



SmartRock™

Wireless Concrete Sensor for Temperature and Strength Monitoring

“With real-time data, SmartRock leaves everything in my control and I don't need to rely on third parties.”

April Smith
Field Coordinator, PCL Construction



Wire-Free
& Wireless
Technology



Remote
Monitoring
Capabilities

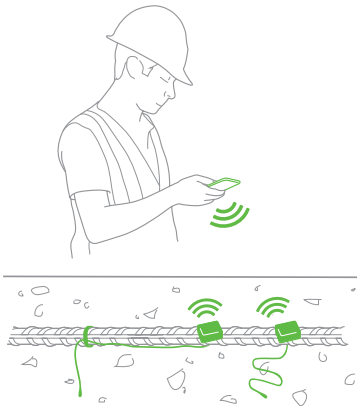


Easy
Activation &
Installation



Real-Time
Data
Collection

SmartRock



Overview

SmartRock is the world's leading wireless sensor for monitoring the curing and hardening of concrete. The sensor is fully-embedded and secured on the rebar, making it completely maintenance and hassle-free. Temperature data is collected at two locations in the sensors' cable and body. The strength of your in-place concrete is then calculated automatically based on the maturity method (ASTM C1074). These results are accessible in real-time and remotely through the SmartRock mobile app and on the Giatec 360™ cloud dashboard to help you make informed decisions. SmartRock's AI assistant, Roxi™, eliminates human-error by sending smart notifications and alerts to give you the upmost confidence in your mix calibration data and accuracy of strength test results.

Features

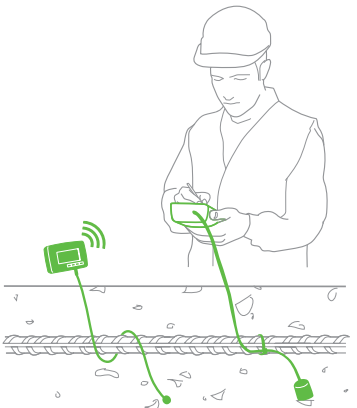
Software

- Accurate real-time data display (i.e. temperature, strength, max-min values, and graphs)
- Maturity calibration database
- Free Android/iOS app with easy-to-use guide
- Project management tools including live data sharing
- Giatec 360 web-based cloud dashboard
- Proactive AI notifications of concrete pouring time and mix calibration errors
- Full PDF & CSV reporting and data exporting
- Open API integration with project management applications (i.e. Procore)

Hardware

- Wire-free and wireless technology
- Fast, simple, and hassle-free activation and installation
- Extended temperature cable and probe for mass concrete
- Two points of temperature measurements located in sensor cable and body
- Rugged and waterproof design
- Long battery life
- 24/7 remote monitoring capabilities with the SmartHub™ device

Conventional Methods



Applications

- Measure temperature differentials
- Accelerate formwork removal
- Control quality in the field
- Speed up post-tensioning
- Open roads to traffic faster
- Optimize curing conditions
- Improve saw cutting time



Technical Specifications

Reading Range

-22 to +181 °F (-30 to 85 °C)

Measurement Accuracy

± 1.8 °F (± 1°C)

Measurement Resolution

± 0.18 °F (± 0.1°C)

Measurement Frequency

Once every 15 mins
(for 2 months of data)

Wireless Signal Range

Up to 40 ft (12 m)

Temperature Cable Length

12 in (30 cm) / 10 ft (3 m)

