

Hydrogen Production Technologies

Course general description:

Hydrogen, the most abundant element in the universe, plays a crucial role in the future of clean energy. This course offers an in-depth exploration of hydrogen's properties, generation methods, storage technologies, and diverse applications across industries. Designed for engineers and professionals, the course provides a comprehensive understanding of hydrogen as a key energy carrier, preparing participants to harness its potential in innovative and sustainable ways.

Audience:

This course is designed for:

1. Process engineers
2. Energy Specialists
3. Technical and Managerial Staff those seeking to enhance their knowledge in Hydrogen Technologies.

Course objectives:

By end of the course participants will gain:

1. a thorough understanding of hydrogen's fundamental properties, chemical behavior, and the safety measures required for handling and storing hydrogen.
2. Overview various hydrogen generation methods, including traditional and innovative technologies.
3. Ability to evaluate and select optimal solutions for different hydrogen storage technologies and applications.
4. Knowledge of how hydrogen is utilized across various industries.

Course duration:

5 days

Course location:

Dubai

Course contents:

Day-1

- Pretest
- Basics about the hydrogen element & hydrogen molecule
- Safety and precautions about hydrogen
- Hydrocarbons for hydrogen generation
- Steam methane reforming
- Partial oxidation.

Day-2

- Advanced hydrogen generation techniques
- Steam reforming, glycerol reforming & cracking
- Solar and biohydrogen generation

Day-3

- Hydrogen storage technologies
- High pressure compression
- Chemical hydrogen storage & metal hydrides
- Physical storage methods

Day-4

- Hydrogen utilization: combustion

- Catalytic combustion
- Hydrogen utilization: fuel cells
- Catalysts for oxygen reduction reaction of fuel cells.

Day-5

- Hydrogen Utilization in Chemical Processes
- Hydrogen Utilization in Physics & manufacturing
- Trends and review.
- Posttest

Methodology:

- 50% lectures & concepts
- 10% Videos
- 15% Case studies
- 15% Exercises
- 10% Discussions

Course code: (TPRS007)