

Postgraduate Certificate Hydrogen Technology as an Energy Vector





Postgraduate Certificate

Hydrogen Technology as an Energy Vector

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: www.techtitute.com/us/engineering/postgraduate-certificate/hydrogen-technology-energy-vector

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and content

p. 16

05

Methodology

p. 20

06

Certificate

p. 28

01

Introduction

The growing need to reduce the environmental impact of industries and considerably reduce CO2 emissions has led green hydrogen to be presented as an excellent alternative to traditional fossil fuels. Likewise, in this process, technology and technical progress are allowing its inclusion in sectors such as transportation or energy production. Therefore, this sector is currently in development and expansion, and that is why TECH has created this Postgraduate Certificate, which offers engineering professionals the most important information on the use of hydrogen, the improvement of production processes, storage or transportation, as well as its current position as an energy vector. All this, through a 100% online format and with the most innovative multimedia content in the current academic panorama.



“

This 100% online program will take you through the evolution of hydrogen development and its potential as an energy vector"

One of the great energy revolutions of the present is the use of hydrogen, especially in the mobility sector. Its lower environmental impact has been key to its promotion (from the automobile industry, the aircraft industry, the chemical industry or the steel and cement industry). Although initial development has been slow, it has accelerated in recent decades due to the pressing need to find more sustainable alternatives to conventional fossil fuels.

In this scenario, large companies require highly skilled engineering professionals specialized in Hydrogen Technology as an Energy Vector. Therefore, in this promising outlook for engineers, TECH has decided to create this Postgraduate Certificate, which brings together in 150 hours, the most advanced knowledge in this area, through a syllabus prepared by an expert teaching staff with a wide professional background in this sector.

A program that will go through an in-depth analysis of hydrogen, its properties as a molecule, its evolution up to the concepts of production, storage, transportation, distribution and end uses. A journey that will be much more dynamic thanks to the multimedia teaching materials (video summaries, videos in detail, diagrams), essential readings and case studies, schemes, essential readings and practical cases, elaborated by the specialized teaching staff.

A Postgraduate Certificate that will allow students to make their way in a booming sector, through a degree that can be taken whenever and wherever they want. You only need an electronic device with an internet connection to be able to visualize, at any time, the syllabus available on the virtual platform. Graduates thereby have an excellent opportunity to obtain a quality education that is compatible with their professional and/or personal responsibilities.

This **Postgraduate Certificate in Hydrogen Technology as an Energy Vector** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ The development of practical cases presented by Engineering experts
- ♦ The graphic, schematic and eminently practical contents with which it is conceived provide technical and practical information on those disciplines that are essential for professional practice
- ♦ Practical exercises where the self-assessment process can be used to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, discussion forums on controversial issues, and individual reflection tasks
- ♦ The availability of access to content from any fixed or portable device with an Internet connection



No attendance and no fixed class schedules. Feel free to access the Postgraduate Certificate content whenever you wish"

“

In this Postgraduate Certificate you will be able to work on the most unique concepts in hydrogen development”

The program includes, in its teaching staff, professionals from the sector who bring to this program the experience of their work, as well as renowned specialists from reference societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive learning programmed to train in real situations.

The design of this program focuses on Problem Based Learning, by which the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, they will be assisted by an innovative interactive video system created by renowned experts.

Enroll now in a Postgraduate Certificate that will take you deeper into the Hydrogen value chain.

Delve into hydrogen storage and distribution and its use as a fuel with this program.



02

Objectives

Upon completion of this Postgraduate Certificate, students will have acquired intensive knowledge about the current state of Hydrogen Technology as an Energy Vector. In order to make such knowledge more useful, this Postgraduate Certificate includes practical case studies, whose techniques and methodologies can be integrated into their daily professional performance and thus carry out projects with maximum guarantees of success. In addition, this tour will be accompanied by a teaching staff specialized in this subject.



2

“

*Enroll now and take a step forward in
your career in the hydrogen sector”*



General objectives

- ♦ To qualify students in the interpretation and in-depth analysis of hydrogen
- ♦ To compile the breadth of concepts and knowledge necessary to deepen in the field of the use of hydrogen as an energy vector
- ♦ To develop specialized knowledge of the hydrogen world and to acquire an in-depth understanding of its potential as an energy vector





Specific objectives

- ♦ To deeply interpret the singularities of the hydrogen environment
- ♦ To examine the existing legal framework in the hydrogen environment
- ♦ To evaluate the hydrogen value chain constituents, as well as the needs to achieve hydrogen economy
- ♦ To deepen in the knowledge of hydrogen as a molecule
- ♦ To determine the most relevant concepts of hydrogen environment
- ♦ To analyze hydrogen integration in hydrogen infrastructures



This Postgraduate Certificate will lead you to learn about trends in hydrogen integration in energy infrastructures"

03

Course Management

This academic program includes the most specialized teaching staff in the current educational market. They are specialists selected by TECH to develop the whole syllabus. In this way, starting from their own existence and the latest evidence, they have designed the most up-to-date content that provides a guarantee of quality in such a relevant subject.



