Comparative Investigation of Split Spectrum Processing over Classical Approach of Filtering for Non-Linear & Non-Stationary Signals

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Abstract

Ultrasonic welding defect signals are not processed, they are very difficult to identify the pattern of the defect, especially the TOFD welding defect signals are often mixed with noise and lead to confusion between grain noise and small flaws. It is very difficult to interpret the result defect and noise due to larger grain noise. This paper describes the comparative study of matlab simulation results of classic approach signal processing methodology and Split Spectrum Processing (SSP) with the Polarity Thresholding algorithm (PT) to the TOFD welding defect. A-scan signals are used to enhance SNR while suppressing the grain noise. The simulation results show that the welding defect TOFD signals after the SSP investigation are the best and produce the qualified output.

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Index Terms

Computer Science

Signal Processing

Key words

Split spectrum processing (SSP)

Time of Flight Diffraction

(TOFD)

Signal to Noise

Ratio (SNR)

Non Destructive Evaluation (NDE)
Low pass filter