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**SPE® AUTOMOTIVE DIV. NAMES WINNERS OF 48TH-ANNUAL
AUTOMOTIVE INNOVATION AWARDS COMPETITION**

Link to Photos:

<https://www.flickr.com/photos/speautomotive/albums/72157700993437531>

Troy, (DETROIT) MICH.— The Automotive Division of the Society of Plastics Engineers (SPE®) today announced the winners of its 48th-annual ***Automotive Innovation Awards Competition***, the oldest and largest recognition event in the automotive and plastics industries. The announcement was made November 7, 2018 during the 48th SPE Automotive Innovation Awards Gala held at the Burton Manor in Livonia, Mich., USA. The Powertrain category winner was also this year's Grand Award Winner. The Grand Award winner is selected from the winners of each of 9 categories by a panel of Blue Ribbon Judges who are industry experts.

This year's winners are:

CATEGORY: Additive Manufacturing

Window Alignment Fixture

- **OEM Make & Model:** 2017 Ford Motor Co. Mustang Convertible sports car
- **Tier Supplier / Processor:** Stratasys / Stratasys
- **Material Supplier / Toolmaker:** Stratasys / Stratasys Direct Manufacturing
- **Material / Process:** PA 12 35% short carbon fiber/ Fused Deposition Modeling (FDM)

Description: This additive fixture was 30% lighter and cheaper to produce vs. a traditional welded fixture. It was also much faster to manufacture – only 50 hours to build the integrated fixture with handles and mounting brackets. Ergonomics were improved significantly. The plastic fixture allows for easier handling and avoided the requirement for a lift assist. The printed fixture integrated pneumatic control, eyelets for a stowage rack, trigger switch housing, ergonomic handles, gage protector deflector and pneumatic tubing retainers and switch mounts.

CATEGORY: Body Exterior

Thermoplastic Liftgate

- **OEM Make & Model:** 2019 Fiat Chrysler Automobiles Jeep Cherokee SUV
- **Tier Supplier / Processor:** Magna International Inc. / Magna Exteriors Belvidere
- **Material Supplier / Toolmaker:** Trinseo & LyondellBasell / Tycos Tool & Die
- **Material / Process:** DLGF 9411 & Hifax TYC TPO / injection molding

Description: Replacing a steel liftgate with a new thermoplastic design enabled a 28% mass reduction and a 50% tooling and capital investment savings through part integration and manufacturing efficiency. An industry first use of conformal infrared welding behind the MIC grain class A surface increased structural and dimensional performance and enabled quicker processing. Bonded in brackets enabled patent pending tethering attachments without fasteners, improved metal reinforcement efficiency and maintained styling surface wrap in D pillars without sacrificing DLO. All this was accomplished within an 18-month window.

CATEGORY: Body Interior

Integrated Modular Pelvic Bolster

- **OEM Make & Model:** 2018 Ford Motor Co. Lincoln Navigator SUV
- **Tier Supplier / Processor:** Faurecia Interior Systems/ Faurecia Interior Systems
- **Material Supplier / Toolmaker:** LyondellBassell/ Roush Tooling
- **Material / Process:** Profax SG702 PP / injection molding

Description: This application combines 2 unique side impact bolster designs to meet the requirements for 5th and 50th percentile occupants. Integrating them into the map packet resulted in tooling cost savings estimated at \$100K. There was an additional \$100K indirect savings in testing time and \$8 per vehicle cost avoidance if add on bolsters were used. An approximate 10% weight savings was achieved. Modular features were added to improve performance, by increasing flexibility of design, and reduce use of multiple bolster parts.

CATEGORY: Chassis / Hardware

High Strength Self-tapping Composite Nut

- **OEM Make & Model:** 2016 Fiat Chrysler Automobiles Chrysler Pacifica minivan
- **Tier Supplier / Processor:** ITW Deltar Fasteners / ITW Deltar Fasteners
- **Material Supplier / Toolmaker:** Asahi Kasei Plastics / Maple Mold
- **Material / Process:** Leona 90G55 PA66 / injection molding

Description: This composite nut has self-healing properties enabling it to maintain sufficient torque and clamp load even after it has been stripped, unlike the metal nut that this composite nut replaces. Total mass savings is 8g per location x 121 locations for a total vehicle mass savings of 2.1 lbs specific to the Chrysler Pacifica. The estimated cost savings per vehicle is \$3.25. The composite nut can be translated across all OEMs and in many additional applications.

CATEGORY: Environmental

Sustainable Hybrid Composites

- **OEM Make & Model:** 2018 Ford Motor Co. Lincoln Continental luxury sedan
- **Tier Supplier / Processor:** Summit Polymers / Summit Polymers
- **Material Supplier / Toolmaker:** Celanese & International Paper / Summit Polymers
- **Material / Process:** THRIVE & Celstran PP+HC (CF/LGF) PP/RPP / melt compounding followed by injection molding

Description: This is an industry first application of composites combining tree (cellulose) fiber with long glass fiber (LGF) in a polypropylene (PP) matrix to replace 35% short glass-mineral filled PP. A 24% weight savings and a 13% cost savings were realized. A total \$2 million cost savings resulted by reducing weight and reducing cycle times by 20% - 40%. A life cycle assessment improvement was also attained.