Battery Life

Up to 4 months after installation

Data Communication and Analysis

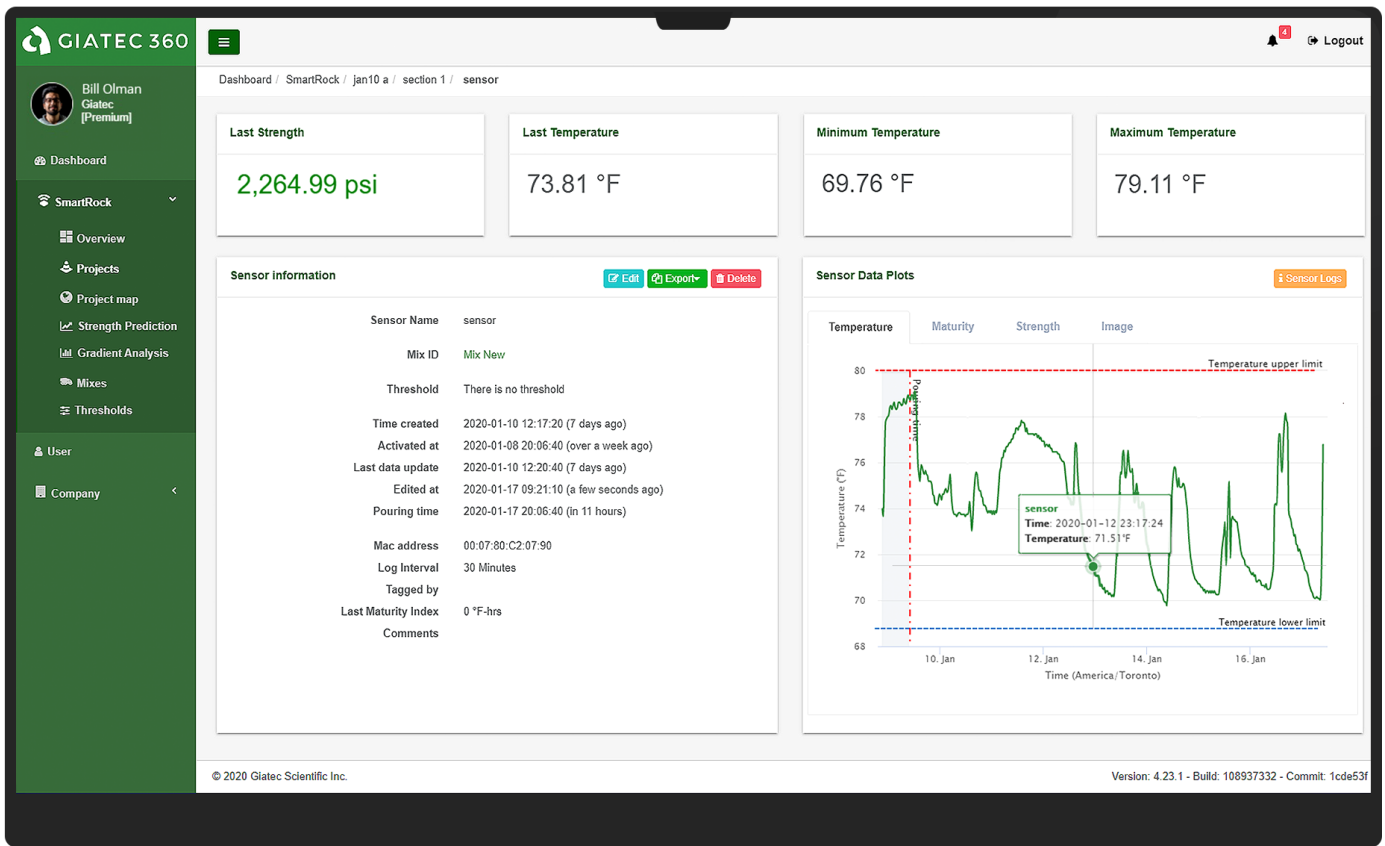
Free Android and iOS app
Giatec 360 Cloud Dashboard

Standards

ASTM C1074 (Approved by ACI 318, CSA A23.1, most USDOT specifications)

Giatic 360™

An Advanced Web-Based Dashboard for Monitoring and Managing Concrete Pours



Real-Time Data Display



Easy Data Sharing

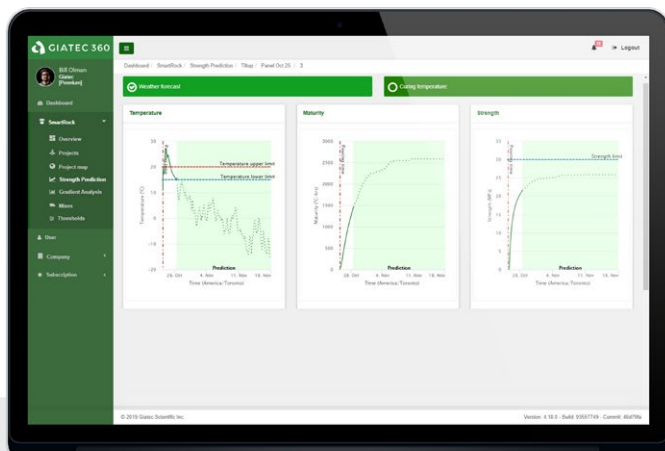


Real-Time Alerts

An Advanced Web-Based Dashboard for Monitoring and Managing Concrete Pours

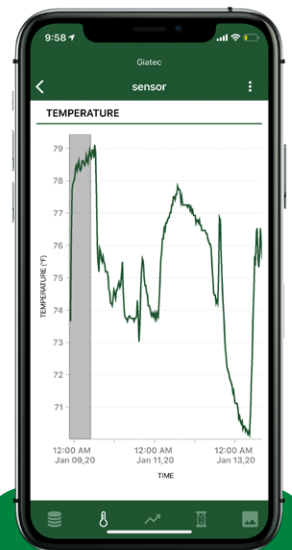
Overview

The Giatec 360 dashboard is the next level in data analytics, reporting, and user management capabilities for your SmartRock sensors. SmartRock is the most widely used wireless concrete sensor in the world, helping construction companies build structures faster, safer, and more economically. These user-friendly sensors are easily installed in the concrete formwork (on the rebar) before pouring to monitor your concrete's in-place temperature and strength in real-time. The sensor data is accessible wirelessly in the free SmartRock app (available on Android/iOS mobile devices) or remotely with the SmartHub device. As a desktop extension of the app, your information is synced on the Giatec 360 dashboard giving you access to numerous features that provide more insights into your projects than ever before.



Software Features

- Gain insights into the performance of your concrete mixes in real-time
- Manage user access levels and protect sensitive project data
- Receive push notifications on your mobile device
- Measure real-time concrete strength prediction
- Analyze temperature differentials and maturity threshold data
- Edit your mix calibration data
- Set up thresholds for your pours
- Monitor multiple projects at the same time
- Organize projects by section
- Plot data between multiple sensors
- View user activity logs and connected devices
- Generate PDF/CSV reports to make fast and efficient decisions
- And all upcoming features!



