



# **FACILITIES & CAPABILITIES**

**AMALGACOMPOSITES**

Telephone: (414) 453-9555; FAX (414) 453-9561

Web Address: [amalgacomposites.com](http://amalgacomposites.com)

# PLANT & GROUNDS

## AMALGA OPERATES FROM TWO LOCATIONS

10600 West Mitchell Street, West Allis, Wisconsin & 11133 West Rogers Street, West Allis, Wisconsin

Our Mitchell Street plant has 82,568 square feet of manufacturing space (73,740 square feet plant, 8,828 square feet office) including: a 120' x 20' temperature and humidity controlled molding area, three 200' x 40' bays with overhead traveling cranes, two shipping docks with cranes for overhead open bed loading and levelers for truck loading. The grounds are located on 3.9 acres of land with adequate on-site parking for employees and customers, and easy access to shipping and receiving docks. The grounds also include rail facilities, and offers expansion of an additional 50,000 to 100,000 square feet. Amalga is located less than one mile from the interstate highway system.

Our Rogers Street facility has 35,000 square feet of manufacturing space. This facility includes overhead cranes, three shipping docks with levelers for truck loading, robotic winding capability and robotic machining capability.





# OUR FOCUS

Amalga is a leading expert in filament wound composites, offering comprehensive solutions in engineering, manufacturing, and quality assurance.

## ENGINEERING SOLUTIONS:

**Amalga** boasts a team of doctoral-level engineers who are experts in composite materials. These professionals work closely with customers to design custom solutions for even the toughest challenges.

**Their engineering capabilities include:**

- Collaborative design and co-development from prototype through production
- Expertise in solving complex engineering problems across various industries
- Ongoing assistance and support throughout the product lifecycle

## MANUFACTURING SOLUTIONS:

**Amalga** is one of the largest independent filament winders in the U.S.,

**Their manufacturing capabilities feature:**

- Two facilities with over 115,000 square feet of space
- Six production lines capable of producing tubing from 1/2 inch to 44 inches in diameter and lengths up to 30 feet
- Advanced equipment, including automated gel coat application and compression molding capabilities
- Complete machining facilities for grinding, cutting, and finishing

## QUALITY ASSURANCE:

**Amalga** is committed to delivering high-quality products and maintaining rigorous quality control standards:

- ISO 9001:2015 certified. CAGE Code 30786
- Comprehensive quality control system ensuring repeatability and traceability
- Advanced testing equipment for continuous product evaluation
- Temperature-controlled molding areas for consistent and reliable quality
- 24-hour temperature monitoring and control in curing ovens

## WITH OVER 55 YEARS OF EXPERIENCE

**Amalga** has built a reputation for delivering on-time, on-budget, and excellent products. Their commitment to engineering expertise, advanced manufacturing capabilities, and stringent quality assurance makes them a trusted partner for both domestic and international orders across various industries.

## Filament Wound Structures

Pressure vessels-Internal and External  
Tanks  
Cylinder tubing (low to high pressure)  
Booms  
Drive shafts  
Rollers and Cores  
Insulating structures  
Spheres  
Conical, elliptical, ovoid shapes  
Bushings  
Cylindrical and rectangular structures

## Analysis

Finite element analysis  
Laminate Analysis  
Joining analysis  
Computer aided design (Solid Works)

## Design Criteria

Impact loads  
Ballistic requirements  
Joints and attachments  
Corrosion prevention  
Fatigue resistance  
Thermal stresses

Random stresses: static and dynamic loads  
Section properties  
Drive shaft: critical speed/deflection criteria  
Beams stress and deflection  
Shell stresses: orthotropic, thick wall,  
sandwich-wall, ring stiffened

## Net Shape Process Capabilities

Vacuum bag cures  
Adhesive bonding  
Compression Molding  
Closed Contact Bag Molding

## Materials

Reinforcements: E-glass, S-glass  
carbon, Kevlar, broad goods  
Matrices: epoxy, vinyl ester

