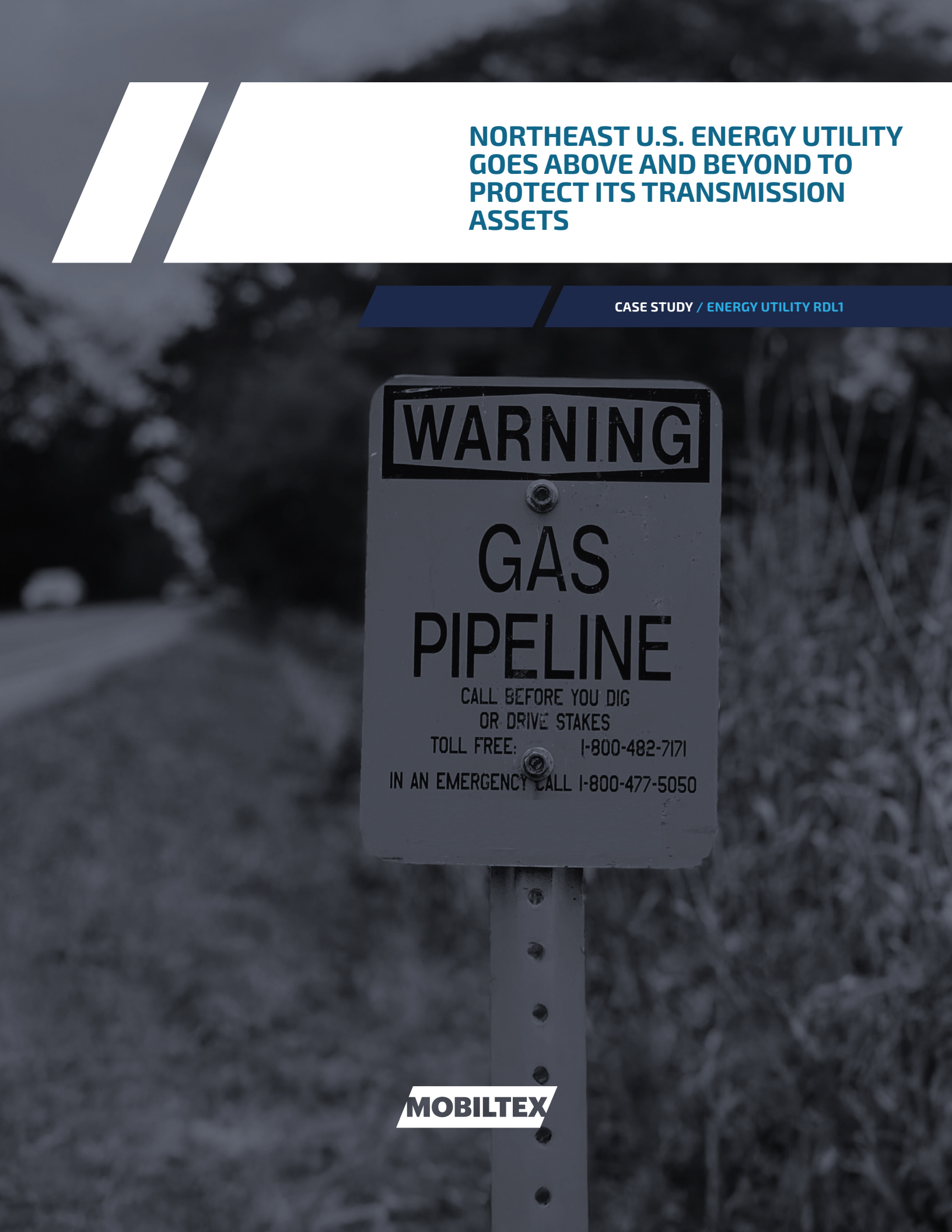
NORTHEAST U.S. ENERGY UTILITY GOES ABOVE AND BEYOND TO PROTECT ITS TRANSMISSION ASSETS

CASE STUDY / ENERGY UTILITY RDL1



MOBILTEX

INSIGHT FOR WHAT IS OUT OF SIGHT

INTRODUCTION

This U.S. Energy Utility operates one of the Northeast's largest natural gas distribution systems, serving 1.8 million customers across the region.