“

*TECH offers the most specialized
teaching staff in the field of study.
Enroll now and enjoy the quality
you deserve”*

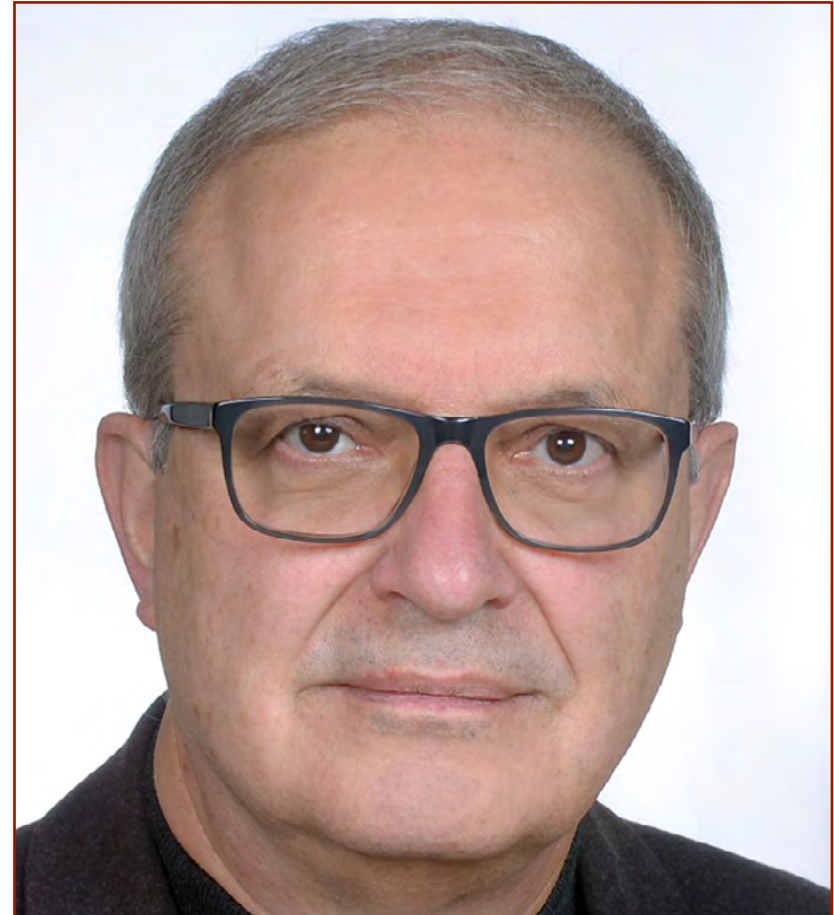
International Guest Director

With an extensive professional background in the energy sector, Adam Peter is a prestigious **electrical engineer** who stands out for his commitment to the use of **clean technologies**. Likewise, his strategic vision has driven innovative projects that have transformed the industry towards more efficient and environmentally friendly models.

In this way, he has worked in leading international companies such as **Siemens Energy** in Munich. In this way, he has held leadership roles ranging from **Sales Management or Corporate Strategy Management to Market Development**. Among his main achievements, he has led the **Digital Transformation** of organizations in order to improve their operational flows and maintain their competitiveness in the market in the long term. For example, he has implemented Artificial Intelligence to automate complex tasks such as **predictive monitoring** of industrial equipment or optimization of **energy management systems**.

In this regard, it has created multiple **innovative strategies** based on advanced **data analysis** to identify both patterns and **trends** in electricity consumption. As a result, companies have optimized their informed decision-making in real time and have been able to reduce their production costs significantly. In turn, this has contributed to companies' ability to adapt nimbly to market fluctuations and respond with immediacy to new operational needs, ensuring greater resilience in a dynamic working environment.

He has also led numerous projects focused on the adoption of **renewable energy sources** such as wind turbines, photovoltaic systems and cutting-edge energy storage solutions. These initiatives have enabled institutions to optimize their resources efficiently, guarantee a sustainable supply and comply with current environmental regulations. Undoubtedly, this has positioned the company as a reference in both **innovation and corporate responsibility**.



Mr. Peter, Adam

- Head of Hydrogen Business Development at Siemens Energy, Munich, Germany
- Sales Director at Siemens Industry, Munich
- President of Rotating Equipment for Upstream/Midstream Oil & Gas
- Market Development Specialist at Siemens Oil & Gas, Munich
- Electrical Engineer at Siemens AG, Berlin
- Degree in Electrical Engineering at the University of Applied Sciences Dieburg

“

Thanks to TECH, you will be able to learn with the best professionals in the world”

04

Structure and content

The syllabus of this Postgraduate Certificate has been designed to show in 150 teaching hours the most advanced knowledge about the current landscape of Hydrogen Technology as an Energy Vector. This will lead students to delve into hydrogen development and production, the existing infrastructures, the problems surrounding the fragilization or the most relevant projects. This content is complemented by multimedia resources to which students will have access 24 hours a day, from any electronic device with an Internet connection.



