White Paper

Why is there a need for Calibration or Verification of Torque Tools and Torque Measuring Devices/Instruments?

May 2021

Advanced Witness Systems Ltd.

1. Introduction

Why is there a Need for Calibration or Verification of Torque Tools and Torque Measuring Devices/Instruments?

Is it just to comply with company Quality Control Audits? ISO 9001:2015 for example.
The need to have proof of traceable calibration?
A piece of paper to be waved in the air and filed. Job done for another 1 or 2 years?

Why one or both of them? What is the difference between them?

Each has its place in Quality Control and performance. This paper gives a brief explanation of the differences and needs of verification and calibration.

2. Verification

Verification is an interim measure to test that the tool or instrument is performing as required at the time of use.

Verification is useful for tools having continual and constant use at one setting (torque value). It allows the user/operator/supervisor to know if the tool still functions correctly and within the required tolerance parameters. For instance, within 4% or 6% of reading. It is a quick check of functionality.

Is it fit to carry out or measure for a short period of time, such as at the start and finish of a production shift or maintenance service operation? For instance, in the maintenance of wind turbines or on wheel nuts for truck and bus transport.

Verification is invariably lower cost.

What it does not do is give true traceability and certainty of the true measurement uncertainty and error.

3. Calibration

Calibration if carried out to known accepted standards does this. It can be more costly due to the cost of the calibration equipment, skill required and the greater complexity and number of operations to be performed. It does however tell you all about that individual tool's performance at the time of the calibration, which is a more believable result than a general conformity statement.

The same applies to instrumentation such as the performance of a torque transducer, especially when used in conjunction with a torque multiplying gear box or power tool, when the transducer is the control on the fastener/bolt, stud and nut applied torque. Critical examples are in sub sea oil and gas installations, pipe flanges etc.

For Torque, the International Common Standard for Hand Torque tools is ISO 6789:2017. Part 1 for conformities, Part 2 for calibration. In America, ASME B107.300-2010.
For Torque Measuring Devices BS7882:2017, BS7996:2018, German DIN51309:2005, Ansi Z540, ASME B107.300.
Power Tools performance test method ISO5393:2017, German VDE2647, VDE 2645-2.

4. Summary

It is important to use the correct equipment, depending on whether the focus is verification or calibration, and the software to record and keep common compliance to a standard. Advanced Witness Systems Ltd has products to perform these verifications and calibrations, ranging from less than 1 Nm. to 300,000Nm.

For verification, view our Professional Torque Tool Tester.

For torque wrench calibration, view our Universal Torque Wrench Calibration Machine.

For torque screwdriver calibration, view our Universal Torque Screwdriver Calibration Machine.

Please see our website www.awstorque.co.uk to view our datasheets or product videos, or contact us for more information.

Disclaimer: The information in this white paper is believed to be fair and accurate but represents the view of the staff of AWS Ltd. and should not be used for any specific purpose other than that intended, which is to encourage further questions, understanding and debate of the new standard.

.

Advanced Witness Systems Ltd.

Unit 8 Beaumont Business Centre,
Beaumont Close,
Banbury.
OX16 1TN
Tel: +44 (0) 1295 266939
Email: sales@awstorque.co.uk
www.awstorque.co.uk

Registered in England Company Number: 2565074