

Imaging of concrete cracks and reinforcing bars inside of concrete structures by using mfEIT

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ABSTRACT

An electrical impedance spectroscopy-based nondestructive testing (NDT) method is proposed to image both insulating cracks and highly conductive reinforcing bars in concrete structures. The method utilizes the frequency-dependent behavior of thin insulating cracks: low-frequency electrical currents are blocked by insulating cracks, whereas high-frequency currents can pass through the conducting bars without being blocked by thin cracks. From various frequency-difference EIT images, we can show its advantage in terms of detecting both thin cracks and bars. Various numerical simulations support the feasibility of the proposed method.

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