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SPE[®] NAMES FINALISTS, CATEGORY, GRAND AWARD WINNERS IN 40TH AUTOMOTIVE INNOVATION AWARDS COMPETITION

TROY, (DETROIT) MICH. –The Automotive Division of the Society of Plastics Engineers (SPE[®]) today announced the finalists, category, and Grand Award winners for its 40th-annual ***Automotive Innovation Awards Competition***, the oldest and largest recognition event in the automotive and plastics industries. After a pre-qualification round, surviving nomination teams presented their applications before a panel of automotive and plastics industry experts during two days of judging on September 30 and October 1. Finalists selected from each category advanced to the *Blue Ribbon Judging* on October 11 where category and Grand Award winners were selected. Category and the event's Grand Award winners were announced on November 9 during the ***Automotive Innovation Awards Gala*** at Burton Manor in the suburbs of Detroit.

According to the 2010 ***Automotive Innovation Awards*** program chair, Jeff Helms, global automotive manager, Ticona Engineering Polymers, "We were really pleased with the number of nominations we received this year, the diversity of automakers represented, and the quality of innovation they displayed. At each round of the competition, our judges had a hard time selecting finalists and then winners from all the strong nominations we received. After four decades, it's great to see that innovation is alive and well in the automotive plastics arena and that this industry is coming back stronger than ever with higher quality, better fuel economy, using more sustainable materials and manufacturing, and offering consumers greater features, value, and safety." Finalists and category winners selected from this year's pool of nominations include the following:

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CATEGORY: Body Exterior

• **DUAL MATERIAL SEALING WITH PIT TECHNOLOGY – CATEGORY WINNER**

- **OEM Make & Model:** Ford Motor Co. 2011MY Ford® C-Max® Compact Car
- **Tier Supplier/Processor:** Röchling Automotive AG / Röchling Automotive Italia srl
- **Material Supplier / Toolmaker:** Not Provided / Not Provided
- **Material:** Polypropylene (PP) & Ethylene Propylene Diene Monomer (EPDM)
- **Process:** Projectile Injection Technology (PIT)
- **Description:** Projectile-injection technology (PIT) allowed a hollow EPDM bulb seal to be co-molded with a PP cowl grille in a single process step, producing a single part. By fixing the precise position of the seal, quality improvements were gained during assembly, lower and more easily tunable compression force was achieved, and greater freedom in designing the seal's path was accomplished, saving 30% weight (vs. a separate, extruded seal) and 10% direct costs.

• **NAMEPLATE BADGE (FINALIST)**

- **OEM Make & Model:** Ford Motor Co. 2010MY Ford® F150® Pickup
- **Tier Supplier/Processor:** Tribar Manufacturing / Tribar Manufacturing
- **Material Supplier / Toolmaker:** SABIC Innovative Plastics & Ashland Distribution / Granby Tool Co.
- **Material:** Acrylonitrile Styrene Acrylate (ASA) / Acrylonitrile Butadiene Styrene (ABS)
- **Process:** Injection Molding
- **Description:** This molded-in-color ASA and ABS design provides the appearance of a paint-over-chrome badge without use of paint, leading to a significant cost savings and quality improvement. The injection-molded part's snap-together design reduces cost, has less scrap and rework, eliminates paint adhesion issues, and allows simple series-differentiation via material / finish changes on insertion. The OEM also saw a \$1-million USD direct cost savings on its F150 pickups, and there was significant environmental benefits by eliminating paint.

• **PILLAR APPLIQUÉ (FINALIST)**

- **OEM Make & Model:** Ford Motor Co. 2011MY Ford® C-Max® Compact Car
- **Tier Supplier/Processor:** Dura Automotive & Windsor Mold / Dura Automotive & Windsor Mold
- **Material Supplier / Toolmaker:** EVONIK, BASF, & SABIC Innovative Plastics / Not Provided
- **Material:** Acrylic / ABS
- **Process:** Injection Molding
- **Description:** This complex one-piece pillar appliqué uses vertical, 2-shot rotational stack molding to efficiently produce acrylic / ABS appliqués with integrated glass-run channels and polyurethane (PUR) seals in a single part. The design eliminates tape, and assures precise fit and minimal appliqué-to-glass offset for world-class craftsmanship. Overmolding produces a significantly stronger part, eliminating breakage and the need for impact modifiers. Special scratch-resistant additives improve long-term finish. Additional benefits include 15-25% lower weight and approximately \$12 USD direct cost savings.