To sign-up for Giatec 360

Please contact technical support at support@giatec.ca or call +1 (877) 497-6278



SmartHub™

A Remote Monitoring System for Accessing
Concrete Data Anytime, Anywhere



24/7 Remote
Monitoring
System



Real-Time
Custom
Alerts



Unlimited
Sensor
Connections

Install SmartHub in 3 Easy Steps

1

Login to the SmartHub device using your Giatec 360 account

2

Secure the Hub on your jobsite near the SmartRock sensors

3

Get real-time results and alerts on your mobile device or Giatec 360 cloud-based dashboard



Overview

SmartHub is a remote monitoring system that allows you to access your SmartRock sensor data at anytime, from anywhere. SmartRock is the most widely used wireless concrete sensor in the world, helping construction companies build structures faster, safer, and more efficiently. These user-friendly sensors are easily installed in the concrete formwork (on the rebar) before pouring to monitor your concrete's in-situ temperature and strength in real-time. The Hub automatically collects this data recorded by the SmartRock sensors and uploads it to the Giatec 360 cloud dashboard via LTE/Wi-Fi where it is synced to your team's mobile devices in the SmartRock app. The Hub's alert system sends smart notifications to let you know when your concrete reaches specific temperature or strength thresholds. With real-time information you know when your project is ready to move on to the next steps in the construction process, allowing you to optimize your schedule.

Features

Software

- 24/7 data collection and analysis of multiple sensors
- Real-time data display (temperature, strength, max-min values, and graphs)
- Maturity calibration database
- Free Android app included with tablet
- Free Giatec 360 desktop account (required)
- Easy data sharing between team members
- Project management tools including live data sharing
- Full PDF & CSV reporting and data exporting

Hardware

- Wire-free and wireless technology
- Android tablet
- Rugged and wireless design
- Easy installation and activation
- Battery charger
- LTE compatible with all Canadian providers, AT&T, and T-Mobile

Applications

- 24/7 access to critical data
- Optimization of curing conditions
- Quality control in the field
- Cold and hot weather conditions
- Commercial projects
- Hard to reach or hazardous locations

Technical Specifications

Reading Range

-22 to +176 °F (-30 to 80 °C)

Cloud Sync Frequency

15 mins connected to power
6 hrs not connected to power

Wireless Signal Range

- 25 feet (8 meters) when SmartRock is embedded in concrete
- 100 feet (31 meters) when SmartRock is outside concrete

Battery Life

Up to 10 days

Network Compatibility

All Canadian Providers, AT&T, & T-Mobile

Data Communication and Analysis

Android tablet included
Giatec 360 Cloud Dashboard

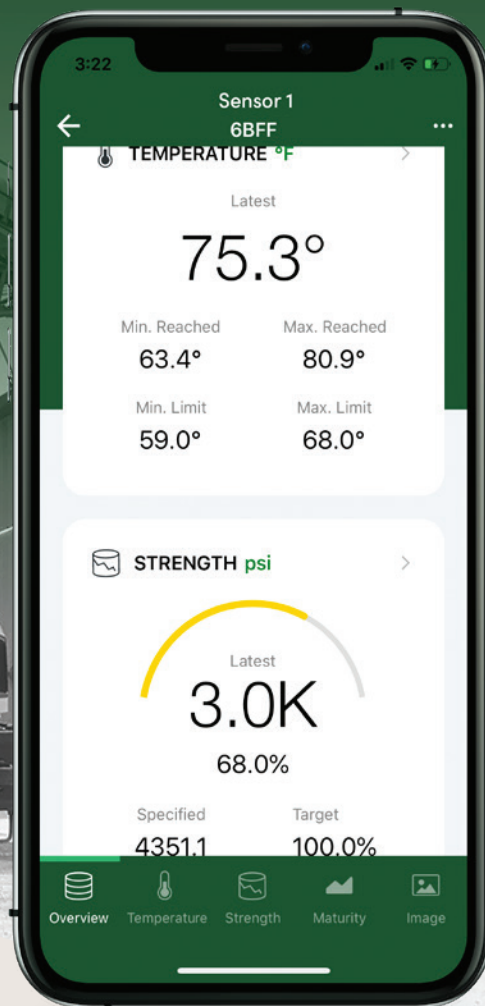


SmartRock™ Plus

Helping Producers 'Know Their Concrete'
Beyond The Pour

“Stoneway has successfully offered SmartRock Plus to construction companies in Seattle working on high-rise structures and concrete pavements. Contractors immediately see the value as they can obtain real-time strength information on the jobsite through this novel mobile-based technology.”

Greg McKinnon
Operations Manager
Stoneway Concrete



Be a
Tech Leader



Enhance
Customer Success



Remote Monitoring
Capabilities

SmartRock™ Plus

Helping Producers 'Know Their Concrete' Beyond The Pour



Jobsite Mix Performance

As an IoT solution, SmartRock Plus combines wireless sensors with mobile and cloud-based applications to make field data available for ready-mix producers. This data can be used to analyze jobsite and concrete mix performance.

In addition, ready-mix producers will benefit from:

- Online access to jobsite data
- Project-based mix performance results
- Field data to reduce cement usage
- Control of their concrete testing procedures
- Mix calibration submittals

Benefit to Contractors

Producers simply need to calibrate each mix for strength using the maturity method (ASTM C1074) and upload the data to the SmartRock Plus cloud.

