



RT-BOLT

BOLT LOAD MEASUREMENT
SIMPLE | ACCURATE | ROBUST



Delayed Coker Operator (USA, Illinois)

Coke Drum Bottom Unheading Valve Joint, Assembly and Monitoring

CLIENT BACKGROUND

A major US based refinery replaced BUD valves on a three-drum Coker unit with single-side feed drums (45°). The BUD joint had experienced leakage during operation. Given the DCU's high temperatures and pressure cycles, ensuring joint integrity was critical to maintaining uptime, safety, and efficiency.

CHALLENGES

The existing valves had a long-standing history of joint leakage, which posed operational challenges and increased maintenance demands. Hydraulic tensioning was applied during assembly, but it only covered 50% of the bolts, leading to an uneven distribution of load across the joint. This imbalance caused inconsistent bolt stress levels, compromising the joint's ability to maintain a secure and reliable seal under the extreme temperatures and pressure cycles of operation.



Torquing RT-Bolts with cassette type tool

SOLUTION

The RT-Bolt System, comprising of RT-Bolts, coated and hardened washers and machined and coated nuts, ensured precise assembly and optimum joint integrity. After initial hydraulic tensioning, bolt stress readings showed the target stress wasn't achieved – an issue only detected using RT-Bolts. Hydraulic torque was applied, adding ¼ to ¾ of a flat (15-45°) per nut. During initial re-tightening and without applying fresh anti-seize, torque was applied with the bolt stress gauge inserted until the target bolt stress was reached.

CONCLUSION

Hydraulic tensioning alone was insufficient to achieve the required bolt stress, highlighting the need for additional torque application to compensate.

The coated studs, nuts and washers resisted galling even though fresh anti-seize was not applied.

The use of RT-Bolts provided an understanding of the actual bolt and gasket stresses achieved in the critical bolted joint to enable a more reliable joint than previous attempts.

Drums operated leak-free for over four years, enduring multiple idle periods before permanent shutdown.

Post installation valve servicing, all RT-Bolts were easily disassembled without galling or the need to split or cut nuts out.

CASE STUDY
INDUSTRY: REFINING / PETROCHEM / OIL & GAS



Market leading accuracy



Market leading repeatability



Ultra-high temperature 800°C



Ultra-low (Cryogenics)



Bolt size ½" upwards

CASE STUDY

INDUSTRY: REFINING / PETROCHEM / OIL & GAS

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