“

Acquire advanced knowledge, but without involving excessive study hours thanks to the Relearning method used by TECH”

Module 1. Hydrogen Technology as an Energy Vector

- 1.1. Hydrogen Technology as an Energy Vector. Global Context and Necessity
 - 1.1.1. Political and Social Context
 - 1.1.2. Paris Commitment to reduce CO₂ emissions
 - 1.1.3. Circularity
- 1.2. Hydrogen Development
 - 1.2.1. Hydrogen discovery and production
 - 1.2.2. Role of hydrogen in the industrial society
 - 1.2.3. Hydrogen today
- 1.3. Hydrogen as a Chemical Element: Properties
 - 1.3.1. Properties
 - 1.3.2. Permeability
 - 1.3.3. index of flammability and buoyancy
- 1.4. Hydrogen as a fuel
 - 1.4.1. Hydrogen production
 - 1.4.2. Hydrogen storage and distribution
 - 1.4.3. Use of hydrogen as a fuel
- 1.5. Hydrogen Economy
 - 1.5.1. Decarbonization of the economy
 - 1.5.2. Analysis of international plans
 - 1.5.3. Comparison between the different International Plans
- 1.6. Green hydrogen market potential
 - 1.6.1. Green hydrogen in the natural gas network
 - 1.6.2. Storage and transportation
 - 1.6.3. End uses
- 1.7. Integration with existing Energy Infrastructures: Hydrogen as an Energy Vector
 - 1.7.1. Regulations
 - 1.7.2. Problems associated with hydrogen embrittlement
 - 1.7.3. Integration of hydrogen in energy infrastructures. Trends and realities





- 1.8. Hydrogen Technologies. Statement of Position
 - 1.8.1. Hydrogen Technologies
 - 1.8.2. Technologies in Development
 - 1.8.3. Key projects for hydrogen development
- 1.9. Relevant "Type Projects"
 - 1.9.1. Production Projects
 - 1.9.2. Flagship projects in Storage and Transportation
 - 1.9.3. Projects for the application of hydrogen as an energy vector
- 1.10. Hydrogen in the Global Energy Mix: Current situation and outlook
 - 1.10.1. Importance of *offtakecontracts* for hydrogen projects
 - 1.10.2. Hydrogen in the Energy Mix. Current situation
 - 1.10.3. Development pathways for hydrogen. Perspectives

“ *This Postgraduate Certificate will show you the perspectives and ways to develop Hydrogen projects* ”

05 Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

“

At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"



You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.



The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



Practising Skills and Abilities

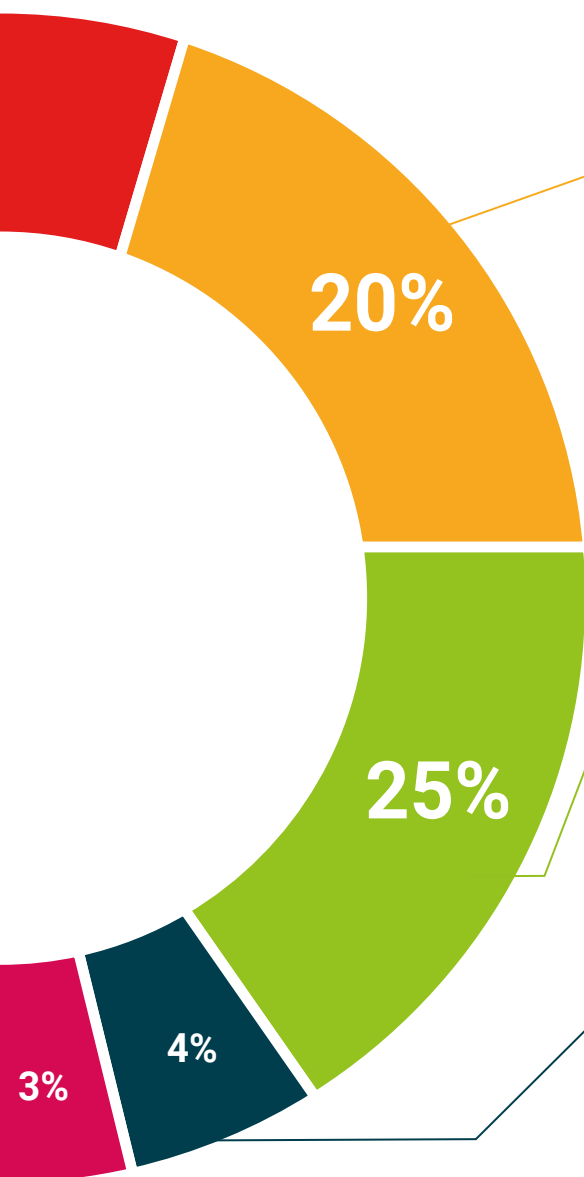
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.



**Case Studies**

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.

**Interactive Summaries**

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

**Testing & Retesting**

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



06 Certificate

The Postgraduate Certificate in Nombre del Porgrama guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



“

Successfully complete this program and receive your Postgraduate Certificate without traveling or cumbersome paperwork”

This **Postgraduate Certificate in Hydrogen Production and Electrolysis** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Hydrogen Technology as an Energy Vector**

Official N° of hours: **150 h.**





Postgraduate Certificate Hydrogen Technology as an Energy Vector

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Postgraduate Certificate Hydrogen Technology as an Energy Vector

