

Continuous Acoustic Emission (AE) Monitoring of a known flaw site behind a nozzle repad at elevated temperature

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ABSTRACT:

This paper discusses the application of AE as a method which provided an operator the feedback required to safely continue operation of a vessel with a through wall flaw.

A vessel operator witnessed product leaking through the weep hole of a nozzle repad. This vessel was operating at 750F in a continuous process and the next shut down opportunity was not scheduled for another two years. The proximity of the flaw and the surface temperature of the vessel precluded the application of conventional NDE methods for characterizing the flaw. The owner required a method to ensure that this flaw was not detrimental to the integrity of the vessel in its current state, and that the severity of the flaw did not become significant during daily operations over a 2 year period.

Continuous monitoring of the nozzle using AE and an internet interface allowed for continuous and immediate feedback when activity alarm conditions were met. The location algorithm of the AE software established the source locations as well as screening of external signals. User defined ratios of the AE hit features allowed characterization of the source signals and allowed for concluding that the majority of the AE activity was generated from mechanical signals as opposed to crack-like signals.

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