



For Immediate Release: October 25, 2023

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CHEVROLET CORVETTE E-RAY WINS 2023 VEHICLE ENGINEERING TEAM AWARD FROM SPE® AUTOMOTIVE DIV.

TROY, MICH. —The 2024 model year (MY) Chevrolet Corvette E-Ray and a team from General Motors Co. (GM, Detroit) and its suppliers that developed the electrified, all-wheel drive (eAWD) sports car have been named the winners of this year's **Vehicle Engineering Team Award (VETA)** given by the Automotive Div. of the Society of Plastics Engineers (SPE®). The VETA award was created in 2004 to recognize the technical achievements of entire teams — comprised of automotive designers and engineers, tier integrators, materials suppliers, toolmakers, and others — whose work in research, design, engineering, and manufacturing has led to significant integration of polymeric materials on notable vehicles. The joint team will be honored for its contributions at the 52nd ***SPE Automotive Innovation Awards Gala*** on **Nov. 8, 2023**.

Given periodically, earlier VETA winners include the teams that developed the:

- 2004 MY Porsche Carrera GT supercar,
- 2009 MY Ford Flex crossover utility vehicle (CUV),
- 2010 MY Ford Taurus sedan,
- 2011 MY Ford Explorer sport utility vehicle (SUV),
- 2011 MY Chrysler 200 & Dodge Avenger sedans,
- 2013 MY SRT Viper supercar,
- 2018 MY Chevrolet Traverse SUV,
- 2020 MY Chevrolet Corvette sports car,
- 2021 MY Ford F-150 pickup, and
- 2022 MY Cadillac Lyriq electric SUV

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The eAWD Corvette E-Ray, whose formidable torque enables it to accelerate from 0-60 miles/hour in a mere 2.5 seconds, is the quickest accelerating Corvette in Chevrolet history. Described as *not* a plug-in-hybrid, the E-Ray utilizes two separate propulsion systems: a naturally aspirated 6.2-liter, small-block V-8 engine, which powers the rear wheels and generates 495 horsepower and 470 foot-pounds of torque, plus an electric motor, which contributes an additional 160 horsepower and 125 foot-pounds of torque to the front wheels via a 1.9-kilowatt battery pack positioned in the tunnel area between the seats. In the E-Ray's case, electrification is used to enhance performance, although it still offers respectable fuel-efficiency for such a high-performance package. No need to plug in to recharge battery packs, which replenish their charge via regenerative energy during coasting and braking as well as normal driving. The battery packs provide the vehicle with an electric-only, stealth driving mode at startup that provides top speeds of 45 miles/hour and limited range used to exit a neighborhood quietly before the engine kicks in. Standard carbon ceramic brakes and magnetic ride control complement the vehicle's staggered 20- and 21-inch Michelin all-season tires when not racing, making it all-season capable. The vehicle's low, wide stance is 3.6-inches wider overall than the 2020 MY Corvette Stingray.

Not surprising, the 2024 E-Ray features numerous plastic and composite innovations that support the multi-patented electrified propulsion system. Many of these technologies were nominated in other categories of SPE's 2023 Automotive Innovation Awards Competition, including the following:

- Aftermarket & Limited Edition/Specialty Vehicles Category: **Carbon Fiber Wheel** — This fifth-generation carbon fiber-reinforced epoxy wheel features new diamond weave technology and satin-finish paint to achieve a Class A finish and is produced in a patented process that is scalable and reproducible. Versus aluminum wheels, mass is 30-50% lower yet meets stringent OEM durability and performance requirements. With lower unsprung mass, the composite wheels improve traction and braking, suspension responsiveness and dynamic steering, plus acceleration. Lighter, yet with higher stiffness and resonant frequency and better damping, the wheels also reduce noise transmission to the driver. The *system supplier* and *material processor* for this application is Carbon Revolution. The *material* used is woven carbon fiber-reinforced epoxy.
- Aftermarket & Limited Edition/Specialty Vehicles Category: **Hybrid Battery Interconnect Board (ICB)** — This patented hybrid battery interconnect board features small and delicate metal current collectors, buss bars, and sense lines in a very compact design to fit in limited packaging space. The 20% fiberglass-reinforced polyamide 6 (GR/PA6) grade was selected for its ability to offer high levels of functional integration in limited space plus be compatible with snapfits, heat staking, ultrasonic welding, and adhesive bonding. The material also is heat stabilized and flame retardant. Laminated core-block inserts were used in rotary injection tooling for venting and to control stampings during overmolding. The *system supplier*, *material processor*, and *tooling supplier* for the application was Sun Microstamping Technologies; the *material supplier* was BASF Corp.; and the *material* used was Ultramid B3UG4 PA6.

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- Aftermarket & Limited Edition/Specialty Vehicles Category: **Plastic Oil Cooling Lines** — Replacing aluminum with flexible rubber hose, for the first time an injected molded plastic fitting is laser welded to extruded plastic tubing and assembled to an aluminum block with a steel plate for structural rigidity while permitting the current system interfaces to be used in limited packaging space. Mass was reduced 30% and direct cost 23% while improving the oil cooling circuit pressure drop by 51% versus benchmark technology. The neat, semi-flexible PA6/10 polymer contains 62% bio-based monomer and offers good cold-temperature impact, chemical resistance, and withstands short-term temperature spikes. The *system supplier*, *material processor*, and *tooling supplier* for this application was Automotive Veritas de México, S.A. de C.V.; the *material supplier* was EMS-Grivory; and the polymer used was Grilamid XE 3975 PA6 & Grilamid 2S25WHLX/10 HIP.
- Materials Category: **Battery Module Side Plates** — By replacing metals with UL94 V0 fiberglass-reinforced polyarylamide (GR/PARA) resin to injection mold the side plates for this battery module, extremely flat parts with high dimensional accuracy, stiffness, and strength were achieved in a complex geometry. The high-modulus, creep-resistant flame retardant (FR) polymer eliminated the need for compression limiters and electrical isolation films, yet withstands extreme pressures from cell expansion and met all mechanical requirements. Additionally, part count was reduced from four to one and many functional features were incorporated in the patented side plates that would not have been possible in metals. Mass was reduced 37% and cost 55%. The *system supplier* and *material processor* for the application was Novares Group; the *material supplier* was RTP Co.; the *material* used was RTP 299 K X 138337 E BLACK; and the *toolmaker* was Liberty Molds, Inc.
- Process/Assembly/Enabling Technologies Category: **Battery Module Structure** — This all-thermoplastic battery structure combines two side plates and 45 repeating spacers bolted together to hold pouch-style batteries. The patented, volumetrically efficient design withstands high cell expansion forces during battery use while eliminating the need for 55 compression limiters plus isolation countermeasures necessary with metals. Side plates are injection molded with 50% GR/PARA while spacers are injection molded with 45% fiberglass-reinforced polyphthalamide (GR/PPA). Both materials required high molding precision, dimensional accuracy, flame retardance, and the ability to integrate a variety of functional features that facilitate assembly. Versus aluminum, both mass and cost are reduced. GM was the *systems supplier*; Novares Group was the *material processor*; RTP Co. and Solvay SA were the *material suppliers*; the *polymers* used were RTP 299 K X 138337 E BLACK (PAA FR/GF 50) for side plates and Amodel A-1145 HS BK 324 (PPA/GF45) for the repeating frames; and Liberty Molds, Inc. was the *toolmaker*.

