

Piezo-Extracted Model Based Chloride/ Carbonation Induced Corrosion Assessment in Reinforced Concrete Structures

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Abstract : Rebar corrosion is one of the main causes of damage and premature failure of the reinforced concrete (RC) structures worldwide, causing enormous costs for inspection, maintenance, restoration and replacement. Therefore, early detection of corrosion and timely remedial action on the affected portion can facilitate an optimum utilization of the structure, imparting longevity to it. The recent advent of the electro-mechanical impedance (EMI) technique using piezo sensors (PZT) for structural health monitoring (SHM) has provided a new paradigm to the maintenance engineers to diagnose the onset of the damage at the incipient stage itself. This paper presents a model based approach for corrosion assessment based on the equivalent parameters extracted from the impedance spectrum of concrete-rebar system using the EMI technique via the PZT sensors.

Keywords : impedance, electro-mechanical, stiffness, mass, damping, equivalent parameters

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