

ASSESSING THE STRUCTURAL INTEGRITY OF HIGH TEMPERATURE REFORMER AND HYDROPROCESSING UNITS BY MEANS OF ACOUSTIC EMISSION COOLDOWN MONITORING

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ABSTRACT

The application of acoustic emission testing (AET) utilizing process generated thermal gradients, pressure swings, and hydrostatic loading to locate and evaluate service induced damaging mechanisms in a variety of refinery and chemical process equipment is discussed. Emphasis is given to high temperature reactors, piping and heat-exchangers subjected to creep, high temperature hydrogen attack, and other environmentally assisted damage mechanisms. Improvements in overall safety and mechanical reliability of a number of high, ambient and cryogenic temperature units have been achieved, while minimizing downtime.

AET, a global non-invasive NDT (non-destructive technique) method identifies areas where active/growing discontinuities are present, and ignores non-active (fabrication) defects, which are unlikely to result in equipment failure. Several case studies and examples of successful industry experiences using AET are described.

KEY WORDS: acoustic emission, non-destructive, cracking, testing, reliability, AET, NDT.

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