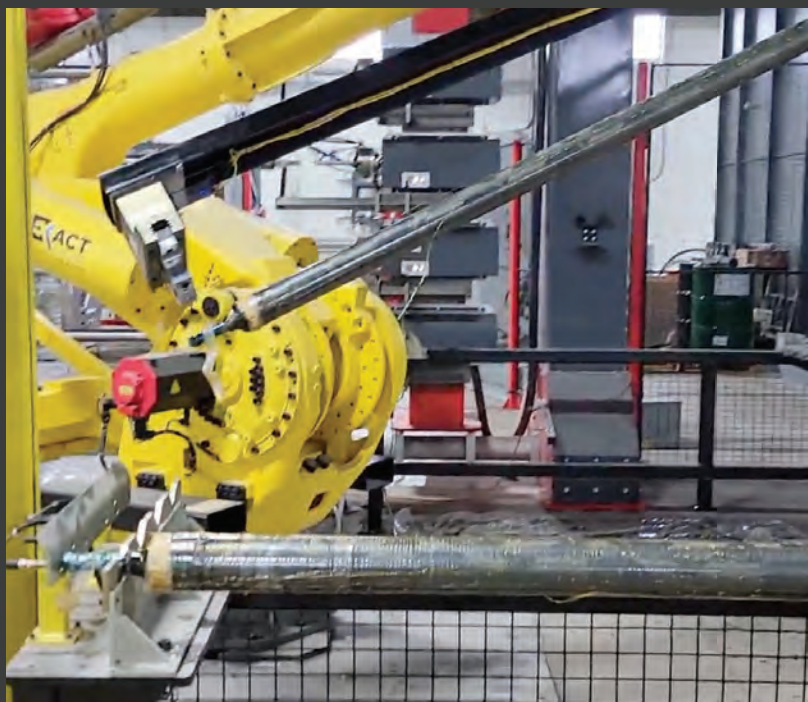
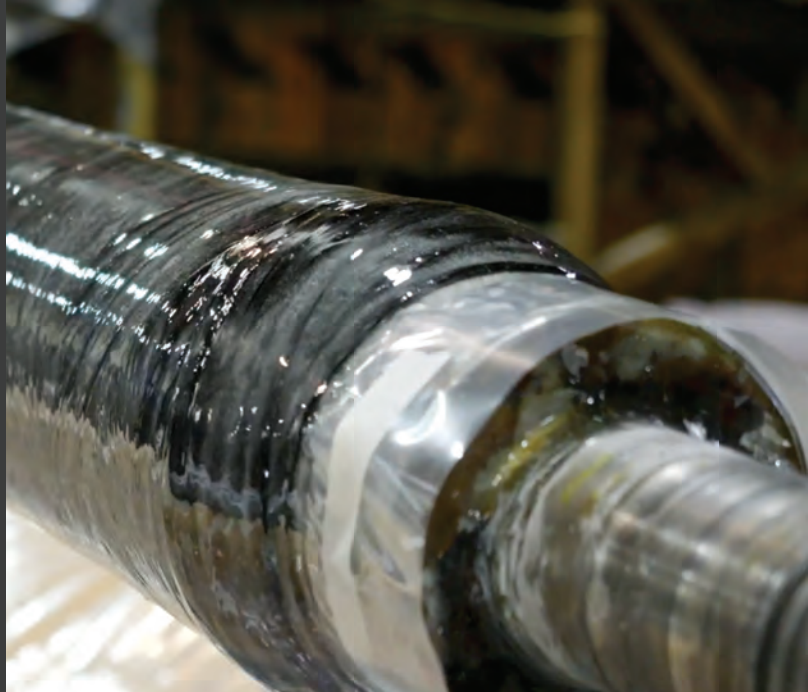
## Process Engineering

Process specifications  
Manufacturing plans  
Customized process/design approaches











EPICOR (Enterprise Resource Planning) software is used to schedule, control and monitor all manufacturing activities.

## **Winding Capability**

Amalga has capabilities to produce tubing from 1/2 to 44-inch diameters and lengths to 30 feet.

## **Gel Coating Machine**

Magnum Venus automated gel coat application machine used to produce Black Amalgon cylinder tubing.

## **Winding Machines (14 machines)**

- Two four-axis computerized machines
- Six two-axis computerized machines with off line computer programming capabilities
- Two seven-foot computer control three spindle machines
- One fifteen-foot computer control two spindle machine
- One fifteen-foot computer control three spindle machine
- One thirty-six foot computer control four axis winder
- One four meter 4-spindle winding machine

## **Compression Molding**

- One Verson 150 ton compression press
- One Wabash 30 ton compression press
- One Sterlco 2 zone oil heater
- Steel rule clicker die

## **Curing Equipment (10 Ovens)**

- One two stage continuous conveyor rotating oven 12 feet wide by 60 feet long with 20 inch diameter capacity
- Two rotating ovens 4 feet wide by 36 inches high by 40 feet long; computerized controls
- One walk-in cabinet oven 5 feet high by 5 feet wide by 15 feet long
- One walk-in cabinet oven 5 feet high by 5 feet wide by 20 feet long
- One walk-in cabinet oven 5.5 feet high by 5 feet wide by 10 feet long
- One walk-in cabinet oven 8 feet high by 8 feet wide by 20 feet long
- One walk-in cabinet oven 8 feet high by 10 feet wide by 20 feet long
- One walk-in cabinet oven 8 feet high by 10 feet wide by 10 feet long
- One continuous conveying oven ten feet high by seventy feet long with two temperature zones
- All ovens have 24 hour temperature controls and read-out devices with temperature indicators for QA monitoring

# MANUFACTURING

## Finishing Operation Capabilities

Amalga has complete facilities to grind, cut and machine to exact specifications.

