XCELL™

HALF-CELL POTENTIAL CORROSION MAPPING

OVERVIEW

Giatec 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. Giatec XCell™ benefits from an advanced Bluetooth-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 be shared easily with the engineering office. Giatec XCell™ significantly reduces the labor cost associated with the data collection and subsequent contour plot generation and reporting.

APPLICATION

Giatec 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 as presented in Table 1. The contour plots are color coded for more clarity.

Table 1: Relationship between the potential values (CSE) and corrosion probability

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

FEATURES

- Single-person operation device
- Maintenance-free electrode
- Tablet/Smart phone 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
- Bluetooth V4.0 LE technology

TECHNICAL SPECIFICATIONS

General

Type	Value
Voltage Measurement Range	± 1,000 mV
Measurement Resolution	0.1 mV
Sampling Rate	1 s
Input Impedance	>10 M ohm
Temperature Measurement Range	-10 ~ 50 °C
Temperature Measurement Accuracy	0.5 °C
Communication Protocol	Bluetooth V4.0 LE
Probe Weight	250 gr

Operating Conditions

Type	Value
Operating temperature	0 ~ 45 °C
Operating humidity	20 ~ 90%
Storage temperature	-20 ~ 70°C
Storage humidity	10 ~ 90%
Dimensions of XCell™ Probe	32 mm x 260 mm (D x L)

Note: Specifications are subject to change without notice.

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