

FEATURED PROJECT

Active Leak Mitigation & Composite Reinforcement of Fiberglass Pipe

CUSTOMER

Major Chemical Manufacturer

APPLICATION TEAM

ProPaint CA

SYSTEM

GF-130 MCU, FRP Repair Putty, FRP 200 Saturant, CF-500 BD, HP 300 Epoxy

LOCATION

Alberta, CAN

DATE OF APPLICATION

October 2016

SUBSTRATE

Fiberglass

PROBLEM

An inspection of a cooling tower at a chemical manufacturing facility found leaks present on the fiberglass header pipe with a bell and spigot design. The design allowed the pipe to taper from 72 inches to 24 inches in diameter along its span. The leaks were mainly present at the joint of the pipe including areas where previously installed fiberglass-based repairs did not perform as expected. As the cooling tower was critical to the operation of the facility, it could not be taken offline and any repair needed to be completed with the pressurized pipes actively leaking cooling water.



Figure 1 Close-Up of Leaking Pipe At Previous Fiberglass Repair

Advanced FRP Systems designed a two-part solution for this challenging pipe repair: a moisture-cured urethane wrap to stop the active leak on the pressurized piping system and a high-strength carbon fiber composite wrap to provide a permanent repair.

INSTALLATION STEPS:

1. After the surface was thoroughly cleaned with a wire brush, a combination of Steel-Stik putty and GF-130 MCU wrap was used to temporarily stop the leak.
2. The step down of the joint was then filled in with FRP Repair Putty, a high-build epoxy material.
3. The entire circumference of the pipe was sanded with 60-grit sandpaper and wiped down.
4. Four layers of CF-500 BD, a bi-directional carbon fiber fabric, were saturated with FRP 200 Saturant, a 100% solids epoxy saturating resin, and wrapped around the pipe.
5. HP 300 Epoxy was rolled on the composite at 15 - 20 mils as a topcoat

The repair was completed without delay despite cold temperatures.



Figure 2 Joint After Leak was Repaired with GF-130 MCU



Figure 3 Permanent Repair with High-Strength Carbon Fiber

SOLUTION

BENEFITS

- The leaks were stopped without taking the system offline despite the difficult location of the leaks at a bell and spigot joint.
- The repair system continues to perform after nearly 5 years in service without any leaks or delamination.
- Advanced FRP's carbon fiber pipe repair was less than 50% of the proposed cost of a similar repair system provided by another supplier.