The company manages more than 28,000 miles of transmission and distribution mains, 1.6 million service lines, and 15 underground storage fields with over 800 wells, which help stabilize supply and control costs.

The utility does not produce natural gas; instead, it purchases supply from out-of-state producers and uses transmission infrastructure and storage facilities to buy gas at lower prices and deliver it reliably during peak demand. Gas is moved through a network of transmission pipelines at high pressures, supported by compressor stations, and then stepped down at city gate stations for safe delivery to consumers.

CHALLENGE:

COLLABORATING TO OVERCOME OLD THREATS AND NEW CHALLENGES

The utility is implementing a 10-year Natural Gas Delivery Plan (2024–2034) to enhance safety, reliability, affordability, and environmental performance.

This includes replacing 2,600 miles of aging pipelines, upgrading major lines, and removing vintage service lines to reduce methane leaks. The organization has also committed to achieving net-zero methane emissions from its natural gas operations by 2030 and broader carbon neutrality by 2050, positioning itself as a leader in modernizing energy infrastructure in the Northeast.

Corrosion Engineers are responsible for monitoring the utility's transmission lines to ensure they operate safely, efficiently, and reliably while delivering services with minimal interruptions.

SOLUTION:

EMBRACING REMOTE MONITORING TECHNOLOGY

The partnership with MOBILTEX spans over a decade, with the operator adopting CorTalk RMU technology into its CP workflows.

"In the spring of 2008, we trialed three remote monitoring units (RMUs) from MOBILTEX and found that having real-time quality data was critical to gaining valuable visibility within our system," said the lead Corrosion Engineer. "The units were compact and represented the best product available in the industry, backed by excellent technical support." The organization has continued to expand its MOBILTEX RMU fleet with the latest technology releases ever since.

Prior to implementing remote monitoring, they relied on legacy portable data loggers like many other utilities. These devices resided in the field and required timely site visits to retrieve readings, charge devices, and relocate them to new areas of concern. Their team estimated that reviewing quarterly data from field loggers required approximately eight hours of work per device, depending on how accessible the location. Furthermore, data loggers only provided small windows of data and could not provide higher-value continuous readings of voltage or current density.

"In-person field surveys only capture one moment in time with a single reading—that's an extremely limited dataset for making critical decisions," noted a lead Corrosion Engineer.



UNDERSTANDING AC CORROSION RISK ON PIPELINES IN DENSE UTILITY CORRIDORS

A result of our expanding cities and urban sprawl means that many of our critical linear infrastructure, such as pipelines and powerlines, are co-located in utility corridors.

This has increased the potential for electrical interference between high voltage AC powerlines and pipelines, which as long, linear steel structures, are an ideal conductor.

Understanding the geometric relationship between transmission lines and nearby power infrastructure, combined with knowledge of electrical interference patterns, enables their team to strategically position remote data loggers at optimal locations. Additionally, higher voltage power lines are more likely to generate significant AC interference issues, so they prioritizes 345 kV lines over 138 kV installations.

“Our state also has extensive swamplands, which are considered high-risk environments due to moisture and conductive soils that increase both the likelihood and severity of corrosion,” added the lead Corrosion Engineer. “These areas receive priority for remote monitoring deployment.”

Furthermore, as our electricity transportation systems rapidly expand and electrify to support new sources of power generation and storage, powerline refactoring is creating a more dynamic environment for managing these risk conditions.

PRACTICAL CHALLENGES WITH AC MONITORING

The utility has steel pipelines between 8 and 36 inches in diameter that span an installation timeline from the 1950s to present with a variety of coatings including coal tar, yellow jacket, wax tapes and fusion-bonded epoxy (FBE). Monitoring AC interference across this diverse mix of pipeline ages and materials presents significant challenges.