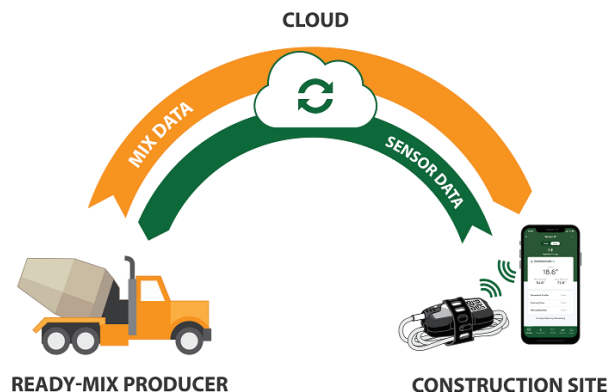
Contractors then select their producer in the mobile app to view the list of mixes available to them, which are continuously maintained by the producer. Once a mix is selected and the sensors are installed, contractors automatically obtain concrete temperature and strength information. This real-time data helps contractors optimize critical operations, such as; formwork removal, post-tensioning, and opening roads to traffic, etc.

What is SmartRock Plus?

SmartRock Plus is a value-added solution offered by high-quality ready-mix producers that enables their contractors to see real-time concrete temperature and strength data. Conventionally, contractors are left to their own devices when monitoring the curing conditions and quality of their concrete mixes. With SmartRock Plus, producers can simplify this process for contractors and gain valuable data on their concrete in return. Concrete mixes from producers are up sold as Smart™ mixes to their clients. Contractors then install the fully-embedded wireless sensors and use the SmartRock Plus application to connect to them. Once connected, real-time data can be obtained on the jobsite, allowing producers to also monitor results remotely.

Drive Profit

At Giatec's suggested retail price, producers can sell the sensors at a competitive rate, while still maintaining a profit. Alternatively, Giatec partners can upsell their concrete per cubic yard as Smart™ mixes, depending on the state of their local market.



SmartRock Plus Enables Producers to Achieve:

- Brand differentiation in local markets
- Strong customer loyalty
- Performance analytics and visibility on all mixes and projects
- Market share expansion

