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Media Contact:

Peggy Malnati, SPE Auto. Div. Comm. Chair
Phone: +1.248.592.0765
eMail: media@speautomotive.com

FIRST INTEGRATED FRONT-END MODULE NAMED 2013 SPE® AUTOMOTIVE DIV. *HALL OF FAME AWARD* WINNER

TROY, (DETROIT) MICH. – The first North American implementation of an integrated front-end module (FEM) system used on 1996 model year (MY) *Ford*® *Taurus*® and *Mercury*® *Sable*® sedans produced by Ford Motor Co. was selected as the 2013 ***Hall of Fame*** winner by the ***Automotive Division of the Society of Plastics Engineers*** (***SPE®***) for the group's 43rd-annual ***Automotive Innovation Awards Competition***. To be considered for a *Hall of Fame* award, an automotive-plastic component must have been in continuous service in some form for at least 15 years and preferably have been widely adopted within the automotive or ground-transportation industries. This application certainly meets those criteria: it has been in continuous use on Ford vehicles for 17 years, and as of 2012 it is estimated to have been featured on 5-million Ford *Taurus* derivative vehicles worldwide, plus has been adapted by other automakers including Volkswagen AG, Audi AG, Daimler AG, PSA Peugeot Citroën, and Chrysler Group LLC.

According to SPE Hall of Fame committee co-chair, Nippani Rao, president, Rao & Associates, "The integrated FEM has proliferated widely because polymer composites allow engineers to mold in features and locators, and to integrate a number of previously separate subsystems and functions into a single component that saves money, reduces weight, and provides for faster, more accurate, and less costly assembly."

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First Integrated Front-End Module Named Hall of Fame Winner
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FEMs were originally multi-piece stamped steel or aluminum assemblies that gradually evolved into non-integrated (radiator-support frameworks) on low-volume Ford commercial trucks (supplied by General Tire Co.) as well as to similar sub-assemblies on vehicles by Volkswagen in bulk-molding compound (BMC) polypropylene composites — an application deemed by Ford engineers to provide insufficient strength and thermal performance for the *Taurus/Sable* platform.

The Ford team evaluated numerous materials and process options and settled on compression-molded sheet-molding compound (SMC) for optimized cost, weight, and functional performance on the original program. Over the years, thermoplastic composites have come to dominate the application, changing initially to glass-mat thermoplastic (GMT) composites, and later to injection or compression-molded long-fiber thermoplastic (LFT) composites with steel inserts or to inline compounded (ILC) direct-LFT composites with or without additional continuous-strand fiberglass reinforcements. With each generation and technology iteration, more weight and cost have been removed from the module.

"Switching to SMC on the original program allowed us to eliminate significant numbers of parts and their specific design drawings/computer-aided engineering models, stamping tools, gauges, fixtures, plus purchasing and logistical tasks," notes John A. Young, engineer-Product Development at Ford. "Thanks to composites-enabled part integration, we were able to eliminate 22 major sub-components and 27 fasteners per vehicle. We ended up with a single 'ready-to-install' structural carrier with self-locating fasteners. This, in turn, improved assembly operations since it provided an 'open architecture' for powertrain installation, eliminating 9 line locations and 15 work-cell locations. We also reduced weight 22% and costs 14% while boosting quality (R/1000) 22% vs. conventional design and assembly practices at the time. Additional benefits included improved serviceability and documented reductions in collision insurance costs while meeting all safety requirements, making this a win-win all the way around."

Moving away from metallic systems to molded-in-color composites also eliminated volatile-organic compound (VOC) emissions and energy usage associated with priming and painting plus welding metal parts. And thanks to component weight reduction, this application also helped reduce fuel usage and greenhouse-gas emissions over the use life of millions of vehicles. This Ford innovation won SPE Automotive Division's 1996 *Chassis/Hardware* and *Grand Award* prizes, and also received recognition from the American Plastics Council and the SMC Automotive Alliance.

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First Integrated Front-End Module Named Hall of Fame Winner
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On **November 6** at SPE's annual ***Automotive Innovation Awards Gala*** held at Burton Manor (www.Burtonmanor.net) in Livonia, Mich., Michael Williams, manager-Global Exterior and John A. Young will accept the award on behalf of the original Ford team that worked on the program. Other companies that will be recognized include the original system supplier, Toledo Mold & Die, Inc.; the original molder/processor, Budd Plastic Products (now Continental Structural Plastics); and the original material supplier, Budd Plastics (now Continental Structural Plastics).

This year's ***Automotive Innovation Awards Gala*** begins with the VIP Cocktail Reception at 4:30 p.m., generously sponsored by Celanese Corp. At 5:00 p.m. the main exhibit area will open for general admission and guests can review this year's ***Automotive Innovation Awards*** part nominations, as well as enjoy the specialty and antique vehicles that are always a highlight of the show. Dinner will begin at 6:30 p.m. and the awards program itself will last from 7:00-9:00 p.m. For those who wish to extend merrymaking and networking activities, the ever-popular *Afterglow* – also sponsored by Celanese – will run from 9:00-11:00 p.m.

SPE's Automotive Innovation Awards Program is the oldest and largest competition of its kind in the world. Dozens of teams made up of OEMs, tier suppliers, and polymer producers submit nominations describing their part, system, or complete vehicle and why it merits the claim as the Y*ear's Most Innovative Use of Plastics*. This annual event typically draws over 700 OEM engineers, automotive and plastics industry executives, and media. As is customary, funds raised from this event are used to support SPE educational efforts and technical seminars, which help educate and secure the role of plastics and composites in the advancement of the automobile.

The mission of SPE is to promote scientific and engineering knowledge relating to plastics worldwide and to educate industry, academia, and the public about these advances. SPE's Automotive Division is active in educating, promoting, recognizing, and communicating technical accomplishments for all phases of plastics and plastic based-composites developments in the global transportation industry. Topic areas include applications, materials, processing, equipment, tooling, design, and development.

For more information about the ***SPE Automotive Innovation Awards Competition and Gala***, see **http://speautomotive.com/inno** and **http://speautomotive.com/awa** For more information on the ***Society of Plastics Engineers*** or other society events, see **www.4spe.org**.

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TROY, (DETROIT) MICH. – The first North American implementation of an integrated front-end module (FEM) system (*image on left*) used on 1996 model year (MY) *Ford*® *Taurus*® (*image on right*) and *Mercury*® *Sable*® sedans produced by Ford Motor Co. was selected as the 2013 ***Hall of Fame*** winner by the ***Automotive Division of the Society of Plastics Engineers*** (***SPE®***) for the group's 43rd-annual ***Automotive Innovation Awards Competition***. This application compression molded from sheet-molding compound (SMC) composite, integrated a number of previously separate subsystems and functions into a single component that saved money, reduced weight, and provided for faster, more accurate, and less costly assembly. In continuous use on Ford vehicles for 17 years, as of 2012 it is estimated to have been featured on 5-million Ford *Taurus* derivative vehicles worldwide and has been adapted by other automakers including Volkswagen AG, Audi AG, Daimler AG, PSA Peugeot Citroën, and Chrysler Group LLC.

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Attn. Editors: High-resolution digital photography available upon request. Numerous other formal and informal shots from prior years' ***Automotive Innovation Awards Gala*** are available for free download at **http://www.flickr.com/photos/speautomotive/collections/**. Photo on left is courtesy of SPE Automotive Division; photo on right is courtesy of Ford Motor Co.