Yanfeng participated in Recycling Project with Eastman, USAMP, and Padnos

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Eastman announced the successful completion of the closed-loop recycling project for automotive mixed plastic waste. Through a collaborative effort, Eastman, the United States Automotive Materials Partnership LLC (USAMP), automotive recycler PADNOS and global automotive interior supplier Yanfeng, demonstrated first-of-its-kind plastic recycling from the by-product of shredding end-of-life vehicles.

When automobiles are at the end of their life, metals, tires, and glass account for 80%–90% of the materials that can be recycled through traditional mechanical recycling streams. The other 10%–20%, referred to as automotive shredder residue (ASR), consists of mixed plastic and other nonrecycled materials that currently end up in landfills or are recovered through waste-to-energy technologies.

Under this initiative, PADNOS supplied a plastic-rich fraction of ASR as a sustainable feedstock to Eastman's carbon renewal technology (CRT). Eastman successfully demonstrated the addition and conversion of that ASR feedstock into a synthesis gas (syngas) which is subsequently used downstream in the production of its polyester and cellulosic thermoplastics. Resins from this production process were further formulated and then supplied to Yanfeng. The parts molded by Yanfeng for demonstration were successfully tested to meet a variety of OEM – Ford, GM, and Stellantis – requirements, thereby demonstrating proof of concept for a truly circular solution.

The study proved the feasibility of Eastman's carbon renewal technology (CRT), one of Eastman's two molecular recycling technologies, which breaks down the plastic-rich ASR into molecular building blocks. By recycling these complex plastics in CRT, Eastman can replace fossil-based feedstock and create polymers without compromising performance for use in new automotive applications.

In addition to diverting waste from landfills, USAMP, a subsidiary of the United States Council for Automotive Research LLC (USCAR) also sees the potential for energy savings and reduced overall greenhouse gas emissions.

Deloitte Consulting, LLP estimates more than 10 billion pounds of ASR is sent to landfills globally each year.

"We are encouraged by the initial results of this study," said Warwick Stirling, USCAR Executive Director. "Innovative processes that enable ASR to be used in automotive parts can help bring us closer to more fully recycling end-of-life vehicles and enabling the possibility of a truly circular economy."

"This is a prime example of how collaboration across the value chain is essential to making material circularity mainstream," said Steve Crawford, Eastman executive vice president, manufacturing and chief sustainability officer. "Modern cars are made with approximately 50% plastic by volume, on average; and this number is only expected to increase as automotive manufacturers continue to seek lighter electric vehicles. We're demonstrating a future where automotive hard-to-recycle plastics and fibers are diverted from landfills and recycled to produce new automotive parts."

Kari Bliss, principal of sustainability at PADNOS said, "The collaboration on this project is indicative of the work that is needed to create closed-loop and circular economy solutions. Our purpose statement is on full display with this project — to continue to find ways to innovate, lead and make a positive impact in this world. We are proud to be the mechanical recycler involved in this complex endeavor, which is the first of its kind in North America."

"Yanfeng is honored to be part of this project with USAMP, PADNOS, and Eastman. Circularity and keeping plastic waste out of landfills is a priority for our company and the industry," said Jeff Stout, executive director of global innovation for Yanfeng. "We see a lot of potential with the resin developed with molecular reprocessing. We are pleased with the performance of the interior components we molded during the study and believe it would be a sustainable solution in production."

About Eastman

Eastman is a global specialty materials company that produces a broad range of products found in items people use every day. For more information, visit Eastman.com.

About USCAR

USCAR is the collaborative automotive technology company for Ford Motor Company, General Motors, and Stellantis. The goal of USCAR is to further strengthen the technology base of the domestic auto industry through cooperative research and development. For more information, visit USCAR.org.

About PADNOS

PADNOS is a fourth-generation, family-owned company with diverse processing capabilities to create real recycling solutions for ferrous and nonferrous metals, end-of-life vehicles, paper, plastics, and electronics. For more information, visit PADNOS.com.

About Yanfeng:

Yanfeng is a leading global automotive supplier, focusing on interior, exterior, seating, cockpit electronics, and passive safety, and is exploring new business actively. Yanfeng has more than 240 locations and approximately 67,000 employees worldwide. The technical team of 4,200 experts is in ten R&D centers and other regional offices, with complete capabilities including engineering and software development, styling, and test validation. Focusing on Smart Cabin and lightweight

technology, Yanfeng supports automakers to explore future mobility and provide leading cabin solutions.

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