They employ 1 cm² coupons to mimic small coating defects (holidays) where AC current density concentrates, providing an indication of potential AC corrosion risk. This measurement technique proves effective for newer pipelines with high-quality coatings. However, older pipelines with coatings like coal tar can develop larger, irregular defects up to 100 cm² in area. Partially bare sections may also exhibit lower current density due to distributed electrical discharge.



“YOU SIMPLY CAN’T COMPARE REAL-TIME FAST-SAMPLED DATA WITH STANDARD RMU DATA OR ESPECIALLY ANNUAL CHECKS WHEN IT COMES TO AC MITIGATION—THE DIFFERENCE IS NIGHT AND DAY. WE’RE ALWAYS STRIVING TO ENHANCE OUR SYSTEMS, REGARDLESS OF THE COST OR RESOURCES REQUIRED.

WE GO ABOVE AND BEYOND TO SAFEGUARD OUR ASSETS SO WE’RE AHEAD OF THE CURVE IN IMPLEMENTING ADVANCED AC MITIGATION TECHNOLOGIES.”

— Senior Corrosion Engineer

In these environments, a 1 cm² coupon can overestimate corrosion risk by measuring artificially high current density, while larger defects experience lower, less critical current density levels. This disparity makes older pipelines with widespread coating degradation more difficult to protect, as cathodic protection current disperses over larger areas, reducing effectiveness at individual defect sites.

Coupons sized for small defects cannot validate cathodic protection effectiveness for large, irregular holidays. “Proving the absence of AC corrosion requires extensive, costly monitoring with varied coupon sizes and locations to match actual defect profiles,” explains their Corrosion Engineer. “For this reason, it’s often more practical to install AC mitigation systems than to prove a problem doesn’t exist.”

Daily monitoring enables them to identify problems and respond quickly. When significant issues are detected, regulations require remediation within 12 months. Since permitting can take six months and construction another six months, rapid issue identification becomes critical for compliance.

Standard RMUs – which typically read every 6 hours – could simply not deliver the data resolution required to address specific mitigation challenges for the the team. When the CorTalk RDL1 remote datalogger was released, the team was early adopters and deployed a small fleet of units to monitor for corrosion and AC interference and provide a proof of concept for their applications.

AC MITIGATION STRATEGIES

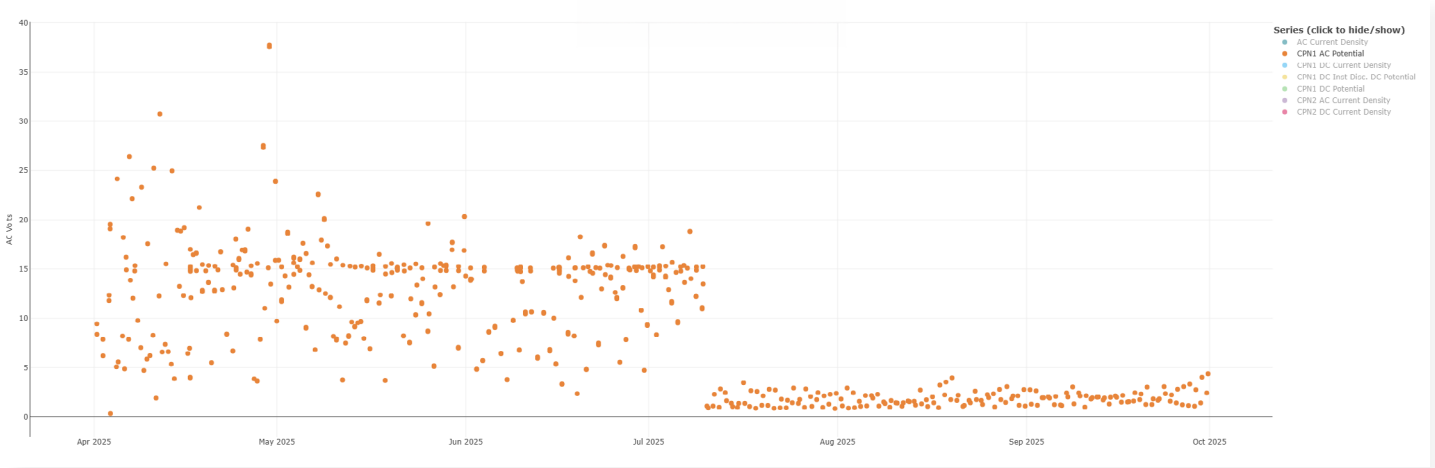
Corrosion guidelines and regulators suggest significant corrosion risk can occur when AC Current Density exceeds 30 A/m² if DC Current Density exceeds 1 A/m^2, and when AC Current Density exceeds 100 A/m^2 if DC current density is less than 1 A/m^2. Furthermore, induced AC is also hazardous to utility staff employees. To ensure employee safety, they consider a threshold of 15 volts AC to determine if hazardous to worker safety. To tackle both of these risks, where they detect elevated voltage in an area or observe an upward trend, they install RDL1s to maintain vigilant monitoring and assess whether AC mitigation is necessary.

