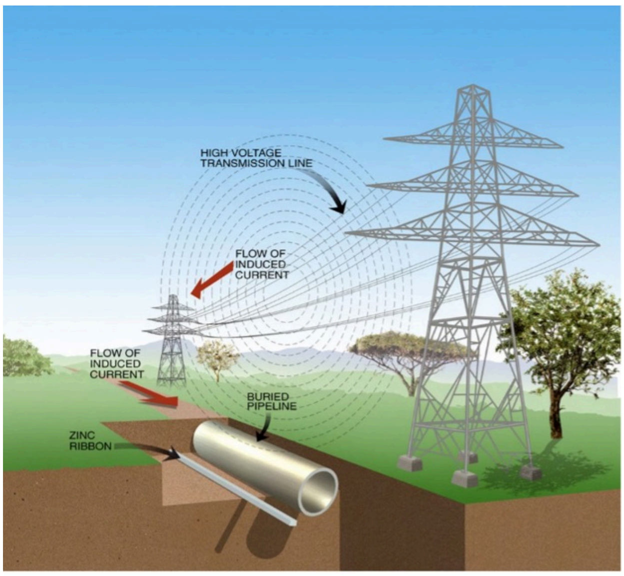
AC Mitigation

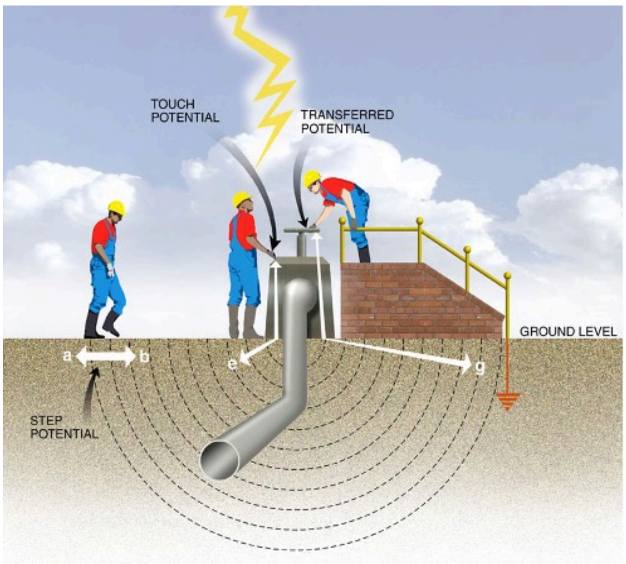
Introduction: Buried Metal Pipelines and High-Voltage Overhead Power Lines: A Risky Combination

When buried pipelines are located near high-voltage overhead and underground power lines, they are exposed to electromagnetic fields generated by alternating current (AC). This exposure creates two major concerns: safety risks and corrosion threats.

Steady-state AC voltages can pose a shock hazard when personnel or the public come into contact with the pipeline or appurtenances—even voltages as low as 15 V can present a danger. Under fault conditions, high fault currents can introduce additional hazards such as step and touch potentials and arcing from tower structures, which may result in severe injury or equipment damage.

From a corrosion perspective, elevated AC current densities can lead to AC-induced corrosion, a highly aggressive degradation mechanism. In-field cases have shown significant metal loss occurring in less than five years of service. Corrosion can initiate even at AC current levels below thresholds considered safe for human contact, representing a potentially severe asset integrity risk.





AC Mitigation

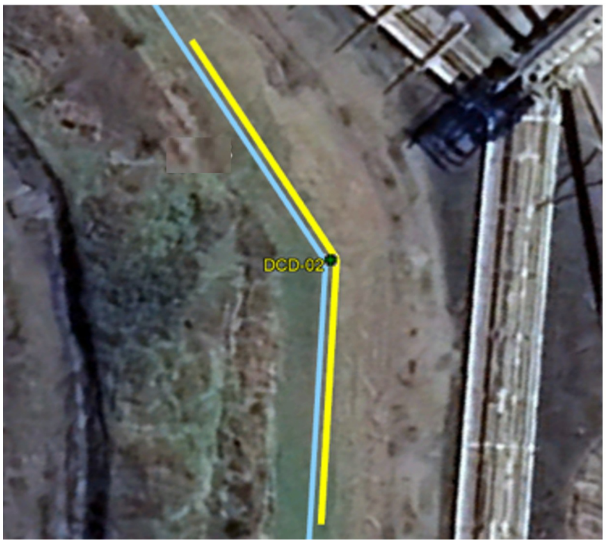
Technical Details: How Corrpro Can Help

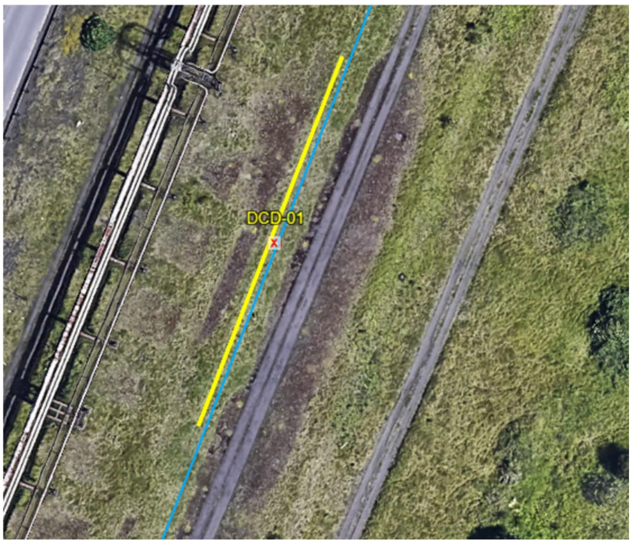
Corrpro provides a comprehensive approach to identifying and mitigating AC interference hazards. Our services include:

- Site investigations and field data logging to assess proximity to power lines, assess the level of AC interference and to quantify current safety and corrosion risks, including:
    - AC and DC current densities
    - Pipe-to-soil voltages (including AC voltages)
    - Corrosion rate measurements
- Computer modelling to simulate interference levels under both normal and fault conditions, and to compare results against industry standards (e.g., AMPP, ISO, EN)
- Design and implementation of AC mitigation systems, including grounding systems, gradient control mats, and decouplers to reduce risks and keep pipelines within acceptable safety and corrosion criteria

These measures are applied to ensure pipeline exposure remains within industry-accepted criteria and thresholds for both personnel safety and long-term corrosion protection.

Pipeline ID	Groundings				Decouplers			
	Label	R max [Ω]	Estimated length [m]	Ref. Soil res [Ω-m]	Label	Lat	Lon	Rating
	GR1	0.15	50	3.3	DCD-01			SSD 1.2KA
	GR2	5.0	50	103	DCD-02			SSD 1.2KA





AC Mitigation

Features:

- Comprehensive Site Investigations
- High-Resolution Field Data Logging
- Advanced Interference Computer Modelling
- Standards-Based Risk Assessment
- Custom Mitigation System Design
- Material Supply, Installation Supervision and Commissioning

---

Applications:

- Pipelines running parallel to high-voltage overhead and underground transmission lines
- Pipeline segments near substations, transmission tower grounding, or wind farm infrastructure
- Proximity to solar farms or wind farms with buried AC export cables
- Areas with unexplained AC-induced corrosion

Corrpro EUROPE