World Academy of Science, Engineering and Technology
International Journal of Materials and Metallurgical Engineering
Vol:12, No:12, 2018

An Intelligent Nondestructive Testing System of Ultrasonic Infrared Thermal Imaging Based on Embedded Linux

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Abstract : Ultrasonic infrared nondestructive testing is a kind of testing method with high speed, accuracy and localization. However, there are still some problems, such as the detection requires manual real-time field judgment, the methods of result storage and viewing are still primitive. An intelligent non-destructive detection system based on embedded linux is put forward in this paper. The hardware part of the detection system is based on the ARM (Advanced Reduced Instruction Set Computer Machine) core and an embedded linux system is built to realize image processing and defect detection of thermal images. The CLAHE algorithm and the Butterworth filter are used to process the thermal image, and then the boa server and CGI (Common Gateway Interface) technology are used to transmit the test results to the display terminal through the network for real-time monitoring and remote monitoring. The system also liberates labor and eliminates the obstacle of manual judgment. According to the experiment result, the system provides a convenient and quick solution for industrial non-destructive testing.

Keywords : remote monitoring, non-destructive testing, embedded Linux system, image processing
Conference Title : ICMNSS 2018 : International Conference on MEMS, Nano and Smart Systems
Conference Location : Barcelona, Spain
Conference Dates : December 17-18, 2018