They employ various AC mitigation techniques, including burying zinc ribbon or copper cable along pipelines, installing grounding mats at 800-1,500 foot intervals, and using decouplers to safely divert induced AC currents away from pipeline infrastructure.

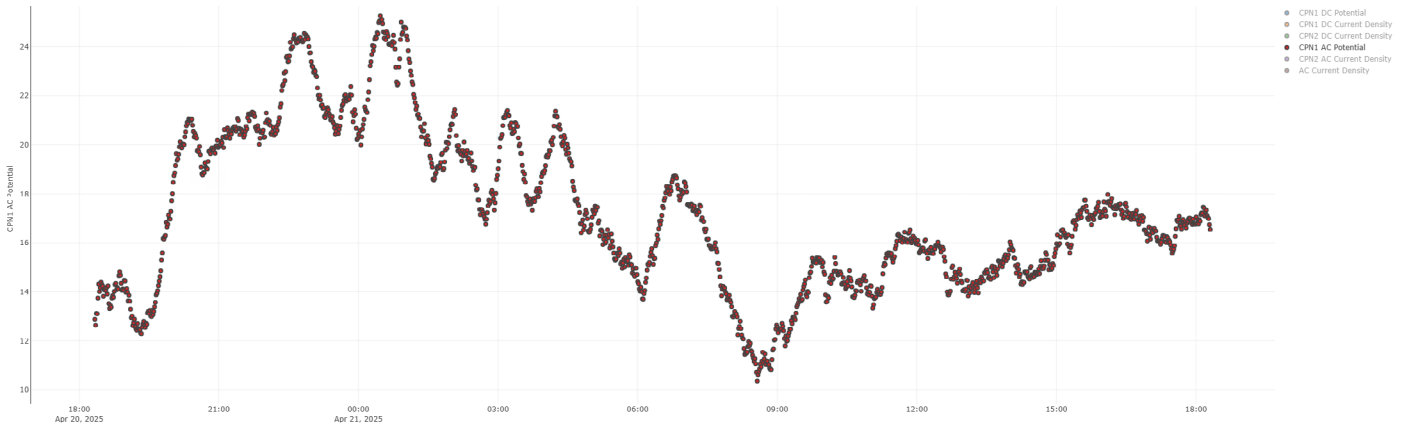
Following installation, RDL1s provide remotely captured, highly granular data that inform the design of AC mitigation systems, and help to verify system performance post installation.

“Having the right data from the monitors allows us to understand the issues better and design effective mitigation solutions for each situation,” says their team leader. “We can capture voltage and current density peaks, which, combined with power line data, enables correlation with pipeline conditions without over-designing AC mitigation systems. There’s no one-size-fits-all for AC mitigation; good data saves both time and money.”

