MCM Composites Emphasizes Custom Thermoset Molding for High-Strength, Lightweight Components

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MCM Composites, LLC, a thermoset molding manufacturer based in Manitowoc, Wisconsin, is drawing attention to its custom thermoset molding service as manufacturers in aerospace, medical, appliance, and electrical markets look for components that combine low weight with high strength. The company produces close-tolerance compression molded parts from thermoset composite materials for programs ranging from prototypes to annual volumes of up to one million parts.

The company's ISO 9001:2015 certified facility operates a range of up-acting and down-acting compression presses with capacities from 50 tons to 800 tons. These presses offer top, bottom, and double transfer capabilities, allowing MCM Composites to run both compression and compression transfer molds depending on the geometry and performance needs of each part.

"Engineers come to us when a part has to hold its shape and strength under heat, chemicals, or constant use, and a standard material will not get them there," said Michael Fredrich, CEO of MCM Composites. "Custom thermoset molding gives them a way to replace heavier metal parts or less stable thermoplastics with components built around their exact dimensional requirements."

Thermoset materials cure through an irreversible chemical reaction that creates a cross-linked structure, so finished parts do not soften when reheated. As a result, thermoset components retain their mechanical properties at elevated temperatures and provide heat resistance, corrosion resistance, chemical resistance, and fire retardance suited to demanding environments.

MCM Composites works with bulk molding compound (BMC) and sheet molding compound (SMC) in both polyester and vinyl ester formulations, along with phenolics, melamine-phenolics, melamine, alkyds, epoxies, and carbon fiber compounds. Compared with thermoplastics, these specially formulated compounds are more resistant to shrinkage and less sensitive to variation in wall thickness.

The company's compression molding capabilities cover part weights from 0.1 grams to 50 pounds and platen sizes from 18.7 by 20.7 inches up to 46.1 by 46.1 inches. Parts can be held to tolerances of plus or minus 0.0015 inches, a level of precision that supports assemblies in aerospace, defense, and medical equipment where fit and consistency are critical.

Tooling plays a central role in the process. MCM Composites designs compression molds for semiautomatic, automatic, and hand-assembled operations, with hand-assembled molds serving short production and prototype runs. The tooling engineering staff has experience with design features such as rising islands, gate cutoff, and cold manifold systems, and each tool is designed to balance part quality, production efficiency, and cost.

"The mold is where quality starts, so tooling gets the same attention as the parts that come out of it," said Fredrich. "Every mold is reviewed after each production run, which helps keep dimensions consistent from the first order through years of repeat production."

A fully equipped tool shop on site also repairs and maintains customer-owned molds. Multi-cavity molds are available for higher-volume programs, and dedicated deflashing equipment helps reduce the cost of flash removal after molding.

Beyond molding, MCM Composites offers post-molding services that allow customers to receive finished or near-finished components from a single source. These services include drilling, tapping, machining, metal insertion, gluing, potting, painting, metallizing, and post baking. Custom coloring options are also available for parts where appearance matters alongside performance.

The company serves customers in the appliance, aerospace, battery, defense, electrical, food and beverage, oil field, lighting, medical, pump, and restaurant equipment industries, among others. Past compression molding projects include an emergency oxygen housing for aerospace use, table and chair tops for the

furniture market, and a medical seating application.

In addition to compression molding, MCM Composites provides thermoset injection molding, insert molding, finishing and machining, engineering services, and assembly. This combination allows manufacturers to move from design review through tooling, molding, and secondary operations with one supplier.

Manufacturers evaluating thermoset materials for new or existing components can find more information about the company's compression molding capabilities at https://www.mcmusa.net/capabilities/thermoset-compression-molding-services/.

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MCM Composites

MCM Composites is a trusted leader in custom molding, providing high-quality solutions to a diverse clientele across the globe

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