

# The Corrosion Monitor

Newsletter: Volume 5 - Winter 2012

## Topics

Visco-Elastic tapes require minimal pipe surface preparation

Farwest News... New C.P. Technologist in PA and New Drill Rig in TX

AC Mitigation Solutions Using SSD Devices

### Visco-Elastic Tape Technology Review

This past summer, Farwest Corrosion Control supplied a field applied tape coating system for a pipeline relocation project in Southern California. While not involved in assisting with the coating specification, we have long-standing relationships with the contractor and the pipeline owner.

Two new 12" pipelines were built. The fittings and some of the girthwelds were field coated with Amcorr Viscotaq Coat Wrap ST for corrosion protection and then followed with Polyken tape for mechanical protection. Visco-Elastic tapes aren't new to the market, but it's within the past few years that their popularity and use have risen.

Typical field applied tape coatings require a number of meticulous steps, time, and patience for successful application. The first step is cleaning the pipe to meet the manufacturer's requirements. This usually means a wire brush, a power wire brush, or abrasive blast cleaning. Applying a primer is the next step. Tape application can begin after the primer has sufficiently dried. When tape is spirally wrapped around pipe, uniform tension must be held on the tape roll and each successive wrap must overlap the previous wrap, meeting the project specifications relative to the number of tape layers. If a wrinkle is created, the tape should be pulled off the pipe and repositioned, ensuring that the tape backing is smooth. The tape should adhere to the pipe and itself, creating an airtight and watertight bond. If wrinkles aren't removed, they can and will create a path for water to find its way to the pipe surface.

Visco-Elastic tapes are atypical. They require minimal pipe surface preparation. A wire brush cleaning is usually sufficient, therefore no specialized tools or equipment are required. The adhesive is mastic-like. It's very soft, tacky, and aggressive, negating the need for a primer. It easily fills the irregularities of the pipe surface substrate. When applied, the tape requires minimal overlap and tension on the tape roll. Contractors and inspectors can be trained in proper application in a relatively short time period as was the case with this project.



### Farwest News

Farwest is happy to announce the acquisition of a deep well drilling rig to our growing list of equipment in Humble, Texas. The addition of this rig will allow us to meet customer demand for the installation of deep well anode systems in the Gulf Coast Region. We're also happy to report that Nathan "Buck" Bishop has joined Farwest in Humble. Buck will be responsible for the operation of the drilling rig and installation of the deep anode systems.



In our Newtown, PA location, Linda Sprague has joined our Engineering Services Division and will be responsible for providing engineering and technical consulting services to customers in the Northeast. Linda is a NACE certified C.P. Technologist with over 14 years of experience in the cathodic protection industry so is a valuable addition to our growing technical group.

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## Visco-Elastic tapes - Continued...

Some Visco-Elastic tape manufacturers make these statements:

- If a wrinkle is created when applied, it need only be pressed down or smoothed out, avoiding possible water migration to the pipe surface.
- Visco-Elastic tapes are self-healing to a degree. If the tape incurs a relatively small damaged area, the adhesive will cold flow to cover it.
- If the tape fails due to shear or soil stress, the adhesive will pull apart but some adhesive will remain on the pipe surface, providing corrosion protection.
- Visco-Elastic tapes will remain flexible for decades. They won't crack or become brittle over time.

The following procedure was in place on the girthwelds and fittings for the project:

- A clean, solvent-soaked rag was used to wipe down the area.
- The bare steel was abrasive blasted to a near white metal degree of cleanliness.
- The plant applied coating was lightly sanded where it would be overlapped.
- Viscotaq Coat Wrap ST tape was meticulously wrapped around the pipe.
- Polyken tape was applied over the Viscotaq tape.
- The tape coating was visually inspected and holiday tested. No repairs were necessary.

## Even More Farwest News!

**Jim Tolly** was promoted to Business Development Manager where he will head our sales staff.

**Bill Golden** has been promoted to Engineering Manager at our Bakersfield, CA operation.

**Nikkole Norberg** moves up to Business Development Specialist at our Hayward, CA location.

**Justin Karn** joins us in Humble, TX as our Business Development Specialist.

**Andy Hartmeier** strengthens our Tulsa, OK operation as our new Customer Service Specialist.

## Advantages of Using a Decoupled AC Mitigation System

Solid-state DC decoupling devices, which function to isolate DC current while grounding AC current and lightning, are commonly used in the mitigation of AC interference voltages and currents on pipelines. Under normal system conditions, if the open-circuit AC voltage on a pipeline is 15 volts, or the available current is 5 milliamperes or more, NACE Standard SP0177-2007 considers this a condition at which a potential shock hazard exists. Voltages and currents above this level could represent a safety risk and mitigation systems should be considered. Mitigation systems should be designed to include appropriately rated solid-state decoupling devices to maximize the performance of cathodic protection systems and provide adequate grounding for AC fault current and lightning.



When AC interference is addressed, there are two options; namely, spot mitigation and continuous mitigation, both of which can benefit from the use of a decoupler. Spot mitigation reduces pipeline potentials only at specific sites along the pipeline, typically at accessible locations where only localized mitigation is desired. Spot mitigation commonly uses many different types of grounding arrangements and materials, including existing grounds or other structures, if appropriate. Regardless of the

grounding system used, mitigation systems implemented with a Solid-State Decoupler (SSD) prevent any CP interaction between the pipe and grounding material. As a result, grounding systems can be comprised of other materials (not just the typical zinc or magnesium), such as copper ground rods, horizontal buried copper conductor, sections of steel pipe casings, often representing substantial cost savings. Additionally, any unwanted leakage of CP current is eliminated, making CP systems more effective.

Continuous mitigation systems provide a more thorough solution than spot mitigation because they minimize touch and step potentials due to AC faults or lightning along the entire pipeline segment that has mitigation applied. Commonly, continuous mitigation systems include zinc ribbon or copper wire as the grounding system. Direct bonded zinc or other typical CP materials would interfere with instant off potential measurements making these tests ineffective, and affect an impressed current CP system. Additionally, stray DC current can access the pipeline through the direct bonded zinc, but can also exit where no zinc conductor exists, causing a corrosion problem. Therefore, decoupled systems offer significant advantages.

When decouplers are being considered, the decoupling device should be third-party listed (independently certified) as meeting the appropriate code requirements, such as the National Electrical Code (NFPA 70) Articles 250.2, 250.4, and 250-6(E) for meeting grounding codes while blocking CP, along with Sections 500-504 for use in hazardous locations.

The Dairyland Electrical Industries SSD series meets these requirements. Contact Farwest Corrosion Control for technical assistance.

Farwest Corrosion Control Company

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