Joint Industry Project, Call for Participation

Topic: Pressure Boundary Bolted Joint Corrosion; Stage #2

Goal:
The goal of Stage #2 of the bolted joint corrosion JIP is to build on the previously obtained corrosion test and analysis results in order to confirm the validity of the method across a wider range of applications. Additional analysis and physical testing will be conducted in order to extend the applicability of the assessment methods to the majority of applications, including offshore, petrochemical, refining and pipelines.

Background:
Stage #1 of the industry JIP (participants: BP and IES) was conducted to determine inspection and maintenance limits that were applicable to corroded bolts and nuts on the full range of ASME B16.5 & B16.47A flange sizes, using spiral wound gaskets. The investigation included mechanical interaction analysis, Finite Element Analysis, physical tensile testing with flanges and corroded bolts and, finally, physical leak testing with mechanically corroded bolts (turned and ground). All of this work allowed the determination of both rudimentary first pass corrosion limits (e.g.: 35% bolt diameter reduction and 50% nut corrosion acceptable for all B16.5 flanges) and also more detailed assessment methods for both custom flanges and standard flanges. The application of the findings in the field has been facilitated by a spreadsheet calculation method that allows determination of the maximum permissible level of corrosion for both the bolts and the nuts on any given ASME B16.5 & B16.47A flange size.

Stage 2 Outline:
Stage #2 will include the following:

a. Extend the method to examine flange corrosion
b. Improvement of the method for multiple corroded components (i.e.: bolt, flange & nuts)
c. Tensile testing of severely corroded bolts & nuts obtained from site
d. Assessment of buried flanged joints
e. Extension to other gasket types (e.g.: RTJ, Fiber)
f. Higher Pressure (cl.1500) leakage tests

g. Assessment of corrosion jacking*
h. Assessment of higher strength flange materials (pipeline X65, X70, etc... and duplex)
i. Assesment of non-uniform corrosion
j. Others... (topics as requested by participants)

* = corrosion jacking will be a longer term test

To Participate in Stage #2:
Contact Warren Brown (wbrown@integrityes.com) for further information.

Participant Cost: US$25,000 per company, which will allow access to both the Stage #1 and Stage #2 results (including spreadsheet).

Deadline: Participants must confirm by the end of August 2016. Stage #2 will commence in September 2016 and will be complete in Dec 2016.