

Green Hydrogen Technology

Course Introduction

Hydrogen possesses the power to revolutionise the energy sector and lead the way forward towards a sustainable future. It presents a solution for decarbonizing Hard-to-abate sectors and industries and can serve as an alternative for other sectors. Moreover, green hydrogen can complement renewable energy technologies and enable their large-scale integration into energy systems.

The Energytics Training course recognises the critical role of hydrogen as the energy carrier in future energy systems. The course provides participants with the essential knowledge and skills required to evaluate the potential of green hydrogen in the energy transition and surmount the challenges it encounters. The course encompasses all aspects of green hydrogen, including production, transportation, storage, application, policy, and economics.

This training program offers a comprehensive overview of the role that green hydrogen plays in the ongoing energy transition. Specifically, the program covers various topics, including the various production technologies available, transportation and applications, economic considerations, and policy developments regarding this transformative technology. By participating in this training program, participants will gain a profound understanding of the potential applications and benefits of green hydrogen and be better equipped to navigate the rapidly evolving landscape of the energy industry.

This training course highlights the following:

- Green hydrogen's role in the energy transition
- Different hydrogen production technologies
- Green hydrogen transportation and applications
- Hydrogen economics
- Recent strategies and policies for green hydrogen

Course Objectives

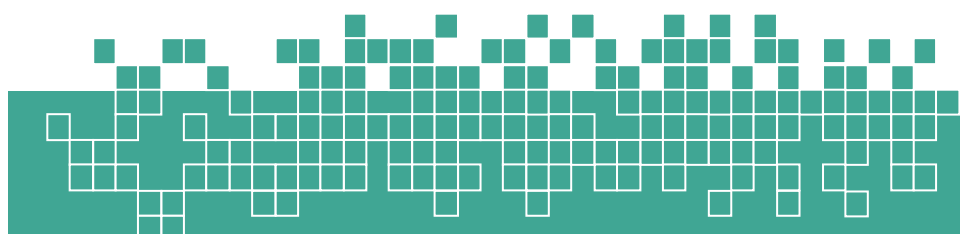
Familiarise course participants with

- Green hydrogen's role in sector coupling
- What is needed to produce low-carbon hydrogen
- The barriers to green hydrogen implementation
- Future for green hydrogen applications worldwide
- Apply the newly gained knowledge in several case studies

Why You Should Attend

Besides achieving the course objectives, the course is

- Flexible for busy people who want to advance their careers and gain new knowledge without disrupting their professional lives
- Course materials are updated continuously to reflect the latest trends in the industry



- Course material is sourced from companies that work in the hydrogen industry and reflects the applied knowledge besides the theoretical knowledge
- Use of open-source tools to calculate the production and transportation cost of green hydrogen
- The course lecturer is an expert with hands-on experience, has carried out several studies, and has published in world-class energy research institutions

At the End of the Course, You Will Be Able To

This course will develop different skills of the participants and enhance their careers by

- Differentiate between different types of hydrogen
- Unfold hydrogen production technologies
- Explain hydrogen's role in the future energy system
- analyse the efficiency of different hydrogen systems
- Calculate the production costs of different types of hydrogen

Who Should Attend?

This course is suitable for a wide range of professionals but will greatly benefit:

- Individuals who want to learn about hydrogen technologies
- professionals who work in the oil and gas and refining industry
- Experts in energy systems
- Enthusiastic persons about decarbonisation technologies
- Persons who want to learn about the future of energy systems

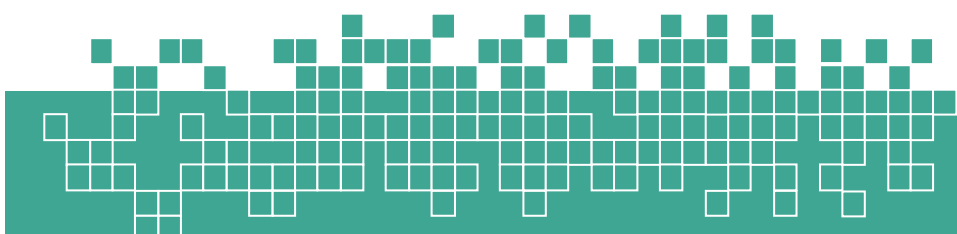
Course lecturer

With over 15 years of experience in distributed power, co-generation, waste heat utilization, energy efficiency, and renewable energy, the lecturer is an expert in his field. He holds multiple master's degrees that enable him to approach the subject from different perspectives, including technical, policy, and economics.

Through his collaboration with national and international organizations such as the EU, GIZ, IFC, MEDREG, RCREEE, UNIDO, and UNDP, he has been involved in several national and international projects, such as energy audits, long-term energy planning for multiple countries, development of national renewable energy action plans (NREAPs) and national energy efficiency action plans (NEEAPs), and techno-economic assessments for hydrogen projects.

In addition to his academic achievements, the lecturer has authored several publications in both Arabic and English languages that showcase the most recent technologies in renewable energy and energy efficiency fields. His published work also presents the latest policies and regulations, including his most recent publication about Hydrogen development in Egypt with the world-leading research institute, The Oxford Institute for Energy Studies.

The lecturer's passion for sustainable energy and his dedication to his work make him an inspiration to students and professionals alike.



Course Syllabus and schedule

- Introduction to hydrogen
- Hydrogen properties
- Different shades of hydrogen
- Production of grey hydrogen
- Production of blue hydrogen
- Production of green hydrogen
- Electrolysis process
- Alkaline electrolyzers
- PEM electrolyzers
- Overview of Carbon capture methods
- Hydrogen Applications in industry
- Hydrogen Applications in the Power sector
- Hydrogen Applications in Transportation
- Hydrogen transportation
- Hydrogen storage
- Hydrogen Economics

Day 1: Introduction Hydrogen	
Session 1 (7:00 – 8.45)	• Introduction to the hydrogen market, history, current usage • The promise of green hydrogen • Introduction to green hydrogen technical properties
Session 2 (8:45 – 10:30)	• Different shades of hydrogen • Grey hydrogen production (SMR, Coal Gasification) • Blue hydrogen productions • Carbon Capture methods
Day 2: Green Hydrogen Production and Applications	
Session 1 (7:00 – 8.45)	• Green hydrogen productions • Different types of electrolyzers • Alkaline electrolyzers • PEM electrolyzers • Other low-carbon hydrogen production Methods
Session 2 (8:45 – 10:30)	• Hydrogen transportation (Ammonia, Liquid Hydrogen, LOHC) • Hydrogen storage
Day 3: Applications & Economics	
Session 1 (7:00 – 8.45)	• Hydrogen Application in Industry • Hydrogen Application in the Power sector • Hydrogen application in Mobility
Session 2 (8:45 – 10:30)	• Calculating production costs of grey hydrogen • Calculating production costs of blue hydrogen • Calculating production costs of green hydrogen

Course mode: Online¹

Course duration: 10-11 hours

Course fees: 400 USD

For any inquiries, please get in touch with info@energytics.net

¹ Face to Face course could be organised

