

LAPT

LONDON ACADEMY OF PROFESSIONAL TRAINING

CERTIFICATE

ISO 15869 — Gaseous Hydrogen Land Vehicle Fuel Tanks

ISO Certification Programme



LAPT — London Academy of Professional Training

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Reference ENG-HYD-15869 • ISO Energy

UKPRN 10067351 • Registered in England and Wales, company 4984798

AT A GLANCE

REFERENCE	ENG-HYD-15869
AWARD	Certificate
ASSESSMENT	430 marks — 258 to pass (60%)
PREREQUISITES	None
VALIDITY	Lifetime
AWARDING BODY	LAPT — London Academy of Professional Training

CURRICULUM

1

Hydrogen Standards and Regulations

5 chapters · 30 classes85 marks

• 1 Overview of Hydrogen Standards and Regulations — 6 classes

› 1.1 Define Key Concepts in Hydrogen Standards

› 1.2 Explore the Evolution of Hydrogen Regulations

› 1.3 Identify Key Stakeholders in Hydrogen Development

› 1.4 Analyze ISO 15869 Overview and Its Importance

› 1.5 Discuss Challenges in Implementing Hydrogen Standards

› 1.6 Apply Best Practices for Compliance with Hydrogen Regulations

• 2 Introduction to ISO 15869: Structure and Requirements — 6 classes

› 2.1 Explore the Structure of ISO 15869

› 2.2 Identify Key Requirements of Gaseous Hydrogen Tanks

› 2.3 Analyze Applicability of ISO 15869 in Vehicle Design

› 2.4 Discuss Safety Considerations within ISO 15869 Standards

› 2.5 Evaluate Compliance Strategies for Hydrogen Fuel Tanks

› 2.6 Apply Best Practices for Implementing ISO 15869 in Projects

• 3 Compliance and Certification Processes for Hydrogen Fuel Tanks — 6 classes

› 3.1 Understand the Importance of Compliance in Hydrogen Fuel Tank Safety

› 3.2 Identify Key ISO 15869 Standards Relevant to Hydrogen Fuel Tanks

› 3.3 Describe the Certification Process for Gaseous Hydrogen Fuel Tanks

› 3.4 Examine the Roles of Regulatory Bodies in Hydrogen Tank Certification

› 3.5 Analyze Common Compliance Challenges in Hydrogen Fuel Tank Manufacturing

› 3.6 Develop a Compliance Checklist for Hydrogen Fuel Tank Certification

• 4 Risk Assessment and Safety Management in Hydrogen Systems — 6 classes

› 4.1 Identify Key Risks in Hydrogen Systems

› 4.2 Analyze Safety Regulations for Hydrogen Tanks

› 4.3 Evaluate Risk Assessment Frameworks

› 4.4 Develop Safety Management Strategies

› 4.5 Implement Emergency Response Protocols

› 4.6 Assess the Effectiveness of Safety Measures

• 5 Future Trends in Hydrogen Regulations and Standards — 6 classes

› 5.1 Explore Emerging Trends in Hydrogen Vehicle Technology

› 5.2 Analyze Current Hydrogen Standards and Regulations

› 5.3 Evaluate the Impact of Global Policies on Hydrogen Development

› 5.4 Investigate Innovations in Hydrogen Safety Protocols

› 5.5 Discuss the Role of Stakeholders in Shaping Hydrogen Regulations

› 5.6 Design a Framework for Future Compliance in Hydrogen Standards

• 1 Fundamentals of Hydrogen as Fuel: Properties and Safety — 6 classes

- › 1.1 Explore the Fundamental Properties of Hydrogen as a Fuel
- › 1.2 Analyze the Advantages and Challenges of Using Hydrogen
- › 1.3 Investigate Safety Considerations for Hydrogen Fuel Systems
- › 1.4 Examine Different Hydrogen Storage Solutions and Their Applications
- › 1.5 Design a Prototype Hydrogen Fuel System with Safety Features
- › 1.6 Evaluate Real-world Applications of Hydrogen Fuel Technologies

• 2 Design Principles for Gaseous Hydrogen Fuel Tanks — 6 classes

- › 2.1 Identify Key Design Principles for Hydrogen Fuel Tanks
- › 2.2 Analyze Material Selection Criteria for High-Pressure Applications
- › 2.3 Evaluate Safety Standards and Regulations for Fuel Tank Design
- › 2.4 Explore Innovative Technologies in Hydrogen Storage Solutions
- › 2.5 Design Testing Approaches for Gaseous Hydrogen Tanks
- › 2.6 Apply Design Principles to Create a Prototype Hydrogen Fuel Tank

• 3 Regulatory Standards and Compliance for Hydrogen Fuel Tanks

— 6 classes

- › 3.1 Understand the ISO 15869 Standard for Hydrogen Fuel Tanks
- › 3.2 Identify Key Regulatory Requirements for Gaseous Hydrogen Tanks
- › 3.3 Explore Compliance Procedures for Design and Engineering
- › 3.4 Analyze Safety Protocols in Hydrogen Fuel Tank Design
- › 3.5 Evaluate Environmental Considerations in Regulatory Standards
- › 3.6 Apply Compliance Guidelines to a Case Study of Hydrogen Fuel Tanks

