Beamex

Calibration White Paper

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How to build a calibration workshop

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WORLD-CLASS CALIBRATION SOLUTIONS

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In the process industry, the calibration of process instruments is performed either in the field or in a calibration workshop, and sometimes a combination of both methods is utilized. Calibration in the field is very common, but there are many situations when the workshop calibration is more suitable. In actual fact though, the most effective calibration systems combine both field and workshop calibration.

When contemplating designing and building a workshop for calibration work, or if it has already been decided, there are many important elements that should be taken into account.

In this paper, we'll look at the most important steps in the process of building a calibration workshop. Even if establishing a calibration workshop is just a thought at this stage, it is useful to read through this paper to plan activities for the future.

Project management

Before discussing the steps involved in building a calibration workshop, don't forget that building a calibration workshop is a project, with various different stages included. It is therefore vital to realize that in the beginning, and to manage the project as any important assignment. Be sure to appoint an accountable project manager and establish a system of organization for the project. Naturally, all responsibilities should be specified, as well as the change management policy for the project.

Researching the needs

Before rushing into buying any equipment, it is imperative to thoroughly research of all the functionality requirements. Find out what kind of calibration work would be carried out in the workshop, which quantities and with which accuracy/uncertainty. Also, what other activities could be performed in the same workshop, for example, service and repair work, electrical and electronic maintenance, and engine testing, just to give a few examples. Once all the immediate and future needs have been clarified and documented, you will have a good foundation to start planning the workshop and the preparatory work will also help determine the equipment required for the workshop.

Suitable space for the workshop

If a new site is being built, the space requirements should be taken into account when designing the premises. Often though, the site is already built and a suitable space for the

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workshop in the existing premises will need to be determined. The space should provide enough room and also be well located from a logistics perspective.

At this point, the details for the workshop are not yet clarified, so it is not possible to plan all the details, but the location and the rough requirements for the space can be estimated. Later, when all the equipment details are clear, all the details can be finalized.

The level of the accuracy/uncertainty functionality specified for the workshop, as well as possible plans for calibration laboratory accreditation, will determine the requirements for the various structures of the premises. For example, these requirements could include suitable HVAC system, lighting, airlock doors, electromagnetic interference protection and others. The more accurate the calibration workshop needed, the more requirements will need to be taken into account.

Evaluating and selecting the supplier

Selecting a supplier involves determining the best choice from the possible suppliers. It is crucial to remember that not only is the equipment being purchased, supporting professional services may be necessary during the installation, as well as after-sales support and training.

Some suppliers can help with the planning/design of a workshop, and in that case, it is good to involve the supplier in the early planning. The supplier can, for instance, provide a 3D layout design and help select the most suitable equipment.

Typically, there are several different kinds of equipment, furniture and accessories needed for the workshop. When possible, it is recommended you select one supplier that takes sole responsibility for all the materials to be supplied. Naturally, if there is a very wide variety of equipment and materials, this may require the use of several suppliers. But attempting to involve too many suppliers, all delivering small parts of the overall project, will most likely result in a messy situation with responsibilities being disputed.

Planning the furnishings

Planning and designing the furnishings needs to be done taking into consideration with day-to-day usability, but also with future adaptability in mind. As mentioned, the furnishings should not only fit into the space now, but the possibilities for expansion should also be considered. Different furnishing options, such as a bench, with various sizes of counter space, cabinets and shelving options, and trolley carts are available. If the workshop is to be stationary and a significant amount of counter space will be needed, a bench may be the best solution. If the workshop will need to be moved at least relatively frequently or space is limited, a trolley workshop may be the best option.

Selecting the equipment

Since all the needs of the work to be performed in the workshop have been clarified in the preparatory phase, it is now time to start looking for equipment that can fulfil these requirements. This phase is naturally one of the most important phases, as selecting the most suitable equipment is essential for the workshop to be able to perform its activities.

The supplier can help select and compare the different equipment available. While selecting the equipment, be sure to prioritize the features that are most important for the plant's needs. These include, for example, accuracy, usability and ergonomics. Again, communication and cooperation with the supplier as early on in the process as possible will minimize the

risk unsuitable installations, overkill in terms of functionality, or missing features.

Final design of the workshop space

When the equipment and furniture that is going to be installed into the workshop has been finalized, start planning all the final details of the workshop, such as the final effective area needed and the arrangement of the required electrical and pressure supplies for the workshop equipment.

Procurement and delivery milestones

Once the selection of all the equipment has been completed, prepare for the procurement process. A proper agreement should be concluded with the supplier before processing the order.

The deliveries for a calibration workshop often include a lot of equipment and furnishings, so it is important to agree the means of the delivery before the delivery takes place. The terms of delivery should be agreed upon, as well as the responsibilities. The project deliveries may contain several delivery milestones, as it is not only equipment being delivered, but often various different services are included in the deliveries as well. All delivery milestones should be specified and included in the agreement with supplier(s).

Equipment assembly

When all the equipment and furnishings have been received, professional resources are frequently required to assembly it all. Most likely, expensive and fragile equipment is included, so it is crucial that nothing gets damaged during the assembly. It is recommended that the full assembly of all equipment is included in the agreement with the supplier. That way, the supplier takes the responsibility that all equipment and furnishings are assembled properly, and also assures that warranty is not jeopardized.

Acceptance testing

Once all the equipment and accessories have been delivered and assembled, it is time to perform the acceptance testing, to ensure that everything that was ordered has been delivered and that everything is working properly. The acceptance testing is faster and smoother if you have a supplier that can assist with the testing. Consider also a pre-shipment inspection, where a plant representative will inspect the goods at manufacturer's site before shipment.

Training

To make the most out of the investment, make sure that the new equipment is used effectively. To achieve the best results, personnel should be professionally trained in the use of the new equipment. It is recommended that training is included as a responsibility of the supplier in the agreement.

Support services

After the new workshop is in active use, it is important to assure that the investment remains in good condition in the future. The most common need for calibration equipment maintenance is to arrange the periodical recalibration of the equipment. But there can also be a need to service the equipment, so this form part of the agreement. The ability of the supplier to provide these important after-sales services should be evaluated during the selection of suppliers. It is crucial to keep the calibration workshop running optimally for years to come.

CONCLUSION / SUMMARY

Overall, building a calibration workshop is a project, and one of the most important aspects of successfully executing a project is planning. Detailed planning should be carried out at all stages in the project process: designating a project leader and team, assessing needs and usage, determining the functionality requirements, supplier selection, responsibility assignment (internally and with respect to suppliers), space availability, furnishing design, installation of the workshop and user training, all the while considering possible future needs.