

REASONS WHY THE REGULAR CALIBRATION OF YOUR EQUIPMENT IS IMPORTANT

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INTRODUCTION

Most instruments are typically subjected to some fairly rough treatment — bouncing around in the vehicle, dropped on site, knocked against hard objects, etc. Even if they're treated carefully and not knocked about, changes in ambient temperatures, humidity levels and deteriorating component tolerances will cause a shift in any electronic measuring equipment readings over time. For these reasons regular calibration is advised and if required, adjustments, to ensure the outputs are accurate and therefore dependable.

Calibration is defined as a measurement referenced to a 'known' standard. Calibration gives you confidence in the measurements being made, provides proof of validated measurements and ultimately enables more time to be spent on core work, rather than having to retest if there isn't confidence in the results.

When testing and calibration is required, there is only one proper way to do it. Unless full range and full scale calibration is completed against validated standards and the data recorded, then the time and expense of doing so is wasted. Everything else, such as self-checks, is false comfort only.

REASONS TO CALIBRATE

1. It is a requirement from the ETU. They state "all equipment used for testing an installation must be regularly calibrated to the manufacturers specifications", (Alert #9, 2001. Reviewed 2008)
2. It is a requirement of the Qld Electrical Safety Regulation 2013. It states "a person conducting a business or undertaking must ensure that electrical work on energised electrical equipment is carried out by a competent person who has tools, testing equipment and personal protective equipment that are suitable for the work, have been properly tested, and are maintained in good working order. Failure to comply can result in a maximum of 40 Penalty Points". The only way to properly test electrical safety equipment and instruments is to perform full HV testing and calibration. The Electrical Safety Regulation 2002 specified a six monthly test frequency, and this should still be followed in order to adhere to best practice, and minimise liability. This is also recommended by the National Electrical Contractors Association (NECA).
3. It is a requirement of AS/NZS3000 that system voltages are tested, and that they are within a certain tolerance (+10%/-6% in Aust, +6%/-6% in NZ). Without performing proper calibrations, which allow you to know the accuracy of your instruments, you are not able to ascertain if any installation tested with your instrument, meets that AS/NZS3000 tolerance requirement (you need to know the uncertainty of your instrument to do that, something that is provided on calibration exports). Clause 1.6.2(c) Supply characteristics of AS3000 (pg. 51) outlines that the nominal voltage and tolerances for low voltage supply systems and electrical installations are – a. For Australia, 230/400 V +10% to -6% and b. For NZ, 230/400 V +6% to -6%.
4. It is a requirement of ISO9001:2008 that equipment used for testing and measuring must be regularly calibrated to the manufacturers specifications, and that records be maintained. Those records must also show traceability information to the test equipment used, company, technician and much more.
5. When performing a calibration, an IUT can often be proved accurate on one part of the range on any given function, and still fail in other sections of that same function. Therefore, if an IUT is functioning at 240V AC when checking at a 'known source' or on a check box, it doesn't by any means ensure that it is correct or functioning at all at other voltages, including 415V AC. A verification that AC Voltage is functioning also doesn't mean that any of the DC function whatsoever is working or accurate.
6. It is a requirement of Worksafe Australia. It states: "work on plant or equipment should not begin until tests have confirmed it is safe to do so. The calibration of any instruments required to test isolation procedure should be checked before use."
7. Regular calibration can extend the life of test equipment and instruments. Regular calibration can often pick up any problems with instruments early in their development, that can be rectified easily and affordably. If left unattended, the problem may become a serious issue, which may cause component failure or board damage inside your instrument.
8. You can increase the perceived value and quality of jobs that you perform, by providing test reports for your work, which should list your instrument/s used as traceability information. You can also provide calibration report/s for the instrument/s used, further increasing the credibility of your work.
9. The regular calibration of your instruments could protect you from possible litigation or insurance problems. If there is ever the unfortunate incident where you or your employees cause or sustain personal injury, death or property damage - insurance claims will not be paid out if un-calibrated equipment are deemed to be a contributing factor by the assessor. Furthermore, a litigator will pursue criminal charges against the responsible person that allowed work to be conducted with un-calibrated equipment.

POTENTIAL CONSEQUENCES

As a reputable business, you need to understand the consequences of inaccurate measurements brought on by the use of un-calibrated or inaccurately calibrated meters. For critical applications, the consequences could be one hundred times the cost of the meter or calibration, or even more. On top of that, your reputation is put on the line.

The consequences of not calibrating can be quite detrimental to a business. The key factor is the integrity of the measured record if it is ever called up as evidence in a court of law. You need to ensure that whoever is calibrating your equipment follows proper procedures, including ISO17025, which outlines laboratory and calibration standards. This removes any uncertainty associated with the reliability and measurement accuracy of your Meter. This provides a traceable reference if you are ever faced with having to prove your innocence in a court of law when it comes to the validity of Test Results.

When checking any critical measurement, you are often dealing with people's safety and you are carrying an extended duty of care.