In addition, the Corvette E-Ray also features a number of carryover composites parts from the 2020 MY Corvette Stingray, a 2019 VETA winner. These include:

- Body Exterior Category: **Rear Bulkhead Window Frame; Rear Fascia Assembly; and Rear Surround Frame;**
- Chassis & Hardware Category: **Precision Wheel-Balance System and Underbody Tunnel Structural Closeout;**
- Materials Category: **SMC/LMC Front & Rear Trunk Components;**

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- Powertrain Category: **Rear Induction Duct;**
- Process, Assembly & Enabling Technology Category: **Pultruded Rear Bumper and Rear Service Doors.**

“We’re incredibly proud to offer the first electrified and first all-wheel drive Corvette to customers,” Josh Holder, Chevrolet Corvette chief engineer said. “For more than 70 years now, mixed material construction has been a cornerstone of Corvette’s strength and speed. We’re grateful to win a VETA award and we plan to continue to push the boundaries.”

The OEM and supply teams that worked on the 2024 Chevrolet Corvette E-Ray will be honored at this year’s SPE Automotive Innovation Awards Gala on November 8th at Burton Manor in Livonia in the Detroit suburbs. That event begins with a VIP Cocktail Reception sponsored by Celanese starting at 4:00 p.m. At 4:30 p.m., the main exhibit area opens for general admission guests to review the Automotive Innovation Awards part nominations and vehicle displays. Dinner begins at 6:00 p.m. and the awards program itself runs from 7:00-9:00 p.m. The evening concludes with an Afterglow from 9:00-11:00 p.m.

SPE’s Automotive Innovation Awards Program is the oldest and largest competition of its kind in the automotive plastics industry. 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 up 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.

SPE’s mission 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 aspects of plastics and plastic based-composites developments in the global transportation industry, including applications, materials, processing, equipment, tooling, design, and development.

For more info on the SPE Automotive Innovation Awards Gala: <https://speautomotive.com/spe-automotive-div-innovation-awards-2023/>

For more info on the SPE Automotive Division: <https://speautomotive.com/>

For more info on the Society of Plastics Engineers: <https://www.4spe.org/>

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TROY, MICH. — On **November 8**, a team from General Motors Co. and its suppliers that developed the 2024 MY Chevrolet Corvette E-Ray will be honored as winners of the 2023 **Vehicle Engineering Team Award (VETA)** given by the Automotive Div. of the Society of Plastics Engineers (SPE®) at its 52nd-annual ***SPE Automotive Innovation Awards Gala***. The wide-bodied, eAWD sports car, which accelerates 0-60 miles/hour in a mere 2.5 seconds, is the quickest accelerating Corvette in Chevrolet's 70-year history thanks to a dual-propulsion system pairing a naturally aspirated small-block V-8 engine, which powers the rear wheels, with an electric motor, which powers the front wheels.

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TROY, MICH. — Among the many innovations on the 2024 Chevrolet Corvette E-Ray that were made possible by plastic and composite technologies are a number of components on the vehicle's unique dual-propulsion system and multi-patented battery technology. The E-Ray was selected by a blue ribbon panel of judges as this year's winner of the 2023 **Vehicle Engineering Team Award (VETA)** given by the Automotive Div. of the Society of Plastics Engineers (SPE®). A team from General Motors Co. and its suppliers that developed the vehicle will be honored on **November 8** at the 52nd-annual ***SPE Automotive Innovation Awards Gala***.

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TROY, MICH. — While it offers impressive track performance, thanks to a combined 655 horsepower from its dual-propulsion, electrified AWD system, the 2024 MY Chevrolet Corvette E-Ray's low, wide-bodied stance, magnetic ride control, and adaptive eAWD system also maintain grip on slippery roads and provides a boost of torque when climbing steep roads. In fact, when combined with special Michelin all-weather tires, the E-Ray handles wet or snowy driving conditions with aplomb. The team from General Motors Co. and its suppliers that developed the technology-intensive sports car will be honored on **November 8** as winners of the 2023 **Vehicle Engineering Team Award (VETA)** given by the Automotive Div. of the Society of Plastics Engineers (SPE®) at its 52nd- annual ***SPE Automotive Innovation Awards Gala***.

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