

# Postgraduate Certificate Hydrogen Storage, Transportation and Distribution



## Postgraduate Certificate Hydrogen Storage, Transportation and Distribution

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

Website: [www.techtute.com/us/engineering/postgraduate-certificate/hydrogen-storage-transportation-distribution](http://www.techtute.com/us/engineering/postgraduate-certificate/hydrogen-storage-transportation-distribution)



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# 01

# Introduction

The great challenges of the 21st century are the reduction of pollution and global warming. This has led to the search for energy carriers such as green hydrogen. At this stage of development, the storage, transport and distribution of the same is a new challenge given its properties. Thus, the right choice depending on the project will be decisive for the success of the whole process. In this line, TECH offers engineering professionals the most advanced knowledge about the methods of choice, the cost of carrying out large-scale logistics or the reality of the sector in this field. To this end, graduates have access to 100% online quality multimedia content, prepared by a team of specialists, who will provide them with the information they need to grow professionally in an expanding sector.





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*This 100% online Postgraduate Certificate will provide you with a scientific-technical vision of the different processes used in the Storage, Transport and Distribution of Hydrogen”*

Undoubtedly, one of the great challenges facing humanity today is to find abundant, cheap and clean energy. In this path, green hydrogen is postulated as the main candidate, although the different problems related to its storage, transport and distribution have led companies to focus their efforts on perfecting the techniques and processes that are being used at present.

In order to meet this challenge, large companies demand highly qualified professionals with specialized knowledge of hydrogen technology. This scenario therefore presents an excellent opportunity for engineers who wish to prosper in this sector. To this end, TECH has designed this Postgraduate Certificate, which in only 150 hours compiles the most advanced scientific-technical information on Hydrogen Storage, Transport and Distribution.

A university education that is at the academic forefront, not only for its content, but also for the way in which students acquire intensive learning. Thus, this academic institution provides multimedia didactic material (video summaries, detailed videos), simulations of case studies or specialized readings, which will allow the consolidation of concepts in an attractive and entertaining way.

In this way, the graduate will learn about the different properties of hydrogen, the methods of transport or storage depending on the state in which this chemical element is found, the costs derived from these processes, as well as the different modes currently used to carry out such logistics.

A 100% online Postgraduate Certificate, which will allow you to grow professionally as an engineer in this field, through an education that you can take comfortably, whenever and wherever you want. It only requires an electronic device (computer, telephone or cell phone) with an internet connection to access the syllabus hosted on the online platform. This program is also an ideal academic option for those seeking to combine the most demanding responsibilities with high-level education.

This **Postgraduate Certificate in Hydrogen Storage, Transportation and Distribution** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ Case studies presented by engineering experts
- ♦ The graphic, schematic and practical contents of the book provide technical and practical information on those disciplines that are essential for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*An academic option that will show you the productive capabilities of green hydrogen and make you grow professionally in a booming sector"*



“

*In this program you won't have to worry about what time a class is taught, TECH eliminates fixed sessions and gives you the freedom to access instruction, whenever you want”*

The program's teaching staff includes professionals from the industry who contribute their work experience to this program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Thanks to the multimedia resources you will be able to learn in a much more dynamic way about the logistic processes of hydrogen transport.*

*You will obtain the most recent information and under the maximum scientific rigor on the methods of Storage, Transport and Distribution of Liquid Hydrogen.*



# 02 Objectives

Thanks to the advanced knowledge that the professional will obtain during the 6 weeks of this program, they will be able, at the end of the program, to know the different ways of hydrogen storage, transport and distribution. This will allow you to expand your capabilities to determine which is the most appropriate for the needs of each project. The case studies provided by the teaching staff of this program will undoubtedly facilitate the acquisition of these concepts and their integration into daily practice.





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*The case studies provided by the teaching staff of this program will undoubtedly facilitate the acquisition of these concepts and their integration into daily practice”*



## General Objectives

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- ♦ Deepening hydrogen storage modes
- ♦ Analyze the advantages and limitations of current technology in storage, transportation and distribution
- ♦ Determine the large-scale logistics of hydrogen technology

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*This Postgraduate Certificate will enhance your competencies and skills for the development of viable large-scale hydrogen projects”*







## Specific Objectives

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- ♦ Develop the different possibilities for hydrogen storage, transportation and distribution
- ♦ Determine the different forms of hydrogen transport, storage and distribution
- ♦ Enable the student to analyze the possibilities and choose the most appropriate method of hydrogen storage, transport, analysis and distribution for his project
- ♦ Analyze the possibilities and limitations of hydrogen export
- ♦ Deepen the techno-economic analysis of large-scale hydrogen logistics



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.



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*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

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- 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

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

04

# Structure and Content

Students who immerse themselves in this university program have before them 150 hours of intense knowledge about Hydrogen Storage, Transport and Distribution. This will also be possible thanks to the multimedia teaching resources to which you will have access 24 hours a day, from any electronic device with an Internet connection. Furthermore, the Relearning method, used by TECH, will lead you to advance through the syllabus in a much more natural way, progressively cementing each of the concepts developed in this Postgraduate Certificate.





