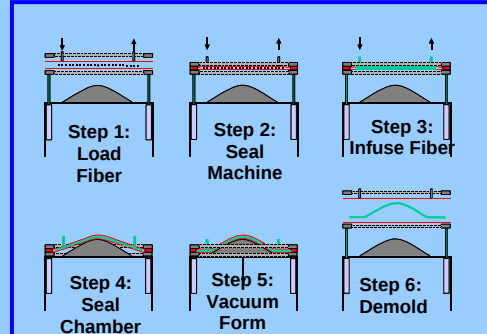


Synopsis:

RIDFT — Resin Infusion between Double Flexible Tooling Process



RIDFT prototype



RIDFT process

Background

Cost savings and rapid manufacturing were the motivating factors behind the development and construction of a novel composite manufacturing technique known as RIDFT - Resin Infusion between Double Flexible Tooling. RIDFT is a two-stage process – resin infusion and wetting at one stage, followed by vacuum forming. Dry reinforcement is placed between two membranes. After securing the membranes, resin is infused under a vacuum. The next stage is vacuum forming, during which the membranes are drawn over a male mold (final product shape) by applying a vacuum. The use of a one-sided mold provides huge cost benefits when compared with the resin transfer molding (RTM) process. The final shape mold can be made by rapid prototyping methods with metallic or non-metallic materials, since the mold does not have to withstand high pressures. Furthermore, the mold does not come into contact with the resin or the reinforcement, which drastically reduces wear and tear.

Goals

- Manufacture large composite parts (5x10 feet)
- Develop a means for in-mold painting of composite components
- Improve production cycle times by the incorporation of UV curing equipment

Projects/Research Highlights

- Developed three prototypes of various sizes
- Formability assessment studies for better understanding of process capabilities and limitations
- Investigate viability of in-mold painting by means of films and gel coats
- From design to part within 48 hours

Benefits to Industry

- Lower cost tooling
- Shorter development cycle
- Potential for in-mold painting