Concilium Technologies

Real Alliances Real Solutions

Calibration Myths

Customer Information Brochure

MYTH	TRUTH
—Calibration—	
A Certificate of Calibration means that the instrument met its specification, at least when it was tested. ALSO Calibration means that the equipment was adjusted back to nominal.	Whether this is correct or not depends on the calibration laboratory's service definitions or what was agreed between the supplier and customer. The international meaning of "calibration" does not require that errors detected by the measurement comparison process are corrected. It means that adjustment to return an item to specification compliance may, or may not, be performed. Unless the Certificate contains a statement affirming that the item met the published specification it is merely a report of the measurements made. In this case it is left to the equipment user to review the data against requirements. The equipment may have been found and returned to the user out-of-tolerance!
Some equipment is more expensive to have calibrated than to purchase a new one each year. Just scrap the old item which was probably worn anyway.	The first part of this assertion is TRUE but.... It could be that a calibration certificate is not provided with the new purchase. Some users are not concerned, perhaps relying upon the manufacturer's reputation to deliver new products that are specification-compliant which may be a justifiable risk. Less justifiable is the suggested practice to dispose of the old item without first getting it calibrated. How would you know if it had been used in an out-of-tolerance condition? If it had been out-of-spec, would it affect the integrity or quality of the process or end-product? If so, the proposal is a false economy !
Only measuring equipment with the possibility of adjustment needs periodic calibration. As an example, liquid-in-glass thermometers only need certification when first put into service; they either work or are broken.	Just because an item is not adjustable doesn't mean that it's perfectly stable. Some standards may be subject to wear which changes their value (e.g. a gauge block) or they may be invisibly damaged leading to non-linear or odd behavior (e.g. a cracked glass thermometer). Or the material from which they are constructed may also not be stable. For example a quartz crystal oscillator changes its resonant frequency because mechanical stress in the crystalline structure is released over time.
If an item needs routine calibration, the manufacturer states what is necessary in the equipment's handbook; otherwise calibration isn't required.	It is true that some manufacturers provide such advice (Agilent Service Manuals spring to mind !). But many, typically smaller, companies do not make this investment. It's unsafe to make the assumption that no advice means no calibration. Also be aware that industry practices change over time and a manufacturer's recommendations as published thirty years ago may not be as metrologically rigorous as those produced to match today's market expectations.

The original manufacturer or the calibration lab defines the appropriate calibration interval for the product or item. The user is bound by that periodicity.	It's often unrecognized that a product's specification is generally linked to a time period. Simplistically, the manufacturer may establish the specification having assessed the accuracy and drift of prototype units. It may well be statistically justified for a particular confidence level that a certain percentage of the product population (all those produced) are likely to still comply with the spec after the stated period. Whatever the mechanism used, the calibration interval is only a recommendation.\ Some cal labs offer a service to manage the periodicity of customers' equipment based on the accumulated cal history. Otherwise, this risk management responsibility remains with the user.
Safety regulations stipulate the legal maximum period allowed between cals to be one year.	The problem with such a policy is that it may be implemented differently to what is intended. Maybe all items will be assigned a one year interval without any regard for its justification or applicability to the use of a particular piece of equipment? The assignment of a suitable interval should be recognized as part of an equipment user's risk management strategy. One must consider the knock-on effects if the item is later found to have been used in an out-of-tolerance condition (e.g. product recall costs). So, there's a balance to be achieved between the inconvenience and cost of excessive calibration and impact of unreliable kit.In safety-critical applications any degree of risk may be unacceptable but this would probably be implemented by parallel and back-up systems. Total reliance upon a single piece of equipment, even if tested every day, would be unusual.

Other Customer Information Brochures

Selecting a Calibration Vendor
The Consequence of not Calibrating
Defining your Calibration Requirements

About Concilium's Services

Concilium is the only Authorised HP/Agilent Service Center in Africa. We boast over 23 years experience in the Repair and Calibration of HP/Agilent Equipment. Our SANAS Accredited Laboratory is the most comprehensive facility, allowing us to calibrate all makes of Equipment from Digital Multimeters to specialised RF Test Equipment.

Concilium is a ISO9001:2000 company with a ISO/IEC17025 SANAS accredited Calibration Laboratory.

We invite you to contact us should you require:

- More information on our Capabilities
- Quotation on Equipment for Calibration
- Assessment of your Calibration Requirements
- A Visit to our Laboratory
- General Information

Contact us

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