

Profometer Corrosion

As direct successors to the Profometer 5+ and Canin+ models, the Profometer 6 instruments continue the successful tradition that began 40 years ago representing the sixth Profometer generation. It is also fully compatible with the Profometer PM 600-630-650 cover meter range using the same readout system, this is an excellent combined system for durability and corrosion assessment work.

In its current version the Profometer brand extends its features to cover additional methodologies related to the testing of reinforcement steel, incorporating both rebar assessment and corrosion analysis functionalities, thus replacing the world renowned Canin instrument for corrosion. Housing specially designed to be used on-site in harsh environments, including carrying strap, integrated stand and sunshield cover High resolution colour touchscreen allowing best possible measuring and analysis of the data for an entire working day (battery lifetime >8h) Dual core processor supporting diverse communication and peripheral interfaces Future proof investment through direct upgrade possibilities to upcoming Profometer products

The half-cell method is used to identify active corrosion of rebars based on the electro chemical properties of reinforced concrete. All the Proceq electrodes (rod or wheel) are based on a Copper / Copper Sulphate (Cu/CuSO_4) half-cell. However specific applications or customer preferences sometimes require different reference electrodes. This is why the Profometer Corrosion voltage input range allows also the connection of Silver / Silver Chloride (Ag/AgCl) electrodes or Saturated Calomel ($\text{Hg}/\text{Hg}_2\text{Cl}_2$) reference electrode. The standard cable supplied with the Proceq rod electrode can be easily connected to most third party rod electrodes allowing the full compatibility of the system.



System Features

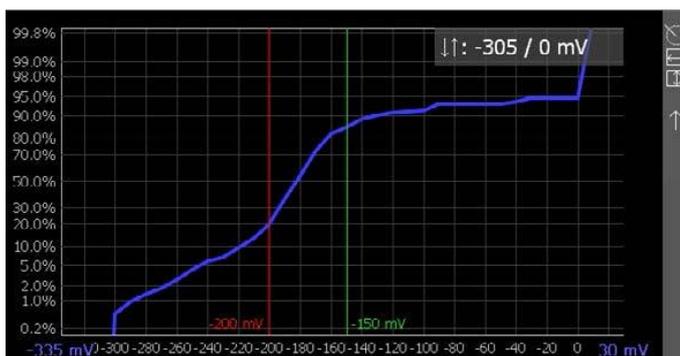
Corrosion Scan

Intuitive user friendly interface for data acquisition

- Buttons indicate measuring path direction
- Optimized workflow for rod and wheel measurements
- Customizable text can be entered for the specific locations
- Flexible features enable the mapping of any irregular geometry
- Improved digital filtering to remove the effect of external noise (civil and industrial power sources)

Statistical Views

- Immediate on site data interpretation
- Customizable Distribution, Cumulative
- Distribution, Chipping Graph Views
- Predefined ASTM compliant layout



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Test Method

Electrical potentials are the most common technique used for assessment of the extent of reinforcement corrosion. A copper sulphate half cell held against the concrete surface can be considered as a battery with one side of the battery being the copper rod in the copper sulphate solution (called a 'reference half cell') and the other side the steel bar in concrete. The potential difference (voltage difference) is measured by a voltmeter connected to the rebar and copper rod. The reference half cell is moved from point to point on the concrete surface. As the potential of the copper rod in copper sulphate solution is constant the different voltages measured are the difference in potential created by differences in potentials at the bar surfaces. However the measurements are not the actual bar potentials, only a reflection of them. The measured values are affected by the resistivity of the concrete, the cover and various other factors. The electrical potential distribution over a corroding area can be represented as a "funnel" centred on the anode, whose shape and extent is defined by the actual ongoing corrosion as well as by the concrete electrical resistivity.

Reference Electrode Configurations

The detection of the hot spots where active corrosion begins involves the measuring of the localized negative values of the half-cell potential (i.e. corrosion potential). When using a rod electrode the user has to define a grid fine enough not to miss any local negative peak, while the use of a wheel electrode on the new Profometer Corrosion ensures a new level of accuracy. The wheel system is fast enough to measure the electrical potential continuously along its linear paths, ensuring the most negative measured value will always be recognized and stored with its associated location.



Technical Specifications

Profometer Touchscreen Universal	
Display	7" colour display 800x480 pixels
Memory	Internal 8 GB flash memory
Regional settings	Metric and imperial units and multi-language and time zone supported
Power input	12 V +/-25 % / 1.5 A
Dimensions	250 x 162 x 62 mm
Weight (of display device)	About 1525 g (incl. battery)
Battery	3.6 V, 14 Ah
Battery lifetime	> 8h (in standard operating mode)
Humidity	< 95 % RH, non condensing
Operating temp	-10°C to +50°C
IP classification	Touchscreen IP54,
Profometer Corrosion	
Voltage measuring range	-1000 to + 1000 mV
Voltage resolution	1 mV
Impedance	100 MΩ
Sampling rate	900 Hz
Standards and guidelines	ASTM C876*, RILEM TC 154-EMC, DGZfP B3, SIA 2006, UNI 10174, JGJ/T 152, JSCE E 601, CE certification



Profometer Corrosion

Profometer Link

Proceq Profometer Link PC tool is included with all Profometer 6 Cover Meter and Profometer Corrosion units. It is based on an integrated suite enabling the user to process the data coming from rebar detection / concrete cover as well as corrosion potential measurement. The Profometer units can be connected to the PC via USB and the software is fully compatible with Windows 7, 8 and 10 (32- and 64-bit).

All features available on the touchscreen unit are also implemented on the PC. Create custom reports with exported graphs and charts. Support for the merging of several corrosion scans into a single graph. Picture and table export (csv files) for further processing, combined data evaluation and reporting on any third party software.

Profometer Configurations

Proceq's Cover Meter and Expert Rebar Tomography Systems allow comprehensive assessment of a concrete structure.

	Basic Cover Meters		Advanced Cover Meters		Expert Rebar Tomography (coming soon)	
	Profoscope	Profoscope+	Profometer PM-600 Spot	Profometer PM-630 Scan	Profometer PM-650	
Rebar Localization						Imaging
Cover Measurement	•	•	•	•	•	Corrosion
Diameter Estimation	•	•	•	•	•	
Data Acquisition		•	•	•	•	
Statistics		•	•	•	•	
Snapshots			•	•	•	
Single-Line Scan				•	•	
Multi-Line Scan				•	•	
Area Scan				•	•	
2D-Imaging					•	
Corrosion Data Fusion						•
Upgrade Possibilities	• →		• →		• →	

About PCTE

PCTE have over 30 years' experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.

Other Equipment

PCTE supply three main ranges: NDT, Lab and Geotech Instrumentation.

NDT includes: Rebound Hammers, Covermeters, Ultrasonics, GPR, Corrosion Testing, Coating Testing and Foundation Testing

Lab includes equipment for: Concrete, Cement, Aggregate, Soil, Asphalt and Metal

Geotech Instrumentation includes: Strain Gauges, Piezometers, Inclometers, Extensometers, Tiltmeters, Load Cells and Dataloggers