Searching for the right Calibration Service Provider

by Paul Bessette and Mark Dillard

High-quality products and services at competitive prices are the norm in today's fiercely competitive global marketplace. In order to stay in business while delivering both quality and value, companies often find themselves looking for ways to reduce costs and free up valuable resources. One way to do so is outsourcing difficult-to-manage functions that lie outside core processes; calibration services frequently fall under this category.

Usually it's the quality professional's responsibility to select and manage calibration suppliers--as economically as possible. The overall cost of this process can be trimmed considerably if, before talking with prospective suppliers, you clearly define your organization's requirements through supplier evaluation criteria.

What are your calibration requirements?

Prior to establishing calibration supplier-selection criteria, it's important to clearly define your requirements. Some areas to consider include:

- Industry quality standards and requirements dictated by customers and regulatory bodies. For example, automotive industry suppliers must establish a calibration program driven by QS-9000 or ISO/TS 16949, whereas pharmaceutical suppliers' programs are guided by FDA regulations.
- Organizational requirements. For example, do you require electronic invoicing?
- Department-specific requirements. A shorter calibration turnaround might be required for a production line running 24 hours a day than for an engineering department that uses its equipment less frequently. Understanding each department's requirements and communicating them to the calibration supplier will result in fewer problems and a lower cost to manage the program.

Only after you've determined your calibration requirements can you develop effective supplier-selection criteria. Key factors for minimizing the total cost of a calibration program include a sound assessment of the supplier's:

- Quality system
- Technical competence (of both measurement results and technicians)
- Automated calibration procedures
- Financial stability
- Service delivery methods
- Record access
- Turnaround time
- Ability to meet your needs

Supplier's quality system

Quality requirements provide the best means of determining which calibration provider meets your needs. A fully documented and technically capable lab will have established a quality system that includes both an ISO standard registration and ISO/IEC 17025 accreditation. Choosing a lab that has one without the other exposes your company to potential service risks and increased costs.

ISO 9001:2000 ensures that a quality system is defined, documented and followed but doesn't require procedures for monitoring a lab's technical ability or assessing how well its technicians perform tests or calibrations; for that, you must look for ISO/IEC 17025 accreditation, which ensures that a lab will perform calibrations as stated on its scope of accreditation.

ISO/IEC 17025 auditors can provide independent, professional assessments of a calibration lab's technical ability. Because scopes of accreditation vary, it's important to compare them when assessing several labs. Some offer very little capability and, just to claim accreditation, will list a few low-accuracy items on their scopes of accreditation. This won't ensure the lab's technical quality when performing calibrations that require higher accuracies than those listed. One must also pay attention to who accredited the lab. Many ISO 9000 registrars accredit laboratories to ISO/IEC 17025, and it's prudent to verify that the accreditation is recognized in your industry and by your customers.

Technical competence

Obviously, your potential service provider's technical competence is critical, but it's often difficult to assess. "Technical competence" should imply technically valid measurement results as well as competently trained metrology technicians. If you're not a metrologist, the best way to assess a supplier's technical ability is to check its respective ISO/IEC 17025 scopes of accreditation.

The technicians' qualifications and experience are critical to ensuring good metrology practices, valid calibrations and confidence in the measurement results. Technicians should have broad knowledge and technical ability within their particular lab area. Verification that they've completed either of the following two programs can help assess calibration technicians' competence:

- Previous military training in precision measurement equipment or TMDE technician programs. Technicians under this program receive formal classroom instruction and extensive on-the-job experience calibrating test equipment.
- American Society for Quality Certified Calibration Technician program. The ASQ certification covers six main areas of expertise: general metrology; measurement systems; calibration systems; applied mathematics and statistics; quality systems and standards; and uncertainty.

Although formal military training or ASQ certification doesn't guarantee appropriate calibration of your instrumentation, it does ensure the technician has fundamental knowledge of calibration. Should measurement discrepancies occur, the technician will know the calibration process well enough to ascertain whether the discrepancies are associated with the device under test, the setup or the standards used in the calibration process. Erroneous readings can make an instrument read out of tolerance when it's in tolerance or

vice versa. Inexperienced technicians with little or no proper training often overlook errors associated with their own standards and setups. These errors can create problems for the customer, including product recall or wasted time and labor reviewing out-of-tolerance conditions that don't actually exist.

Automated calibrations

Calibration laboratories often use a commercial calibration program or develop their own automated software procedures. In the former case, the responsibility for reliable validation and testing usually falls upon the software manufacturer. If the lab writes an automated calibration software program, it must validate the procedure before implementing it. Software validation is a critical process that ensures the validity of results. Without this control, data results provided to a customer can be skewed, incomplete or even incorrect.

The following should be defined and documented when validating a software procedure:

- Software requirements
- Design, including architecture, construction code, source code and any annotations
- Test plan to ensure that software input and output obtain the expected results (i.e., just as if the calibration had been performed manually)
- Installation and checkout documentation
- Traceability matrix showing how the requirements map to the design test

Financial stability

A lab's financial stability is important. When looking for a suitable calibration supplier, consider the company's:

- Viability. Will the lab be around for the next calibration?
- Reliability. Will it keep pace with your organization's technological advances?
- Flexibility. How will it manage changes in scope in a constantly changing environment?

Inadequate financial stability and resources could result in excessive turnaround times, inadequate calibrations or simple lack of support, all of which will affect your product's delivery time and quality.

Delivery methods and solutions

Methods for providing calibration services include pick-up and delivery from fixed calibration lab locations, scheduled on-site calibrations, permanent on-site calibrations (e.g., installing technicians, processes and tools at your location) and ship-in/ship-out services. Some companies also use self-contained mobile labs to provide scheduled on-site calibration. Working with your provider to determine which delivery method is most compatible with your needs will result in lower program management costs for your company.

Record accessibility

Calibration records (e.g., certificates, reports and measurement data) are often provided with the instrument either as hard copy or electronic media. Many providers also offer real-time, online record access for calibration records and invoicing through their Web site. Online access reduces time spent filing paperwork, allows for easy access of specific documentation such as calibration certificates and frees up floor space previously relegated to record storage.

- Important record factors to evaluate include:
- Protection and security of calibration records and information
- Ease of access, backup and recovery capability
- Length of record storage
- Accessibility to records upon termination of contract
- Real-time access to records

Some calibration providers will even e-mail monthly "calibration due" notices to the appropriate equipment user. All of these options can help you maximize your calibration program's efficiency and reduce internal costs.

Turnaround time

Downtime for calibration can be a costly risk. During the last several months, many businesses have lacked capital for investing in test equipment, and consequently, they must keep what equipment they do have running optimally. The industry standard for instrument turnaround time is five business days, but most service providers, if requested, will offer expedited service for critical items. Expedited services often cost more, so it's best to check with the calibration provider to determine costs. Turnaround times are often linked with the provider's financial stability. The greater the provider's stability, the greater its ability to ensure that labor, equipment and resources are available when needed.

Finding the right supplier

Differentiating the varied services offered by calibration labs can help you narrow your choices to the provider that best meets your needs. For a list of characteristics of some calibration service providers, refer to the table posted at www.qualitydigest.com/pdfs/0803cal.pdf. Depending upon your organization's size and needs, each of them has something valuable to offer.

Too often, companies focus solely on the price a supplier charges for calibration service and overlook the total cost, which includes the previously mentioned evaluation elements. An arbitrarily selected calibration service provider could disastrously affect your organization, but an informed choice will benefit quality, customer relations and that all-important bottom line.