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- **INTEGRATED BUMPER ENERGY MANAGEMENT DEVICE (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Edge® Cross-Over Utility Vehicle (CUV)
 - **Tier Supplier/Processor:** Flex-N-Gate Corp. / Flex-N-Gate Corp.
 - **Material Supplier / Toolmaker:** LyondellBasell / Concoors Mold Inc.
 - **Material:** Thermoplastic Polyolefin (TPO)
 - **Process:** Injection Molding
 - **Description:** This injection-molded flexible TPO bumper fascia incorporates the energy-management device into a one-piece design, providing world-class appearance, structural integrity, and impact energy management, while reducing weight 50%, direct costs 20%, and indirect costs \$1/vehicle.

- **BRIGHT BELT WEATHER STRIPS WITH HIGH LUSTER (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co. 2010MY Ford® Fiesta® Subcompact
 - **Tier Supplier/Processor:** Cooper-Standard Automotive Inc. / Cooper-Standard Automotive Inc.
 - **Material Supplier / Toolmaker:** Not Provided / Not Provided
 - **Material:** Not Provided
 - **Process:** Injection Molding
 - **Description:** Stainless steel was replaced by an injection-molded plated ABS cap that snaps into place on the EPDM outer-belt weatherstrip, providing a bright, body-in-white finish, while still ensuring functionality. In addition, the change saved an estimated \$350,000 USD direct and \$350,000 USD indirect cost annually, while reducing weight 428 grams per door.

CATEGORY: Body Interior

- **HEATED STEERING-WHEEL SYSTEM (FINALIST)**
 - **OEM Make & Model:** Hyundai-Kia Motors Co. 2010MY Kia® Optima® Sedan
 - **Tier Supplier/Processor:** LG Hausys, Ltd. / LG Hausys, Ltd.
 - **Material Supplier / Toolmaker:** LG Hausys, Ltd. / LG Hausys, Ltd.
 - **Material:** Polyurethane
 - **Process:** Coating
 - **Description:** This heated steering-wheel system makes use of reaction-injection molded PUR and a unique sprayed-on, silver-impregnated coating-based heating element, which was developed especially for this application. Heating is achieved by the silver-based specialty coating rather than traditionally wrapped / sewn-in heating wire. Not only does the new system reduce weight by 50% (100 g) and reduce tooling and assembly steps, but it also leads to a 5% direct cost savings. In addition, it reduces risks of fire (since the unit operates below 80C), produces more soothing, deep-penetrating far-infrared heat, and also provides antibacterial properties.

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● **INTERIOR TRIM WITH 3-D APPEARANCE (FINALIST)**

- **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Explorer® SUV
- **Tier Supplier/Processor:** Johnson Controls Inc. / Johnson Controls Inc.
- **Material Supplier / Toolmaker:** Dow Automotive / ToolPlas Systems Inc.
- **Material:** ABS
- **Process:** Injection Molding
- **Description:** A new decorative option and an industry first allowed a technical pattern to be injection molded into an interior trim component, preventing distortion in the pattern in deep-draw areas via graining of the substrate rather than incorporating patterned paint film. This provides greater decorative flexibility for the substrate to be molded-in-color, painted, or filmed – all from the same tool. This led to a 10-20% variable cost savings due to use of non-patterned films, and 100% avoidance of multiple substrate tools for different decorative finishes, allowing easy and cost-effective model differentiation.

