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Compressive strength evaluation by non-destructive techniques: An automated approach in construction industry

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Abstract

Non-destructive techniques (NDTs) for the evaluation of concrete structure are widely used for the assessment and monitoring of concrete structures. Previous researches showed a large variation in results due to highly dependent on the number of cores and sensitivity of the NDTs. In this experimental work, concrete mixtures were cast in a wide range of compressive strength varying from 20 to 50 MPa. Ultrasonic pulse velocity test, rebound hammer test and the crushing compressive strength test were conducted at the age of 7, 28 and 56 days. Relationships between ultrasonic pulse velocity - compressive strength and rebound number-compressive strength were established. At the end, a combination of both NDTs was used to predict the compressive strength. The predicted values were verified by comparison with experimental results and previous studies. A close correspondence was found between experimental and predicted values,

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