floor is designed to allow a part-to-part cycle of 60 s.



Pierburg calls this the world's first continuously variable intake manifold, made of a magnesium-phenolic hybrid.

A polymeric film that eliminates the need to paint vehicle exteriors nabbed the best of the best award in the annual **Society of Plastics Engineers** (SPE) Automotive Division judging competition.

Debuting on the April 2003 European-launched **Smart** Roadster and Roadster-Coupe hardtop roof, the **GE Plastics** Automotive film achieves a number of industry benchmarks, including the first paint-less Class A horizontal body panel as well as the first Class A thermoforming of film pre-form.

"Lexan SLX film is a self-protecting polymer technology," said Venkatakrishnan Umamaheswaran, Industry Manager for Lexan SLX Body Panels at GE Plastics Automotive in Southfield, MI, noting that the film, available in solid and metallic colors, passed 10-year accelerated outdoor weather testing for gloss and color retention. OEM paint specifications such as etch resistance, cycle crack resistance, humidity, water resistance, and thermal shock are met via the film.

The roof module's use of polycarbonate copolymer film bypassed the need for the system supplier—Troy, MI-based **ArvinMeritor**, Inc.—to add a new paint line. The new roof module also achieves an approximately 50% weight savings when compared to a traditional painted steel roof system.

The Smart roof module earned the most votes in the SPE body exterior category before going on to being voted the overall winner for the 2003 Automotive Division.

Two application examples shared the limelight for top honors in the materials category: an underbody closure system on the 2004 **BMW 5 Series** and a SMC (sheet-molded compound) load floor on the 2003 **Renault Megane**. Made of SymalITE, the BMW 5 Series underbody closure system provides variable stiffness and density values where needed without adding mass or material volume to the underbody



The instrument panel lower carrier on full-size GM trucks uses homopolymer polypropylene in place of filled SMA.

panel. The SymaLITE core, a mixed fiber fleece product from **Quadrant Plastic Composites**, is laminated with polypropylene films. **Seeber** is the material processor and system supplier. Estimated weight savings via the SymaLITE composite sheet material is 4 kg (8.8 lb) per vehicle when compared to a similar glass-reinforced polypropylene compression- or injection-molded composite part.

A new SMC compound was developed for the Megane's load floor to enable high-volume production from a single tool. "The total weight reduction, compared to steel, was 4 kg," said Matthew Orlando, Director of Business Development for **InoPlastic Omnium** in Rochester Hills, MI. **MCR Composites** of Lyon, France, was the material supplier.

The winner in the body interior category was an instrument panel lower carrier that replaced filled SMA (styrene maleic anhydride) in a running change (mid-2003) material conversion. "We found a lower-cost homopolymer polypropylene containing 15% mica, 25% glass, and proprietary coupling agents that met our requirements," said David Boch, Supervisor of Materials Engineering for **Delphi** Safety and Interior Systems in Vandalia, OH. He noted that a 43% resin cost savings was achieved without a significant change to existing tooling and equipment. The instrument panel lower carrier is on 2004 full-size **General Motors** pickup trucks. **Spartech-Polycom**, with divisional headquarters in the Pennsylvania cities of Washington and Donora, was the material supplier.

Taking the powertrain category was the world's first continuously variable intake manifold. The product—on the BMW 5, 6, X5, and 7 Series equipped with the 4.4-L V8 engine—employs glass-fiber-reinforced phenolic for the rotors and the rotors' housing, while the outer shell is pressure-die-cast magnesium. "We achieved a better torque curve than the predecessor," said Joachim Wekenmann, Senior Program Manager for **Pierburg**, Inc. in Southfield, MI. System supplier for the program was Pierburg GmbH of Germany. **Baumgarten** GmbH was the material processor, Belgium's **Vyncolit N.V.** the resin supplier.

Top honors for the process/enabling category was a technology that results in a single-piece instrument panel with a soft foam-in-place upper, a hard molded-in-color lower, as well as integrated components. A patented mechanism in the skin-foam tooling permits accurate registration of the instrument panel skin directly to the substrate—creating a foam seal—for precise placement of soft area on the surface and "net no gap" aesthetics. "The



Reductions in tooling, manufacturing and assembly costs, material usage, and trimming operations shaved \$15 per vehicle with the first application in North America of a High Performance Integration instrument panel on the Mazda6, from Intertec Systems.

first application of High Performance Integration technology in North America is the 2003 model year **Mazda6**. The key to the technology is the ability to integrate components—such as defroster grille, end caps, center stack trim—that are traditionally assembled after foaming," said Andy Dargavell, Senior Director of Engineering for **Intertec Systems** in Troy, MI, the system supplier. Material suppliers were **Basell** (retainer) of Lansing, MI, and **PolyOne** (skin) of Cleveland.

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