● **SELF-REINFORCED AIRBAG DOOR SYSTEM – CATEGORY WINNER**

- **OEM Make & Model:** PSA Peugeot Citroën 2007MY PSA® Citroën® C5 Sedan
- **Tier Supplier/Processor:** Visteon Corp. / Visteon Corp.
- **Material Supplier / Toolmaker:** LyondellBasell & Propex Fabrics / Not Available
- **Material:** PP-Fiber-Reinforced PP
- **Process:** Injection Molding
- **Description:** This is the auto industry's first airbag door system that integrates an all-PP construction (PP-fiber-reinforced PP). As such, it is fully recyclable and does not require typical post-mold scoring / weakening of the door flap. The injection-molded door system is the lightest, least-expensive system solution, since additional components and post-mold operations (to enable the door flap to open / hinge) are eliminated. Multi-zone temperature control of the mold was required, as was use of a vacuum-holding system for the fabric insert. The program also required development of a specialized fiber-reinforced material to facilitate overmolding and subsequent adhesion. The resulting system reduced weight 30 and 300% vs. competitive systems and saved approximately \$5 USD/part vs. welded systems. Additional indirect savings of approximately 5% were also accrued, and production scrap is 100% recyclable.

CATEGORY: Chassis & Hardware

● **INTEGRATED CARRIER RAIL FOR REAR PLASTIC DOOR MODULE – CATEGORY WINNER**

- **OEM Make & Model:** Hyundai Motors Co. 2010MY Hyundai® Sonata® Sedan
- **Tier Supplier/Processor:** PYEONG HWA Automotive & Arvin Meritor / Arkal Automotive
- **Material Supplier / Toolmaker:** SABIC Innovative Plastics / Aalbers Tool & Mold
- **Material:** Long-Fiber Thermoplastic (LFT)-PP
- **Process:** Injection Molding
- **Description:** Previous plastic door module designs had separate metal rails that are attached to the module after molding. This innovative design has the window-regulator guide rail molded as part of the plastic door module. Additionally, wire-harness clips are normally a snap-in feature but in this design are integrated into the module. And the drum housing, location pin, and door-handle bracket are also integrated into the design.

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- **STRUCTURAL COMPOSITE RADIATOR SUPPORT (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co. 2010MY Ford® Taurus® Sedan
 - **Make & Model: Tier Supplier/Processor:** Magna International Inc. / Magna International Inc.
 - **Material Supplier / Toolmaker:** Dow Automotive & Composites One / Century Tool & Gage
 - **Material:** LFT-PP
 - **Process:** Compression Molding
 - **Description:** This structural composite radiator support is a single part capable of passing a 5,340 N hood-latch pull test, while saving cost and weight. Compression molded of direct- (inline-compounded) LFT-PP / glass and a glass-mat overlay (for extra strength), the part reduced weight 33%, direct costs 20%, and also lowered part count, materials handling, and assembly time, and replaced coated steel and cast magnesium parts.

- **ENGINE CRADLE MOUNT (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Focus® Sedan & C-Max® Compact Car
 - **Tier Supplier/Processor:** Hutchinson Paulstra / ThyssenKrupp Tallent Ltd.
 - **Material Supplier / Toolmaker:** DuPont Automotive / SPLAST Sp z o.o
 - **Material:** Thermoplastic Elastomer Ether Ester (TEEE)
 - **Process:** Injection Molding
 - **Description:** In this application, an injection-molded TEEE thermoplastic elastomer replaced thermoset rubber thanks to the unique properties of the elastomer and a post-mold forming step that used controlled insertion to achieve proper compression. This design also takes advantage of the elastomer's ability to take a new material property set in order to meet hysteresis requirements. Cost savings of 15% were achieved, and cycle time was reduced 90% vs. thermoset rubber.

- **HIGH-DUTY LIGHTWEIGHT ENGINE MOUNTS (FINALIST)**
 - **OEM Make & Model:** BMW AG 2009MY BMW® 550i® & 750i® Sedans
 - **Tier Supplier/Processor:** ContiTech Vibration Control GmbH / ContiTech Vibration Control GmbH
 - **Material Supplier / Toolmaker:** BASF SE / Not Provided
 - **Material:** 50%-Glass-Reinforced (GR) Polyamide (PA, Nylon) 6/6
 - **Process:** Injection Molding
 - **Description:** For the first time, a highly loaded transmission cross-beam with integrated hydraulic mounts was achieved in a lightweight plastic design thanks to use of injection-molded, 50%-glass-reinforced PA 6/6. Replacing rubber/steel and rubber/aluminum, the nylon assembly was designed to meet the rigorous requirements of this application with regard to acoustics, crash, fatigue, and high-temperature stability. The result was a 50% weight savings, as well as in-house production integration at the systems supplier, leading to further reductions in logistics and transportation costs.