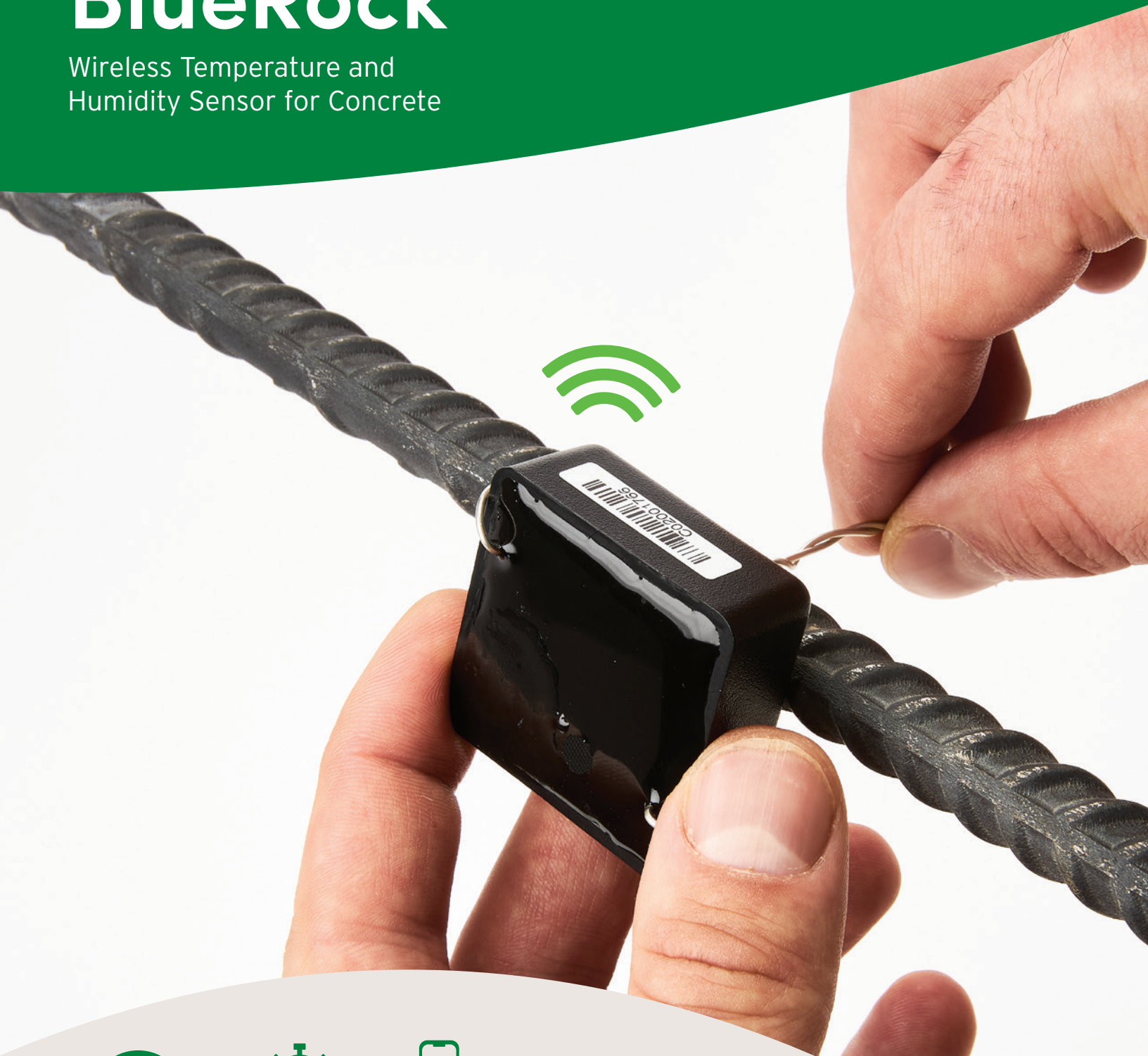
Some of Our SmartRock Plus Partners





BlueRock™

Wireless Temperature and Humidity Sensor for Concrete



Wire-Free
& Wireless
Technology



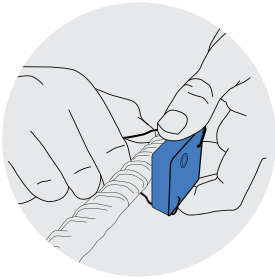
Easy
Activation &
Installation



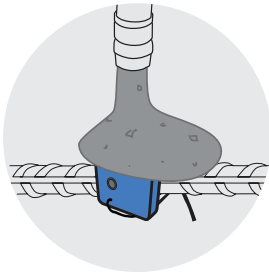
Real-Time
Data
Collection

Get Started With BlueRock in 3 Easy Steps

1. Activate & Install*



2. Pour Concrete



3. Get Sensor Data



Overview

BlueRock is a wireless sensor for monitoring the temperature and relative humidity of in-place concrete from fresh to hardened stages. The sensor is fully-embedded and secured on the rebar, making it completely maintenance and hassle-free. Temperature and humidity are continuously measured and recorded by the BlueRock device.

Current destructive and time-consuming methods for temperature and humidity monitoring only measure one data point at the testing time and require drilling a hole into your concrete. With BlueRock, you can monitor variations in your concrete's internal humidity in real-time via LTE/Wi-Fi connection using the BlueRock mobile app (available for Android/iOS devices). This data is used as a QC/QA method. By knowing the level of humidity of in-place concrete, you can optimize the timing in which floor coverings are installed, such as resilient flooring, epoxy coating, or wood.

Features

Software

- Accurate real-time data display (i.e. humidity and temperature)
- Free Android and iOS app
- Interactive plotting of data
- Full PDF & CSV reporting and data exporting
- Continuous measurement and recording of humidity and temperature
- Customizable data measurement frequency
- Memory capable of recording up to 2500 data points

Hardware

- Wire-free and wireless technology
- Rugged and waterproof design
- Easy installation and activation by tying the wires together
- Long battery life (up to 2 years after installation)

* Sensors should be installed within 2 in (5cm) below the surface of concrete.

Applications

- Drying level in concrete floors
- Effectiveness of curing conditions
- Optimization of flooring installation
- Water penetration in concrete
- Monitoring of humidity gradients



Technical Specifications

Temperature Reading Range
-22°F to 140°F (-30°C to 60°C)

Temperature Accuracy
± 1.8°F (± 1°C)

Relative Humidity² Reading Range
0 to 100%

Relative Humidity² Accuracy
20% - 80%, ±2% <20% or >80%, ±3% Hysteresis ±1%

Wireless Signal Range
Up to 26 ft (8 m*)

Battery Life
Up to 2 years

Data Communication and Analysis
Free Android & iOS app



SmartBox™

Wireless Concrete Sensor for Resistivity and Temperature Monitoring



Wire-Free & Wireless Technology



Easy Activation & Installation



Accurate Real-Time Data Display

Technical Specifications

Reading Range
1 - 3000 Ω

Measurement Frequency
10 KHz

Accuracy
 $\pm 2\%$

Measurement Time
<1s

Battery Life
Up to 3 months

Data Communication and Analysis
Free Android app

Overview

SmartBox is a wireless sensor for measuring and monitoring the electrical resistivity and temperature of fresh concrete. Monitoring these properties provides insights regarding the water content of your mix, giving you a good indication on the setting and hardening time of your concrete. This data is recorded by the SmartBox device where it can be downloaded in the mobile app (available for Android).

Features

Software

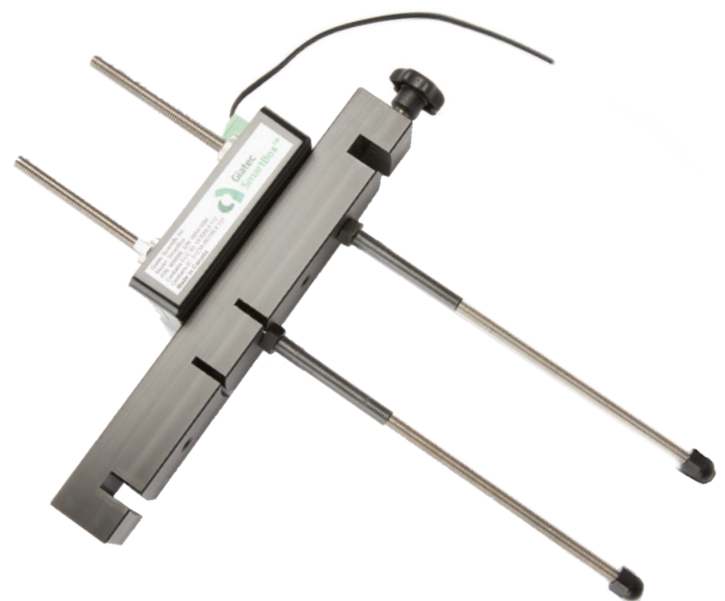
- Free Android app
- Easy data sharing
- Accurate real-time data display
- Simultaneous measurement of electrical resistivity and temperature

