

The Benefits of Being Proactive: Implementing an Effective Equipment Maintenance Program

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A frequently overlooked technical requirement of AASHTO R 18 and ISO/IEC 17025 is the implementation of an equipment maintenance program. Proper equipment maintenance helps to ensure that the most-used and valuable pieces of equipment in your laboratory are in good working order and ready for use whenever you need them. This, in turn, provides peace of mind and fewer headaches in day-to-day laboratory operations. This article will focus on how regular equipment maintenance can benefit your laboratory, as well as provide guidance on the elements of an effective maintenance program.



Maintenance vs. Calibration and Standardization

You may be wondering how equipment maintenance differs from equipment calibration and standardization activities. While these activities may seem quite similar, there is an important distinction. Maintenance applies to equipment, generally with moving parts, which periodically requires some form of service or repair in order to maintain proper working order. On the other hand, [calibration and standardization](#) procedures are generally performed on measurement equipment to ensure meaningful results. Maintenance activities may take place at the same interval as calibration and standardization activities, or they may occur more or less frequently. Both maintenance and calibration or standardization activities play an important role in ensuring quality in laboratory testing.

Why Is a Maintenance Program Important?

A great way to think about equipment maintenance is to compare maintenance activities of laboratory equipment to vehicle maintenance. Your car needs certain things to keep it in good running order- regular oil changes, new tires, brakes, etc. Think of your laboratory equipment in a similar manner. Cars need an oil change about every 5,000 miles in order to function properly. Likewise, equipment like mechanical shakers should be cleaned and lubricated regularly to ensure that the gears and other moving parts continue to function properly. Maintenance is essential in producing consistent and accurate test results and increasing the longevity of equipment. By identifying possible issues before they interfere with day-to-day activities you can save time, money, and stress.

Identifying Maintenance Needs

To get started, identify the equipment in your laboratory that requires maintenance and determine how often the equipment should be serviced. Once you have identified the equipment, the next step is to create a list, including the corresponding maintenance intervals and a reference to the maintenance procedure that should be used. For more specific guidance on equipment requiring maintenance and maximum allowable intervals, refer to Table A1.9 and Figure X1.17 of AASHTO R 18.

Maintenance Procedures

It is important to formalize your maintenance activities by creating detailed written procedures that describe how the maintenance is performed. Documenting your maintenance activities can help to ensure that equipment is cared for and maintained in a consistent manner, regardless of changes in laboratory staff or other key personnel. You may already be completing many of the maintenance activities required by AASHTO R 18. Are the fluid levels in hydraulic machinery checked at regular intervals? Are worn out parts being replaced or repaired? If so, documenting the procedures that you already follow will be easy.

Some equipment may be serviced by an outside agency. The required maintenance can often be performed by an equipment calibration service provider during regularly scheduled calibration activities. When creating the maintenance procedure for any piece of equipment, it is important to determine if it is serviced according to the manufacturer's instructions or by an alternative in-house procedure. Remember that written in-house procedures must include a list of the equipment used during maintenance and a detailed written explanation of the maintenance to be performed.

Record-Keeping

Having detailed records of maintenance activities can help track of the life span of a piece of equipment, parts in need of replacement, and even aid in documenting the cost of ownership. Records conforming to AASHTO R 18 must identify the person performing the maintenance, the date on which the maintenance was performed, and any comments. If maintenance activities are performed by an outside agency, make sure that the agency documents the activities performed and provides a record for you to keep in the laboratory.

The Benefits of Being Proactive

Taking a proactive approach to equipment maintenance means knowing that your equipment is continually in good working order. An effective equipment maintenance program is a fundamental part of running an efficient testing laboratory. When you know that your laboratory equipment is operating properly, it instills confidence in the accuracy of your testing results. Not only will performing and documenting regular maintenance aid you in achieving more efficient laboratory testing, it can also help extend the life span of the equipment and avoid costly repairs or replacements down the road.