



Corrosion and CP - Construction Oversight

Introduction

With many U.S. pipeline operators expanding their pipeline systems, it is becoming increasingly critical to design and implement effective cathodic protection (CP) systems to preserve the integrity of both existing and new systems. New pipeline systems are often installed in existing pipeline right of ways, congested with pipeline crossings, high-voltage AC power lines, and more. This congestion increases the importance of designing effective CP systems to mitigate interference and to ensure cathodic protection is applied to the asset prior to product going through the line.

Overview

To achieve the goal of cathodic protection and interference mitigation at the onset of a new pipeline project, it is critical to involve qualified CP professionals during the construction process. EN Engineering offers our clients NACE-qualified engineers to oversee cathodic protection related aspects of pipeline construction including oversight and guidance during the installation of rectifiers, ground beds, AC mitigation devices, test stations, casings, and foreign line crossings.

On such projects, EN Engineering provides the guidance and technical expertise often absent from a mainline pipeline installation contractor's area of focus. Our expertise ensures proper installation of a cathodic protection system, reduces post installation costs, reduces exposure to regulatory issues, and preserves the integrity of pipeline assets by creating a complete, effective cathodic protection system from the onset of pipeline operations.

Key Project Tasks

General activities

- Attend morning contractor meetings for awareness of CP installation timeline and keep contractors aware of CP installation progress and issues
- Answer cathodic protection questions from all main line and tie-in crews
- Provide communication to and from clients on the progress and issues in the field during CP system construction
- Provide information and progress updates to EN Engineering project management during CP system construction

Rectifier and ground bed installation

- Monitor excavation near existing cathodic protection systems to protect and ensure existing rectifier and pipe connection wires are not disabled during construction
- Monitor rectifier and ground bed installation to ensure systems are constructed as designed
- Provide on-site data collection for ground bed “as-built” drawings
- Conduct CP system commissioning as soon as practical during the construction of the pipeline

Foreign line crossings

- Coordinate with foreign pipeline operators as related to cathodic protection
- Provide additional “watch and protect” service for both pipeline operators
- Monitor installation of any necessary bond test stations and initial bond set-up
- Provide testing and collect data as related to interference and mitigation of stray current

Test station installation

- Monitor pipe connections and thermite welds to minimize broken test leads
- Monitor test post installation to ensure facilities are installed in correct locations
- Label test wires inside test station heads to reduce future monitoring issues
- Collect baseline native CP readings
- Document initial test station reads for creation of baseline CP database

Casing installation

- Oversee installation of casing test stations
- Ensure electrical separation of product pipe and casing
- Provide initial testing and data collection at casing test stations

AC mitigation device installation

- Oversee AC mitigation grounding systems (copper wire, zinc ribbon, linear anodes, ground beds, etc.)
- Oversee conductive backfill
- Oversee decoupling devices
- Provide testing, commissioning, and initial data collection

Post construction

- Collect initial cathodic protection readings for integrity management database
- Conduct ACVG and CIS surveys to assess coating effectiveness after installation of pipeline
- Set up of cathodic protection database at customer location
- Provide all relevant data for entry into cathodic protection database
- Assemble data collection and construction drawing mark-ups for “as-built” drawings

Station work

- Oversee isolation flange inspection
- Oversee and install cathodic protection systems for tanks and facility piping
- Commission station cathodic protection systems