Hardware

- Wire-free and wireless technology
- Rugged and compact design
- Long battery life
- Fast, simple, and hassle-free activation and installation

Application

- Water content in fresh concrete
- Prediction of setting time
- Setting time measurement
- Crack detection in concrete



20v1



iCOR[®]

NDT Device for Detecting and Measuring the Rate of Rebar Corrosion



“The iCOR has proven to be robust onsite and I am confident in the results I see.”

Dr. Jose Pacheco
Associate
CTL Group



Non-Invasive
Wireless
Technology



Fast & Accurate
Real-Time Data
in Seconds



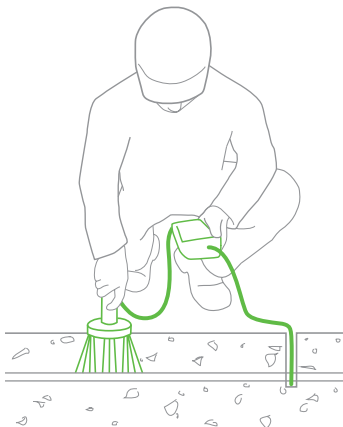
Simple
&
Easy-To-Use



Giatic iCOR



Other Commercial Devices



Overview

iCOR is the most advanced wireless corrosion measurement device for evaluating the health of reinforced concrete structures. iCOR detects corrosion potential, corrosion rate, and in-situ electrical resistivity. Unlike other devices which must drill into the concrete and physically connect to the rebar to evaluate it, the iCOR is completely non-invasive. Measurements are taken outside the concrete without damaging the structure or compromising its integrity. Data is collected, analyzed, and stored wirelessly within the mobile app on the tablet provided. This information is then presented as contour maps which are accessible in real-time. In 2019, the iCOR was presented the Corrosion Innovation Award by the National Association of Corrosion Engineers (NACE).

Features

Software

- Real-time contour mapping of corrosion rate, electrical resistivity, and corrosion potential
- Accurate non-subjective algorithm-based interpretations
- Multiple and directional parameters tested in a single measurement
- Easy reporting and data exporting

Hardware

- Non-destructive, and non-invasive wireless technology
- Measurements obtained and evaluated within seconds
- Simple and easy-to-use with minimal training required
- Single-person operation device
- Tablet included with free Android app
- Award-winning patented technology

Patented Technology

iCOR benefits from the patented CEPRA technology that makes it possible to estimate the rate of rebar corrosion through a non-invasive, non-destructive approach. This means that the need to connect the device to the rebar to obtain measurements, which is the case for other commercial devices, is eliminated with the iCOR.

Applications

- Detection of corrosion in reinforcement
- Measurement of rebar corrosion rate
- Evaluation of corrosion potential of rebar
- Measurement of in-situ electrical resistivity
- Assessment of concrete durability
- Rehabilitation and repair of concrete structures



Technical Specifications

Testing Time
3 to 30 seconds

Corrosion Rate Range
0 to 500 μm / year

Corrosion Potential Range
-800 to +200 mV / CSE

Electrical Resistivity Range
0 to 10,000 $\Omega \cdot \text{m}$

Standard
ASTM C876 (Half-Cell)

Data Communication and Analysis
Free Android app



XCell™

NDT Device for Half-Cell Corrosion Mapping



Non-Invasive
Wireless
Technology



Accurate
Real-Time Data in
Seconds



Simple
&
Easy-To-Use

Overview

XCell is a non-destructive testing device for fast, reliable, and accurate detection and analysis of corrosion in reinforced concrete structures.

A probe is used outside the concrete to detect the location of corroded rebar. The probe then wirelessly communicates with the tablet provided and generates half-cell contour plots that illustrate the presence of rebar corrosion within the concrete structure.

This device is highly accurate, easy-to-use, and provides information in real-time within seconds. Data is collected, analyzed, and stored wirelessly within the mobile app on the tablet provided where it can easily be shared with team members.

Features

Software

- Real-time contour mapping of corrosion potential
- Automated temperature correction
- Fast data assignment to grid points
- Easy reporting and data exporting

Hardware

- Non-destructive and non-invasive wireless technology
- Single-person operation device
- Measurements obtained and evaluated within seconds
- Simple and easy-to-use with minimal training required
- Tablet included with free Android app
- Verification kit included

Reading Range and Accuracy

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

Applications

- Efficient and accurate detection of corrosion in reinforcement
- Evaluation of corrosion potential of rebar
- Assessment of concrete durability
- Rehabilitation and repair of concrete structures

