

## FEATURED PROJECT Composite Tank Repair

## COMPOSITE REINFORCEMENT OF A TURPENTINE TANK

## **CUSTOMER** Georgia Pacific

LOCATION Cedar Springs DATE OF APPLICATION June 2021

SUBSTRATE 316 Stainless Steel **SYSTEM** FRP Repair Putty, FRP 211 HT Saturant, CF-500 BD, HP 400 Novo

During a planned outage at a pulp and paper plant, the weld seams on a chemical storage tank were found to have severe degradation. The tank typically operates at elevated temperatures and contains turpentine, a highly volatile and flammable liquid, and is critical to the safe and efficient operation at the plant. The engineering team explored a range of options, including full tank replacement and externally welded patches, but had limited time and manpower. The repair needed to allow the plant to put the tank back in service promptly at the end of the outage and be a long-term solution.

After consultation with Advanced FRP Systems, the plant performed spot welds on all severely damaged weld seams and then installed a full composite tank reinforcement, providing a long-lasting solution despite continued internal corrosion and ensuring the repair was no longer time-critical as the composite system could be finished after the plant went back online.

## **INSTALLATION STEPS:**

- After spot welds were completed, the exterior was grit blasted to an SSPC SP-10 Near-White Metal finish.
- 2. All weld seams and pitting were covered in FRP Repair Putty.
- FRP 120 HT was applied to the tank surface at 5 10 mils via a roller.
- 4. Three layers of carbon fiber were saturated with FRP 211 HT Saturant and wrapped around the tank while in service, operating at 120 - 160°F
- 5. HP 400 Novo topcoat was rolled on the composite at 15 20 mils.

Despite delays caused by severe weather and high humidity, the repair was completed successfully and within budget.

- The composite system will provide a 20-year service life despite continued internal corrosion.
- The carbon fiber composite provides a secondary pressure boundary, operating up to 375°F and in direct contact with turpentine and other aggressive solvents.
- The composite system was installed in six shifts and was estimated to be half the price of a full tank replacement.



Figure 1 Close-up of the Installation of Carbon Fiber Composite



Figure 2 Reinforcement of the Bell End of the Cylindrical Tank



Figure 3 Turpentine Tank after Application of the HP-400 Novo Topcoat