

1.12.9. DETECTION OF PIPING DEFECTS IN NUCLEAR PLANTS BY ULTRASONIC PULSE-PHASE THERMOGRAPHY

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In this study, the applicability of ultrasonic pulse-phase infrared imaging method for real time crack detection is described. As vision technique, an ultrasound wave passing through a material with mechanical discontinuity, such as a disbanding crack, causes temperature raise of that due to internal friction or thermo-mechanical effect. And the elastic wave with vibration energy is converted to the heat in the vicinity of the crack of the defect. its local heat emitted in the crack of the defect is monitored as the hot spot area via the thermal infrared camera. From the experimental works, the test material was austenitic STS 304, which was used as pipelines in the reactor coolant system of a nuclear power plants. As conclusions, Internal crack in a pipe using ultrasonic infrared thermography imaging to detect defects were. Also, at the end of the crack was able to identify hot spots using NDT.

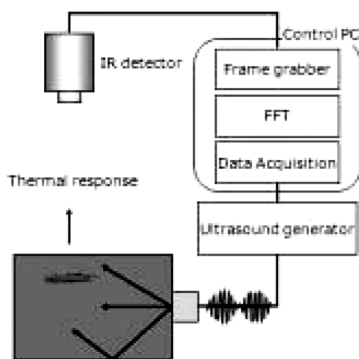


Fig. 1. Schematic of experimental set-up

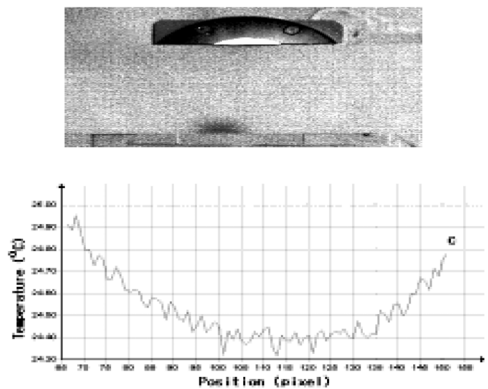


Fig. 2. Imaging and temperatures at 270° hot spot