

CALIBRATION: PROTECTING THE INTEGRITY OF YOUR NETWORK

By Glenn Cain

The telecom industry through its own initiative and presently with the help of the QuEST Forum has developed a broad base, single standard of quality. This standard known as TL-9000 is relevant to the special needs of the telecom industry and is designed as a living document so that it can

change as systemic changes are required. This designates the standard as an active document and not static or passive one. There are many very good reasons for the development and implementation for an industry unique quality system indigenous to a specific industry. The automobile industry has developed and enhanced its own quality system, which its vendors must adhere to for all quality concerns. The aircraft industry has done the same. Specialized industries find that "One size doesn't fit all" so a quality assurance program is developed that is unique unto that industry. All of these "unique" systems however, have a common ground, they all maintain ISO9000 and its repertoire of specifications as the systemic base then add or subtract from that as required by

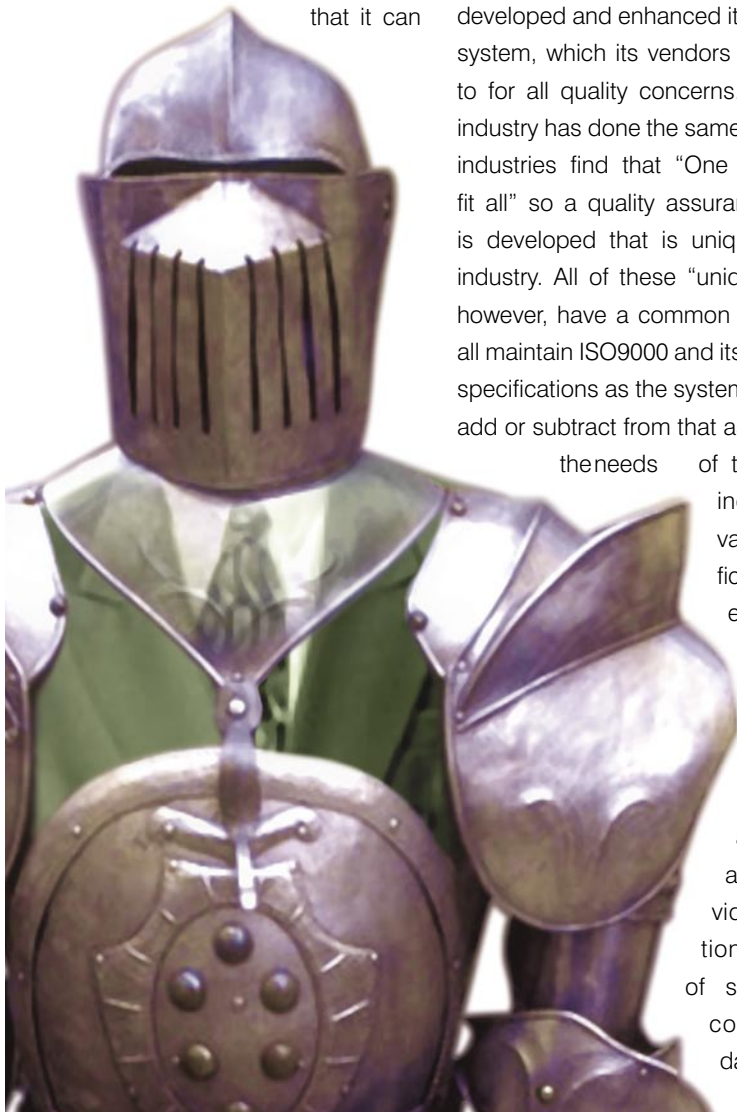
the needs of the particular industry. The various specifications indigenous to the ISO9000 standard cover a multitude of applications aimed at providing exceptional quality of service, cost consideration, data retention, traceabil-

ity of work and work processes with a total measurement process designed to provide a quality product that will "protect the integrity of the network." These and other quality requirements are all designed to benefit and measure each area of responsibility in order to maintain the highest standard of performance through total quality management. The network in the telecom industry is the final product and all of the interrelated activities must be performed correctly and with consistency to insure the acceptability, longevity and performance of the network.

This unique total quality system is the "assurance" and the "insurance" policy to the contract provider indicating that the proper tools, processes, hardware and procedures have been used and that all tools and instruments have, or will have evidence of current calibration and can perform their functions as designed.

