

Northwest National Marine Renewable Energy Center (NNMREC): Testing Accreditation Guidance

Draft v0.2

Outline

- A. Overview
- B. References
- C. Guidance

A. Overview

This document is intended to provide guidance on testing accreditation to NNMREC during the establishment of an ocean current energy conversion device test center. Guidance is provided to help the Northwest National Marine Renewable Energy Center (NNRMEC) develop a plan for testing accreditation as the center and wave device technologies mature.

B. References

The references below provide substantive detailed information on accreditation.

1. IEC/ISO 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories
2. Applying for Accreditation to ISO/IEC 17025
[www.a2la.org/appsweb/applytestlab.cfm]
3. A2LA Document I105, "Typical Steps in Preparing for the Accreditation Process for Testing and Calibration"
4. A2LA Accreditation Process Summary
[<http://www.a2la.org/appsweb/AccProcSumm.cfm>]

C. Guidance

Accreditation- General

Accreditation to conduct a test provides greater confidence to reviewers that a test was conducted correctly and that the findings of the testing are accurate.

From ISO 17025: "ISO/IEC 17025:2005 specifies the general requirements for the competence to carry out tests and/or calibrations, including sampling. It covers testing and calibration performed using standard methods, non-standard methods, and laboratory-developed methods. It is applicable to all organizations performing tests and/or calibrations. These include, for

example, first-, second- and third-party laboratories, and laboratories where testing and/or calibration forms part of inspection and product certification. ISO/IEC 17025:2005 is for use by laboratories in developing their management system for quality, administrative and technical operations. Laboratory customers, regulatory authorities and accreditation bodies may also use it in confirming or recognizing the competence of laboratories. ISO/IEC 17025:2005 is not intended to be used as the basis for certification of laboratories.” (1) Accreditation to ISO/IEC 17025 by accreditation bodies is done on an individual test-by-test basis. Organizations offer training classes in 17025 and participating in one should be considered.

Certifications, such as ISO 9001 for an organization, would provide more confidence in the test findings to external reviewers, than if an organization conducting the tests had no accreditation, however, these do not provide the confidence that accreditation to perform a specific test would.

Device testing is used to during the various phases of technology development for numerous purposes, such as: design assessment, model validation, and power performance assessment/validation. Technology developers will have different test quality requirements for different tests at different stages of development.

For example, at one end of the spectrum, an early stage research test could utilize an internally developed method that was validated in prior tests (e.g. loads measurements) and this would provide device engineers with data they could utilize in design efforts. On the other end of the spectrum, a device company could want a power performance test completed to IEC standards by an organization accredited to perform this test to use to get insurance or financing for a commercial project and/or to sell a commercial device.

It is recommended that NNMREC engage with relevant technology developers to assess the testing and data quality requirements for different tests at different stages of product development (concept development through commercialization) to prioritize which tests are desired to be conducted to different quality levels at each stage. What tests will NNMREC conduct?

Accreditation- IEC/ISO 17025

The American Association for Laboratory Accreditation (A2LA) is one of several accreditation bodies in the U.S. that provide accreditation for IEC/ISO 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories. Other organizations include: Laboratory Accreditation Bureau (LAB), Perry Johnson Laboratories, ACLASS, International Accreditation Service, and National Voluntary Laboratory Accreditation Program.

We suggest obtaining a copy of IEC/ISO 17025 and using the requirements listed as a framework to explore what would need to be done and how to do it. The A2LA website (see references 2, 4) provides guidance on how to prepare for and obtain accreditation through A2LA. This exercise will help to identify the policies and procedures that are presently in place at OSU and the ones that would need to be developed.

After identifying which tests/methods/procedures NNMREC would like to obtain accreditation for (e.g. IEC/TS 62600-200: Electricity producing tidal energy converters – Power performance assessment) NNMREC should choose which accreditation body to work through.

Other high level tasks would then include:

- Identifying required elements needed for accreditation
- Building a quality assurance manual
- Constructing an organization chart for accreditation (does not have to be same as existing organization chart)
- Identifying reviewers, approvers, qualified staff, and their roles
 - Management reviewers
 - Technical reviewers
 - QA reviewers
 - Qualified people that conduct the work
- Identifying equipment, vendors for equipment and services (maintenance, qualified calibration laboratories)
- Reviewing existing OSU policies for
 - Conflict of interest
 - Purchasing equipment and services (i.e. defining a vendor list, purchasing documentation)
 - Calibrations, proving traceability
 - Agreements with customer
 - Corrective and preventive actions
 - Control and archiving of records
 - Internal audits
 - Method validation or proficiency testing plan
 - Document control
 - Training (defining records, training plan)

Begin documenting how NNMREC conducts the tests being considered for accreditation. How does/will OSU assure they are getting quality data and results from the beginning to end considering the agreement to conduct test, agreement between the laboratory and customer, assignment of qualified staff to conduct test, equipment, installation of equipment/test item, data collection, data quality assurance, analysis, reporting, customer feedback, test review, test close out, and include any reviews along the way.

Build the rest of the quality assurance documentation around the various methods/procedures, including the following:

- Management system including organization chart
- Document control
- Contract review
- Purchasing services and supplies
- Service to the customer

- Handling of complaints
- Control of non conforming testing and/or calibration work
- Corrective and preventive action
- Internal audits
- Proficiency testing or assuring the quality of test results
- Management review
- Personnel
- Handling of test items

It is suggested that you cross reference with ISO/IEC 17025 requirements and ensure the documentation address and meets all the requirements, making sure to keep the quality assurance system simple and useable. Documentation is required and useful, but do not make it such a chore that testing staff stop using it.

Before the external assessment portion of the accreditation process, NNMREC would also need to:

- Conduct an internal audit of QA system
- Conduct a management review of all aspects of accreditation
- Defining 4 year proficiency test plan- how will results be validated?
- Identify staff who will be conducting the testing and get them qualified to perform these tests

OSU

We would also suggest liaising with different functions at OSU that could possibly support NNMREC test accreditation. For example 17025 requires you have certain procedures in place such as purchasing. OSU may have a procedure in place for purchasing. NNMREC might be able to use this rather than develop and document their own procedure. The University may have 9001 certification or there may be areas that have 17025 accreditation. Places that have 9001 certification usually display it in some way on documentation. The accreditation bodies listed above list who they accredit for 17025 on their website. You can go to their websites to see if OSU is listed. There are other accreditation or certification that the University may have that would have in place some of the requirements. Investigate these so you don't have to reinvent the wheel. Additionally, whomever coordinates these existing accreditations may be able to provide support and guidance.