

Rapid Processing of Thermoplastic Composites

Tarpon Springs—May 5, 2006—American Matrix Corp announces its new PDMS line of molding equipment. PDMS is the acronym for “Progressive Discreet Molding System”. This new molding system and technology is available to firms seeking rapid, fully consolidated, high-quality thermoplastic composite parts molding. The PDMS is part of a complete technology package of part design, tooling, process design, and post-molding operations in the implementation of which American Matrix Corp. and its founder, Robert Davies, have invested much experience and knowledge, accumulated over years of working in the development and processing of thermoplastic composite materials.

The PDMS is a modified compression molding system using low-cost, matched-metal molds uniquely designed for rapid processing of composites at rates ranging from a few seconds to several minutes per part. This speed advantage is accomplished by integrating proprietary methods for managing both the thermal dynamics and the consolidation pressure of the process within one computer-controlled machine. All mold handling is managed and accomplished by this one machine. Molds can be changed rapidly also, reducing setup time to a matter of minutes and the click of a mouse. Also, multiple molds are processed sequentially through the machine, a significant benefit when non-identical parts, such as the front and back of a control enclosure, are required. An operator monitors the process from the mold workstation where he or a robot removes the





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molded parts and inserts a composite preform. The machine generates reports on productivity, historical process variables and trends, and any other data you wish to capture.

Thermoplastic composite materials are available from many sources. They come in multiple formats such as fabric, tape and non-woven material and are composed of carbon, glass or aramid. Additionally many resins, such as polypropylene, nylon, PPS, and PEEK, are available for use. All of these materials can be processed with this system. American Matrix also has a proprietary process that forms integral cores for sandwich-panel-style moldings. The cores will accommodate variable thickness buildups, providing extraordinary stiffness-to-weight properties and offering superior damage tolerance compared with other technologies such as honeycomb.

The PDMS molding process minimizes waste and conserves material, a very important advantage over thermoforming processes when you consider the cost of many of the higher-performance materials such as PEEK/Carbon fiber. Not only do sheet thermoforming processes generate huge quantities of waste material, but also energy and time must be expended to form the sheets before they can be thermoformed. The PDMS is not burdened by this expensive intermediate process; it provides superior consolidation pressure, which is critical for making high-quality laminates.

Among the services American Matrix Corps offers to complement the PDMS are producibility and technology assessments, part design, mold design, mold making, prototyping, pilot production, volume production, and technology licensing.

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For more information on Composite Products:

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