MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

PRESSURE SWING ADSORPTION (PSA) HYDROGEN PURIFICATION

""Maximizing Hydrogen Purity, Process Safety, and Efficiency Through PSA Technology""

Schedule

Date	Venue	Fees (Face-to-Face)
19 – 20 Nov 2026	Dubai, UAE	USD 1995 per delegate
09 – 10 Dec 2026	Doha, Qatar	USD 1995 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

As global industries transition to cleaner fuels and more efficient energy systems, hydrogen has emerged as a cornerstone in refining, petrochemical, and green energy applications. Pressure Swing Adsorption (PSA) technology remains the most widely used method for hydrogen purification due to its high reliability and cost-effectiveness.

This intensive 2-day course provides a comprehensive understanding of PSA systems used for hydrogen recovery and purification. It covers the principles of adsorption, process flow, design considerations, operational strategies, troubleshooting, and performance optimization. The course also addresses HSE practices, integration with hydrogen production units, and future trends in low-carbon hydrogen.

Objectives

By the end of this course, participants will be able to:

- Understand the working principles of PSA for hydrogen purification
- Identify key components and configurations of PSA systems
- Monitor and control process variables to optimize purity and yield
- Troubleshoot common issues such as breakthrough and pressure imbalances
- Integrate PSA units with hydrogen reformers and downstream applications

MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

Why Attend

- Gain in-depth knowledge of PSA technology for hydrogen purification
- Enhance operational efficiency, safety, and product consistency
- Reduce hydrogen losses and operating costs through effective process control
- Ensure compliance with safety and environmental regulations
- Prepare for advancements in hydrogen supply, storage, and decarbonization

Target Audience

This program is designed for:

- Process Engineers and Chemical Engineers in refining and hydrogen production
- Operations and Maintenance Technicians
- Plant Supervisors and Shift Leaders
- Energy Transition and Hydrogen Project Engineers
- HSE Officers and Technical Managers involved in hydrogen systems

Individual Benefits

Key competencies that will be developed include:

- Understanding PSA cycle dynamics (adsorption, regeneration, equalization, etc.)
- Reading and analyzing process flow diagrams and control systems
- Responding to upsets and breakthrough events in PSA beds
- Optimizing purge rates, cycle times, and adsorbent performance
- Applying PSA knowledge to improve plant reliability and hydrogen quality

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved hydrogen recovery and purity levels
- Reduced energy use and adsorbent degradation
- Minimized downtime through proactive troubleshooting
- Better alignment of PSA operations with production goals
- Support for hydrogen supply chain integration and low-carbon targets

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – PSA principles, cycle steps, and design parameters
- Case Studies – Operational challenges and optimization scenarios
- Workshops – Breakthrough curve analysis, pressure profile simulations
- Peer Exchange – Practical lessons from hydrogen production facilities
- Tools – PSA monitoring templates, adsorbent life estimators, safety checklists

MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

Course Outline

DETAILED 2-DAY COURSE OUTLINE

Training Hours: 07:30 AM – 03:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: PSA Principles, Process Flow, and Operations

- Module 1: Fundamentals of Hydrogen Purification and PSA (07:30 – 09:30) • Overview of hydrogen sources, contaminants, and purity requirements • PSA working principle and comparison with other separation methods
- Module 2: PSA System Components and Flow Diagrams (09:45 – 11:15) • Adsorber vessels, switching valves, buffer tanks, and instrumentation
- Module 3: PSA Cycle Steps and Dynamics (11:30 – 01:00) • Adsorption, depressurization, purge, repressurization, and equalization
- Module 4: Workshop – PSA Cycle Mapping and Bed Scheduling (02:00 – 03:30) • Group exercise on interpreting and adjusting cycle timing

Day 2: Optimization, Troubleshooting, and Integration

- Module 5: PSA Process Control and Optimization (07:30 – 09:30) • Key operating parameters: temperature, pressure, cycle time, and flow rates
- Module 6: Common Operational Issues and Troubleshooting (09:45 – 11:15) • Bed breakthrough, valve failure, adsorbent degradation, and pressure drop
- Module 7: PSA System Integration and Future Trends (11:30 – 01:00) • Tie-ins with SMR, ATR, electrolyzers, and green hydrogen strategies
- Module 8: Workshop – Troubleshooting and Recovery Plans (02:00 – 03:30) • Scenario analysis and corrective action development

Certification

Participants will receive a Certificate of Completion in Pressure Swing Adsorption (PSA) Hydrogen Purification, validating their skills in operating, maintaining, and optimizing PSA units for hydrogen recovery and purification.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

In-House / Customized Training Interested in running this course for your team? Please contact us:	TEL: **+601116373203**	EMAIL: **info@mawaevents.net**