

# Advanced Concrete Testing Technologies™



## GIATEC SCIENTIFIC



**RCON™**

Performance-Based Quality Control of Concrete



**iCOR™ and SENCOR™**

Accurate Condition Assessment of Infrastructure



**Perma™**

Concrete Permeability Measurement





# Giatec Scientific Inc.



Giatec Scientific Inc. is a technology-based company that provides advanced concrete testing solutions to the construction industry. Giatec offers novel methods and devices for the performance-based quality control of concrete and accurate condition assessment of concrete infrastructure. These innovative tools are designed for various applications for concrete producers, consulting companies, and infrastructure owners and operators.

Giatec's products help engineers manage civil infrastructure by allowing them to schedule maintenance, rehabilitation, repair and replacement operations more effectively and accurately so that their assets will be resilient against extreme conditions imposed by multiple sources of deteriorations.

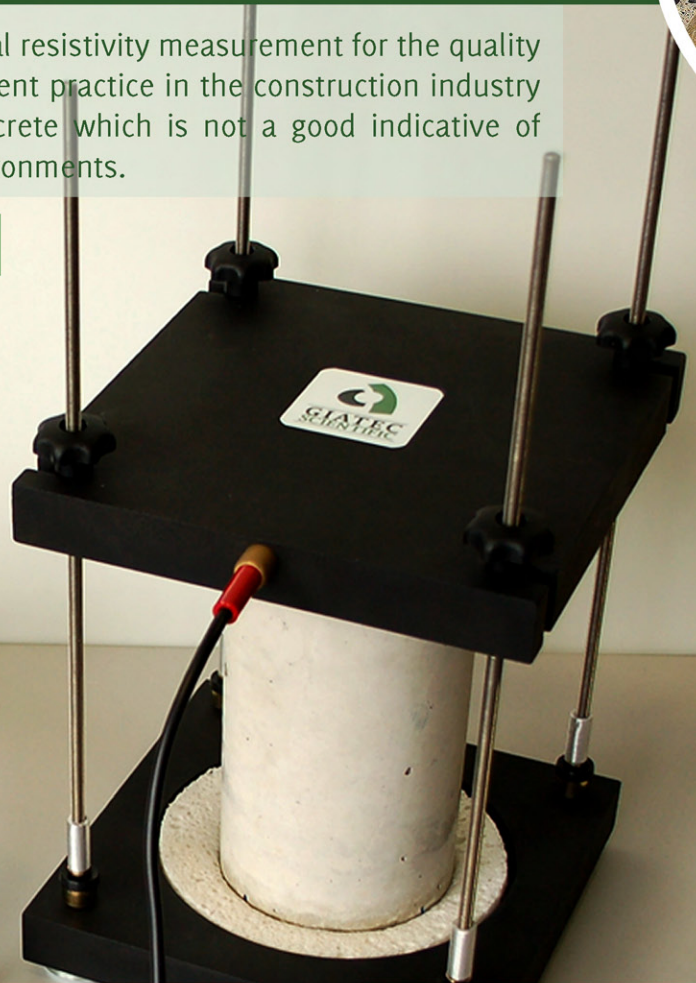


## RCON™ – Quality Control of Concrete

RCON™ provides a reliable method that utilizes electrical resistivity measurement for the quality control of concrete based on its performance. The current practice in the construction industry involves measuring the compressive strength of concrete which is not a good indicative of concrete's durability characteristics in aggressive environments.

### Applications

The electrical resistivity is correlated well with important durability parameters such as permeability, diffusivity and, in general, the micro-structure characteristics of concrete. RCON™ is a unique device for investigating the micro-structural properties of concrete including the chloride diffusion, setting time of fresh concrete, moisture transfer, and corrosion of steel reinforcement.



### RCON™ – Competitive Advantages

- Fast (<3 Seconds)
- AC measurement (1Hz - 30 kHz)
- Continuous measurement
- Flexible sample holders
- Accurate
- Phase detection (0-180 degree)
- Stand-alone operation
- User-friendly software

### RCON™

... significantly increases the service life of new concrete infrastructure.



# Perma™ – Concrete Permeability Measurement

Perma™ is a laboratory test device for the measurement of the electrical resistance of concrete against the penetration of chloride according to the standards such as ASTM C1202 (RCPT), AASHTO T277 and ASTM C1760. The measurement data can be used to estimate the chloride diffusion coefficient of concrete for the service life prediction and design of concrete structures as well as the durability-based quality control of concrete.



## Competitive Advantages

- Stand-alone operation
- Easy-to-assemble
- Accurate ( $\pm 0.1$  mA)
- Logging interval time: 1-10 min
- Automatic temperature control
- USB connection (optional)

## Perma™

... is an accurate device for testing the quality of concrete based on ASTM and AASHTO standards.

# iCOR™ and SENCOR™ – Condition Assessment



Giatec offers an innovative technology for fast, accurate and non-destructive corrosion detection in reinforced concrete structures. It can save lives and decrease infrastructure repair costs by the early detection of durability problems. iCOR™ and SENCOR™ are revolutionary tools that can help the infrastructure inspectors better evaluate the state of deteriorations by obtaining accurate information about the rebar corrosion in concrete – the main cause of collapsing in concrete structures.



**iCOR™** is a hand-held device that measures several parameters from the surface of concrete and then analyzes them using advanced algorithms embedded in the device. These quick calculations accurately determine the 'rate of corrosion'. The rate of corrosion in the reinforcement is the most important parameter in estimating the service life of a concrete structure.

**SENCOR™** is a wireless sensor technology that is installed on critical infrastructure for continuous health monitoring and sends real-time information to the client about possible initiation of deteriorative mechanisms in the structure.

## Competitive Advantages

- Fast: obtains measurements within seconds
- Accurate: comparable to laboratory techniques
- Predictive: predicts the probability of failure
- Non-destructive: used for existing structures
- Easy-to-use: requires minimum training
- Non-subjective: algorithm-based interpretations
- Efficient: detects initial signs of corrosion
- Cost effective: saves up to 20-40% in maintenance costs

## iCOR™, SENCOR™

... improve the safety of concrete infrastructure and substantially decrease the repair and maintenance costs.

## Specialized Consulting Services

Giatic offers a wide range of specialized consulting services such as concrete mixture proportioning for specific applications, durability design of concrete materials, corrosion detection, and detailed condition assessment of concrete structures. The strength of Giatic lies in its experts who have a robust understanding of the industry and can solve engineering problems using the most recent research and technological tools. Giatic's consulting services include:

### Problem Assessment

- Non-Destructive Testing
- Materials Characterization
- Chemical Analysis
- Modeling and Model-Assisted Diagnosis
- Service and Remaining Life Prediction

### Mitigation Strategies

- Repair and Rehabilitation Methods
- Concrete Repair Materials Design
- Retrofitting Methods
- Protection Strategies
- Life-Cycle Assessment

### Implementation

- Continuous Health Monitoring
- Performance-Based Quality Control
- Instrumentation of New Structures
- Probabilistic Model Assisted Monitoring



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