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*With this program you will be able to  
Analyze the advantages and limitations  
of current Hydrogen Storage, Transport  
and Distribution technology”*



## Module 1. Hydrogen Storage, Transportation and Distribution

- 1.1. Hydrogen Storage, Transportation, and Distribution Forms
  - 1.1.1. Hydrogen Gas
  - 1.1.2. Liquid Hydrogen
  - 1.1.3. Hydrogen Storage in Solid State
- 1.2. Hydrogen Compression
  - 1.2.1. Hydrogen Compression. Necessity
  - 1.2.2. Problems Associated with the Compression of Hydrogen
  - 1.2.3. Equipment
- 1.3. Gaseous State Storage
  - 1.3.1. Problems Associated with Hydrogen Storage
  - 1.3.2. Types of Storage Tanks
  - 1.3.3. Storage Tank Capacities
- 1.4. Transportation and Distribution in Gaseous State
  - 1.4.1. Transportation and Distribution in Gaseous State
  - 1.4.2. Distribution by Road
  - 1.4.3. Use of the Distribution Network
- 1.5. Hydrogen Storage, Transportation and Distribution as Liquid
  - 1.5.1. Process and Conditions
  - 1.5.2. Equipment
  - 1.5.3. Current State
- 1.6. Storage, Transportation and Distribution as Methanol
  - 1.6.1. Process and Conditions
  - 1.6.2. Equipment
  - 1.6.3. Current State
- 1.7. Storage, Transportation and Distribution as Green Ammonia
  - 1.7.1. Process and Conditions
  - 1.7.2. Equipment
  - 1.7.3. Current State
- 1.8. Storage, Transportation and Distribution as LOHC (Liquid Organic Hydrogen)
  - 1.8.1. Process and Conditions
  - 1.8.2. Equipment
  - 1.8.3. Current State





- 1.9. Hydrogen Export
  - 1.9.1. Hydrogen Export. Necessity
  - 1.9.2. Green Hydrogen Production Capabilities
  - 1.9.3. Transport Technical Comparison
- 1.10. Comparative Techno-Economic Analysis of Alternatives for Large Scale Logistics
  - 1.10.1. Cost of Hydrogen Export
  - 1.10.2. Comparison between Different Means of Transportation
  - 1.10.3. The Reality of Large-Scale Logistics



*You will learn in a comfortable way through a theoretical-practical syllabus on hydrogen storage modes"*

# 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.







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*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.

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*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

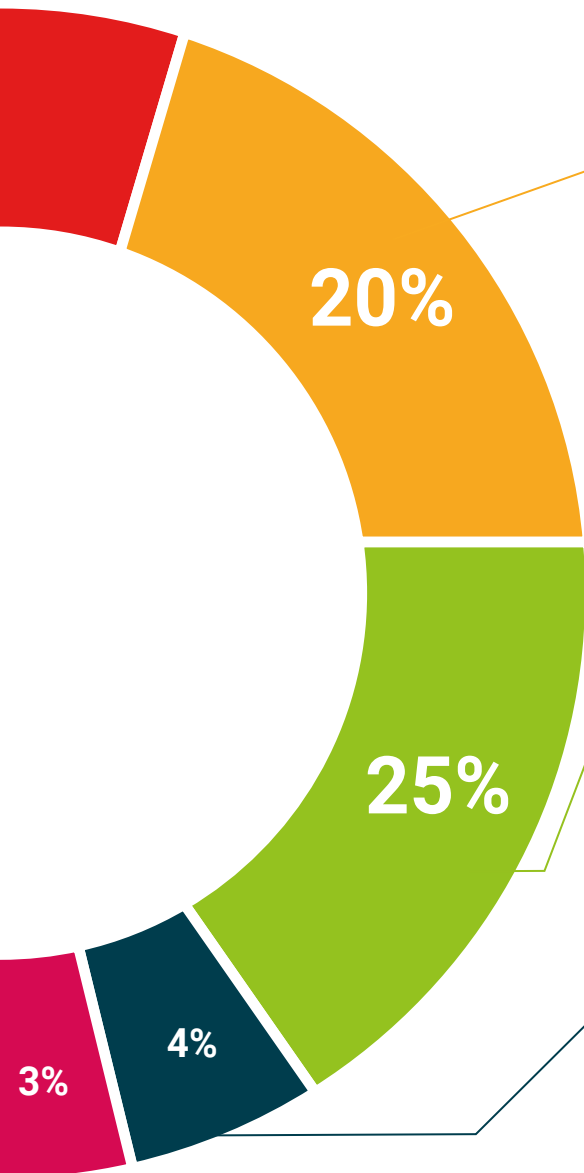
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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 Hydrogen Storage, Transportation and Distribution guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



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*Successfully complete this program  
and receive your university qualification  
without having to travel or fill out  
laborious paperwork”*



This **Postgraduate Certificate in Hydrogen Storage, Transportation and Distribution** contains the most complete and up-to-date program on the market.

After the students 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 Storage, Transportation and Distribution**

Official N° of Hours: **150 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



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