



McIlvaine Company - Hot Topic Hour

“Materials for Corrosion Prevention in Power Plant Boiler and APC Systems”

**“Innovative
FRP and Dual
Laminate
Equipment
Solutions for
Power Plant
Applications”**



August 9, 2012

By: Doug Reinke - AFC



Manufacturing Headquarters – Blackville, SC

In 1974, John Boyd founded Augusta Fiberglass



- Currently located on 63 acres
- Debt Free – \$50+ Million of Bonding Capacity
- Mandrels – 50+ over 10' diameter and up to 119' diameter
- Cranes – 50 from 5 ton – 165 tons
- Computer controlled winders – 12 Horizontal & 3 Vertical

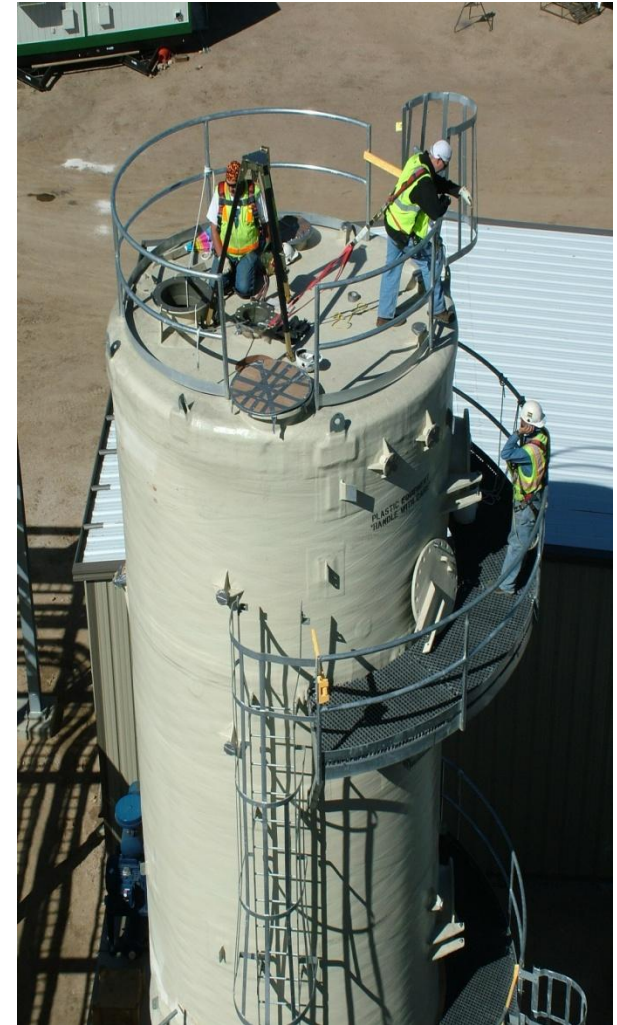


Safety First

- Safety is our #1 Priority.
- Since 2007 – over 3,000,000 W/H.
- Work at client sites, Blackville, SC, and Ocean Springs, MS.
- Work Non-union and Union sites.



Working in fabrication shops



Working in field assembly



Getting Started - Design Methodology

- Design Conditions
 - Temperature
 - Pressure and Vacuum
 - Wind, Seismic & Snow load
 - Internal live load
 - Abrasion
 - Support method & locations
 - Oblation (50' ϕ to 13' width)
 - Insulation and Heat Panels
 - Agitator Mixer Load
 - Ladder and Handrail





Design Methodology – Standards and Tools

- Governing Standards
 - ASME RTP-1,
 - ASTM 3299, ASTM 4097
 - ASCE 7-05, IBC 2006
 - AISC ASD
 - ASTM D5364



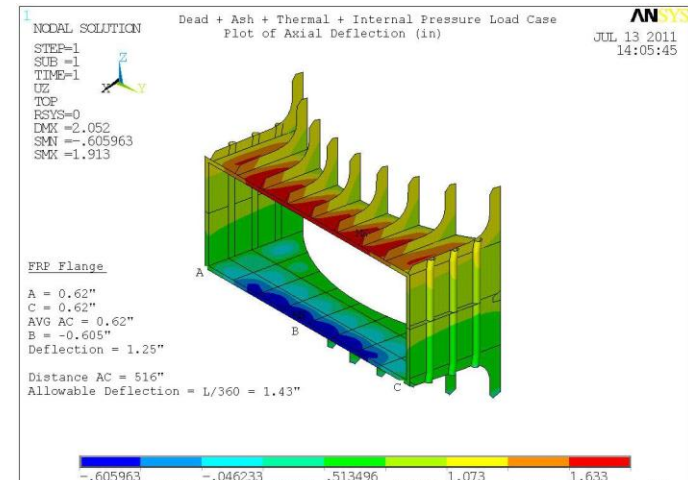
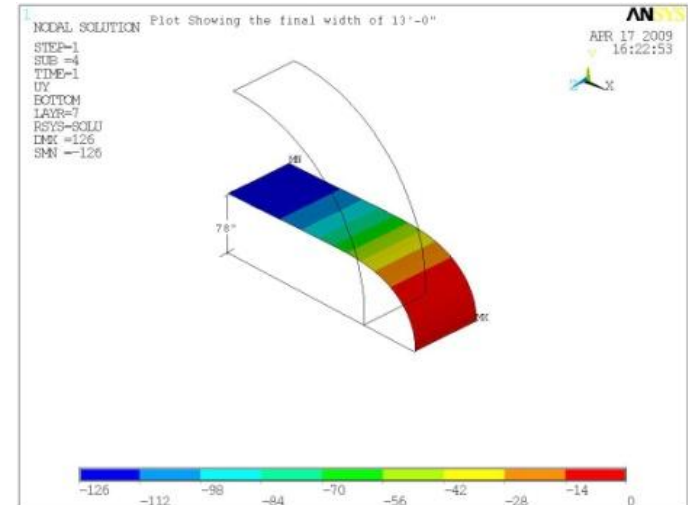
- Design Tools
 - MathCAD
 - ANSYS
 - AutoCAD
 - SOLIDWORKS
 - TRILAM



