



Код: 10922

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# Fatigue Monitoring of High Strength Concrete Using Acoustic Emission and Ultrasonic Techniques

Дрезден, Германия, 2012 год

8 стр; формат: 23,5 x 16 см; библиографический список: 4 единицы

In this work we present the results of a measurement campaign performed on high strength concrete, to investigate fatigue behavior under cyclic loading in terms of a Structural Health Monitoring (SHM) system. The specimens, small concrete cylinders, were equipped with acoustic emission (AE) and ultrasonic (US) sensors which recorded signals from the onset of beginning fatigue processes in the material until complete damage of the specimen. The parameters monitored have been the acoustic emission activity and the ultrasonic signals time-of-flight respectively travel velocity. The results are in accordance to tests on different concrete material and demonstrate the capability of the proposed methods to trace the fatigue process of concrete. As roundup, results obtained with similar sensing technologies on a large scale structure are presented.

Доклад. 6-я Европейская конференция по мониторингу технического состояния сооружений, 2012. Редакция Кристиана Боллера.

**Ключевые слова:**

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