Available equipment includes:

- Computerized machine centers (21)
- Computerized center-less grinding machine to produce tapered sections (1)
- Center-less grinding (6)
- On-center grinding (3)
- Cut-off (7)
- Milling (4)
- Drilling
- Roller balancing and other necessary equipment to handle composite fabrication  
(3 facing centers, 4 chamfering centers)

ACI uses a 60 ton Eitel straightening press to straighten mandrels and steel tubing.

Amalga also uses a state-of-the-art machine to process our waste products.

Custom painting is done in one of two available spray booths.

Included in the machining equipment are:

- 20 x 240 inch Poreba engine lathe
- Knuth 12 x 60 engine lathe
- ENCO 12 x 80 engine lathe
- (1) 14 x 118 inch Toolmex CNC engine lathe
- (1) Tree Journeyman milling machine
- (1) Okuma LB15 slant bed CNC lathe
- (5) Haas manual /CNC engine lathes
- (4) Haas ST20 slant bed lathes
- (2) Milltronics vertical machining centers
- (1) Haas TM1P CNC milling machine
- (5) Haas ST30 slant bed lathe
- (1) Haas ST20 Y slant bed lathe.

Three FANUC robotics automation cells located at the Rogers Street facility.

There are two Fanuc M710Ic robots with a payload capacity of 99 pounds and a reach of 102 inches.

There is one Fanuc M900iB/400L robot with a payload capacity of 880 pounds and a reach of 146 inches.

## Testing Equipment

- |  |                                       |
|--|---------------------------------------|
| Differential scanning calorimeter                | Muffle furnace and analytical balance |
| Meg-ohm resistance module                        | Customized measuring equipment        |
| Hydrostatic burst strength and proof test module | Pressure Cycling Test Stand           |
| Granite Inspection Tables                        | Dynamic Balancer                      |
| Vibration Analyzer                               | Tension/Compression Load Frame        |



# MANUFACTURING

## Design Equipment

Computer Aided Design (SolidWorks) package

Composite laminate analysis software

Gibbs CAM Computer Aided Manufacturing software

## Process Control Equipment

Local Area Network software providing computerized estimating, quoting, order entry, scheduling, production control

## Handling Equipment

**The Mitchell Street facility includes:**

- (1) 12,000 pound
- (2) 8,000 pound overhead traveling cranes on bays that are 200' long by 40' wide and 25' high
- (1) 4,000 pound overhead traveling crane 20' long by 15' wide
- Other standard and special handling equipment, forklifts, mobile cranes, etc.

**The Rogers Street facility includes:**

- (2) Two-ton overhead traveling cranes
- (2) one-ton overhead traveling cranes
- (1) Half-ton jib crane

## Shipping Facilities

**The Mitchell Street facility includes:**

- (2) 40' enclosed docks with a two-ton overhead traveling crane
- (1) Automated stretch wrap machine used to package tubular products

**The Rogers Street facility includes:**

- (3) Enclosed docks with dock leveler plates
- (2) Surface level docks







Since its inception in 1966 Amalga has been involved in and committed to the design and fabrication of advanced composite structures. Our quality control system provides repeatability and traceability on all composite components. Amalga is currently an ISO 9001/2015 certified company.

## Raw Material Control

The raw materials used in our products can be traced back to specific certified sources to assure that product quality is maintained. Our raw material control includes:

Lot or batch number	Supplier certifications	Raw material testing requirements
Manufacturing date	Incoming inspection	Expiration date
Temperature limitations	Inspection plan	

## In-Process Inspection

Inspection plan	Inspection data sheets	Laminae thickness
Wind angle	Wall thickness	Construction sequence
Bandwidth	Roving tension	Cure cycle (time/temperature)
Roving laydown	Number of rovings	

## Final Inspection

Inspection plans	Perpendicularity	Voids
Length	Surface Finish	Delamination
Diameter	Imperfections	Fiber content
Concentricity	Barcol hardness	Visual inspection
Roundness	Burst Pressure	Glass transition temperature (T <sub>g</sub> )
Dynamic balancing	Vibration Analysis	Hydrostatic Proof Pressure