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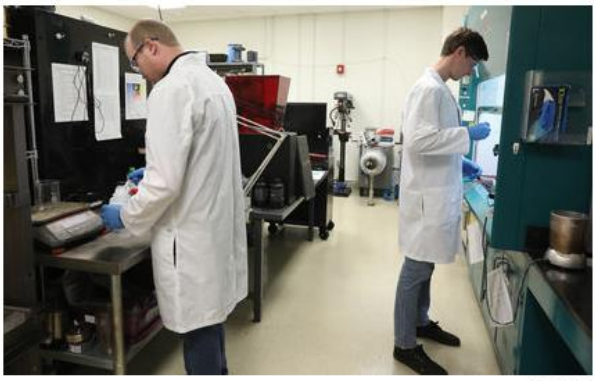
Turning coal waste into building treasure

Florida-based Semplastics and its advanced materials division X-MAT dreams of building safer and more durable homes from the waste left behind by coal mining.

"'One person's trash is another person's treasure' is a saying our team has taken to heart," said Bill Easter, founder of Semplastics. "We're working to create a circular economy where we take coal waste materials and turn them into something remarkable. We're already seeing great progress with prototypes."



X-MAT

X-MAT technicians work on a lightweight and fireproof roof tile made from coal powder and a proprietary chemical.

Semplastics' endeavors to turn coal trash into commercially useful home building treasure has been awarded $1.4 million in cost-shared research funding by the United States Department of Energy.

Founded in 2000, Semplastics has supplied plastic engineered components to a broad range of industries from medical to aerospace. Its X-MAT division has developed a revolutionary, high-performance material that combines the electrical conductivity properties of metals, high operating temperatures of ceramics, yet is lightweight like plastics. This state-of-the-art material has various current applications including fireproof roof tiles, lightweight space mirrors, battery electrodes, and 3D printing ceramics.

This coal waste project co-funded by the Department of Energy could help Semplastics achieve its ultimate dream for X-MAT technologies – construct a safer and more durable home, from the front stoop to structural walls to the roof tiles, completely from coal-derived building materials.

"Our vision for the re-use of coal and coal waste products is a major reason why the Department of Energy is interested in our R&D (research and development)," said Easter. "We're transforming an old energy product into something that will one day be used in all types of commercial businesses and potentially even residential architecture."

Semplastics and X-MAT, which have received a total of $4 million in grants and contracts to fund research into safely using coal in new ways, are working in concert with the University of North Dakota Energy and Environmental Research Center and Center for Applied Research and Technology in West Virginia on this project.

The company also has several other coal and coal waste projects in the works. These include X-TILE, a lightweight and fireproof roof tile made from coal powder and a proprietary chemical. Using a patent-pending X-MAT coating technology, Semplastics is also on the edge of a breakthrough that involves combining coal with waste graphite to create a lithium-ion battery anode, which the company says has more energy capacity than never-used graphite.

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