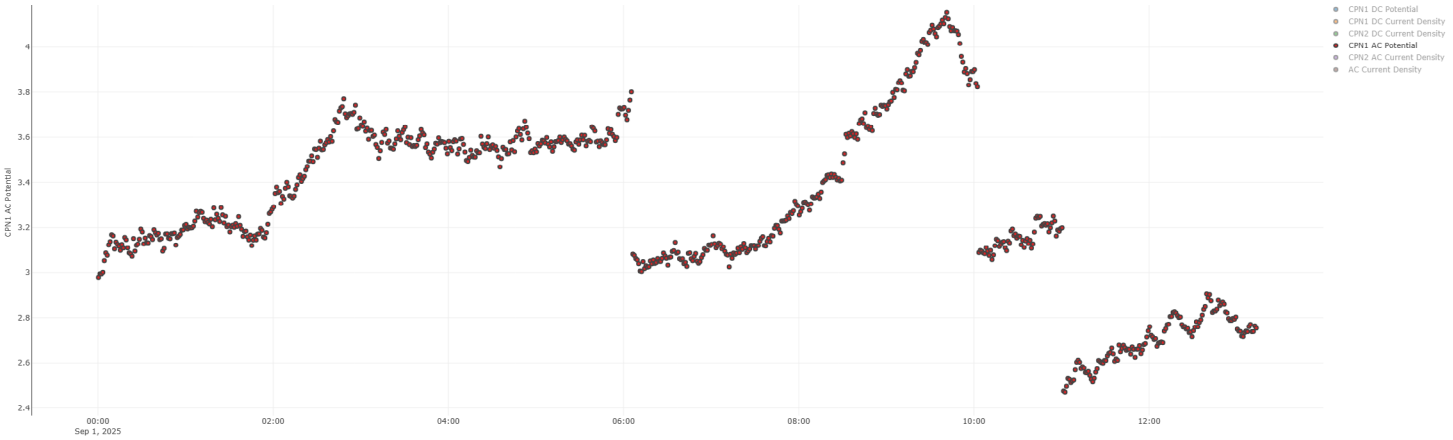




Hourly readings from an RDL1 between April to September - Indication of AC Mitigation coming online in July. Observe considerable fluctuations in AC voltage pre mitigation.



Daily Fast Sample Data (24 hours, 10s samples) from an RDL1 in April - Prior to AC Mitigation. Observe diurnal pattern and relatively high AC voltage loads.



RESULTS:

Daily Fast Sample data (24 hours, 10s samples) from an RDL1 in September - Post AC Mitigation. Observe far smaller AC voltage loads.

ENHANCED SYSTEM VISIBILITY: A DEFENSE FOR UNEXPECTED POWERLINE REFACTORING

The RDL1 offers significantly improved visibility into AC interference over traditional RMUs, which helps address one of the emerging risks for pipeline operators – powerline refactoring.

Electricity transmission line operators nationwide are currently dealing with major disruptions to their powerline networks as they race to build out and modernize an increasingly complex electricity grid due to decentralized power generation from renewables. As such, powerline operators are not obligated to share their planned line refactoring project schedules with other infrastructure operators, which presents a major challenge for pipeline operators. As the power load characteristics change when cables are refactored, the risk of induced AC and other interactions with nearby infrastructure (like pipelines) increases.

Without proper coordination, these changes can introduce new risks, including increased induced voltages on nearby pipelines or equipment. Fast-sampling remote dataloggers have empowered Corrosion Engineers with the ability to effectively observe reconductoring effects more closely and in real time.

Operators can set thresholds so that when the electrical environment changes, for example, when new conductors induce higher voltages on nearby pipelines, alerts are automatically sent, enabling rapid response. The team utilizes graphs and fast sampling tools within the Corview Cloud platform to quickly visualize and assess situations when alerts are received. A granular (typically 1Hz or 0.1Hz) waveform print can be captured for a given day, or week, which can quickly update the diurnal loading patterns you can expect under the new operating paradigm.