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CATEGORY: Environmental

- **RECYCLED POLYOL FOR SEAT FOAM – CATEGORY WINNER**
 - **OEM Make & Model:** Chrysler Group LLC 2011MY Chrysler® Jeep® Grand Cherokee SUV
 - **Tier Supplier/Processor:** Magna Seating of America / MS Chemical Technologies (Magna)
 - **Material Supplier / Toolmaker:** InfiChem Polymers LLC / Not Provided
 - **Material:** Aromatic Polyether Polyols (Repolymerized Polyurethane (PUR))
 - **Process:** Foamed Urethane
 - **Description:** This is the first industrial production application of flexible urethane seat foams produced with polyols manufactured from post-industrial scrap foam. A two-stage, closed-loop recycling process converts the scrap foam back into a polyol product, resulting in zero waste going to the landfill and allowing up to 10% recycled content in new parts. A unique process to reformulate the reclaimed polyol to meet OEM specs was also developed for this application. Neither weight nor direct cost were negatively impacted and an estimated \$348,000 USD indirect cost savings was achieved, along with reduced CO2 and landfilling.

- **BIO-BASED TPU OVER RECYCLED ABS TAMBOUR DOOR (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Lincoln® MKZ Luxury Sedan
 - **Tier Supplier/Processor:** International Automotive Components / Leon Plastics Inc.
 - **Material Supplier / Toolmaker:** Merquinsa & ACI Auto Group / Not Provided
 - **Material:** Thermoplastic Polyurethane (TPU), Polycarbonate (PC), & ABS
 - **Process:** Injection Molding
 - **Description:** This is the auto industry's first use of a bio-based TPU, which was injection overmolded on top of a PC-ABS derived from 100% post-industrial scrap. Both materials were a drop-in replacement on the tambour door. While weight was the same, a direct cost savings of \$0.41/part was achieved while making the application both more environmentally friendly and ensuring 100% recyclability at end of part life.

CATEGORY: Materials

- **ON-ENGINE OIL FILTER MODULE (FINALIST)**
 - **OEM Make & Model:** Chrysler Group LLC Multiple/ 2010MY Chrysler Pentastar Engines
 - **Tier Supplier/Processor:** Hengst of North America, Inc. / Hengst of North America, Inc.
 - **Material Supplier / Toolmaker:** BASF Corp. / VHM
 - **Material:** Hydrolysis-Resistant, 35% -GR PA 6/6
 - **Process:** Injection Molding
 - **Description:** This material is a hydrolysis-resistant PA 6/6 modified during polymerization to increase hot glycol resistance at temperatures from 120-130C and to extend hot-air heat-aging performance. It also offers reduced swelling and improved weld strength in this application that is subject to oil and coolant contact. Because of the material's higher heat and chemical resistance, it allowed this oil-filter module to be mounted directly in the engine valley, eliminating 148 parts, reducing weight 43%, and saving over 60% direct costs, plus indirect costs owing to greater reliability.

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- **SEAMLESS PASSENGER-AIRBAG (PAB) INSTRUMENT PANEL (IP) TOPPER (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co.
 - **Make & Model:** 2011MY Ford® Lincoln® MKX CUV
 - **Tier Supplier/Processor:** Automotive Components Holdings, LLC/ Leon Plastics Inc.
 - **Material Supplier / Toolmaker:** Canadian General Tower Ltd. / Leon Plastics Inc.
 - **Material:** Polyvinyl Chloride (PVC)
 - **Process:** Extrusion / Hand Wrapping
 - **Description:** This seamless passenger-airbag IP topper molded from vinyl provides a cost-effective alternative to more costly leather and synthetic-leather materials made from urethane while providing upscale aesthetics. A special topcoat is used to provide a low-squeak finish and to improve mar resistance. Like previous materials, cut & sew stitching and hand wrapping via a bladder press (for bonding) are used to join cover material to substrate. No tooling changes were required.