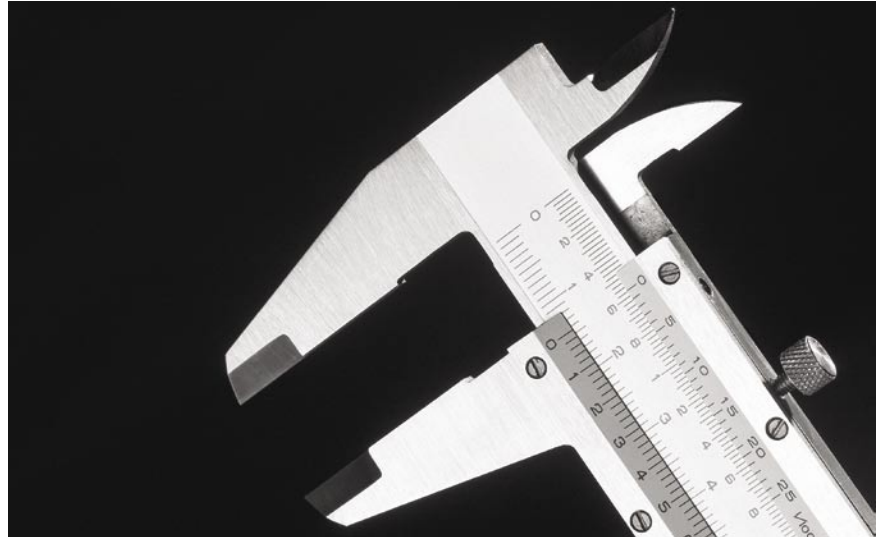
The calibration of tools and instruments used in the daily installation operations is of utmost importance to the overall outcome of each project.

To provide the assurance to the installer and the client that tools and instruments will perform correctly, periodic calibration and maintenance must be performed. We will take this one area of service and expound upon it just to give an idea of what happens throughout this the total quality program designed ultimately for "network protection."



FIRST THINGS FIRST

First, a calibration service provider that meets and fulfills its obligations for accreditation to ISO/IEC17025 and has the documented tool and instrument calibration instructions and equipment, and can perform the required tasks in compliance with the intent of the specification and the manufacturers design characteristics, must be found. Second, having written detailed calibration instructions and standard operating procedures, an accredited laboratory must meet or exceed the following requirements per ISO/IEC17025: organization, quality system, document control, review of requests and tenders, subcontracting of tests and calibrations, purchasing of supplies and services, service to the client, complaints, control of non-conforming work, corrective action, preventive action, control of records, internal audits, management reviews, general, personnel, environmental conditions,



calibration and test method validation, equipment, measurement traceability, handling of items, assuring the quality of calibrated results, and reporting the results.

A very good reason and an economically wise one is to use an accredited service because it will provide complete systems compliance with trace-

able calibration evidence, historical and empirical data as required by the standard and cyclic changes for cost control and reduction. Plus, there will be little or no delay caused by internal or external auditing if the tools are compliant to the specification as initially and cyclically required.

"NEW" TOOLS

A general misunderstanding in tool calibration conformance is in the purchase of new or even "new" pre-owned tools. It is assumed that if the tool is new it is "calibrated" and will meet all the specifications for which it was intended. This is a logical concept, but not always the case. Tool manufacturers today do not build the tools that have their names on them from the frame up. They rely on many hands to get the job done. A completed tool is packed with a "tool card." The tool card that comes with a tool basically indicates it should work if everything went together as planned. This card is an indicator, not a calibrated certificate for the various parameters of the tool or instrument. An auditor will not accept a "tool card" as objective evidence of tool acceptability or as calibration of the tool. Only a long form calibration certificate for each tool is acceptable or the job can be stopped.

Calibration prior to use is the most beneficial way to go it does two things: First, it complies with the standard ask-

ing for calibrated evidence prior to tool use, and second, it weeds out tools that do not conform to design requirements. If the tool or instrument is calibrated before it is used repair or replacement can be performed immediately avoiding costly delays and/or defective work.

After the initial calibration, a cyclic frequency is provided based upon manufacturer's recommendations and calibration data models. The normal interval is one year. The process can then determine after the second calibration if cyclic changes can be made without any adverse quality concerns.

Intervals for periodic calibration are used as an added measure of insurance for continued tool acceptability and continual network protection. The periodic calibration and maintenance assures that the tool will perform as designed since there are many variables that can cause changes in each tool or instrument. These changes can be either adjusted or verified and viewed so that the parameter(s) in question does not exceed manufacturers recommended

tolerances. The tool can be replaced or repaired before it becomes a problem in the field.

Tools and instruments are the heart of the installation process. Without the proper tools and instruments, or with defective tools and instruments, the job has little chance of success without cost overruns and with probably a reduced confidence level even after completion. Maintenance of this valuable resource has logistic, as well as quality and quantity ramifications. Although it is one small part of the whole system it is a very important small part. ■

**GLENN CAIN IS CALIBRATION ENGINEER FOR
OEL WORLDWIDE INDUSTRIES AND PRESI-
DENT OF MC TELSERV, INC., GLENN CAN BE
REACHED AT GLENNCAIN@MCTELSERV.COM
OR WWW.MCTELSERV.COM.**