

## FEATURED PROJECT

# Carbon Fiber Repair Kit

### CUSTOMER

Power Transmission System Operator

### APPLICATION TEAM

A&G Industrial

### SYSTEM

Carbon Fiber Repair Kit

### LOCATION

Boston, MA

### DATE OF APPLICATION

June 2017

### SUBSTRATE

Carbon Steel

## PROBLEM

A power transmission system operator in the North East United States was experiencing spot corrosion in areas of their underground power transmission system where the pipe-type cables were installed via a horizontal directional drilling technique only five years from the date of installation. The corrosion was occurring primarily on girth welds, resulting in 50 - 100% wall loss, and led to several dielectric fluid leaks. The utility provider needed a solution that could repair the damaged girth welds even when extensive wall loss was present and proactively reinforce other potential problem areas of the host pipe; all while their assets were online.



Figure 1 Damaged Girth Weld Protection System with Spot Corrosion

## SOLUTION

An inspection found that the 8-inch, carbon steel pipes were experiencing localized corrosion due to the damaged coating on the girth welds. Advanced FRP Systems recommended our Carbon Fiber Repair Kit solution, a high-strength, fully structural, carbon fiber composite repair that would allow the utility to repair the corroded areas and tie back into the original barrier coating to prevent further corrosion. The all-inclusive kit is designed for spot repairs, is easy to install and includes all the composite materials and instructions required to perform a full repair in compliance with ASME PCC-2 (2018) Standard for Non-Metallic Repairs on Pressurized Equipment and Piping, even with 100% wall loss.



Figure 2 Application of Carbon Fiber Composite over the 8-inch Feeder Pipe

### INSTALLATION STEPS:

1. The existing coating was removed and the repair area was grit blasted.
2. The carbon fiber pipe repair kit was installed, including a galvanic barrier layer and impact-resistant epoxy topcoat
3. The system was allowed to cure for 24 hours and holiday tested to ensure continuity.
4. The existing corrosion barrier was extended to cover the termination points of the carbon fiber repair.



Figure 3 Application of HP-300 Topcoat System Prior to Holiday Testing

## BENEFITS

- The composite system is fully structural and verified to withstand more than 1,000 psi of internal pressure even with a through-wall failure in the host pipe
- Provides a permanent solution with a maintenance-free service life of over 50 years
- Fully installed in as little as 48 hours, without taking the system offline.
- Acts as a barrier coating to prevent external corrosion.