InnoEnergy Skills Institute

Battery Testing

Last revised: 2023 March

With the booming development and use of battery-powered applications, there is a growing need for specialised battery professionals. Apart from understanding the main components of a battery and its function, it is important to look at how battery cells and systems can be tested to ensure they comply with required specifications.

This certification introduces you to the purpose of battery testing. Specifically, you will be introduced to different methods of battery testing that allow battery cells and systems to be evaluated properly after manufacturing. You will discuss the importance of testing, and explore the related standards, required testing infrastructure, safety measure, and analysis tools. Finally, you will explore how to create and incorporate battery models in different applications in order to assess the performance of the battery during use.

Learning Outcomes

Upon completion of the certification, learners will be able to:

- Explain the need for battery testing
- Select the correct test for a given battery application to select the right technology
- Look for specific standards and regulations
- Understand and explain safety precautions in battery testing labs
- Retrieve and interpret basic analysis results
- Link battery test results to battery modelling activities

Certification structure

The certification is delivered fully online and is self-paced, making it easy for participants to learn without having to take time off work.

The certification consists of eight lessons and is structured as follows:

Lesson 1: The Importance of Battery Testing
Get introduced to the topic of battery testing and its importance.

Lesson 2: Battery Definitions, Datasheets, and Characteristics
Review and understand important definitions related to batteries for initiating a battery testing procedure.

Lesson 3: Battery Standards and Regulations
Explore the international standards and European regulations that exist for lithium-ion batteries related to mobile and stationary applications.

Lesson 4: Electrical, Thermal, and Mechanical Tests
Look at the different tests that can be performed to assess the electrical, thermal, and mechanical performance of a battery.

Lesson 5: Battery Laboratory and Battery Testing Equipment
Get a practical explanation of important safety measures and proper conduct in a battery testing lab.

Lesson 6: Battery Testing Procedures and Examples
Explore different standard electrical battery testing procedures.

Lesson 7: Battery Analysis: From Raw Data to Specific Battery Parameters
Understand what parameters can be derived from the data of one specific test procedure.

Lesson 8: Battery Modelling at Cell and Pack Level
Review the basic procedures involved in creating battery models, including how battery models are created and used.

Take an online exam covering topics from all the component courses within the certification. Successful completion of the certification assessment (scoring 75%) will earn you a Certificate of Accomplishment for this certification.

Instructors

The certification is led by experts from the EIT InnoEnergy ecosystem. Instructors on this certification are:

Dr. Jeroen Büscher

Product Manager Electrical Storage of Vito / Energy Ville. Since 2016 Jeroen is leading the VITO team working on electrical storage technologies and is responsible for the

development and execution of the related activity roadmap. Since 2011, Jeroen has been coordinating several projects within Europe on electrical storage, smart grids and e-mobility.

How will you learn?

This is an online certification and can be taken at your usual study location. The certification consists of eight lessons and is self-paced.
Duration: 5 Hours

Is it right for you?

This certification is beneficial for battery system integrators, battery technicians, Energy Management System developers and providers, and researchers in the field of energy willing to develop or build further on battery testing. But anyone interested in understanding battery testing might find it useful.

Prerequisites: Basic understanding of battery cells, system components, and their working principles. Also, a basic understanding of electrical systems.

Certificates of Achievement

We offer two pathways for issuing of certificates, **InnoEnergy Skills Institute Certificate** and **EDC (European Digital Credentials),** each with its own unique set of benefits, allowing your organization to choose the one that best suits the objectives. **The Achievement recognition will be awarded at a >75% course assessment pass rate.**

InnoEnergy Skills Institute Certificates

What is it?

The InnoEnergy Skills Institute serves as the certificate issuer, verifying learners' progress and achievements with the course material.

What are the benefits?

InnoEnergy Skills Institute certificates are highly adaptable for recognizing various learning levels and achievements. We offer Participation, Completion, and Achievement certificates for learners who complete online courses through the Skills Institute platform.

What that means for you?

You will receive a digital credential that you can store in your personal digital credential wallet. You can also add and share these credentials on your social media platforms. The authenticity of the credentials can be verified online by anyone seeking credential verification.

European Digital Credentials (europass)

What is it?

European Digital Credentials provide an online record of an individual's personal achievements and qualifications. Recognized by employers across the continent, InnoEnergy Skills Institute can issue European Digital Credentials, which learners can add to their European Digital Credentials wallet. For this type of credentials, we only offer Achievement certificates, awarded at a >75% course assessment pass rate.

What are the benefits?

It allows learners to signal their skills and qualifications using the European Learning Model — a semantic standard that helps the recognition of qualifications and digital credentials across Europe. It also combats fraud, and greatly reduces administrative costs.

What that means for you?

You can be confident in the authenticity of your credentials and showcase your skills in a way that is understood in the context of the European Learning Model. You'll also be able to access everything quickly and easily via your online European Digital Credentials wallet.

Versioning

#	Version	Summary of Changes	Date
1	v1.1	Updated the formatting as per InnoEnergy Colour and Font styles	09-Dec-24