

Half-Cell Potential Corrosion Mapping

XCell™ offers the most convenient tool for half-cell corrosion mapping of reinforced concrete structures.

Relationship between the potential values (CSE) and corrosion probability

Measured Potential (mV)	Probability of Steel Corrosion Activity
>- 200mV	Less than 10%
-200 mV to -350mV	Uncertain
<-350 mV	More than 90%

Overview

XCell™ is a novel tablet/smartphone-based NDT device for fast, accurate, and efficient detection and in-situ analysis of corrosion in reinforced concrete structures based on ASTM C876. XCell™ benefits from an advanced wirelessly-enabled maintenance-free sensor that measures the corrosion potential and sends it wirelessly to a tablet for generating half-cell contour plots (i.e., corrosion maps) in real-time. The results can easily be shared with team members or the engineering office. Giatec XCell™ significantly reduces the labor cost associated with the data collection and subsequent contour plot generation and reporting.

Applications

XCell™ can be used for efficient and accurate corrosion mapping according to the ASTM C876, "Standard Test Method for Half-Cell Potentials of Uncoated Reinforcing Steel in Concrete." The results are analyzed using the Android-based application onsite for the identification of locations with high probability of corrosion. The output includes an equipotential contour map for the examined area. The measured potential values are indicative of corrosion probability. The contour plots are color coded for more clarity.



FEATURES

- Single-person operation device
- Maintenance-free electrode
- Tablet/smartphone operation device
- Easy grid generation (on tablet or smartphone)
- Fast data assignment to grid points
- Real-time contour plotting
- Automated temperature correction
- Easy data sharing
- Wireless technology
- Verification kit



Technical Specifications

General

Type	Value
Voltage Measurement Range	± 1000 mV
Measurement Resolution	0.1 mV
Sampling Rate	1s
Input Impedance	>10M ohm
Temperature Measurement Range	0 ~ 50°C (32 - 122°F)
Temperature Measurement Accuracy	0.5°C (0.9°F)
Data Communication and Analysis	Android App
Probe Weight	250 gr

Operating Conditions

Type	Value
Operating Temperature	0 ~ 45°C (32 ~ 113°F)
Operating Humidity	20 ~ 90%
Storage Humidity	5 ~ 90%
Dimensions of XCell™ Probe	32mm x 260mm (DxL)