

**April 7, 2018**

## **A Brief Summary of the Bolting Study in Progress**

### **Introduction to the Study**

The research team from the College of Technology at the University of Houston has been studying the DuraSquirt DTI's from Applied Bolting Technology (ABT) since January 2018 with the goal of determining if they are a cost effective improvement to bolted flange connections. The DuraSquirt DTI's from ABT are being tested and compared to the ASME PCC-1 methods. The full scope of our work is not yet complete, however there is sufficient data to provide some preliminary conclusions.

### Preliminary Conclusion:

The DuraSquirt DTI's reliably work. The joint does not leak and the DuraSquirt DTI system enjoys a 50 to 70 faster bolting time. This is done with fewer movements and therefore fewer opportunities for mistakes or injuries as well as eliminating necessary calculations and eliminating the need for torque tool calibrations.

### **Summary of the Study:**

Procedure: Two 12 inch 600 class flanges with raised face sealing surfaces on a small table top are bolted together and hydro-tested. Axial deformation of the studs is measured before, during, and after tension and Flexitallic gaskets are used with the inner ring in place. There are no pipes or other connections, just two flanges. The hydro-test uses a Carber Weld Test Tool and holds 2250 psi for 20 minutes.

### Results:

- The ASME PCC-1 Legacy bolting method requires a number of calculations, a calibrated torque tool, and at least two trained professionals. It involves 60 movements and requires 45 minutes to 1 hour to fully tension all 20 studs.
- The DuraSquirt DTI's and associated bolting method requires a torque tool but no calibration, a set of 20 DTI's, and two competent individuals with little to no training. Bolting time is approximately 10 to 20 minutes.
- All hydro-tests of both methods have been fully successful.

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## Conclusions:

The DuraSquirt DTI's from Applied Bolting Technology reliably work, producing a joint that does not leak with a 50 to 70 percent faster bolting time. They do this with 67% fewer movements, thus reducing opportunities for mistakes or injuries as well as eliminating calculations and saving resources that would otherwise be expended on torque tool calibrations and care.

Sincerely,

Jeff Braun



Cesar Moreno



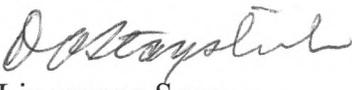
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