Technical Specifications

Voltage Measurement Range
-750 to +250 mV / CSE

Measurement Resolution
0.1 mV

Sampling Rate
1s

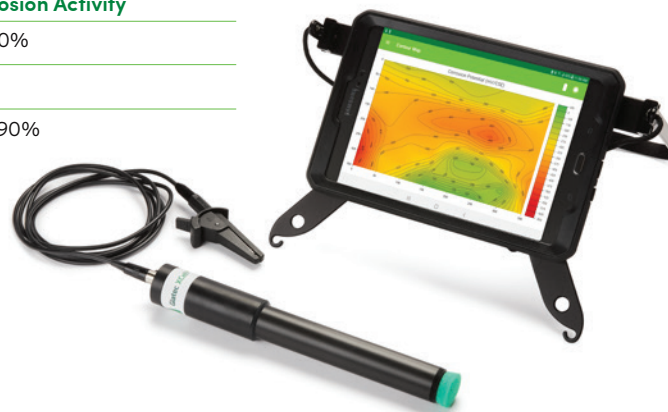
Input Impedance
>10M ohm

Temperature Measurement Range
32 - 122°F (0 ~ 50°C)

Temperature Measurement Accuracy
0.9°F (0.5°C)

Standard
ASTM C876

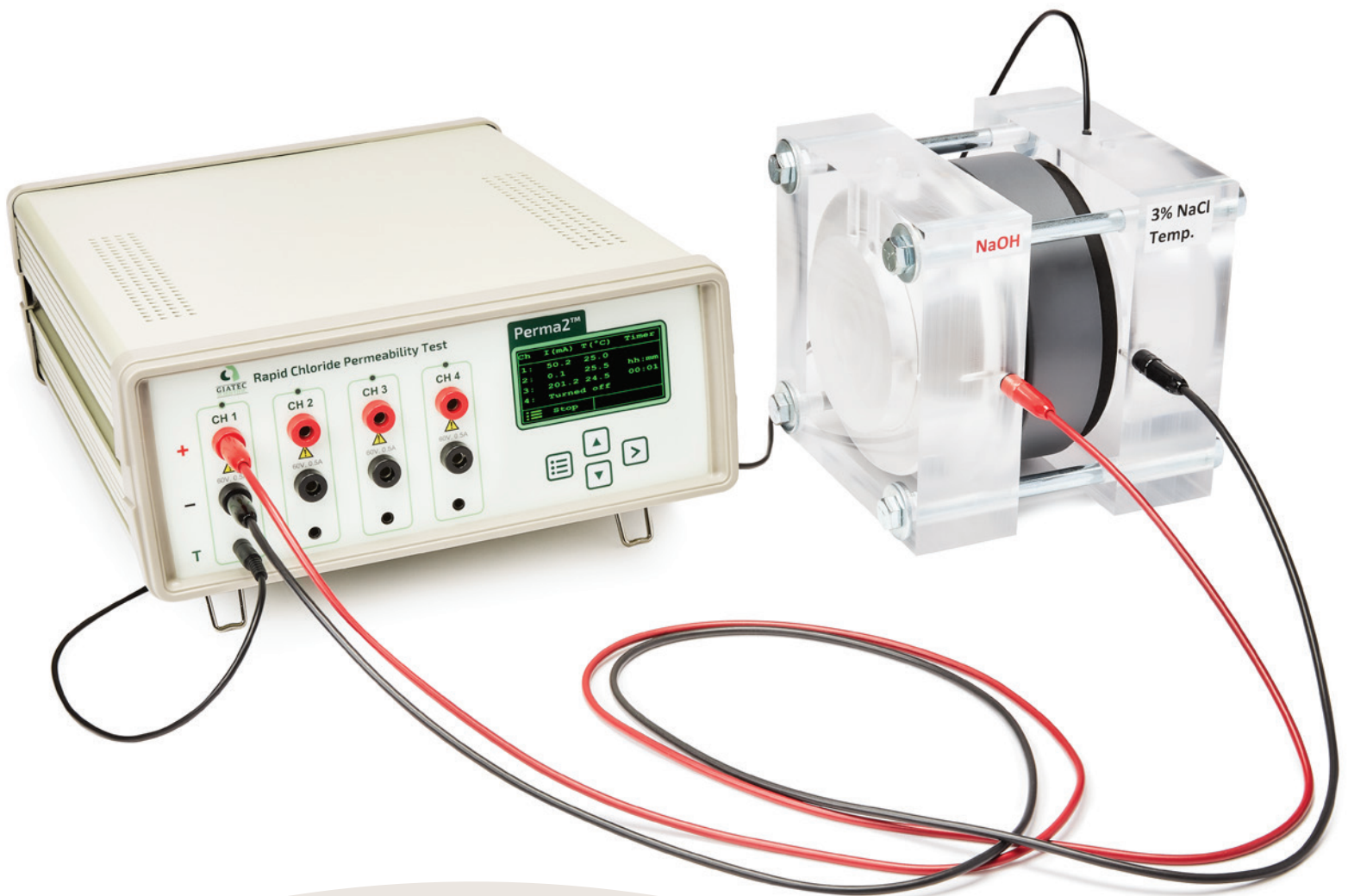
Data Communication and Analysis
Free Android app





Perma²TM

Laboratory Device for Testing the Rapid Chloride Permeability of Concrete



Four Measurement Channels



Flexible Logging Intervals



Customizable Setup

Laboratory Device for Testing the Rapid Chloride Permeability of Concrete

Overview

Perma is a laboratory device for measuring the electrical resistance of concrete against the penetration of chloride (RCPT). This data is used to estimate the chloride diffusion coefficient of concrete for predicting service life, durability-based design, and durability-based quality control, of concrete structures. Perma is electrically certified for rapid chloride penetrability tests in concrete laboratories. This device is the only RCPT device that has a CSA electrical safety certification mark for use in concrete laboratories.

