COMPOSITES 2016

AllTech Communications, LLC

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Flexible Solutions for Small Volume Needs

Our composites are manufactured by combining reinforcement materials with polymer matrix materials. This is done in several different ways depending on part volume, complexity of the part and other customer requirements. Reinforcement materials include but are not limited to glass, carbon and aramid fibers, resin fillers; polyester, polyvinyl chloride, and urethane foams. Polymer matrix materials are normally vinyl esters (a hybrid of polyester and epoxy), but other polymer resins are employed when the design requirements dictate. Color and gloss can be obtained using standard gel coat or pigmented resin with no surface coat.

Engineering

- Ability to take project from Concept through Design, Prototype and Production
- Design and Engineering Services Available
- Laboratory Facility for Physical Testing and Quality Control
- Composite Parts for Commercial and Military Applications

Tooling

- Tooling For Close Tolerance and Conventional Open Molded Process
- Aluminum and Steel Fabrication and machining

Production

- Advanced Composite Processes
- High Gloss Finishing
- 200,000 Square Foot Facility
- 60 Foot Paint Booth
- Steel Fabrication and machining
- Lightweight structures

Spray Layup:

- Lowest initial cost for mold and materials
- More process variation – requires more operator skill for consistency. Variations in laminate thickness, resin content and laminate strength is common
- Reinforcement material is “chopped” and dropped into the resin stream as the resin is sprayed onto the part
- The spray up is rolled out to force the reinforcement materials into the resin matrix
- Core materials can be applied to increase moment of inertia distance for added strength
- Usually the highest labor cost
- Practical for low part volume

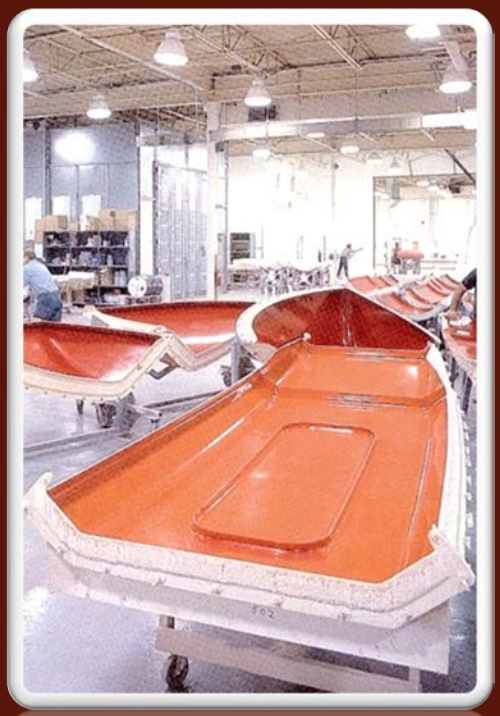
Hand Layup (open mold):

- Low initial cost for mold and materials
- Some variation in part quality can be expected but variations in laminate thickness, resin content and laminate strength are less than with spray up processes
- Reinforcement materials and core materials are added to the part in layers
- Each layer is hand rolled to force the materials into the polymer matrix and force air out of the matrix
- Suitable for complex parts and part with negative angles
- Requires skilled personnel for high quality parts (high labor cost)
- Practical for low part volume

Experience

CUSTOM SOLUTIONS

Our Facility in Wagoner, Oklahoma, USA



Flexible Solutions for Larger Volume Needs

Vacuum Assisted Resin Transfer Molding:

- VARTM, also known as infusion molding, is a process wherein the reinforcement and core materials are laid into the mold dry, a vacuum bag is placed over the materials and the catalyzed resin is drawn into the mold with a vacuum.
- Low process variation – requires less operator skill. Variations in laminate thickness, resin content and laminate strength are low.
- This process is capable of producing a consistent, stronger, lighter weight part.
- Complex parts and parts with negative angles make VARTM molds somewhat more expensive.
- Lower labor cost.
- Practical for any part volume.

Closed Cavity Bag Molding (CCBM):

- Essentially the same process as VARTM with the exception of the vacuum bag. With CCBM the vacuum bag is a durable and semi-permanent reinforced silicone sheet formed in the shape of the part.
- Lowers process variation and labor costs as well as consumable materials cost.
- Break even for added tooling expense is about 50 parts annually.
- Practical for part volumes of 50 to 500 parts per year.

Resin Transfer Molding (RTM):

- The final refinement of resin transfer molding is the “B” side mold. This process uses a laminate back mold, vacuum and some pump pressure to infuse resin into a cavity that is filled with dry reinforcement and core material.
- Precise control of process variation – best part quality, lighter parts, very consistent laminate thickness.
- Lowest labor costs.
- Practical for part volumes up to 3000 parts annually per mold.

Other Methods That Will Be Available In the Future:

- Several other processes available soon include ***Filament Winding*** (for hollow circular or oval components such as pipes and tanks) and ***Pultrusion*** (used for producing continuous lengths of FRP.

Industries

- Agriculture
  - Machinery enclosures
  - UV stabilized, corrosion resistant material
  - Fire resistant anti-static material available
- Architectural & Building Construction
  - Structurally resilient, complex shapes
  - Beams, Channel, Pipe and Grating
- Emergency Services
  - Composite moldings and accessories for police and emergency vehicles
- Government Infrastructure & Utilities
  - Fiberglass industrial equipment & storage enclosures
  - Fire resistant materials available
- Military
  - Lightweight advanced composite towers, enclosures and structures
- Transportation
  - Aerospace – Lightweight robust interior and exterior parts for aircraft
  - Marine – fiberglass molded boat decks along with interior and exterior UV stabilized and corrosion resistant components.
  - Rail – Exterior and Interior components
  - Road Transport – Fiberglass molded interior and exterior vehicle components and accessories
  - Training – Lightweight structural interior and exterior panels and components for training simulators

Leader

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