

# InnoEnergy Skills Institute

## Battery Storage Basics

Last revised: 2023 March

**The Battery Storage Basics Certification** empowers you with the basic knowledge and insights to build your understanding of the importance and working principles of battery technologies. You will learn how batteries fit in the energy context, their historical importance, and explore different perspectives and classification of current battery technologies. You will then look into the core components and parameters of batteries and battery systems. Lastly, you will be guided through different battery technologies that are currently in use.

### Learning outcomes

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

- Recognise the current and historical importance of batteries
- List the components of any generic electrochemical cell and battery system and describe its functionality
- List basic specifications of a battery from cell specifications and a particular series-parallel arrangement
- Describe common considerations when selecting a battery
- Summarise current battery technologies in terms of working principles, main characteristics, advantages, and limitations

### 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 two courses and is structured as follows:

#### Course 1: Introduction to Batteries

- Discover the added-value of batteries, not only in daily life but also in the development of a low-carbon society

- Obtain knowledge for a deeper understanding of battery technology and take a look inside a battery to understand its basic operation and main components

#### Course 2: Current Battery Technologies

- Explore the different battery technologies that are currently in use and learn to explain their key characteristics, advantages, and limitations, as well as their main applications

## Instructors

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

#### Jean-Luc Delplancke\_

Scientific co-worker at the Université Libre de Bruxelles (ULB) in Belgium and Honorary Professor at the University of Birmingham. Jean-Luc has also worked in the European Commission (EC) where he was Head of the Program Unit for the Fuel Cells and Hydrogen Joint Undertaking up to 2016.

#### Jorge Varela Barreras

Senior researcher at Imperial College London in the Department of Mechanical Engineering, where he works on batteries and battery management systems.

## How will you learn?

This is an online certification and can be taken at your usual study location. The certification consists of two courses and is self-paced.

**Duration: 10 hours**

## Is it right for you?

This certification is beneficial for anyone interested in developing their knowledge of battery storage basics and battery storage technologies.

**Prerequisites:** In order to be able to follow and benefit from the Battery Storage Basics certification, learners would need to have a basic knowledge of chemistry, math, physics, and 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.