Features

Software

- Automatic temperature control system
- Accurate (± 0.1 mA)
- Flexible logging interval time (1 to 10 min)
- Free user-friendly PC software

Hardware

- Four measurement channels
- Customizable setup
- Verification kit included
- Stand-alone operation device
- Auto-sealable cells with rubber gasket and spacer

Chloride Penetration	56-Day Rapid Chloride Permeability Charge
High	>4000
Moderate	2000-4000
Low	1000-2000
Very Low	100-1000
Negligible	<100

Applications

- Measurement of chloride penetration resistance
- Bulk electrical conductivity of concrete
- Performance-based quality control of concrete
- Estimation of chloride migration and diffusion coefficient of concrete
- Service life design of concrete structures

Technical Specifications

Measurement Channels
4

Range of Current Measurements
0 ~ 500 mA \pm 0.1 mA

Temperature Measurement Range
0 ~ 100°C

Standards
AASHTO T277, ASTM C1760, ASTM C1202, & ASTM C1556

Software
Free PC program





RCON™

Laboratory Device for Testing the Electrical Resistivity of Concrete

“The RCON is an amazing tool for the concrete arena. We have successfully used this device on a wide variety of projects. It's ease of use coupled with data relating to permeability helps us determine the appropriateness of concrete mixtures.”

Dr. Jon Belkowitz
Intelligent Concrete



Fast & Accurate
Measurements



Non-Destructive
Technology



Customizable
Setup

Overview

RCON is an advanced non-destructive laboratory tool for measuring the bulk electrical resistivity of concrete at various ages. The device is fast (measurement time is less than 5 seconds), accurate (utilizing a variable frequency method), and flexible (measurements can be taken with different settings for verification). No additional sample preparations are required before testing. RCON allows for continuous measurement of electrical resistivity over time, which can be used to monitor important durability parameters of concrete, such as; cracking, moisture transfer, and setting time in concrete specimens.

Features

Software

- AC measurement (Galvanostatic)
- Phase detection (0-180 degree)
- Accurate data ($\pm 2\%$)
- Continuous measurement
- Free user-friendly PC program

Hardware

- Fast measurement (< 5 Second)
- Stand-alone operation device
- Flexible sample holders
- Customizable setup

Reading Range and Accuracy

Reading Range	Frequency Spectrum	Phase Measurement	Impedance Accuracy	Phase Accuracy
1-100 Ω	1Hz - 30KHz	0-180°	$\pm 2\% \pm 2$ digit	5% ± 3 digit
0.1-1K Ω				
1-10K Ω				
10-100K Ω				
0.1 - 1M Ω	1Hz - 10KHz			

Measurement Time

Frequency	Sampling Time	Reading Time (minimum)
1Hz - 4Hz	5 seconds	10 seconds
5Hz - 30KHz	1 second	2 seconds

Applications

- Diffusion of chloride in concrete
- Rebar corrosion in concrete
- Setting time of fresh concrete
- Moisture transfer in concrete
- Curing of concrete
- Cathodic protection design



Technical Specifications

Standard
AASHTO TP 119, ASTM C1876,
& CSA A23.3 - 26C

Software
Free PC program



20v1



Surf™

Laboratory Device for Testing the Surface
Electrical Resistivity of Concrete



Four
Measurement
Channels



Fast
& Accurate
Data



Automatic
Report
Generation

Overview

Surf is a laboratory device for testing the surface electrical resistivity of concrete based on the four-probe (Wenner-Array) technique. Surf automatically measures resistivity around the concrete specimen using four channels of 4-probe array which are located at 90° from each other. These measurements are used to estimate the resistance of chloride penetration in the concrete. This shows the qualitative relationship between the rapid chloride penetrability test (RCPT), and the surface electrical resistivity of concrete. This device can also be used for durability-based quality control of concrete and for monitoring the service life design of a structure.

Chloride Penetration	56-Day Rapid Chloride Permeability Charge	Surface Resistivity at 23°C/ 73°F (k Ω cm)
High	>4000	<10
Moderate	2000-4000	10-15
Low	1000-2000	15-25
Very Low	100-1000	25-200
Negligible	<100	>200

Reading Range and Accuracy

Reading Range	Frequency Range	Accuracy
0.1 - 100 KΩ cm	13-100 Hz	± (0.1+1%)
100 - 1000 KΩ cm	13-100 Hz	± (1+1%)

Applications

- Performance-based quality control of concrete
- Estimation of chloride diffusion of concrete
- Service life design of concrete structures
- Crack detection in concrete
- Water content of fresh concrete

Features

Software

- Accurate data (±2%)
- Variable frequency (13 - 100 Hz)
- Automatic report generation
- Free user-friendly PC software

Hardware

- Optional hand-held probe
- Fast measurements (8 measurements < 15s)
- Four-channel four-probe surface resistivity meter

Technical Specifications

Single Measurement Time
1.5 seconds

Testing Time (8 measurements)
<15 seconds

Measurement Channels
4

Frequency
13 - 100 Hz

Standards
AASHTO T358

Software
Free PC program