Design Criteria

- Global Analysis
 - Ply Failure in Each Direction
 - Buckling Analysis
 - Wind and Seismic Loads
 - Flange Deflection
 - FRP Panel Deflection
 - Steel Stiffener Deflection
 - Saddle design
 - Process Conditions
- Oblation Analysis
- Lifting Analysis

(8) Degreed Engineers on Staff





Field Winder Mandrel Preparation



Moving equipment on site is the first step for field fabrication



Leader in Field Fabrication and FRP Construction

In **1988**, first to fabricate field wound FRP tank - 52' diameter X 42' tall, even before ASME RTP-1. In **1995**, we received RTP-1 accreditation.



In **2001**, first to achieve compliance with a new field fabrication accreditation through ASME – ***allowed AFC to field fabricate and stamp vessels anywhere in the world.***



ASME Accredited for High Quality Equipment

We are one of only (9)
Companies with **ASME RTP-1**.

Augusta Fiberglass is one of
only (3) companies with
ASME RTP-1 Accreditation
for field fabrication,
assembly, and repair for new
construction.

Our Dual Laminate shop will
soon earn ASME RTP-1
accreditation. **B&D Plastics**
will be one of (2) companies
accredited.



CERTIFICATE OF AUTHORIZATION

This is to certify the named company as authorized to use the RTP symbol of the American Society of Mechanical Engineers (ASME) for the scope shown below in accordance with the applicable rules of the ASME RTP-1 Standard on Reinforced Thermoset Plastic Corrosion Resistant Equipment. The use of the symbol and the authority granted by this certificate of authorization are subject to the provisions of the agreement set forth in the application. Any equipment marked with this symbol shall have been produced, assembled, and tested in accordance with the provisions of the aforementioned ASME standard.

COMPANY:

Augusta Fiberglass
86 Lake Cynthia Road
Blackville, South Carolina 29817

SCOPE:

Manufacturer of reinforced thermoset plastic corrosion resistant vessels and vessels parts by shop fabrication and shop subassembly, fabrication of types I, II and X laminates using hand lay-up, spray-up and filament winding fabrication methods; performance and subcontracting of design by rules and design by stress analysis; performance of hydrostatic and vacuum testing and subcontracting of acoustic emission and mechanical laminate testing at the above location; and performance of field assembly & field fabrication and field repair for new construction before being placed in service

AUTHORIZED:

May 20, 2011

EXPIRES:

December 29, 2013

CERTIFICATE NUMBER:

RTP-009

Vice President
Conformity Assessment

Director, Accreditation and Certification

The American Society of Mechanical Engineers





Patented 120' Mandrel for Large Field Vessels



We have field fabrication experience with the largest vessels in the world. B&D Plastics fabricates the largest dual laminates in the world.



Large Equipment Field Fabrication Capabilities



Manufacturing On-site

Since 2003, our field operations have been involved in the manufacture of seven (7) JBR's, seven (7) Gas Risers/Mist Eliminators/Turning Vanes and 53 large diameter stack liners consisting of ***over 30 million pounds of field constructed laminate.***



45' diameter tanks shipped over the road





Field Fabrication Solutions – Modular assembly





World's Largest All FRP Process Equipment



System weighs more than 1.5 million pounds



Field Capabilities

- Equipment & Staff for 10 simultaneous field projects





AFC and B&D Plastics Both Can Deliver by Barge





Innovative Shipping Solutions – By Land





Innovative Shipping Solutions – By Barge



From
Blackville, SC
to
Washington,
DC



From Ocean Springs, MS to Point Comfort, TX



Summary

- Safety is #1 priority
- RTP-1 for high quality
- FEA Analysis for design
- Equipment and staff
- Field mobilization experience
- Field fabrication experience
- Oblation, modular assembly
- Ship by truck or barge



The largest FRP and Dual Laminate equipment - delivered to your site!