



InnoEnergy

Co-funded by the
European Union



InnoEnergy Skills Institute

Prepare your workforce for the green energy transition
Battery Training Portfolio overview

The workforce is evolving. Are you?

The global green economy is growing rapidly. According to a study by Oxford Economics¹, an energy transition by 2050 will create new industries worth \$10.3 trillion to the world economy by that same year. From electric vehicle manufacturing to renewable power generation, there are countless new markets being created and they are expanding rapidly.

And whilst technology is driving this shift, people remain at the heart of the industry — but they're not currently equipped with the knowledge and training to handle the impending demands. In order to keep pace with the growing market, a whole generation of workers needs to upskill.

“ *The industry estimates that by 2025, this growing skills shortage could amount to some 800,000 jobs across the entire battery value chain.*

We need to shift to training on the ground – and therefore, to roll out national reskilling and upskilling programmes across the Member States. [...]

To facilitate, I have tasked EIT InnoEnergy to team up with interested Member States to help them prepare their country-specific project proposals.”

**European Commission
Executive Vice-President,
Maroš Šefčovič**



By 2030 employment in the renewable energy sector will need to reach

38 million



18 million

workers around the world will need to be retrained in the transition to net zero



700+ job types

will be created in the battery workforce alone



800,000

workers will need to be retrained by 2025 in the EU battery sector

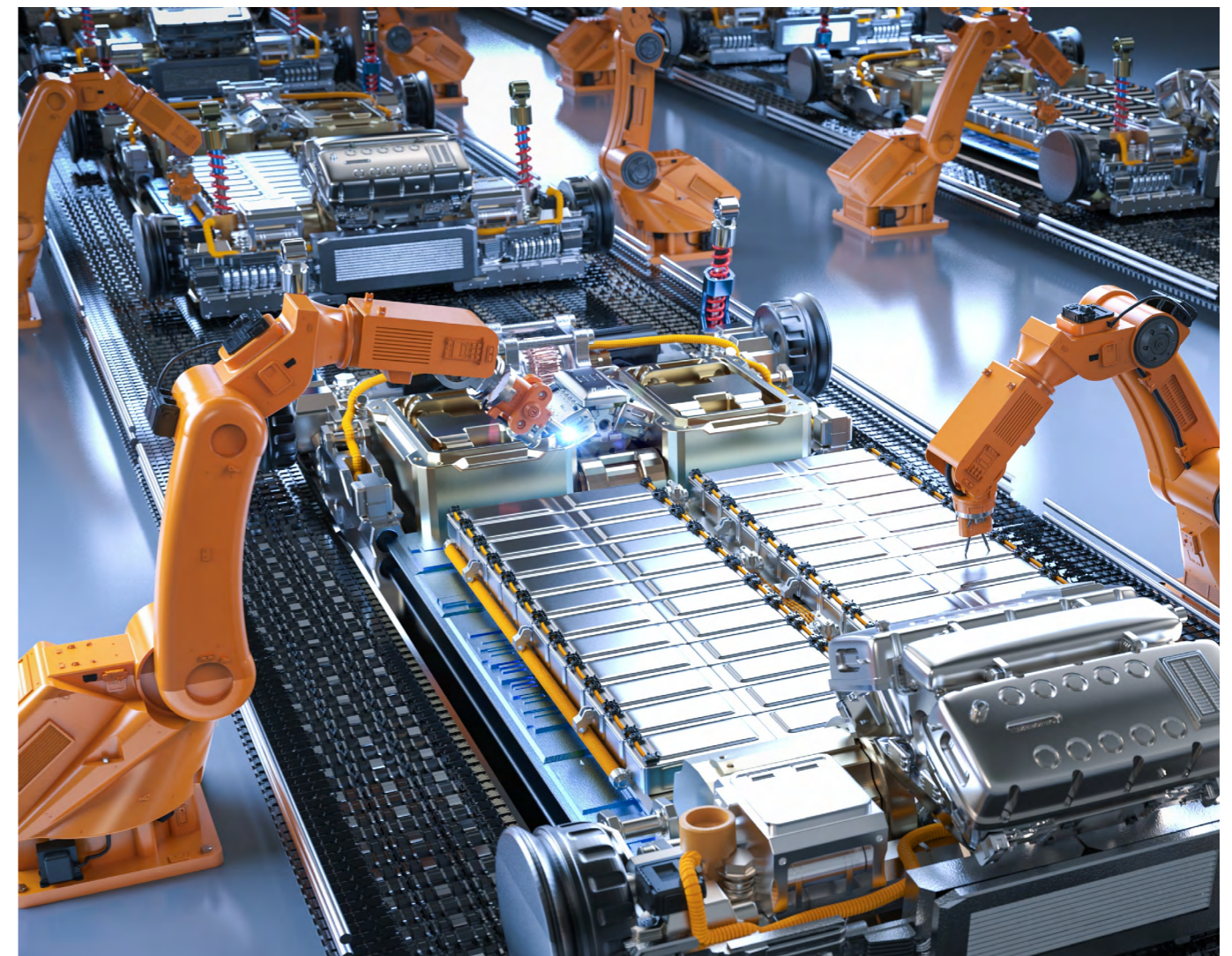
¹The Global Green Economy: Understanding and capturing the opportunity, Oxford Economics, 2023



InnoEnergy Skills Institute

InnoEnergy Skills Institute has a mission: to rapidly equip today's global workforce with the skills required for the sustainable energy economy of tomorrow. We do it by distilling our knowledge into know-how to deliver best-in-class intelligence and learning solutions.

Skills Institute's agility and expertise transforms today's skills into those needed for a sustainable tomorrow.





Skills Compass

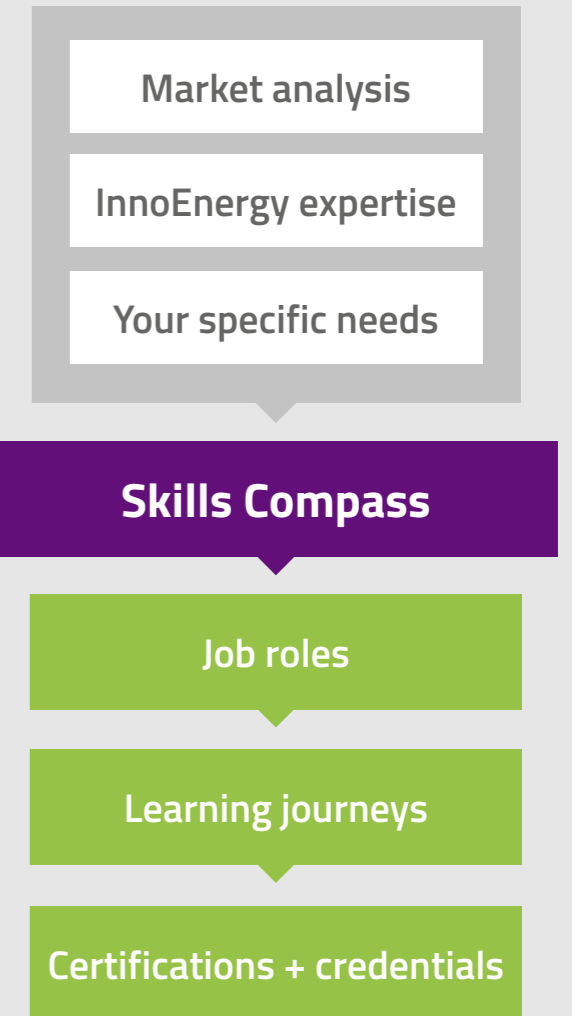
Skills Compass is a powerful tool to help you accurately assess your needs when it comes to skills of your employees.

Our experts offer **customised and specialised recommendations** that highlight the areas your team should focus on to upskill effectively.



How does it work?

- 1** Tell us about the learning and development needs in your business
- 2** Our experts use a combination of market analysis and automated software to identify the specific skills needed
- 3** We'll outline and create skills matrices for job profiles you need
- 4** You'll receive tailored learning journeys that lead to certifications and credentials



Your benefits

- ✓ Rapidly identify required skills and knowledge for crucial job profiles.
- ✓ Efficiently determine the profiles to hire and train based on specific skill sets.
- ✓ Knowledge on which talent pools to access and from which industries.
- ✓ Gain a competitive edge over similar companies.

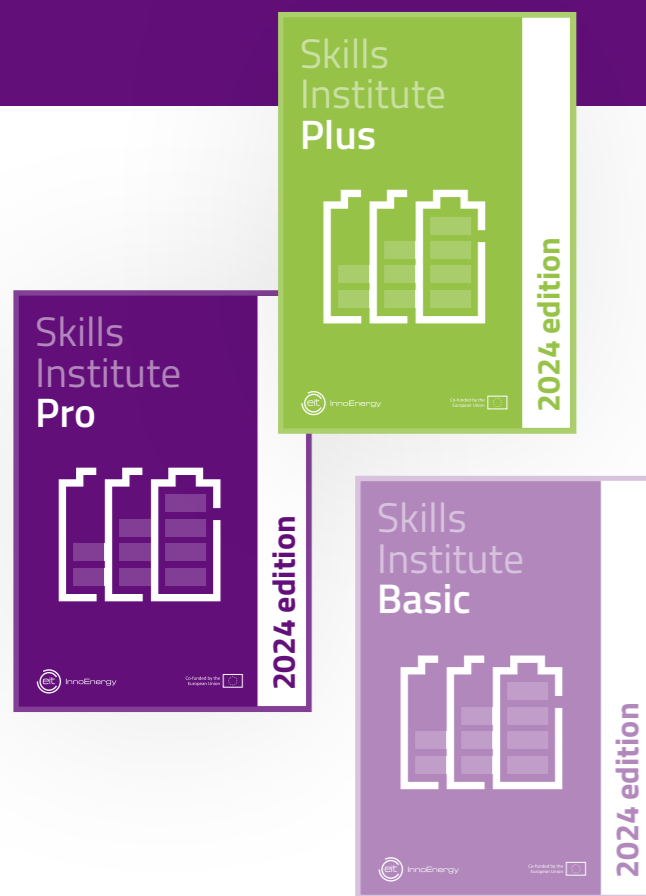
Leave the upskilling and reskilling process to us, while you focus on driving your business forward.

InnoEnergy Skills Institute

The headlines

Our expertise in all areas of sustainable energy is backed by a range of sector experts, alliances and partnerships that help us deliver innovative and highly effective skills training. We combine agile processes with the latest AI technology to ensure that we remain relevant, trusted partners to our customers around the world.

-  More than **80 courses**
-  **270** specially designed lessons
-  **29 certificates** available
-  Training in **10 languages**
-  Upskilled around **50,000 workers**
-  **70** Learning journeys



Training for every skill level

InnoEnergy Skills Institute has a range of different courses and programmes available — each specifically designed to develop particular skills. We also offer you the support when it comes to identifying and choosing the right training for your team.



Who's this best for?

Any job role or skill level can take part in – and earn certificates from – BASIC

Other details

Minimum seats: 10
Access period: 12-months
Prices quoted are for licenses, including InnoEnergy Skills Institute Certificate

Basic

Introductory / Awareness level

Basic is an effective entry point even for those without specialised expertise in batteries or the energy transition. Introductory / Awareness level training offers foundational understanding of battery storage and electrification of energy grids without getting into the more technical aspects — perfect for fostering general understanding in your workplace.

Battery storage basics

Empowers learners with the knowledge and insights to build their understanding of the importance and working principles of battery technologies.

🕒 10 hours

Fundamentals on batteries

Provides fundamental knowledge and state-of-the-art insights into battery technologies and game-changing, emerging innovations.

🕒 20 hours

Battery storage and the energy transition

Examines the challenges faced by the energy system to accommodate the upcoming changes and how batteries can accelerate this transition.

🕒 7 hours

Understanding energy storage: the battery revolution

Introduces the most promising battery storage technologies and how they can affect the future of the transportation and power sectors.

🕒 5 hours

Battery storage technology: opportunities and uses

Explores the potential role and position of battery storage in the future European electricity industry, by shedding light on different applications of battery storage.

🕒 4 hours

Energy systems integration: an introduction

Explores sustainable energy systems solutions and giving an integrated perspective on the energy market.

🕒 4 hours

Energy systems integration: the future of transport

Provides an understanding on how the future transportation sector will impact the energy system both by putting stress on the electricity grid and by delivering valuable new services.

🕒 6 hours

Energy systems integration: evolution in electricity grids

Gives unparalleled insight into the fundamentals of power systems, from direct to alternating current, active to reactive power, and more.

🕒 5 hours

Introduction to battery safety

Introduces essential safety aspects of battery manufacturing, testing, storage, handling, and disposal.

🕒 3 hours



Plus

Non-technical level

Plus is a comprehensive suite of business, energy ecosystem, and energy data-focused certificates that delve deeper into various battery applications such as grid storage, electric vehicles (EVs), home use, and industrial settings, as well as data and energy analytics.

Energy storage: the battery revolution

Gives participants in-depth knowledge of the exciting potential of battery storage solutions, and their applications and benefits across various areas of the electricity grid.

🕒 13 hours

Battery storage applications

Focuses on real-life applications that will contribute to achieving a low-emission, sustainable future.

🕒 12 hours

Managing energy data: advanced analytics

Extracts insights from the energy big data to boost your business and create value added services.

🕒 15 hours

Battery storage value chain

Provides a rock-solid overview and understanding of the battery value chain, production processes, and end-of-life scenarios.

🕒 13 hours

Energy systems transformation

Explores the implications of the evolution of our power system into decentralised, digitalised and secure power exchange platforms which are more sustainable, cost efficient and end-user focused.

🕒 11 hours

Battery storage: business models, market and regulation

Empowers participants to expertly assess the challenges, the main drivers and the business opportunities of a changing energy system at different levels of the market.

🕒 11 hours

Data science for energy engineers

Designed for energy domain professionals who are interested in learning more about the application of data science to real energy problems.

🕒 10 hours

Who's this best for?

- ✓ Logistics and supply chain management
- ✓ Data analysis and data engineering
- ✓ Sales and account management
- ✓ Business and innovation roles

Plus can help you become

- ✓ Business or data analyst
 - ✓ Energy consultant or engineer
 - ✓ Environmental analyst or manager
 - ✓ Data or logistics engineer
 - ✓ Supply chain coordinator
- And many more...

Other details

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Pro

Technical level

Pro provides vital technical knowledge for the battery domain, such as battery management systems, battery testing, and safety and security. Whether for a technician to advance their knowledge or for an engineer or technical manager to reskill, our courses give you the know-how you need to excel in the battery field.

Battery management connection and control

Dives deep into power conversion systems that connect storage systems to smart grids and consumers, learning how to choose the right type of converter while assessing overall system performance.

🕒 22 hours

Battery management systems

Explains why a BMS is needed for different battery technologies and looking at several possible configurations.

🕒 5 hours

Battery testing

Introduces different methods of battery testing, the importance of testing, and explore the related standards, required testing infrastructure, and analysis tools.

🕒 5 hours

Materials to electrodes

Provides a deep yet simple explanation of the operational principles of a rechargeable battery.

🕒 5 hours

Electrodes to cells

Explains how a lithium-ion cell can be designed, sized, and produced for a specific capacity and energy.

🕒 5 hours

Introduction to solid-state batteries

Focuses on the next generation electrolytes for Li-ion and Lithium metal batteries and explaining why the shift to a solid electrolyte is necessary.

🕒 3 hours

Power convertors and efficiency in battery applications

Discusses the need of power converters for battery applications. It dives into the different types of power converters and explains the underlying principles.

🕒 8 hours

Who's this best for?

- ✓ Cell engineering and manufacture
- ✓ Technicians and maintenance
- ✓ Operators
- ✓ QC/QA
- ✓ Battery management systems

Pro can help you become

- ✓ Battery management system developer or engineer
 - ✓ Quality control engineer or technician
 - ✓ Electrical or cell material engineer
 - ✓ Integration or power electronics technician
 - ✓ Control system or cell testing engineer
- And many more...

Other details

Minimum seats: 10
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New: Introduction to Battery Safety

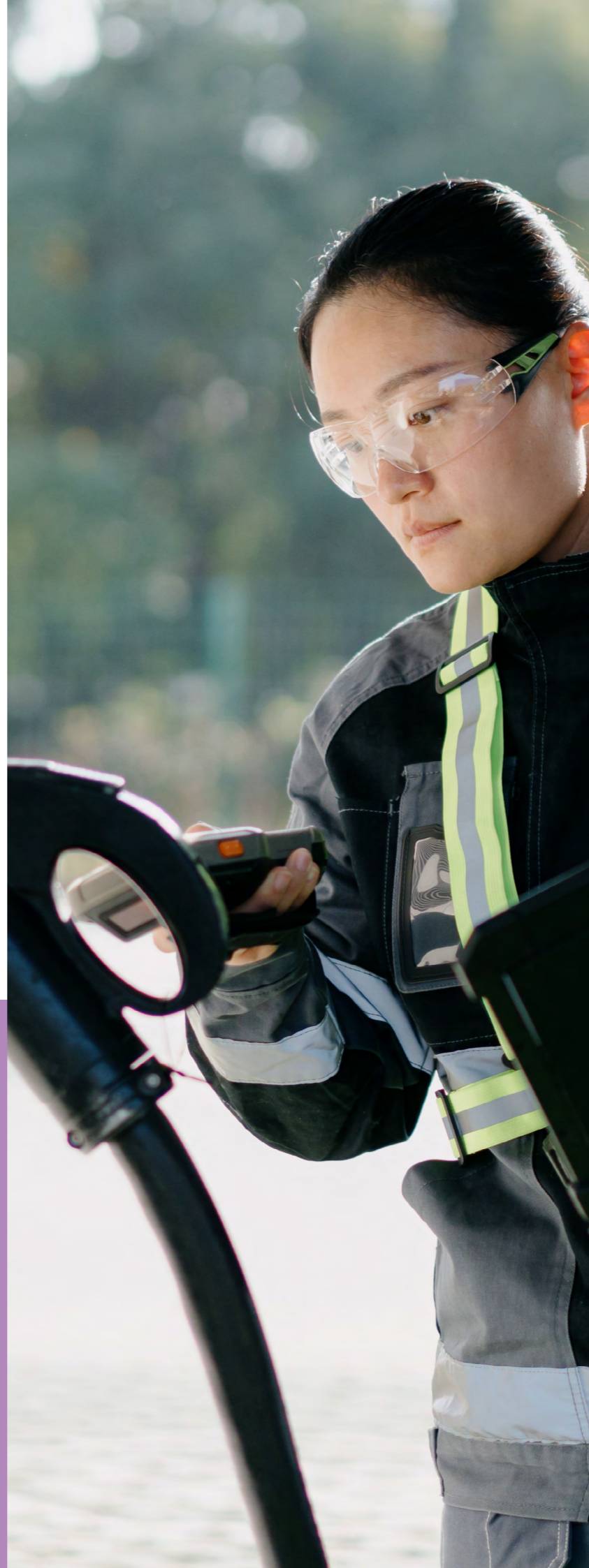
As the need for efficient batteries is growing fast, it's vital to know how to handle them safely. This course is relevant for any worker involved in fabricating, handling, transporting, storing, or disposing of batteries.

Who is the course for?

- ✓ Battery Safety Officers
- ✓ Calibration technicians
- ✓ Battery Test Technicians
- ✓ Cell Assembly Technicians
- ✓ Battery Assembly Technicians
- ✓ Testing engineers
- ✓ Quality system engineers
- ✓ Control systems engineers

What will you learn?

- Administrative and engineering safety controls
- Safety risks in producing, handling, transporting, storing, or recycling battery cells or battery packs
- Ensuring safety compliance at any stage of battery cell or battery pack manufacturing and disposal
- Appropriate PPE to comply with safety protocols
- Relevant safety regulations to ensure compliance (EU-OSHA)



Lesson breakdown

Total course duration:

🕒 3 hours (divided in eight 20-minute sessions) 📍 Virtual

- 1 General Safety: Regulation, Roles, Responsibilities, and Controls**
The crucial role of safety regulations in the battery industry and going beyond pure compliance.
- 2 Battery Fundamentals**
Key electrical principles like Ohm's Law and how they apply to battery safety.
- 3 Battery Cell Production Process**
The four main stages of battery cell production, the safety hazards associated with each stage, and safety measures for risk mitigation.
- 4 Battery Pack Production Process**
The two main stages of battery module and pack assembly, the safety hazards associated with each stage, and safety measures for risk mitigation.
- 5 Battery and Cell Charging and Testing**
Critical aspects of battery testing, its importance for safety, and how to maintain a safe battery testing environment.
- 6 Handling and Storage of Batteries and Cells**
Safety aspects of handling and storing batteries and cells to reduce risks like thermal runaway and short circuits.
- 7 Safe Shipping and Transportation of Batteries**
The standards and regulations for safe transportation of lithium and experimental batteries.
- 8 Waste Management and Recycling**
Waste management and recycling of various battery types.

Our lessons are...

- ✓ Designed to educate learners of all skill levels
- ✓ Interactive and engaging
- ✓ Supported by video content
- ✓ Backed up by downloadable content for further learning
- ✓ Delivered by industry experts
- ✓ Concluded with a graded assessment

Explore our programmes

Our comprehensive programmes expertly cover a broad range of battery skills and content areas, while providing options for learners to deepen their knowledge through hands-on battery labs.

Battery Storage Expert

The Battery Storage Expert Programme is a comprehensive learning offer covering the entire battery storage value chain, including the role of batteries, their constituent parts, the integration in power applications, the impact on the electricity market, and ground-breaking business models.

🕒 86 hours
96 hours with optional labs

Battery Technician

Battery Technician Programme focuses on the practical skills that are needed to design, operate, test, maintain, and replace battery cells and packs for various applications. After completion, learners are empowered to choose the right technology for the right challenge, set up battery systems, and evaluate battery performance.

🕒 25 hours
49 hours with optional labs



Learning journeys

We have an exhaustive understanding of more than 70 job roles, primed for learning journey customisation to meet your specific requirements. Here are two examples:

BECOMING A Process technician

Battery storage basics

Introductory / Awareness level

Materials to electrodes

Technical level

Electrodes to cells

Technical level

Battery testing

Technical level

Battery management systems

Technical level

Battery technician





BECOMING A
**Battery management
system engineer**

Battery storage basics

Introductory / Awareness level

Introduction to solid state batteries

Technical level

Battery storage applications

Technical level

Battery management systems

Technical level

Battery testing

Technical level

Battery storage systems



Credentials

ECQA GmbH

What is it?

ECQA GmbH is a non-profit association, joining institutions and thousands of professionals from all over Europe. It brings together market experts to support the definition and development of the skill sets required for professions. It also verifies quality criteria for training organisations and trainers to assure consistent training all over the world.

What are the benefits?

ECQA GmbH certificates are aligned to job roles, so they act as evidence that an employee is able to perform skills connected to the role they claim to be qualified for. We also meet their strict standards for developing and proctoring exams.

What that means for your team?

ECQA GmbH endorses our processes, which gives you peace of mind that they're both robust and reliable. If your employees are looking to move into a particular job or upskill in a particular area, they can demonstrate that they are building skills related to that specific job profile.

European Digital Credentials

What is it?

European Digital Credentials provide an online record of an individual's personal achievements and qualifications. Recognised by employers across the continent, InnoEnergy Skills Institute can issue European Digital Credentials, which learners can add to their European Digital Credentials wallet.

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 your team?

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

What next?

Upskilling is beneficial both in the short and the long-term. Completing a Skills Institute course gives participants:

Professional development and employability

Participants are trained to handle more demanding roles that require greater competency and demand greater responsibility.

Industry recognised certificates and credentials

Graduates bolster their CV with a huge variety of credentials and qualifications. Skills Institute offers more than 35 individual certificates.

Personal development

Participants have a more well-rounded knowledge of the green energy sector, are more skilled, and can earn a higher salary.

Job security

Newly upskilled workers will be sought after by employers and have the necessary skills to play a key part in the green energy transition.



Why choose Skills Institute?



Track record of success

Since 2017, we've led in skills training, offering effective online and on-site programs with research and insights.



Global coverage

Our unique learning ecosystem of partners and alliances is expanding globally to benefit our customers worldwide.



Access to ecosystem

Backed by InnoEnergy — a global accelerator of sustainable innovations, we translate expertise in battery, solar and green hydrogen into effective skills training.



Driving transformation

By leading industrial value chains within battery, solar and green hydrogen sectors, InnoEnergy creates new markets and drives global transformation in the sustainable energy sector.



Modular approach

We offer customer-centric customized programs tailored to specific needs, regardless of location, size, or technology.



Backed by the best

Our training is developed and delivered by industry subject matter experts from the world's leading universities and organizations.

Want to know more?

Visit innoenergy.com/skillsinstitute



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