



James Instruments Gecor 8

**World's most advanced system
for analyzing corrosion of
concrete reinforcing steel in
existing structures.**

Features and Benefits

- "...giving the corrosion rate most closely matching the true values."
(from the US Strategic Highway Research Program.)
- Rapid mapping capabilities for analysis of large structures.
- Advanced method for more accurate corrosion rate determination.
- New sensor design for analysis of wet or submerged structures.
- New method for analysis of cathodic protection systems while the system is running.
- Personal computer software for data analysis and report generation.
- Graphical user friendly interface to facilitate measurements.

Corrosion Rate Analysis

Corrosion of steel reinforced concrete affects the safety and durability of concrete structures in the following ways:

- A.** The steel cross section is reduced, weakening the concrete strength.
- B.** The concrete is cracked due to the increased volume in the rust.
- C.** The steel to concrete bond is reduced when cracking and spalling are initiated.

A true measure of the corrosion rate is possible by the polarization resistance technique. It has been well established by Stern and Geary that corrosion current is linearly related to polarization resistance. This gives a direct quantitative measurement of the amount of steel turning into oxide at the time of measurement. By Faraday's equation, this can be extrapolated to direct metal sectional loss.

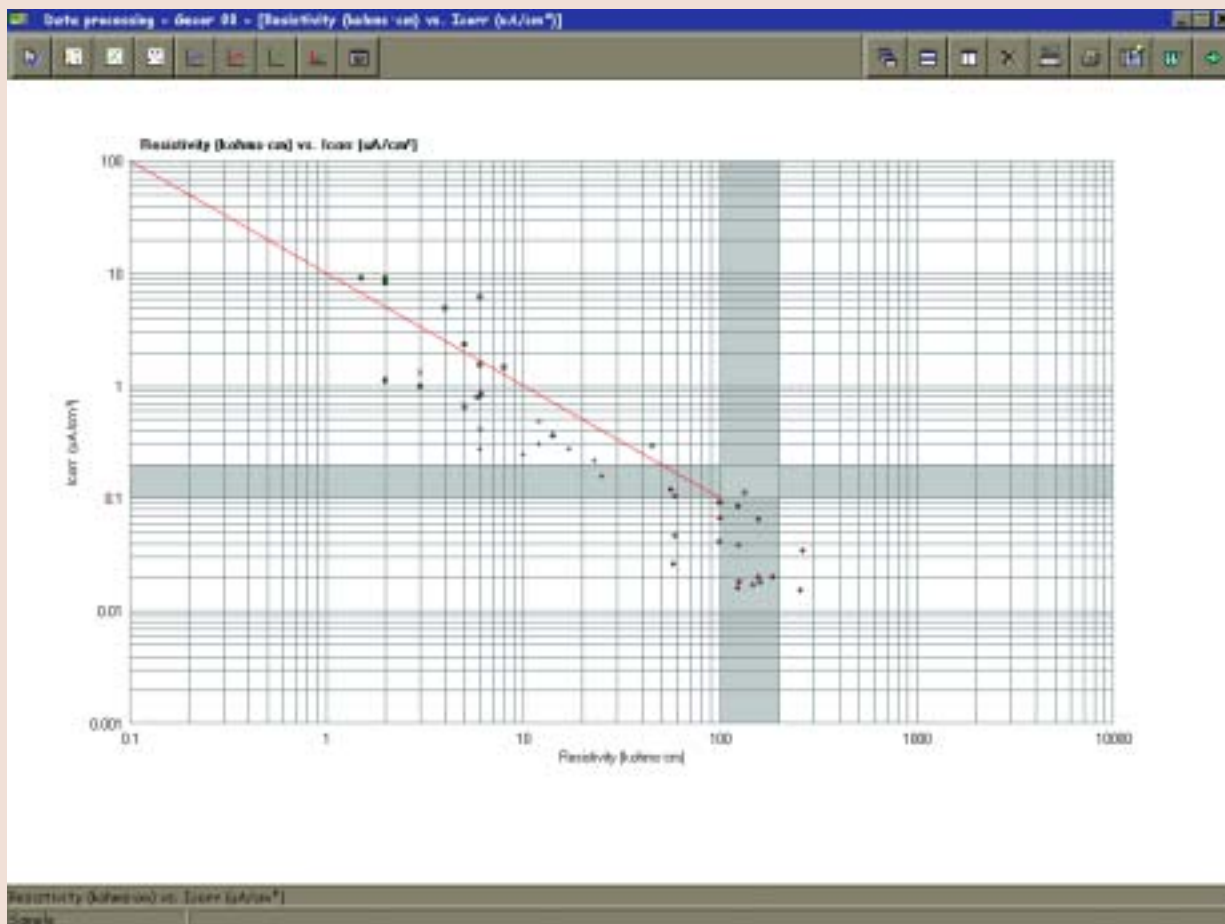
James Instruments Gecor 8 represents the latest technology in steel reinforcing bar corrosion rate determination. It combines state of the art embedded microprocessor systems and computerized flash technology with the world's leading research in reinforcing bar corrosion rate analysis.

