Detection of Weld Defects in Rails by Ultrasonic Software

Statistical and algorithmic ultrasonic software techniques are used in the analysis of ultrasonic images in order to automatically detect potential weld defects using techniques such as spectral filtering and feature identification. The analysis concentrates on weld defects that are internal and volumetric in rail welds because it is highly relevant to the transport industry. Failure in rail welds is an on-going concern for rail safety. A means to detect flaws using phased array ultrasonic techniques promises to minimise catastrophic failure and provide paths to preventative maintenance.

The use of phased array analysis software to automatically detect defects in phased array ultrasonic inspections provides a valuable preventative tool that will serve to help maintenance engineers to locate rail welds that contain defects, and to provide a quantitative analysis of the severity of the defects, including sizing and classification of the defect so as to support a decision to accept a newly welded rail or to repair a defect as part of a maintenance schedule.

Conclusions

The KCC phased array ultrasonic processing software has developed statistical and algorithmic methods to process phased array data images so that indications of defects within rail welds may be detected and effectively sentenced. The images have been processed to reject background noise and to enhance the regions where flaws may be present. Engineer controlled defect inspection assists in identifying the type and severity of present defects, using filtering and golden image subtraction filter to assist with this task. The KCC software has successfully identified both defect types and automatically sentenced defects correctly.

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For more information on defect detection in rail welds by ultrasonic software see the following websites:

www.kcc ltd.com  •  www.railect.com  •  www.twi.co.uk