Operators can access the devices from the CorView.Cloud platform via cellular connection to monitor, manage sampling configurations, and validate incoming data. Centralizing historical data enables the team to provide evidence for system improvements, plan maintenance, and implement risk mitigation strategies before known events occur.

“Having easy access to centralized historical data with 24/7 real-time monitoring, even via mobile app, gives us the power to make informed decisions in the moment while continually evaluating and improving service delivery to our customers,” says the Senior Corrosion Engineer.

EDGE COMPUTING DELIVERS INSIGHT WITHOUT DATA OVERLOAD

The RDL1 computes statistics on the fast-sample event data, translating to the customer in a quick review format that informs whether a more detailed analysis needs to occur.

Legacy remote monitoring devices deliver measured data

A key enhancement that the remote datalogger has over the remote monitor is how it synthesizes the potentially overwhelming data included within a fast sample event down to an actionable summary. For the datalogger, as quickly as once per second, a single event could contain over 500,000 discrete readings. While incredibly valuable for detailed analysis, the entirety of the dataset is not likely adding value for a quick look to understand what the site conditions were.

To better shorten 'time-to-insight' for the customer, the RDL1 computes a selection of key statistics at the device side, and includes them as a summary within the fast sample data transmission.

An illustration of this is captured in the image below:

FAST SAMPLE STATISTICS

Event ID	365
Start	09-Jun-26 13:43:11.000
End	10-Jun-26 13:43:11.000
Total Readings	5760
CPN1 DC Potential	# of Readings: 1440 Min: -1.9 @ 10-Jun-26 12:54:11.003 Max: -1.85 @ 10-Jun-26 5:34:11.003 Average: -1.87 Standard Deviation: 0.01 Percent Overlimit: 0
CPN1 AC Potential	# of Readings: 1440 Min: 0.74 @ 09-Jun-26 23:07:11.046 Max: 4.86 @ 10-Jun-26 8:37:11.046 Average: 2.84 Standard Deviation: 0.01 Percent Overlimit: 0
CPN1 DC Current Density	# of Readings: 1440 Min: -0.35 @ 09-Jun-26 17:34:11.003 Max: -0.29 @ 10-Jun-26 17:55:11.003 Average: -0.33 Standard Deviation: 0.01 Percent Overlimit: 0
AC Current Density	# of Readings: 1440 Min: 0 @ 09-Jun-26 14:57:11.046 Max: 1.02 @ 10-Jun-26 8:39:11.046 Average: 0.53

The user can quickly scan the fast sample event statistical summary to better understand the measurements being taken, sampling rate, and per measurement details on the min, max, average, standard deviation, and, if limits are established, the percent of measurements above limits.

While simple, this methodology helps deliver insights to the customer through edge computed statistics, allowing the decision to dive deeper into data analysis to be made when these indicators call for it. This creates a more efficient monitoring program overall.

MOBILTEX SOLUTIONS:

Reduce Operating Expenses

- Minimize resource use
- Improve efficiency
- Operate by exception

Limit Safety Incidents

- Reduce windshield time
- Improve contractor safety
- Eliminate hazardous exposure

Maintain Regulatory Compliance

- Meet regulatory requirements
- Automate regulatory reporting
- Eliminate HS&E Incidents

Boost Efficiency

- Minimize failures
- Improve communication
- Ensure proper maintenance

Ensure Asset Integrity

- Automate integrity tests
- Predict equipment failures
- Optimize process monitoring

Improve Decision Quality

- Increase data reliability
- Enable useful AI/ML
- Create data-driven culture

Eliminate Production Downtime

- Predict process breakdowns
- Automate preventive maintenance
- Enable continuous monitoring

Drive Sustainable Impacts

- Reduce emissions
- Minimize use
- Eliminate waste

Extend Equipment Life

- Minimize wear and tear
- Avoid failures
- Improve maintenance & service

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