

SHTM- Self Heated Thin Mold

In order to achieve greater cost savings and optimization in the manufacturing process for composite parts, we have developed a new *thin and self-heating composite tooling* solution with integrated self-clamping system, for low pressure.



Some of the advantages are:

- The produced parts have good aspects on both sides, typical of RTM/VaRTM technology.
- The autonomy of the system: no need for autoclave, press or oven, so no need for big investments.
- Increase of the fiber volume fraction up to 60%.
- Close to zero consumables: reduction of recurring costs and time saving.
- Precise control of the mold temperature: the heating circuit is close to the molding surface.
- Good thermal dynamics with low heating power. Good thermal homogeneity of the molding surface: $\pm 2^{\circ}\text{C}/3.6^{\circ}\text{F}$ at $180^{\circ}\text{C}/356^{\circ}\text{F}$
- Use of RTM/VaRTM processes with pressure less than 2 bars/29 PSI
- Possibility to use this process for large parts, reducing the space needed as there is no need to move the tooling.

CHARACTERISTICS



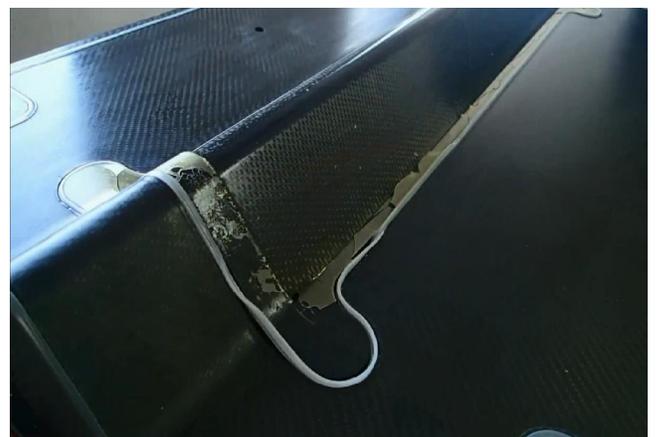
Preforming



SHTM Compaction



Molding



Demolding

- Study and selection of the materials for the mold and thermo-fluid circuit based on the application
- Mold and thermo-fluid circuit's materials have compatible CTE with the part, to prevent cracking, bursting and sliding in the mold or any damage to the part
- Thermo-fluid distribution circuit is custom designed according to the geometry and temperature regulation of the mold and allow very fast heating and cooling
- Distance between thermo-fluid circuit and molding surface is minimal and constant throughout
- Can use oil, water or metal-based thermal fluids with temperature up to 400°C/752°F, and high pressure without risks of delamination in the mold
- Thin composite mold with consistent thickness, offering low weight, less material, quick manufacturing lead-time and cost savings