

Corroded Offshore Riser Repaired with A+ Wrap™

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Offshore

Summary

Offshore oil and gas platforms along the coast of Southern California have been an energy resource for the western U.S. for decades. Preventative maintenance and pro-active repair are instrumental to continued, efficient operation and environmental safety. When corrosion was noted on a riser during routine observation and maintenance, the owners investigated repair options that could meet the challenging conditions.

The on-site maintenance contractor, who had experience with similar pipe damage and repairs, suggested [A+ Wrap](#) to the owners. A+ Wrap provided an option for a permanent repair that could be completed without hot work or interruption of operation.

Benefits

- Easy installation
- Restores structural integrity
- Extends the life of the pipe
- Prevents future external corrosion
- Factory-saturated for time-saving application on site
- No pipe cutting or welding
- Permanent repair with no disruption to pipeline operation during installation
- Can be applied to thin wall pipe, allowing installation in areas where Type B sleeves cannot be welded
- Can install, re-coat, and backfill on the same day, saving time and money
- Easily applied on condensating pipelines and underwater
- Customized engineering design package supports regulatory compliance requirements

Challenge

A 12-inch carbon steel pipeline riser located on a permanent offshore platform had experienced highly visible exterior corrosion over a five-foot straight segment. The external wall loss depth was approximately 0.36 inches. The repair location posed challenging access and wet conditions. In addition to restoring strength, the repair needed to provide protection against future corrosion in a salt-water environment.

Solution

CSNRI was contacted for a customized solution with A+ Wrap, which is designed to work in both wet and dry environments. Available in widths from two to 12 inches, a narrower wrap was selected. With limited access to the repair area, the narrow wrap makes repair easier and faster.

CSNRI engineers designed a system to repair up to seven feet of the riser using A+ Wrap. The bi-directional fiberglass composite wrap is designed for corrosion repair of small-diameter pipes. The wrap system is provided in moisture-sealed pouches, allowing for quick and easy access. By eliminating field saturation and fabric measuring, the installation time is reduced, ensuring the highest repair quality while minimizing crew time in hazardous environments.

The product can be applied in temperatures up to 120 F. The system follows ASME PCC-2 and ISO 28417 standards and begins to set within an hour.



The repair area was cleaned and filled, followed by an underwater primer applied to all exposed pipe areas.



A+ Wrap is compatible with wet conditions and can even be applied under water.

Application

Crew members selected by the asset owner were trained and certified by CSNRI to execute the repair. The offshore location required application at low tide. Additionally, the repair was delayed several times due to rough seas. With CSNRI representatives located in the area, rescheduling could be accommodated quickly. A small three-man crew performed the repair on site.

Prior to application, the repair area was media blasted and surface cleaned. A high-compressive filler was applied to the damaged area, followed by an adhesive primer applied to all exposed pipe. After a brief waiting period, the crew applied the A+ Wrap by spiral-wrapping the pipe. The six-inch fabric width made application more manageable in the difficult-to-access area. The wrap was followed by compression film and then perforated to allow for natural off-gassing. The repair was allowed to cure overnight. The next day, SynthoGlass SPF was applied over the cured repair to protect the installation from UV degradation and future corrosion.

Results

The structural integrity of the pipe has been completely restored. Additionally, because of the owner's approach to ongoing maintenance, a repair was designed and applied during the right weather conditions, without danger of leaks or emergency shut-downs. The entire repair was completed in less than two days with no disruption of operation.



Compression wrap was applied over the A+ Wrap and allowed to cure overnight.



Completed A+ Wrap repair is a permanent repair that will virtually eliminate instances of future corrosion