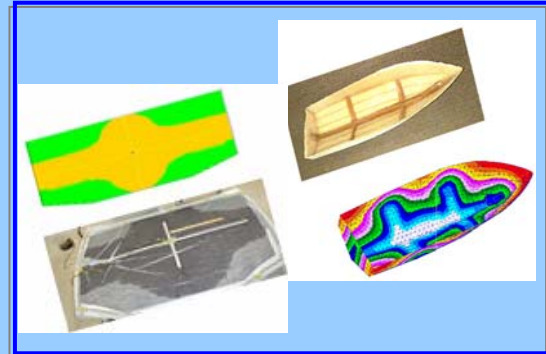


Synopsis: Environmentally Conscious Process for Fiberglass Boat Fabrication



Conventional hand lay-up for boat building



Environmentally benign closed mold process

Background

Most of today's boats are fabricated with the hand lay-up/spray-up processes. These open molding processes have certain deficiencies, such as VOC emission and inconsistent quality, to name only a few. From an environmental standpoint, with relatively inexpensive tooling and the ability to fabricate large parts with complex geometry, the vacuum bag molding process (and its variations such as SCRIMP) may be the best choice to replace the traditional open molding processes with. Since SCRIMP is often used to fabricate large composites with complex geometry, reaching the optimum process design by the trial-and-error or experience-based approach is difficult. Considerable expenses accumulate and valuable time is lost in this way. This project attempts to develop a new variation of vacuum bagging process, Vacuum-Assisted Resin Infusion Molding (VARIM), and a science-based process design approach for the closed molding process.

Goals

- Develop an environmentally benign and cost-effective process for boat building industry
- Advance knowledge base for repeatable vacuum bagging process

Projects/Research Highlights

- Develop the new vacuum bagging process- VARIM
- Test the new process with sub-scale boat fabrication
- Develop the optimum process design approach

Benefits to Industry

- 90% VOC emission reduction
- 10% - 30% boat weight reduction
- 30% - 120% stiffness increase
- 10% - 30% cost reduction