



Wausaukee Composites - Owosso, Inc.
401 S. Delaney Road
Owosso, MI 48867
(989) 725-2900
www.wauscomp.com

Wausaukee Composites, Inc. – CASE STUDY

Snow Groomer Composite Cab Body - New Product Introduction (NPI)



Challenge: A major Original Equipment Manufacturer (OEM) customer decided to extend their product portfolio and leverage their engineering competencies by providing a fully integrated cab solution for another OEM. Wausaukee Composites (WCI) was called upon to provide the full exterior composite panel set for the cab in a fast paced, design-intensive new product launch. As the project progressed, Wausaukee’s scope of supply broadened to include a Class-A paint top-coated cab exterior, and the cab interior panels.

Project Highlights:

Design: Wausaukee Composites’ project engineering team engaged in extensive design collaboration with the OEM customer’s industrial designers, project engineers, and third-party design consultants. Product styling was a top priority for the OEM customer and WCI worked to ensure the integrated cab assembly, which included the roof, front fascia, door panels, intermediate side panels, and front and rear headlight bezels would maintain the stylistic design elements required, while also ensuring that manufacturing process requirements were maintained.

Product Development: With a challenging project timeline, the collaborative design and product launch team had to move swiftly, and accomplish design and engineering changes in parallel with the development process. The program was tightly managed around a comprehensive project Gantt timeline, with defined daily and weekly milestones. Expansion of the project scope included the requirement to

qualify a Tier-2 supply base that included a third-party paint specialist, and molded plastic and hardware sub-component vendors. In collaboration with our customer, comprehensive product verification check sheets were developed and redefined as the program progressed from initial prototypes to production volumes.

Tooling: Wausaukee Composites supervised the CNC-machining of tooling patterns cut directly from the customer's 3-D solid model CAD data, which included dimensional validation of the pattern against the Pro-E models. From these patterns, Wausaukee fabricated a full set of prototype components to prove out the form and fit of the entire cab assembly. Following validation of the prototypes, Wausaukee's experienced tool builders fabricated production molds from the industry's best epoxy resin systems, capable of producing more than 10,000 pieces from a single mold. As Critical to Quality Elements were defined precision-calibrated secondary process fixtures for all post-molding robotic operations, along with a full set of inspection fixtures and check gages to be employed in post-production process controls have been fabricated by our in-house tooling technicians.

Manufacturing Process: Vacuum Assisted Resin Transfer Molding (VARTM) with RimFire™



RimFire™ application of fiberglass reinforcement to the mold cavity

Following a review of the product attributes, critical-to-quality specifications, and estimated annual production quantities, Wausaukee Composites recommended that Vacuum Assisted Resin Transfer Molding (VARTM) with RimFire™ would be the ideal manufacturing process for the full set of components to be manufactured in this program. Product attributes that led the NPI team to select VARTM as the preferred production process included tight-tolerance dimensional requirements, high glass reinforcement to resin ratio, controlled thicknesses, finished B-side of the laminate, and controlled product weight, in addition to the reduced-emissions advantages of this closed molded manufacturing process. Our unique robotic RimFire™ process is the most cost efficient method of precisely placing the fiberglass reinforcement onto the large mold surfaces, prior to initiating the resin transfer molding operation.

Production Environment and Capacity Plan: A high volume automated production plan was implemented to efficiently manage this program on the factory floor. CNC robotic automation was employed for in-mold coating application, precise delivery of the fiberglass reinforcement in the mold cavity, and for water-jet robotic trim operations.



Robotic application of the in-mold coating to the mold surface

The part molding process is managed in a production work cell dedicated exclusively to the VARTM process, where precise metered volumes of polyester resin are introduced to the dimensionally controlled glass-filled mold cavity.



Vacuum Assisted Resin Transfer Molding (VARTM) production cell

Results: The snow groomer cab program was successfully launched in time for the annual machine selling season. The cab program has been so well received that the OEM customer is considering extending its use to include additional machine models.