CATEGORY: Materials

EMI Shielding Compounds for High-Voltage Cover

- **OEM Make & Model:** 2019 Hyundai Motor Co. Hyundai Nexo SUV
- **Tier Supplier / Processor:** Yura Corporation / Yura Corporation
- **Material Supplier / Toolmaker:** Hanwha Compound / Hyundai Motor Co.
- **Material / Process:** Hanwha Compound ESM-204B PA6 / injection molding

Description: New conductive plastic compound materials for EMI (Electromagnetic Interference) shielding were developed for high-voltage junction box upper covers. The material replaces conventional die cast aluminum covers for reduced weight and manufacturing costs. The materials are Polyamide 6/PPO compounds with hybrid conductive carbon filler (Carbon fiber, nano carbon fiber filler – CNT, Carbon black) not containing metal powder or metal coated fiber. The weight savings is estimated at 30% (0.3kg) and the cost savings is estimated at 70% (\$50 per vehicle.)

GRAND AWARD & CATEGORY: Powertrain

Vacuum Generation System for Brake Assist

- **OEM Make & Model:** 2017 Ford Motor Co. Ford F-150 pickup
- **Tier Supplier / Processor:** Dayco Products / MacLean-Fogg, Engineered Plastics Co.
- **Material Supplier / Toolmaker:** DuPont Automotive / Kaid Tool & Die
- **Material / Process:** Delrin 73M30 POM+PTFE, Minion 520MP PA6 / injection molding

Description: The open/close valve actuation is accomplished via two complimentary resin systems acting in concert to provide for critical no “stick-slip” and no measurable wear after 2,500,000 hot/cold test cycles. Injection molding allows for very close tolerances of critical details necessary for total system performance. A 40% weight savings and a 25% cost savings over current pump systems was achieved.

CATEGORY: Process / Assembly / Enabling Technologies

Integrated Tire Carrier, Rear Camera & Brake Light Assembly

- **OEM Make & Model:** 2018 Fiat Chrysler Automobiles Jeep Wrangler SUV
- **Tier Supplier / Processor:** TMD-Grammer AG Group / Leggera Technologies
- **Material Supplier / Toolmaker:** DuPont / Leggera Technologies
- **Material / Process:** Zytel ST 801 AW PA66 / injection molding

Description: This hybrid composite technology utilizes magnesium injection molding for higher structural strength with reduced weight & polymer over molding for improved impact and corrosion resistance. A 60% weight savings is achieved compared to metal stamping and a 20% weight savings is achieved compared to die casting processing methods. A cost savings of 20% is achieved with an improved load rating from 85 lbs to 115 lbs. The new design eliminates the need for a steel bracket for an indirect cost savings.

CATEGORY: Safety

Interlocking Mechanism Design for Side Impact

- **OEM Make & Model:** 2019 Ford Motor Co. Ford Transit Connect van
- **Tier Supplier / Processor:** Faurecia Interior Systems / Thermolympic SL
- **Material Supplier / Toolmaker:** Trinseo / Meymol SL
- **Material / Process:** Magnum 3325MT ABS / injection molding

Description: This interlocking mechanism improves door trim performance during side impacts by preventing fracture or separation of components that could cause sharp edges. This patent pending design provides strong attachment, force absorption and high impact resistance between two components during side impact. It replaces the need for metal bracket reinforcement solutions (saving 3.70kg in weight per vehicle). A cost avoidance savings of \$30.60 per vehicle and a tooling investment of \$9.88 million is achieved.

CATEGORY: HALL OF FAME

FIRST INJECTION MOLDED THERMOPLASTIC (PC/PBT) ENERGY ABSORBER

The first injection molded thermoplastic (PC/PBT) rear energy absorber for a vehicle bumper system, used on the 2003 Honda Element compact crossover SUV from Honda Motor Company, has been named the 2018 Automotive Innovation Awards Hall of Fame winner. The energy absorber, made with XENOY™ Polycarbonate/Polybutylene Terephthalate (PC/PBT) resin from SABIC (then known as GE Plastics), replaced expanded polypropylene (EPP) foam energy absorbers in less package space at lower cost with better damageability performance. To be considered for a Hall of Fame Award, an automotive plastic or composite component must have been in continuous service in some form for at least 15 years and broadly adopted in the automotive industry. This application certainly qualifies as over 80 million pounds of XENOY™ (PC/PBT) injection molded energy absorbers have been validated and launched on multiple vehicles, in both front and rear bumper system applications, leading to numerous innovations improving crash safety worldwide. Representatives from Honda R&D Americas, Net Shape (now part of Shape Corp.), Shape Corp., and SABIC accepted the award on behalf of the original team that worked to develop the technology.

CATEGORY: LIFETIME ACHIEVEMENT

Dr. Rose A. Ryntz, vice president, Global Advanced Development and Material Engineering at International Automotive Components Group (IAC) was named the 2018 ***Lifetime Achievement Award*** winner. Ryntz is a technical specialist and research leader in automotive plastics technology with more than 35 patents and five trade secrets in production and material technology that have advanced the industry. Her game-changing innovations include the development of damage resistant fascias, automotive interior skin technologies for use in seamless passenger airbag instrument panels and interior and exterior automotive coatings on plastics. Her technical support, with several automotive suppliers, led to several Joint Development Agreements further advancing the industry. These include functionally integrated interior automotive components with heating, lighting, and Human Machine Interface (HMI) content, bi-laminate and compact sheet technologies for use in vacuum formed and In-Mold grain laminate doors and instrument panels and lightweight technologies incorporating natural fiber and bio-based solutions.

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 *Year'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 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 in all phases of plastics and plastic-based composite 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 www.speautomotive.com. For more information on the ***Society of Plastics Engineers***, see www.4spe.org.

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