

ABSTRACT

DESIGN OF INSTRUMENTATION QUALITY TEST OF THE CONCRETE BY ACOUSTIC SPECTRUM USING FOURIER TRANSFORMATION.

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It has been realized instrumentation of concrete quality testing by acoustic spectrum using fourier transformation. The research used a microphone as the voice-detection sensor with signal amplifier. Data were collected for 28 days with some age differences of the samples 7, 14, 21, 26 and 28 days that theoretically the best concrete quality at the maximum age of the test was 28 days. The concrete sound signal processing was done with the help of Matlab 7.8. The study used three kinds of samples with ratio of water cement varrying 0.78 for sample A, 0.66 for sample B and 0.53 for sample C. Based on the Young's modulus theory, data generated according to the theory that at the age of 26 samples and 28 days with dominant frequency 2043.52 Hz to sample A, 2033.58 Hz to sample B and 1988.9 Hz to sample C at the age of 26 days. Meanwhile, at the age of 28 days obtained dominant frequency 1950.6 Hz to sample A, 1949.7 Hz to sample B and 1946.46 Hz to sample C. Data in accordance with the theory of Young's modulus were at the age of 26 and 28 days of testing.

Keyword. Condenser, concrete, Young's modulus, Fourier transformation.