

Corrosion Protection for a Single Bottom Storage Tank on Pea Gravel Foundation via Internal Flood IDS

Project Specifics

Installation Dates
September 1-4, 2020

Location
Texas, USA

Environmental Conditions
96°F, ~80% humidity, hot and sunny with some clouds

Asset Details
Diameter: 143-ft
Vessel Construction: Single-Bottom with Concrete Ring Wall, Existing Liner, 4 Ports, and No Anchor Bolts
Foundation Media: ~4 inches of pea gravel soil mixed with rocks around the concrete foundation.

Inhibitor Delivery System (IDS)
Internal Flood IDS with ER Probe Monitoring Systems

Zerust Product(s) Used
Zerion® FVS Corrosion Inhibiting Powder



Project Specifics

The client wanted corrosion protection for an aboveground storage tank on pea gravel foundation with a concrete ring wall, existing liner, four ports, and no anchor bolt(s).

Zerust Solution

The engineers at Zerust® Oil & Gas developed custom solutions for this client and successfully installed an IDS sealant system around the chime area of the targeted asset and completed the injection of the corrosion inhibiting solution slurry on the tanks using Zerust's Internal Flood IDS along with the installation of ER probes for IDS monitoring.

Vessel Assessment

Pea gravel soil mixed with rocks around the concrete foundation. Dug out small areas around existing old ports, which were replaced by Zerust ER Probe assembly port connection on all three (3) trench channels at a 90-degree angle. Wire brushing was conducted on the circumference of the chime ring to clean off the rust and dead shell paint for better seal application of Sikaflex. Inspection was also conducted to make sure there was no leakage around the chime ring during injection of the inhibitor. Other than rust/dead shells around the chime ring, the concrete foundation is still in terrific shape. Some work was also being performed within the tank upon our arrival and during probe/seal installation.

Installation

Sikaflex polyurethane construction adhesive was applied at the circumference of the tank Chime Ring interface to prevent any form of leakage during injection process. PVC pipes were assembled and installed in ports through the ring wall at three (3) different locations. Each port is connected to a trench that goes to the center of the tank foundation. Port assemblies were connected to the old ports which were cut and connected at the base of the trench wall for installation of ER probes.

FVS Inhibitor installation was injected through the floor plate ports inside the tank using garden hose and submersible water pump. The application was continually done through all four (4) floor ports. ER probe readings were taken from each installed unit and analysis shall be presented in continuous reports upon gathering of further data. Ammonia readings were also taken on seven (7) different tanks for further analysis on corrosion rate levels.

Conclusion and Recommendations

It is recommended that data should be recorded (min.) once a week for three (3) months post VCI application. After which this frequency can be reduced to once a month. All data should be sent to Zerust Oil & Gas for analysis.