- **REACTOR GRADE TALC-FILLED POLYPROPYLENE (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co.
 - **Make & Model:** 2011MY Ford® Explorer® SUV
 - **Tier Supplier/Processor:** NYX, Inc. / NYX, Inc.
 - **Material Supplier / Toolmaker:** Flint Hills Resources / Toolplas Systems Inc.
 - **Material:** Reactor-Grade Talc-Filled PP
 - **Process:** Injection Molding
 - **Description:** In an industry first, reactor-grade, talc-filled PP was used to increase stiffness in a quarter-trim panel while allowing a decrease in wallstock and improvements in craftsmanship. By eliminating the burden of secondary compounding, a lower carbon footprint was achieved and the supplier gained greater lot-to-lot consistency, higher stiffness that allowed for thinner parts to be molded (reducing mass 7%), and saving an estimated \$500,000 annually over precompounded PP grades.

- **LOW-GLOSS SOFT-FEEL RESIN (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Edge® & Lincoln® MKX® CUVs
 - **Tier Supplier/Processor:** Johnson Controls Inc. / Johnson Controls Inc.
 - **Material Supplier / Toolmaker:** LyondellBasell / Toolplas Systems Inc.
 - **Material:** Engineered Polyolefin
 - **Process:** Not Stated
 - **Description:** A new low-gloss, soft-touch TPO resin was developed for these applications, offering improved aesthetics, better haptics, and greater durability. Previously, to achieve this combination of properties, more costly wrapping or painting of the substrate was required. The new applications, the first in North America, led to cost reductions of \$4 USD/part vs. painted and \$5 USD/part vs. wrapped substrates.

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● **TURBOCHARGED ENGINE COVER – CATEGORY WINNER**

- **OEM Make & Model:** General Motors Co. 2010MY GM® Ecotec® 2L Turbo Engine for Cadillac® CTS Luxury Sports Sedan
- **Tier Supplier/Processor:** Camoplast Inc. / Camoplast Inc.
- **Material Supplier / Toolmaker:** DuPont Automotive / Camoplast
- **Material:** PA Copolymer with Extended HS
- **Process:** Injection Molding
- **Description:** This injection-molded turbocharged engine cover features a PA copolymer with new “Shield” technology for high-heat stability while doubling the heat-aging property retention vs. conventional nylons and some higher cost specialty resins. The material handles the application’s routine 180C service temperature and periodic 200C temperature excursions while offering easy processing, good surface finish, faster cycle times, and extended performance at up to 30% lower cost than specialty resins in this demanding underhood application.

● **NICKEL-METAL HYDRIDE (NI-MH) BATTERY CELL ENCLOSURE (FINALIST)**

- **OEM Make & Model:** BMW AG 2010MY BMW® X6® ActiveHybrid CUV
- **Tier Supplier/Processor:** Cobasys LLC / PM Plastics Co.
- **Material Supplier / Toolmaker:** AsahiKasei Plastics / Arlen Tool Co. Ltd
- **Material:** Polyphenylene Ether (PPE) / PP Copolymer
- **Process:** Not Provided
- **Description:** This is the first use of engine coolant as a cell-cooling medium for Ni-MH battery cells for a hybrid cross-over utility vehicle. A special PPE/PP copolymer provides lightweight stiffness and creep resistance, plus seals out moisture for this battery-cell enclosure while providing resistance to alkali battery and coolant chemicals. The high-productivity resin provided excellent molding productivity in thin walls. A special film-insert molding process and secondary welding technology also were developed for this application. The unit saves an estimated 2.3 kg of weight vs. alternative resins considered for the application.