The Gecor 8 features:

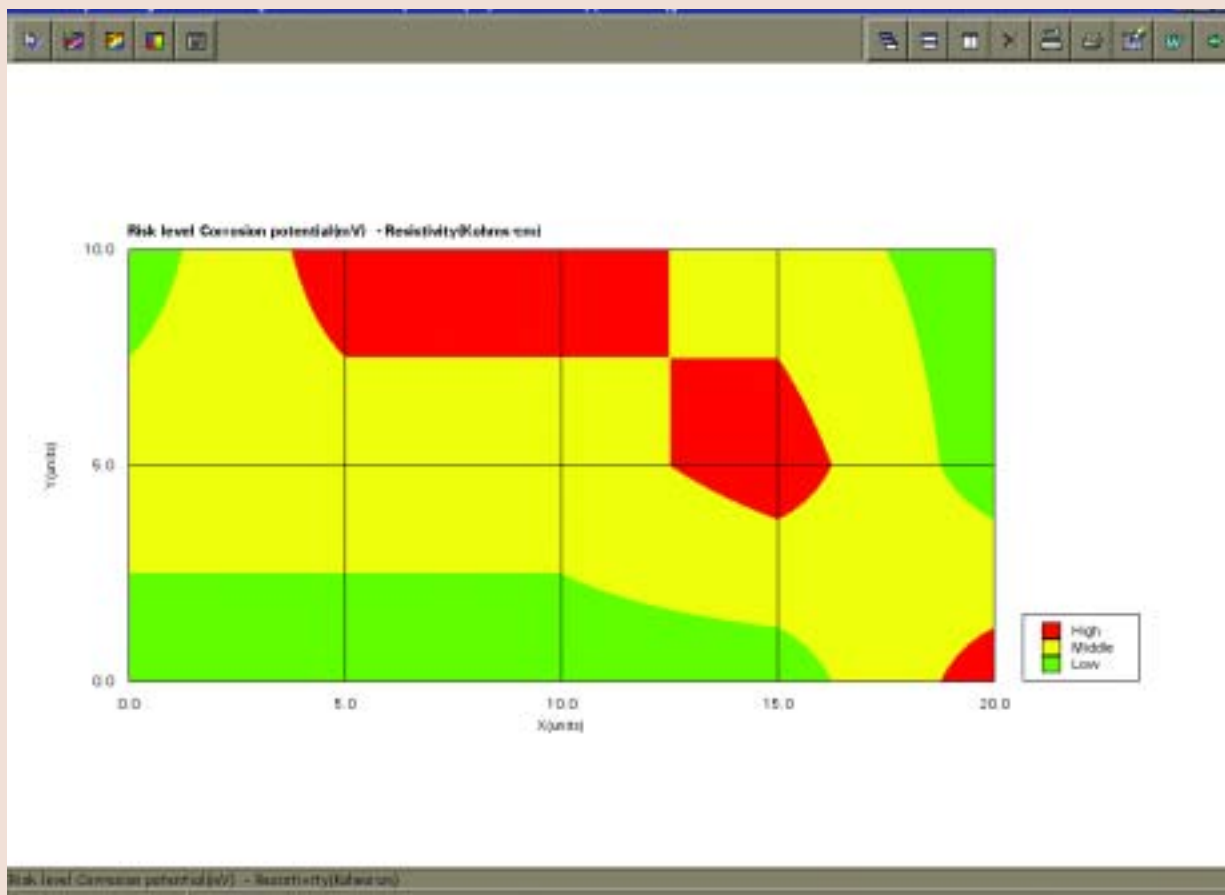
- 1.** A rapid mapping technique that allows the engineer to quickly classify areas of a structure. Both the classical corrosion potential as well as the resistivity of the concrete can be measured. Each individual parameter can be mapped in a multi-color contour graph. The built-in programming also analyzes this data and the two parameters can be combined to reliably determine areas of highest corrosion.
- 2.** Our advanced modulation confinement technique precisely measures the true polarization resistance of the steel reinforcing bar. Utilizing the information obtained by the two reference electrodes in a feed-back network, the unit automatically adapts the electrical field produced by the guard ring to the conditions of the concrete. This allows the Gecor 8 to reach a quasi steady-state condition for the 30 to 100 seconds required for determining the polarization resistance through a galvanostatic pulse. This advanced technology provides the most accurate field test currently available for the determination of corrosion rate.
- 3.** The Gecor 8 also has the ability to measure corrosion rate in submerged or very wet structures. An optional sensor has been designed to measure corrosion rate in extremely wet environments, eliminating the need for an external guard ring. The sensors measure polarization resistance through the use of Feliu's formula, using three aligned field-follower electrodes.
- 4.** Another optional feature is a technique to measure the cathodic protection efficiency by analyzing the electrical impedance obtained from an alternating current applied with modulated confinement. This method provides a relative index of the cathodic protection performance as a percentage.
- 5.** PC software assists the user to graphically interpret, collate, organize and generate reports with the data generated from the device. It allows the user to set up the Gecor 8 for more rapid testing later in the field, and will automatically link to the PC for data collection.

