

CALIBRATION OF TORQUE MEASUREMENT DEVICES TO BRITISH STANDARD BS 7882:1997. PROCEDURAL REQUIREMENTS AND DETERMINATION OF UNCERTAINTIES

Speaker/Author: Barry C. Pratt
Head of Laboratory Norbar Torque Tools Ltd.
Banbury, England

Abstract

History of the standard is outlined, from a NAMAS (now UKAS) procedure in 1993, through to publication as a British Standard in 1997. Comparison is made with DIN 51309:1998 and the draft European EA document, with comment on the relevance to each for calibration laboratories and end users of torque devices. Application of the standard is demonstrated with reference to an unsupported beam and weights. Exercise and preloading requirements are explained, followed by three series of torque application, with rotation of the device between the second and third series. The classification of the device from the calibration data is then demonstrated. The calculation of uncertainties associated with the calibration is explained from first principles. This includes assessment of the likely causes of uncertainty; their potential magnitude; and the type of distribution associated with each element. The combination of each uncertainty into the final expanded uncertainty is then demonstrated.