

A Reusable Non bonded Piezo sensor for Assessment of Rebar Corrosion

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Abstract: Corrosion in rebars is a very common problem faced by the ageing infrastructure across the world. Surface bonded lead zirconate titanate (PZT) transducers have been used for corrosion diagnosis and assessment, this paper presents a reusable non-bonded piezo sensor (NBPS) setup for monitoring the corrosion in rebars, for this purpose, a special design is proposed where the PZT patch is first bonded on a thin aluminum strip, which is in turn clamped securely on the rebar. The primary thrust for research in the application of NBPS stems from the fact that, directly bonded piezo sensors although very sensitive from damage detection point of view, cannot be employed on certain objects such as humans or other real life existing structures. Also they need to be bonded during construction for the newly constructions. The results show that the reusable setup is able to effectively monitor the corrosion in rebars and the behaviour of same specimen as interpreted from NBPS experiment is in congruence as seen from the direct bonded piezo sensor experiment. It can also be detach from the specimen for reuse.

Biodata:

Dr.T. Visalakshi is currently serving as Professor & Head, Department of Civil Engineering, Bennett University, Greater Noida. She is graduated from Osmania University, Hyderabad and PhD from IIT Delhi. Her research interests lie primarily in Structural health monitoring, corrosion of RC structures, but has research interests in many aspects of concrete technology, Geopolymer Concrete, flyash blended concrete, self healing concrete, Non-destructive techniques, Green construction materials etc.

She is having more than 13years of experience in academics and five years in industry and has guided several undergraduate and post graduate students. She has published more than 40 research papers in peer reviewed international journals and conferences. She is a life member of various profession bodies. She is governing council member of Indian Association of Structural Engineers and Executive member of Indian Concrete Institute, Ghaziabad Centre. She is technical committee member of various international and National International professional bodies such as "Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM) for (i) Characteristics of the steel/concrete interface and their effect on initiation of chloride-induced reinforcement corrosion (TC SCI) and (ii) Stress Corrosion Cracking and Hydrogen Embrittlement of Concrete-Reinforcing Steels (TC CCH). Technical Member of Indian Concrete Institute (ICI) for framing guidelines of water proofing systems. She has received various awards, among them include

1. Best Paper award at Corrosion conf. and Expo. CORCON 2012
2. Best Paper award at Nation Civil Engineers Symposium (IIT Bombay) 2013
3. Best poster award at ICTRAM 2012