

Beamex

# Calibration White Paper

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Implementing a  
calibration system  
— how to overcome  
the common pitfalls

# Implementing a calibration system – how to overcome the common pitfalls

**Why talk about calibration system implementation? Isn't it enough to focus on comparing equipment and software feature lists? The reason is that a calibration system implementation is only about 20 to 30% technology, the rest is business culture and process. Calibration system implementation is also very time- and resource-consuming – the risk of failure is high. Typically, a calibration system implementation involves many different functions and departments within an organization and takes a long time to complete.**

## Definitions and terminology

**Calibration** - Comparison of the device under test against a traceable reference standard (calibrator) and documentation of the results.

**Calibration process** - All the individual steps, activities and work procedures that are taken in order to plan, manage and perform calibrations as well as to document and analyze the results.

**Calibration system** - The equipment and software that are used in the calibration process for planning, managing, performing and documenting calibrations. Typically they include at least portable calibrators and calibration management software.

**Calibration system implementation** - The process of defining of how the new calibration system should be built and calibration process re-engineered as well as related customizations, systems integrations, user policies, user training and delivery. Implementation involves several professionals overseen by a project manager. To be successful, implementation utilizes a methodology that contains a sequence of inter-related tasks.

## Why implement a new calibration system

An efficient, modern, automated, computer-based calibration system, and related processes, have many benefits. First of all, this kind of system will save money by reducing the costs of calibrations. The most significant savings are accrued when getting rid of the paper-based calibration system; electronic record keeping is more effective and it's possible to get rid of manual recording of calibration results in the field by using

documenting calibrators. Calibrate less, because the system can help to concentrate on the most critical calibrations and avoid unnecessary calibrations.

Another benefit is the improvement of quality and reliability of the calibration records. Using electronic record-keeping and documenting calibrators, the errors common in manual entries can be avoided. This will help to ensure compliance with quality system and regulatory requirements.

The increased efficiency of the calibration process is also one of the benefits of an automated calibration system.

## Why focus on the implementation process instead of product features

Often the components of the calibration system (software and calibrators) are selected and compared based on their features and functions only. However, even the components with the best features will not automatically change the way of working. Studies show that only 20 to 30% of the calibration system implementation is about technology. The biggest part is about the business culture and processes in the company.

The implementation is a very time- and resource-consuming operation, and the risk of failure is therefore high. These facts need to be taken into account when implementing a new system.

Many companies have experience with ERP, accounting and other system implementations, but most often it is the first time the company/people implement a calibration system. This will increase the risk of failure.

Typical failures in IT project implementations include overruns of costs and schedule. Also, the expected benefits are not always obtained. Often, dissatisfaction is caused by the incapability of the system vendor/supplier to support the implementation process with required services and documentation.

## Calibration system procurement

Due to the software included in the calibration system, the project is largely IT-driven implementation. This is especially the case in larger implementations covering multiple sites, which may even be located in multiple countries. Various sites are often used to operate different calibration processes.

In this kind of large implementation, one of the key things is the ability to define and adopt a new uniform calibration process across the multiple sites. The actual calibration tools – software and hardware – are often secondary while the

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processes are the main priority.

The calibration system procurement itself is a process. It is not enough to use the traditional procurement for tools, i.e. to send a request for quotations and select the tool based on the quotations. To concentrate on the features, functions and pricing of the tools is just not enough to successfully implement a calibration system. The pricing of the individual tools has very little to do with the total costs of the process. Saving money on the price of the tools may cost many times more in the end.

### Early warnings

How can one find out if the implementation is on the verge of failure? One of the first signs is when asking the vendor for a quotation for a new calibration system, the vendor just sends a quotation of the tools/products. That already shows that the vendor does not understand the process of how to implement such a system.

When asking for a quotation for a calibration system, instead of just sending a quotation of the products, the vendor should be interested in asking more about the current calibration system/process. The vendor should be interested in the current challenges and the aims of the process. At an early stage, the vendor should also be able to show that he understands the various steps in the implementation process.

### Most common pitfalls and how to avoid them

#### 1. Features – functions - price arms race

It is good to remember that the software that has the longest

list of features and functions is not necessarily the best. Also, the cheapest software may become the most expensive in the end. It is important to analyze the weaknesses in the current calibration process as well as the goals for the new process. What kind of calibration process does the offered calibration system support? It is important to find the most suitable system and the best vendor as a partner to guide the company through the implementation process.

#### 2. Unclear goal and purpose

First of all, it's essential to remember to specify a clear goal for the new calibration system. Without a target it is very easy to fall straight into the discussion of details and features. This causes a high risk for the failure of the process.

#### 3. Modelling old legacy system into a new system

Sometimes there is a tendency to use the existing, old, paper-based legacy calibration process and force the new computer-based system to conform to the old one. This approach most often results in failure. When the technology and tools are updated, the calibration process should be updated, too. Also, this approach most often does not utilize the benefits and possibilities of the modern automated calibration system.

#### 4. Failing to gain early user and stakeholder adoption

The users and stakeholders must be involved at an early stage and remain throughout the whole implementation process. The bigger the process changes are, the more important to involve the users. The stakeholders include, for example, calibration process owners, IT, compliance and quality. In a multi-site implementation, it is important to include stakeholders from all of the sites.

#### 5. The "Big Bang" implementation

For large, multi-site implementations, the "Big Bang" implementation style has proven unsuccessful and will more often result in failure. Instead, the successful calibration process implementation projects have been gradual roll-outs of the sites instead of one big launch. It is recommended to have a Proof-of-Concept approach where the solution is successfully implemented on one site before the roll-out to other sites starts.

### 6. Under-resourcing and lack of project organization

It is good to remember that a calibration system implementation is a joint-effort of the customer and the vendor. Often, three quarters of the resource requirements are the customer's responsibility and one quarter the vendor's. As regards the customer, there must always be a well-defined project organization with a dedicated project manager. As mentioned earlier, other resources typically needed are application and process experts, IT resources. Legal council is needed in the contract phase.

### SUMMARY

Finally, to summarize some of the key issues:

- System change also means a process change and a key success factor is the ability to define and adopt a new calibration process.
- Focus on defining the goals as well as on the calibration process modeling ("as is/to be"), instead of jumping straight to feature and function lists.
- Understand who the relevant stakeholders are and involve them and the users at an early stage in the process.