



HF Alkylation Flange Face Inspection

Piping flanges in hydrofluoric acid systems are typically subject to under-gasket corrosion. Historically, traditional inspection programs have relied on visual inspection methods to identify and determine corrosion damage to the raised face of the flange. This procedure is costly and involves breaking and remaking flanges that in some cases may not be necessary.

MISTRAS has developed a proven ultrasonic procedure to inspect flange faces in HF Alky service using Phased Array Technology. We have a successful track record built over the course of 15 years of inspection at 6 refineries in North America totaling 15 Alky units and over 6000 flanges inspected.

While corrosion detection is an obviously important part of the inspection, the ability to size the depth of corrosion across the flange raised face is the single most critical component of the evaluation. Mistras performed extensive laboratory trial testing to meet a predetermined tolerance value of 0.030 of an inch yielding an accuracy percentage along the axial plane of the flange raised face.



Field inspection data is recorded, analyzed and pictorially presented for inclusion into a final report. Data analysis and final reports may include word, excel and AutoCAD drawings and are combined into one document for final submittal. Mistras utilizes ultrasonic Level II Shear Wave certified technicians with extensive training in Mistras HF flange inspection techniques. The HF flange inspection trainer is certified as a Principle Level III and Certified NDT instructor in accordance with Mistras certification procedures.

The Mistras flange face inspection technique examines the entire width of the flange raised face (sealing surface) and has the ability to determine corrosion presence, maximum mate-



rial loss in terms of depth and any progression of existing corrosion across the sealing surface. This inspection is a non-intrusive inspection that may be performed either in-situ or on-stream and helps in eliminating unscheduled downtime. It also identifies at-risk flanges and eliminates safety issues regarding "open flange" conditions.

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