Complete implementation of these options provides an unprecedented system for corrosion rate analysis of steel reinforced concrete structures.

Combined with the latest advances in interface systems and database storage technology, Gecor 8 is an easy to use, reliable, automatic and intelligent corrosion rate analysis system. A system that can save an engineer time, money and effort in evaluating corroding structures for subsequent rehabilitation.



Resistivity vs Corrosion Current Density



Contour Map of Risk Levels

James Instruments Gecor 8

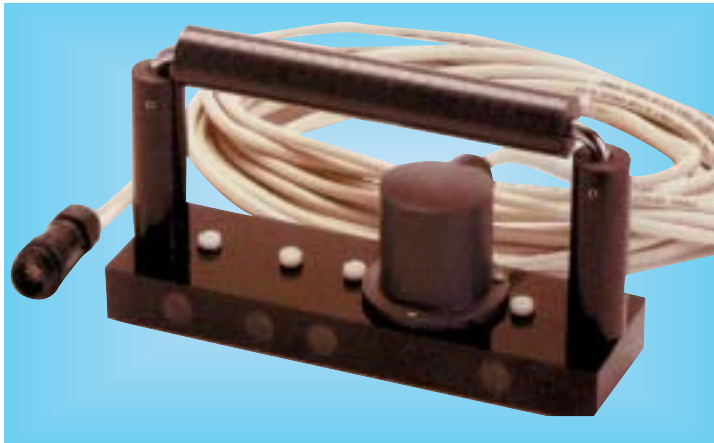


**Gecor 8 Main Unit
with Sensor "A"**

**Measurement of
Resistivity with
Sensor "B"**



Sensor "C" for Very Wet Submerged Structures



Sales Numbers

- C-CS-8300C:** Complete System • Cu/CuSO₄
C-CS-8000C: Basic System with Cu/CuSO₄ sensors
- C-CS-8300A:** Complete System • Ag/AgCl
C-CS-8000A: Basic System with Ag/AgCl sensors
- C-CS-8100C:** Submersion Upgrade with
C Cu/CuSO₄ sensors
- C-CS-8100A:** Submersion Upgrade with
C Ag/AgCl sensor
- C-CS-8232:** Database Software

Specifications

CORROSION RATE METER C-CS-8010

- Weight:** 9 lbs. (4 Kg)
Dimensions: 12 x 8 x 6.5 in.
(300 x 200 x 360 mm)
Batteries: Rechargeable nickel hydride
LCD Display: 320 x 240 1/4 VGA

SENSOR A C-CS-8020C / C-CS-8020A

- Weight:** 2 lbs. (0.9 Kg)
Dimensions: 7 x 0.8 in. (180 Dia x 20 mm)

SENSOR B C-CS-8030C / C-CS-8030A

- Weight:** 0.6 lbs. (0.3 Kg)
Dimensions: 1.4 x 5 in.
(35 mm Dia x 130 mm)

SENSOR C C-CS-8040C / C-CS-8040A

- Weight:** 2 lbs. (0.9 Kg)
Dimensions: 8.2 x 1.2 in.
(210 mm Dia x 30 mm)

SOFTWARE C-CS-8232

- OP System:** Microsoft Windows 9 x / Me
Processor: Pentium 166 MHz or better
Hard Disk: 100 Mb
RAM: 32 Mb

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