



LPG Sphere – Paper Abstract

“The inspection of construction welds on medium and heavy wall vessels contributes to the overall asset management and safety of such critical plant items.

Industry experience has shown that most common in-service cracking on LPG spheres is oriented at hard, weld HAZ areas internally, where the combination of higher residual welding stresses and product contaminant factors are in combination. The major threat to vessel integrity arises where initiated hydrogen or stress corrosion cracks further propagate through fatigue mechanisms. Detailed internal examinations of LPG tank welds involve; draining and purging tanks, scaffolding internally, grit blast cleaning operations, and Magnetic Particle and Manual Ultrasonic Inspections to tank welds.

When requiring a condition assessment on one LPG storage sphere, Integrity NDT proposed to TÜPRAŞ a computerized Ultrasonic inspection technique to be carried out from the external surface. The aim was to carry out rapid inspection, giving high defect detection probability and detail with minimum commercial disruption to operations i.e. no surface preparation, no paint removal, no scaffolding, and the sphere remaining in-service and operational.

Utilizing Integrity NDT I-Scan semi-automated scanning system coupled to multi-channel Ultrasonic computer, the sphere was scanned successfully, obtaining digital images of the welds and a number of defects accurately positioned and sized for assessment. This inspection has enabled TÜPRAŞ engineers to make strategic asset management decisions on this sphere at a fraction of the cost of an internal inspection“.

