

mears
A QUANTA SERVICES COMPANY

T.C.A.T.®

TOWER CORROSION ASSESSMENT TOOL

CAPABILITY OVERVIEW

T.C.A.T.® is a custom solution for power transmission tower inspection services with risk prioritization.

Galvanized steel towers still corrode below grade, and the damage is hidden until a foundation is excavated. The Tower Corrosion Assessment Tool is Mears' proprietary algorithm. It combines field electrochemical measurements, soil chemistry and visual condition data into a relative risk score for every tower leg and every tower. Operators see which structures to inspect, protect or repair first.

Mears field teams collect the data. Mears engineers analyze it. You receive a ranked, defensible plan instead of a system-wide guess.

THE CORROSION CHALLENGE

Zinc galvanizing protects steel only while it lasts. Soil conditions, stray current and age determine when it stops. T.C.A.T.® evaluates the three mechanisms that drive tower footing degradation:

- Atmospheric corrosion
- Stray current and electrochemical corrosion
- Electromagnetic interference

HOW T.C.A.T.® WORKS

Over 16 electrochemical, chemical and physical measurements are integrated into one risk model, grouped into six factors:

- **Soil:** resistivity, chlorides, sulfates, carbonates, bicarbonates, nitrates, pH, redox potential, moisture
- **Electrochemical:** AC and DC structure-to-soil potential, linear polarization resistance (LPR) corrosion rate
- **Interference:** static and dynamic stray current influence
- **Design:** bare, galvanized or coated steel; grounding type and material
- **Visual:** general corrosion, section loss, pitting depth, coating condition
- **Cathodic protection:** presence, type, age and protection levels

THE T.C.A.T.® PROCESS

1. COLLECT

Field crews measure structure potential, soil resistivity and corrosion rate at every tower leg. Soil samples go to the lab.

2. ANALYZE

Electrochemical, chemical and physical data feed the T.C.A.T.® risk model.

3. RANK

Every leg and every tower receives a relative risk score and a degradation classification.

4. VALIDATE

Selected high- and low-risk towers are excavated and directly examined to confirm the ranking.

5. PRIORITIZE

Operators receive a ranked plan for inspection, cathodic protection and monitoring.



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WHAT YOU RECEIVE

- Relative risk score for every tower leg
- Combined risk score for every tower
- Degradation classification tied to each score
- Risk ranking by tower or by individual circuit
- Custom reports summarizing test results, risk analysis and tower status
- Prioritized recommendations for direct examination, cathodic protection and monitoring
- Project status tracking from "Proposed" through "Mitigated" or "Repaired"

MARKETS & APPLICATIONS

- High-voltage AC (HVAC) transmission lattice towers
- Galvanized and coated steel tower foundations
- Buried tower legs and footings
- Aging infrastructure
- System-wide and circuit-level assessment programs
- River crossings and other critical structures

FIELD-VALIDATED RESULTS

The T.C.A.T.® risk model has been field validated on multiple projects by excavating and examining multiple towers. One one project, seven towers were risk ranked, then directly excavated and examined to confirm the model. The method then ranked a full 75-tower system. Towers with advanced corrosion shared lower soil resistivity, higher soil moisture, and higher bicarbonate and chloride levels.

WHY MEARS?

- ***PROVEN METHODOLOGY***
- ***FIELD-VALIDATED RESULTS***
- ***ENGINEERING-LED ANALYSIS***
- ***125+ NACE-CERTIFIED ENGINEERS***
- ***SELF-PERFORMED FIELD DATA COLLECTION***
- ***RISK-BASED PRIORITIZATION***

Ready to learn more?

Scan here: