Co-funded by the European Union

InnoEnergy Skills Institute

Energy Systems Integration: evolution in electricity grids

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The transportation sector is at a crossroads. As one of the biggest consumers of the world's energy and a major contributor to CO2 emissions and air pollution, the onus is on the transport sector to find alternative energy solutions to drive a sustainable future for all.

This course gives you a big-picture understanding of the history, the changing present, and the future for electromobility which is and is set to remain one of the most compelling, globally relevant, and innovative areas in our global economy that is being shaped by the energy transition. You will also explore compelling case studies to understand how tech giant ABB has been changing the playing field, driving innovation in high-end electromobility for cars and public transport.

This course empowers you to:

- Differentiate different car propulsion technologies, from combustion engines to hybrid vehicles and fully electric cars
- Formulate the different challenges to large-scale deployment of electro-mobility
- Fully understand the impact of electromobility on the electricity grid
- Master different business models for electric vehicle charging
- Appreciate different modes of electric transportation and their respective challenges for further electrification.

What will you learn?

Energy Systems Integration: the future of transport immerses you in the history, the technologies, innovations, business models, and future scenarios for electromobility. You will take 6 core online lessons, complemented by 2 real-world case studies that set your learning in context and expose you to the authentic challenges and solutions shaping this exciting space. You will cover:

- Lesson 1: History of electric transportation: from Edison to the new Tesla
- Lesson 2: Electrical drives in transportation: overview of technologies
- Lesson 3: How does the integration of electromobility affect the energy system?
- Lesson 4: Business models and regulation behind charging stations
- Lesson 5: Integrating other forms of electric transportation into the energy system
- Lesson 6: The path towards large-scale electric vehicle use
- Case study 1: How to roll out a reliable network of fast chargers?
- Case study 2: Urban transformation: the impact of electrifying public transport

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Instructors

This course has been developed by InnoEnergy, a pioneer in sustainable energy education. Our consortium is built on the combined expertise of many of Europe's foremost technical universities, business schools, industry experts, and innovation start-ups. In this course, your faculty include:

Johan Driesen

Full professor at the Faculty of Engineering and Science head of Subdivisie EnergyVille Electa - Driesen with years of experience in distributed generation of electricity, renewable energy, power electronics, electrical drives, electric vehicles, and smart grids.

Peter Van Den Heede

Head of Sales Council – Electrification Benelux at ABB, working at ABB for more than 10 years in the fields of smart grids, electrification, and business development.

How will you learn?

This course is delivered entirely online. Flexible and designed for immediate impact, the course structure means you don't need to take time off work and you can apply your learning in your workplace from day one. Your learning experience will include:

- Video lectures and expert interviews
- Self-evaluation exercises such as multiple-choice, associations, or 'fill in the blanks'
- Relevant references that will consolidate your acquired knowledge and back your decisions after the course
- A glossary that helps you understand technical concepts
- A tutor with extensive experience to answer any questions you might have during the course.

Duration: 4 Hours

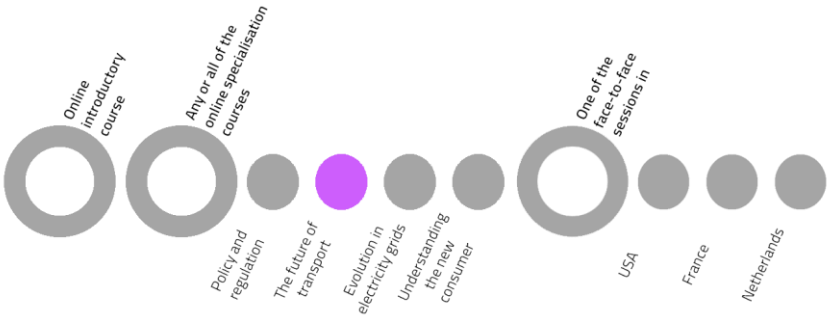
Is it right for you?

The course is ideal for you if you are a professional in the energy industry. It is also expertly designed for academics and individuals who want to deepen their understanding of electromobility, challenges, innovations, and future scenarios in this exciting, fast-moving space.

Ready to delve deeper?

It is recommended that you take Energy Systems Integration: an introduction, before taking this course, although this is not mandatory. This particular course is part of a series of specialisation courses, delivered entirely online, about systems integration from the perspective of different disciplines. By taking a step back and looking at energy systems as a whole, you will be able to connect the dots between your expertise and that of others, and quickly identify the knowledge and skills you need to improve yourself, and step up your contribution in the transition towards a sustainable, affordable, and reliable energy system.

We strongly recommend that you complete all the modules in this learning path for a thorough understanding of the subject matter. Upon completion of all of the online specialisation modules, you will be able to attend further face-to-face sessions that have been designed to complement the online courses and give you deeper and more advanced insights.



Who are the collaborators?

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.