GIS ENHANCES AC MITIGATION PROJECTS



By: SCOTT RICCARDELLA
sriccardella@structint.com

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Geographical Information Systems (GIS), like that shown in Figure 1, are a very beneficial tool to the pipeline industry for organizing critical asset information and key pipeline attributes. GIS is particularly useful for integrating and analyzing multiple datasets. Structural Integrity has recently developed specialized software tools to automate the integration of multiple data sets and generating map books. These map books can be printed or viewed with a ruggedized tablet in a field environment.

On a recent project, we used this approach for the documentation of AC mitigation systems as part of the construction support and as-built documentation. AC Corrosion is a special form of corrosion caused by stray currents discharging off a pipeline typically caused by inductive or conductive coupling due to pipelines being in close proximity to High Voltage AC power lines. This form of corrosion can require specialized mitigation systems to protect the integrity of the pipeline. The color maps were an invaluable tool to the construction teams, aiding in the installation of these mitigation systems.

Once the system designs were finalized, the GIS mapbooks provided added value over traditional CAD drawings via the:

- Ability to see a profile view of the system design relative to key reference points. Background aerial imagery makes it easier to identify transition, connection, and end points, leading to more accurate construction.
- Ability to see depth of cover, stationing, pipeline markers and other key pipeline attributes during construction for more accurate and efficient installation of the mitigation system.
- Ability to instantly generate an accurate representation of as-built construction data in an electronic and permanent record of the design that integrates with the client GIS system.
- Flexibility to incorporate and map future monitoring and survey results over time to ensure and trend effectiveness and/or issues with the AC mitigation system.

To help expedite development of these maps, Structural Integrity has created an application that assists in integrating data and creating the alignment sheet maps. Typical data captured and integrated includes:

- Depth of Cover
- GPS Coordinates tied to engineering or survey stationing
- GIS linear footage values
- Parameters of the AC mitigation system per configuration (such as ribbon type and quantity of ribbons, and tie-in points)
- Corrosion coupon locations
- Test stations
- Farm taps and appurtenances
- Exposed pipe, foreign pipelines, or other features identified from an onsite pipeline construction review

As new data is captured (such as from surveys or measurements from monitoring coupons), we can rapidly import this data and overlay it onto the existing data sets.

AC MITIGATION MODELING TOOLS

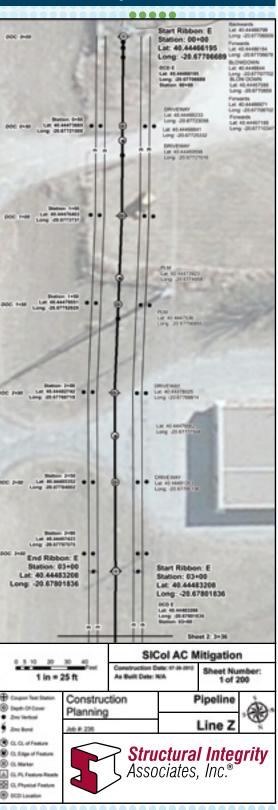
To help support our Cathodic Protection specialists on AC mitigation projects, Structural Integrity has recently acquired ELSYCA IRIS software for modeling the influences of AC corrosion and mitigation systems. This software provides the latest and most advanced analytical capabilities allowing greater details of the pipeline and HVAC system to be taken into account.

The analysis includes detailed modeling on the inductive and resistive effects and supports fast and easy import from files (such as coordinate databases, survey data, etc.). In addition, multiple pipeline networks can be modeled simultaneously and any pipe section can be used in combination with any coating quality.

http://structint.com/elsycairis

FAMILIARIZING YOUNG ENGINEERS





ASME Organization and Code Processes



By: HAROLD E. QUEEN ■ hqueen@structint.com



Since our foundation in 1983, Structural Integrity has recognized the value in industry code and standardization practices and has committed countless resources and time to ASME code development and maintenance as it relates to pressure vessels, piping nondestructive examination (NDE), and the power industry in general. While many of our senior level engineers can regularly be seen at ASME code meetings and conferences, SI is making an effort to get our younger engineers actively involved as well.

Matthew Lindsey, an engineer in Structural Integrity's NDE Research, Development, and Integration group, was recently awarded an ASME ECLIPSE internship for the 2013-2014 term. The ECLIPSE program promotes and recognizes the value of long-term leadership development and diversity among its members and is committed to investing in the careers of its high-potential early-career members. Interns learn their way around ASME with a dedicated advisor, where each intern is personally matched with a senior volunteer (as a professional coach) within their area of interest at ASME. In Matt's case, he has been paired with ASME's Director of Research.

Interns have the opportunity to travel to several meetings and participate in workshops and training sessions to build leadership and management skills, which will serve well in their professional and personal lives. There is a wide range of opportunities to network among themselves and senior society officers to see how they can incorporate the ASME experience into their career development. Matt has already participated in the 2013 Leadership Training Conference, the 2013 ASME Annual Meeting, and recently presented some of his work at the 2013 ASME PVP Annual Conference in Paris, France.

Based out of our State College, Pennsylvania office, Matt's early career has included projects involving piping inspection, bonded plate inspection, civil structure evaluation, and industrial components inspection. He has previously managed a project focusing on multifunctional ultrasonic rotorcraft sensors and, most recently, he has been developing novel inspection solutions that create value for the energy industry. Matt will put his experience to good use as an intern for the Center for Research and Technology Development (CRTD) at ASME.