CATEGORY: Performance & Customization

● **MODULAR SUNVISOR STORAGE SYSTEM (FINALIST)**

- **OEM Make & Model:** Ford Motor Co. 2012MY Ford® Mustang® Sports Car
- **Tier Supplier/Processor:** Irvin Automotive Products, Inc. / Fortis Plastics LLC
- **Material Supplier / Toolmaker:** Ticona Engineering Polymers / Yusei Holdings
- **Material:** Polyoxymethylene (POM, Acetal)
- **Process:** Injection Molding
- **Description:** This modular sunvisor-based storage system functions as a low-cost alternative to an overhead console to allow customer to customize storage for sunglasses, garage-door openers, coin or CD holders, organizers for pen and notepad, as well as cell phones. Interchangeable components injection molded from POM snap in and lock onto the base on the sunvisor, making changeover quick and easy.

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• **DUAL-LENS CUP-HOLDER LIGHT (FINALIST)**

- **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Explorer® SUV
- **Tier Supplier/Processor:** Chicago Miniature Lighting, LLC (ChML) / ChML
- **Material Supplier / Toolmaker:** Not Provided / Global Management & Sales Group
- **Material:** Not Provided
- **Process:** Injection Molding
- **Description:** In this next-generation interior-lighting application, a 1-piece design integrates primary illumination surface and show-surface lenses for improved craftsmanship, 10% weight savings, and \$0.35 USD cost savings vs. previous 2-piece lens designs. The design also reduced assembly costs and lowered warranty issues.

• **CHROME FILM THERMOFORMED BUMPERS – CATEGORY WINNER**

- **OEM Make & Model:** Ford Motor Co. / Retro USA 2009MY Retro USA Limited-Edition “Bullit” Mustang® Sports Car
- **Tier Supplier/Processor:** Retro USA / Orion Plastics Inc. & Brentwood Industries, Inc.
- **Material Supplier / Toolmaker:** Mytex Polymers, Inc. & Soliant LLC / Castek
- **Material:** Chrome Paint Film Over TPO
- **Process:** Thermoforming
- **Description:** This is the largest and thinnest chrome-film thermoformed TPO fascia to date. It offers excellent impact resistance and gravelometer performance, is fully recyclable, and offers a lustrous chromed surface while eliminating hexavalent-chromium chemicals. The result is a lighter, less costly bumper cover that is more environmentally benign. Low tooling costs make this technology very attractive for quick-change transition parts at any production volume.

CATEGORY: Powertrain

• **THERMOPLASTIC OIL PAN MODULE (FINALIST)**

- **OEM Make & Model:** Chrysler Group LLC 2010MY Chrysler® 5.7L V8 Hemi Engine
- **Tier Supplier/Processor:** MAHLE North America / MAHLE North America
- **Material Supplier / Toolmaker:** BASF Corp. / Integrity Tool & Mould Inc.
- **Material:** Impact-Modified, 35%-GR PA 6
- **Process:** Injection Molding
- **Description:** A next-generation, all-plastic oil-pan module is specifically designed for this trail-rated vehicle to be able to channel oil up hill on a 60% grade. New levels of parts integration have incorporated the pan’s windage tray with cam scraper function, oil pickup tube, seal, fasteners, and oil plug in an injection-molded assembly that is joined via vibration and infra-stake welding. The 35%-glass-reinforced PA 6 base material was optimized for stone impact and retention of mechanicals when exposed to hot oil, cold temperatures, and road salts. Replacing stamped steel, quiet steel, and cast aluminum, the all-plastic oil pan reduces weight 41%, saves 50% on tooling costs, and eliminates 4 assembly operations.

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- **DIESEL EXHAUST FLUID (DEF) SYSTEM – CATEGORY & GRAND AWARD WINNER**
 - **OEM Make & Model:** Ford Motor Co. 2011MY Ford® SuperDuty® Pickup
 - **Tier Supplier/Processor:** Robert Bosch LLC / Kautex Textron GmbH & Co. KG
 - **Material Supplier / Toolmaker:** Multiple / Multiple
 - **Material:** Multiple
 - **Process:** Injection Molding
 - **Description:** This is the first high-volume pickup truck application to use an all-plastic system to fill, store, and deliver diesel-exhaust fluid (DEF) to the exhaust system to meet stringent diesel-emissions requirements. Multiple materials and molding processes are featured on this system, 90% of whose components are polymeric, including the plastic filler-pipe assembly (which requires no clamps), plastic supply module with integrated pump, reverting valve, pressure sensor, heater, and filtration unit. Additional plastic components in the system include heated intake reservoir (with integral heater), level sensor, filter, and temperature sensor. The only other type of material that could have withstood the DEF fluid would be stainless steel, which would have been 7x heavier and have cost 40% more.

