Moisture Sensor „MULTIRING ELECTRODE MRE“

Moisture sensor consisting of stainless steel rings at staggered depths to determine the moisture distribution in the surface-near concrete and to monitor the effectiveness of coating systems.

1 Fields of Application
Multiring Electrodes are used to determine the moisture distribution in the surface-near concrete of structural components exposed to water and to monitor the effectiveness of waterproofing and coating systems, e.g. used under edge beams or around joints. Multiring Electrodes can be installed into new or existing structures.

2 Description of the Sensor
The Multiring Electrode consists of eight stainless steel rings (1.4571, \(d = 20 \text{ mm}, h = 2.5 \text{ mm}\)), with a ring spacing of 5 mm between two neighbouring rings, and a pt1000 temperature sensor. Between each stainless steel ring a PE-insulation ring is located.

3 Measuring Principle
By measuring the AC resistance between two adjacent rings a resistance profile can be determined across the installation depth of the sensor, which can be converted into a moisture profile using concrete-specific calibration curves. A temperature compensation of the measured resistance is possible with the concrete temperature; a conversion of the resistance into the specific electrolytic resistivity is possible with the cell constant \(k\).

4 Measurements
Two-electrode measurement AC resistance measurement (at frequencies of 100 Hz or 1.000 Hz) between two neighbouring stainless steel rings, measurement of the concrete temperature at the depth of the inner ring.

5 Cell Constant
The measured resistance \([\Omega]\) can be converted into the specific electrolytic resistivity \([\Omega\text{m}]\) when multiplied by the cell constant \(k = 0.10 \text{ m}\).

6 Dimensions
Length: 42 mm
Diameter: 20 mm
Ring spacing: 5 mm

7 Measuring devices
The Multiring Electrode can be read manually with a corresponding switch box for the separate control of the ring pairs and an LCR-instrument. It can also be used in conjunction with the measuring instruments CANIN LTM or HMG or integrated into existing measuring systems. For automatic data acquisition measurement nodes are supplied by the company Protector (www.protector.no).