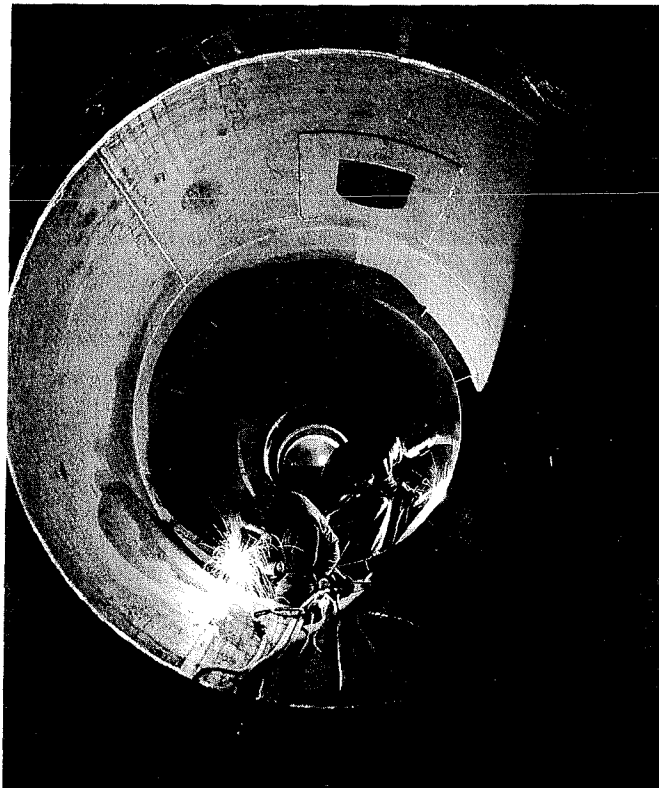


Shot Peening, Two-Minute Stress Testing More Than Doubles Tank Weld Life



Auvo Nikula, (inset) manager for standardization functions in the Kemira Group, says, "Extending the time between tank repairs gave us considerable savings. We believe the good result was due to the elimination of all tensile stresses in the welds by shot peening. STRESSCAN made that feasible by giving information immediately, so corrective action could be taken. Based on our good experience, we are planning to use this technology more, both here and overseas."



(Harjavalta, Finland:)—A tank of corrosive ammoniac was expected to go only two years between weld repairs. Yet five years after the last repairs, there are still no signs of weld failure.

The owner, international chemical company Kemira Oy, credits a patented technology using a hand-held STRESSCAN stress tester. This made it possible for the shot peen operator to 'fine tune' the process until all traces of residual stress were eliminated.

The tank, 78ft (25.9m) long and 15ft (5.1m) in diameter, is fine-grain steel with yield strength below 52 ksi (360 MPa). The corrosive contents are under 174 psi (1.2 MPa) at maximum pressure. A scheduled maintenance inspection in 1985 found many weld cracks inside the tank.

Following Kemira's usual practice, the welds were ground, rewelded, and shot peened with glass beads to relieve stress. Based on past experience with ammoniac tanks, Kemira expected the welds would again need repairs in 1987. But periodic inspections, the latest made in 1990, have still found no weld cracks.

Because the shot peening was done in the field, the stream was directed by hand, making precise control impossible. However, the stress testing worked alongside the shot peening inside the tank. When a section of weld was shot peened, the weld was scanned for residual stress with a hand-held STRESSCAN tester. In less than two minutes, a readout told the shot peen operator whether additional peening was needed, and indicated how much. The peen-test cycle was continued until it was certain that all tensile stresses had been removed.

STRESSCAN testers are small, light and portable; they work on all magnetic materials. The equipment is so easy to use, shot peen operators can perform stress tests to check results as they go. For more information, contact American Stress Technologies, Inc., 61 McMurray Road, Pittsburgh, PA 15241. Phone (412) 854-0789, Fax (412) 854-1290.

AST

AMERICAN STRESS TECHNOLOGIES, INC.

61 McMurray Road, Pittsburgh, PA 15241

Bingo No. 24