- **ELECTRONIC THROTTLE-CONTROL ACTUATOR (FINALIST)**
 - **OEM Make & Model:** General Motors Co. All (Global)
 - **Tier Supplier/Processor:** Continental Automotive / Multiple
 - **Material Supplier / Toolmaker:** DSM Engineering Plastics / Not Provided
 - **Material:** PA 4/6 & Polybutylene Terephthalate (PBT)
 - **Process:** Injection Molding
 - **Description:** This electronic throttle-control actuator meets or exceeds all USCAR global standards and focused on mass reduction. The unit makes use of injection molded PA 4/6 and PBT resins to produce 7 innovative plastic components: an ultra-thin-wall carbon fiber-reinforced PA 4/6 bushing, ultra-high-strength gears with outstanding dimensional stability, high-temperature electric motor brush card, and a uniquely designed cover/cap combination. In total, 43 g of weight were saved on this program vs. previous designs.

CATEGORY: Process, Assembly, & Enabling Technologies

- **MULTI-FUNCTIONAL EXCHANGE BLOW MOLDING AIR DUCT (FINALIST)**
 - **OEM Make & Model:** Subaru 2010MY Subaru® Legacy® Sedan & Outback® CUV
 - **Tier Supplier/Processor:** Excell USA Inc. / Excell USA Inc.
 - **Material Supplier / Toolmaker:** Channel Prime Alliance & ExxonMobil Chemical / Excell Corp.
 - **Material:** PP & PP / Thermoplastic Vulcanizate (TPV)
 - **Process:** Multi-Functional Exchange Blow Molding
 - **Description:** This multi-functional-exchange blow-molded air duct integrates the resonator, brackets, and pipe in a single step using a combination of hard HDPE and soft TPV resins via a new process. The part replaced a combination of rubber hose, metal and resin ducts, the resonator, and clamps with a single part produced in a single process step where material change, wall thicknesses, and inner pressure are all controlled very precisely. The application saved an estimated 30-40% in weight and 25-35% in both direct and indirect costs.

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- **HIGH GLOSS FINISH WITHOUT PAINT – CATEGORY WINNER**
 - **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Escape® SUV
 - **Tier Supplier/Processor:** Summit Polymers, Inc. / Summit Polymers, Inc.
 - **Material Supplier / Toolmaker:** Samsung Cheil Industries, Inc. / Namdo Tool Co.
 - **Material:** PC & ABS
 - **Process:** Injection Molding
 - **Description:** These are the first molded-in-color, high-gloss, jet-black ABS instrument panel, console, and door-finish panel applications produced by a modified injection process that eliminates paint while avoiding molding defects such as flow marks and knitlines. By increasing the cavity-side tool temperature to between 110 and 160C, before and during injection, then quickly cooled down before the part is injected, a highly aesthetic surface is achieved. A new grade of ABS resin was developed to deliver deep, jet-black color while also meeting head-impact criteria. The application increased aesthetics, eliminated paint, improve environmental compatibility, and lowered direct costs by 20-65%.

- **CAM COVER WITH INTEGRATED VARIABLE-VALVE TIMING (FINALIST)**
 - **OEM Make & Model:** Chrysler Group LLC 2011MY Chrysler® Jeep® Cherokee SUV
 - **Tier Supplier/Processor:** Bruss NA / Bruss NA
 - **Material Supplier / Toolmaker:** BASF Corp. / Active Burgess
 - **Material:** 35%-GR PA 6/6
 - **Process:** Injection Molding
 - **Description:** This is the first time that a plastic surface has been used for a cam variable-valve timing cam cover. Holding a positional tolerance of 0.5 mm and required to pass 100% inspection, the application required development of a special workstation with laser and optical measurement tools to verify dimensional compliance. High-flow, 35%-glass-reinforced PA 6/6 was injection molded for this application and replaced machined die-cast aluminum while saving 2,200 grams and 25% direct material costs.

