

Roush Advanced Composites Services

Roush Advanced Composites has been manufacturing high tech components in multiple processes for over 35 years. Along with our Model Development Group, we are a single source solution for product development needs. Utilizing our in-house design team, engineering support and model services, we can take a design idea and transform it into a finished product. We use the latest in composite material selections, experienced technical staff, and modern technologies to produce autoclaved composite and open-molded epoxy laminate components.

Model Development

Processes:

CNC Machining (5-Axis)
SLA
SLS
Rapid Prototype
Hand Built Models

Tooling Materials:

Aluminum
High Density Tooling Board
High Temp Epoxy
Invar
Carbon Fiber

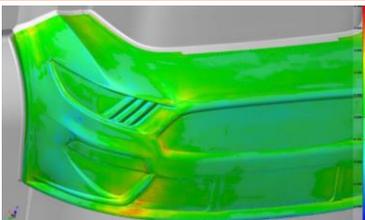
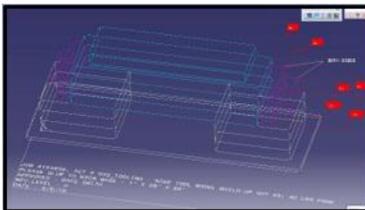
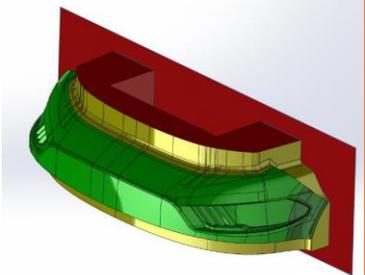
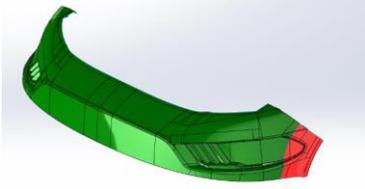
Tooling Capabilities:

Roush has exceptional tooling design and manufacturing capabilities in house, including CAD tooling designers, large machine shops with multiple large envelope 5-Axis CNC mills, and model shops for composite tooling lamination. Tooling consistency and robustness is a key strategy for Roush in making the parts consistent and accurate.

- Develop Starts with Gold Surface CAD
- Buildup design is developed
- Buildup is CNC cut on multiple 5-Axis mills
- Post CNC male models are sanded and benched
- Male tooling model is dimensionally scanned
- Female mold fabrication begins (carbon fiber or fiberglass)
- Molds are dimensionally scanned and tracked

Tooling Repeatability:

- Roush's tooling processes yield highly accurate and consistent results.
- The tooling process utilizes high temperature stable carbon fiber molds. Carbon molds are more stable due to *near zero CTE*
- The consistency of the tooling will drive consistency into the parts geometry.



Dave Zajac
734-466-6348
Dave.zajac@roush.com

Composite Part Manufacturing

Processes:

Automated Fabric Cutting & Kitting
Prepreg Autoclave Curing
Prepreg OOA Curing (Oven)
Prepreg Press Curing
Wet Laid Vacuum Bag
Infusion / VARTM

Materials:

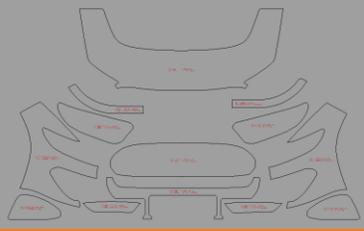
Carbon Fiber
Kevlar
Fiberglass Fabrics
Nomex Honeycomb
Aluminum Honeycomb
PVC Foam Core
High Temp Epoxy Resins
Polyester Resins

Part Production:

- Flat pattern and nesting – to maximize material usage
- Cutting and kitting operation
- Wet layup fabrication process
 - o Material kits with dry fabrics, liquid epoxy resin
 - o Vacuum bagged, leak checked
 - o Cure at ambient room temperature
- Prepreg fabrication process
 - o Material kits with prepreg patterns
 - o Laminators follow laminate schedules, record each ply
 - o Parts are heated to cure
- Controlled autoclave or oven curing of prepreg parts
- Parts are trimmed to net shape utilizing automated and non automated methods

Quality & Inspection Services

- Blue light dimensional scanning for tooling and assemblies
- Romer Arm – 2-meter reach with integrated laser scanning head
- CMM – Automated process for high precision, accuracy and increase in reporting.
- Highly trained quality team focused on the quality control of the materials, processes and finished products.



ROUSH
INGENUITY ON DEMAND

www.roush.com
Dave Zajac
734-466-6348
Dave.zajac@roush.com

