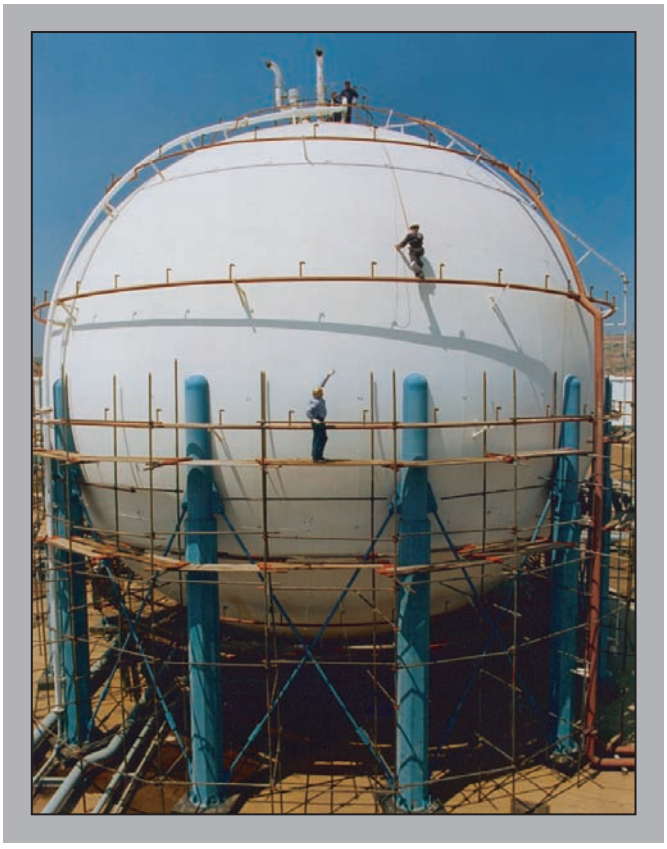
Acoustic Emission Testing

YOUR KEY TO DRAMATICALLY REDUCING INSPECTION COSTS

Stress Engineering Services, Inc. is an employee owned professional engineering consulting company. Founded in 1972, Stress Engineering successfully completes over 3,000 projects per year for more than 800 clients worldwide. Our engineers have an average of 20 years experience, many of them with advanced degrees. Because a large number have previously worked directly for oil and gas companies, our engineers have an extensive understanding of operating equipment and plants.

ACOUSTIC EMISSION TESTING (AET)

AET is a powerful, non-intrusive inspection technique to verify the structural integrity of pressure vessels, spheres, high temperature reactors & piping, coke drums, above ground storage tanks, cryogenic storage tanks and more. Because the inspection is executed externally and avoids costly shut-downs, AET can save users millions of dollars annually. There are other cost-saving advantages to AET as well.

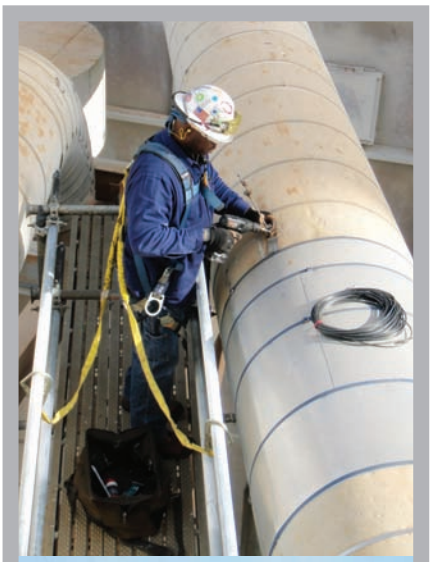


GLOBAL, SIMULTANEOUS INSPECTION

AET can inspect an entire unit/system simultaneously, including pressure vessels, heat exchangers, several reactors and piping in one single operation. This is done through an in-service over pressurization, or during a scheduled cool-down using the thermal stresses imposed by the temperature gradients across reactor's walls, and piping systems.

AET IDENTIFIES ONLY ACTIVE DEFECTS

AET is based on the principle that only defects that are actually growing, under a specific damage mechanism (i.e. SCC, wet hydrogen sulfide cracking, thermal fatigue, creep, etc.) can generate genuine AE signals. Consequently, old fabrication defects and stable cracks will not be detected because these defects are not actively growing. Repairs, if necessary, can be made only on the areas that contain defects significant to the vessel's structural integrity.



AET AVOIDS INTERNAL INSPECTION.....EXTENDS LIFE

Under allowance of current engineering standards, if a vessel is inspected by means of AET and no significant defects are found, a plant has the option to continue operating the equipment for an extended number of years until a new inspection date.

WORLDWIDE RECOGNITION OF AET RESULTS

AET has been used extensively in North America, Europe, Japan, South America, and in the Middle East. Its application is regulated by domestic and international standards and procedures, including ASME Div.1 Sec. VIII, Articles 11 and 12, API 510, CARP, U.S. Coast Guard, Department of Transportation, Department of Energy, Nuclear Regulatory Commission, and others.

Stress Engineering utilizes Vallen AMSY5 Digital AE Systems, the only instrument certified by a third party certification agency (TUV-Austria).

ONE STOP SOURCE FOR AET AND RESULTS INVESTIGATION

With internationally recognized expertise on-staff, Stress Engineering Services offers clients more than simply the ability to conduct Acoustic Emissions Testing. Our unique capabilites include the tools and the experience to further investigate AET results in order to determine how they impact fitness for service.

A History of Service

Stress Engineering Services has been providing quality design, testing, and analytical services for a variety of pressure vessels, piping, heat exchangers and other process equipment since 1972. This experience includes full scale testing, laboratory and field data acquisition, failure analysis, and teaching seminars in pressure vessel and piping design. We offer in-depth experience with FEA using ANSYS, PATRAN, ABAQUS, etc. and numerous Code and other classical calculations that have satisfield a multitude of clients with varied applications.

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