CATEGORY: Safety

- **FILM FOR VACUUM-FOLDED AIRBAG APPLICATION (FINALIST)**
 - **OEM Make & Model:** Ferrari S.p.A. 2010MY Ferrari® 458 Italia® Supercar
 - **Tier Supplier/Processor:** Takata Corp.
 - **Material Supplier / Toolmaker:** Bemis Assoc. Inc. & Schreiner Group / Takata Corp.
 - **Material:** Co-Extruded Laminated Film
 - **Process:** Film Extrusion / Vacuum Sealing
 - **Description:**
 - To meet styling trends for smaller airbag cushion package space without loss of functionality, a packaging process common in the food and pharmaceutical industries – vacuum-sealed films – has been applied to automotive safety restraints for the first time. New tool design and manufacturing equipment were required to produce the co-extruded, laminated vacuum-sealed pouches in order to meet airbag performance requirements and environmental durability for the life of the vehicle. Additionally airbag module mass was reduced by 15-30% and package size was greatly reduced.

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- **ADVANCED PASSENGER AIRBAG CHUTE (FINALIST)**
 - **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Lincoln® MKX CUV
 - **Tier Supplier/Processor:** Automotive Components Holdings, LLC (ACH) / ACH
 - **Material Supplier / Toolmaker:** Mitsubishi Chemical USA, Inc. / Not Provided
 - **Material:** TPO
 - **Process:** Injection Molding
 - **Description:** A unique cavity / core tool design at the hinges allowed a special “hook and window” feature to be created on this advanced passenger-airbag chute that intersects the chute’s inner wall rather than the top flange. The result is reduced squeak and rattle, vertical support, and better PAB-to-chute alignment, as well as a savings of 612 g and \$4.36 USD / vehicle.

- **INFLATABLE SEATBELTS – CATEGORY WINNER**
 - **OEM Make & Model:** Ford Motor Co. 2011MY Ford® Explorer® SUV
 - **Tier Supplier/Processor:** Key Safety Systems / Not Provided
 - **Material Supplier / Toolmaker:** Not Provided / Not Provided
 - **Material:** Not Provided
 - **Process:** Not Provided
 - **Description:** Special tubular webbing used in the shoulder portion of rear seatbelts hides an inflatable airbag that is triggered when front driver and passenger airbags are triggered, protecting second- and third-row occupants, and particularly upper- and lower-percentage occupants. During inflation, the airbag breaks through the tubular webbing, expanding across the chest area and a special coating helps the airbag stay inflated for 6 sec. to protect for multiple crash modes. A new weaving technique was used to form the tubular webbing and a frangible edge that allows the belt to split and the airbag to deploy.

This year’s **SPE Automotive Innovation Awards** gala was held at Burton Manor (www.Burtonmanor.net) in Livonia, Mich. on November 9. All nominations accepted for this year’s competition were on display at the event with signage explaining their innovations.

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 module and why it merits the claim as the *Year’s Most Innovative Use of Plastics*. This annual event typically draws 600 to 800 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.

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SPE Announces Finalists for 40th Automotive Innovation Awards Competition
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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-composite developments in the global transportation industry. Topic areas include applications, materials, processing, equipment, tooling, design, and development.

For more information about the ***Automotive Innovation Awards Competition and Gala***, please visit the SPE Automotive Division's website at <http://speautomotive.com/inno> and <http://speautomotive.com/awa>, or contact the group at +1.248.244.8993, or write SPE Automotive Division, 1800 Crooks Road, Suite A, Troy, MI 48084, USA. For more information on the Society of Plastics Engineers or other SPE events, visit the SPE website at www.4spe.org, or call +1.203.775.0471.

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High-resolution digital images for all nominations are available for download at:
<http://www.flickr.com/photos/speautomotive/collections/72157625138215603/>