Case History

Improving Marine Small Parts Production with AOC's New RTM Low Profile Formulation

Market Segment:	Marine
Composite Application:	RTM Small Parts
Resin:	Altek® R985 Series
Manufacturing Process:	RTM

Background

MasterCraft, a leader in building high-performance, reliable, and comfortable boats, has consistently set the bar for innovation in the marine industry. With 69 patents and over 45 awards for customer service, manufacturing excellence, and innovation, MasterCraft's commitment to quality is unmatched. AOC Formulations has partnered with MasterCraft for years, providing formulations that support continuous improvements in their boatbuilding processes.

Challenge: RTM Part Production Issues

Despite its long-standing expertise in boatbuilding, MasterCraft continuously seeks opportunities to enhance its production processes. One area identified for improvement was the manufacturing of small parts using Resin Transfer Molding (RTM) technology. The team recognized the need for a more consistent resin with superior wet-out properties to prevent dry spots that had been appearing on the parts. Additionally, they aimed to improve the cosmetic quality of the parts while reducing rework time to lower overall production costs. To address these goals, MasterCraft initiated a thorough evaluation process to explore potential solutions, including the use of alternative low-profile resins to overcome these challenges.

AOC
Trusted Solutions

Solution: AOC's New RTM Resin

In 2023, AOC Formulations developed an innovative low-profile polyester resin, R985 series, designed specifically to address the cosmetic and production challenges faced by MasterCraft. The R985 series resin offers several key benefits, including excellent resin flow, low shrinkage, good mechanical properties, and superior mold release without the need for gel coat.

MasterCraft and AOC launched a joint project to test this new resin and assess its performance against competitive alternatives.

Trial and Results

During the trial, AOC and MasterCraft conducted extensive testing on various RTM parts. The results revealed several significant improvements:

- Enhanced Resin Flow and Wet-Out: The R985 series resin provided superior resin flow, addressing the dry spot issue and ensuring consistent wet-out throughout the parts.
- Improved Mold Release: Parts were easier to remove from the molds, reducing handling time and minimizing the risk of part damage.
- Reduced Styrene Build-Up: The R985 series resin's low profile formulation led to less styrene build-up in the molds, meaning the molds stayed cleaner for longer and required less maintenance.
- Better Phase Stability: The resin exhibited better phasing behavior, which contributed to a smoother production process and improved cycle times.
- Excellent Aesthetics: The formulation delivered excellent cosmetic results, meeting MasterCraft's high standards for finished part quality.
- Increased Efficiency: With fewer defects and reduced rework, the production process saw significant improvements in part yields, ultimately reducing waste and production costs.

A Seamless Transition to R985

Based on the results of the trial, MasterCraft decided to adopt AOC's R985 series resin for its RTM parts. Jade Pearson-Perritt, Composites Engineer, Quality, at MasterCraft, shared her feedback:

"AOC's R985 series resin met all our key criteria for production efficiency, part aesthetics, and cost-effectiveness. The resin has delivered improved wet-out, reduced rework, and a better overall process, helping us maintain our commitment to high-quality, reliable products."

By embracing this advanced formulation, MasterCraft continues to lead the industry in boat manufacturing, ensuring that every part meets its high-performance and aesthetic standards while improving efficiency in the production process.

About Mastercraft

The MasterCraft Boat Company is an American manufacturer of luxury high-performance boats. The company was founded in 1968 in Maryville, Tennessee, and is currently headquartered in Vonore, Tennessee. MasterCraft boats are used in waterskiing, wakeboarding and wake surfing.

About AOC

AOC is the leading global supplier of specialty formulations and solutions that enable customers to create robust, durable, and versatile products and components for applications in coatings and protective barriers, colorants and visual effects, adhesives and specialties, and conventional composites. For more information, please email americas@ aocformulations.com, call (866) 319-8827, or visit aocformulations.com.