

Solvay Announces Polimotor 2 All-Plastic Engine Project Will Mold its Oil Pump Housing from AvaSpire® PAEK Ultra Polymer

Alpharetta, Ga., June 21, 2016 – Solvay, a leading global supplier of high-performance polymers, announced today that its AvaSpire® AV-651 CF30 polyaryletherketone (PAEK) will form three sections of the Polimotor 2 engine's external dry sump modular oil pump housing. Led by legendary automotive innovator Matti Holtzberg, the Polimotor 2 project aims to design and manufacture a next-generation, all-plastic engine for competitive racing in 2016. Solvay is a leading materials sponsor for this highly anticipated technical endeavor.

“Solvay’s unmatched selection of specialty polymers offered several possible options for replacing the typically aluminum pump components, including its high-performing Ryton® PPS and KetaSpire® PEEK products,” said Holtzberg, who is also president of Composite Castings, LLC, based in West Palm Beach, Fla. “But we found that this particular grade of AvaSpire® PAEK delivered the targeted weight reduction with an optimal balance of toughness, dimensional stability and other qualities required to successfully withstand the rigors of the Polimotor 2’s oil pump.”

Each of the three injection molded sections weighs 0.09 kg (0.2 lbs) compared to 0.19 kg (0.42 lbs) for their aluminum counterparts. Overall, replacing the entire metal housing with one molded from AvaSpire® PAEK delivered a total weight reduction of 0.27 kg (0.6 lbs) while meeting the desired performance requirements of the oil pump.

A 30 percent carbon fiber-reinforced compound, AvaSpire® AV-651 CF30 PAEK delivers higher strength, stiffness and fatigue resistance compared to base AV-651 grades, and enhanced weight reduction vs. glass fiber-reinforced AvaSpire® PAEK grades. The material’s long-term thermal oxidative stability approaches that of carbon fiber-reinforced PEEK, but it delivers better dimensional stability and warp resistance during injection molding.

Michigan-based Molding Concepts injection molded the three net shape parts. They were then machined by Allegheny Performance Plastics, LLC, a Pennsylvania-based processor of high-performance thermoplastics.

“The excellent machinability of AvaSpire® AV-651 CF30 PAEK enabled Allegheny to achieve the extremely tight tolerances necessary for the pump’s gear tip clearance and sealing surfaces, while achieving very good surface finishes,” said Greg Shoup, president of Allegheny Performance Plastics.

AvaSpire® AV-651 CF30 PAEK is well-suited to form the structural components of Polimotor 2’s oil pump housing, which will encounter oil temperatures approaching 140°C (284°F) and internal pressures cycling between 2.8 and 5.5 bars.

“Like Solvay’s Ryton® PPS or KetaSpire® PEEK polymers, AvaSpire® PAEK is attracting increasing interest for the unique benefits it offers automotive component applications,” said Brian Baleno, global automotive business development manager for Solvay Specialty Polymers. “Specifically, AvaSpire® PAEK offers the most optimal balance of toughness and elongation within our specialty polymers portfolio, which is prompting evaluation of these polymers for use as vacuum pump vane tips, bearing cages and cable ties.”

The Polimotor 2 project aims to develop an all-plastic, four-cylinder, double-overhead CAM engine that weighs between 138 to 148 lbs (63-67 kg), or about 90 lbs (41 kg) less than today's standard production engine. Holtzberg's groundbreaking program will leverage Solvay's advanced polymer technologies to develop up to ten engine parts. In addition to the oil pump components, other parts include cam sprockets, fuel assembly components and O-rings, water cooling fixtures, throttle body parts and other high-performance components. Besides AvaSpire® PAEK, other Solvay materials targeted for use encompass Amodel® polyphthalamide (PPA), KetaSpire® polyetheretherketone (PEEK), Radel® polyphenylsulfone (PPSU), Ryton® polyphenylene sulfide (PPS), Torlon® polyamide-imide (PAI) and Tecnoflon® fluoropolymer (FKM).

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About Allegheny Performance Plastics

A division of Pittsburgh, Pennsylvania-based Allegheny Plastics Inc. Allegheny Performance Plastics has been processing high-performance thermoplastics for technically advanced molded parts since the 1960s. Today we are a leading global supplier of functional thermoplastic parts for use in the transportation and outdoor power equipment industries which require high performance polymers and demanding specifications. Through our internal resources and industry channel partnerships, Allegheny Performance Plastics provides outstanding customer support from initial part design through the rate production stage.

About Solvay Specialty Polymers

Solvay Specialty Polymers manufactures over 1500 products across 35 brands of high-performance polymers – fluoropolymers, fluoroelastomers, fluorinated fluids, semi-aromatic polyamides, sulfone polymers, aromatic ultra-high performance polymers, high-barrier polymers and cross-linked high-performance compounds – for use in Aerospace, Alternative Energy, Automotive, Healthcare, Membranes, Oil and Gas, Packaging, Plumbing, Semiconductors, Wire & Cable, and other industries. Learn more at www.solvayspecialtypolymers.com.

About Solvay

An international chemical and advanced materials company, Solvay assists its customers in innovating, developing and delivering high-value, sustainable products and solutions which consume less energy and reduce CO2 emissions, optimize the use of resources and improve the quality of life. Solvay serves diversified global end markets, including automotive and aerospace, consumer goods and healthcare, energy and environment, electricity and electronics, building and construction as well as industrial applications. Solvay is headquartered in Brussels with about 30,000 employees spread across 53 countries. It generated pro forma net sales of € 12.4 billion in 2015, with 90 percent made from activities where it ranks among the world's top 3 players. Solvay SA ([SOLB.BE](#)) is listed on Euronext in Brussels and Paris (Bloomberg: [SOLB.BB](#) - Reuters: [SOLB.BR](#)).

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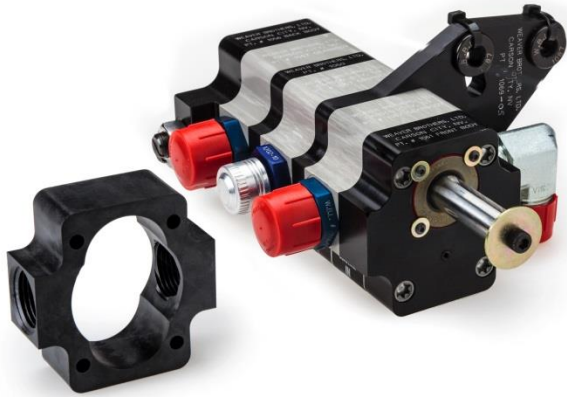
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Solvay's AvaSpire® AV-651 CF30 polyaryletherketone (PAEK) will form the external housing and other structural components of the Polimotor 2 engine's unique dry sump modular oil pump. A 30 percent carbon fiber-reinforced compound, AvaSpire® AV-651 CF30 PAEK delivers an excellent balance of strength, stiffness and fatigue resistance. This makes it a highly suitable material for the oil pump housing, which will encounter oil temperatures approaching 140°C (284°F) and internal pressures cycling between 2.8 and 5.5 bars. Photos courtesy of Solvay Specialty Polymers.