• 4 Innovative Engineering Techniques in Hydrogen Tank Development — 6 classes

- › 4.1 Explore the Fundamentals of Hydrogen Storage Technologies
- › 4.2 Analyze Safety Considerations in Hydrogen Tank Design
- › 4.3 Evaluate Materials for High-Pressure Hydrogen Tanks
- › 4.4 Investigate Innovative Manufacturing Techniques for Hydrogen Tanks
- › 4.5 Assess the Role of Simulation in Hydrogen Tank Testing
- › 4.6 Design a Prototype for a Gaseous Hydrogen Fuel Tank

• 5 Future Trends in Hydrogen Fuel Tank Technology — 6 classes

- › 5.1 Explore the Fundamentals of Hydrogen Fuel Tank Design
- › 5.2 Analyze Current Innovations in Hydrogen Storage Materials
- › 5.3 Compare Safety Standards for Gaseous Hydrogen Tanks
- › 5.4 Evaluate the Role of Regulations in Fuel Tank Development
- › 5.5 Investigate Future Trends in Hydrogen Tank Manufacturing
- › 5.6 Propose Innovative Solutions for Enhancing Tank Efficiency

• 1 Overview of ISO 15869 Standards for Hydrogen Fuel Tanks — 6 classes

- › 1.1 Explore the Purpose and Scope of ISO 15869 Standards
- › 1.2 Identify Key Components of Gaseous Hydrogen Fuel Tanks
- › 1.3 Understand Safety Requirements for Hydrogen Fuel Tanks
- › 1.4 Analyze Performance Criteria Defined in ISO 15869
- › 1.5 Evaluate Certification Processes for Hydrogen Fuel Tanks
- › 1.6 Implement Best Practices for Compliance with ISO 15869

• 2 Material Properties and Design Considerations for Fuel Tanks — 6 classes

- › 2.1 Identify Key Material Properties for Hydrogen Fuel Tanks
- › 2.2 Analyze Strength and Durability Requirements of Tank Materials
- › 2.3 Evaluate Corrosion Resistance in Fuel Tank Materials
- › 2.4 Explore the Impact of Design Geometry on Tank Performance
- › 2.5 Assess Safety Considerations in Fuel Tank Design
- › 2.6 Apply Best Practices for Material Selection in Tank Manufacturing

• 3 Performance Testing Methods for Hydrogen Fuel Tanks — 6 classes

- › 3.1 Understand the Principles of Hydrogen Fuel Tank Performance Testing
- › 3.2 Identify Key Performance Indicators for Hydrogen Fuel Tanks
- › 3.3 Explore Standard Testing Procedures for Hydrogen Fuel Tanks
- › 3.4 Analyze Data from Fuel Tank Performance Tests
- › 3.5 Evaluate the Impact of Temperature and Pressure on Fuel Tank Performance
- › 3.6 Apply Performance Test Results to Improve Hydrogen Fuel Tank Design

• 4 Analyzing Failure Modes and Risk Assessment — 6 classes

- › 4.1 Identify Common Failure Modes in Fuel Tank Design
- › 4.2 Analyze the Impact of Failure Modes on Safety and Performance
- › 4.3 Conduct a Risk Assessment for Hydrogen Fuel Tanks
- › 4.4 Evaluate Existing Mitigation Strategies for Identified Risks
- › 4.5 Develop Recommendations for Enhancing Tank Reliability
- › 4.6 Create a Risk Management Plan for Fuel Tank Implementation

• 5 Future Trends and Innovations in Hydrogen Fuel Tank Technology — 6 classes

- › 5.1 Explore Emerging Materials for Hydrogen Fuel Tanks
- › 5.2 Analyze Current Performance Metrics in Fuel Tank Design
- › 5.3 Investigate Innovations in Safety Features for Hydrogen Storage
- › 5.4 Evaluate the Impact of Regulatory Changes on Tank Technology
- › 5.5 Design a Future-Proof Hydrogen Fuel Tank Prototype
- › 5.6 Present Viable Solutions for Integrating Smart Technology

• 1 Understanding Hydrogen Fuel Tanks and ISO 15869 Standards —

6 classes

- › 1.1 Explore the Basics of Hydrogen Fuel Tank Design
- › 1.2 Identify Key Components of Hydrogen Fuel Tanks
- › 1.3 Analyze the ISO 15869 Standards Framework
- › 1.4 Assess Compliance Requirements for Hydrogen Fuel Tanks
- › 1.5 Investigate Safety Considerations in Hydrogen Fuel Storage
- › 1.6 Apply ISO 15869 Standards to Project Management Practices

• 2 Project Management Fundamentals in Hydrogen Initiatives — 6

classes

- › 2.1 Define Key Concepts in Project Management for Hydrogen Initiatives
- › 2.2 Explore the Project Lifecycle in Hydrogen Initiatives
- › 2.3 Identify Stakeholders and Their Roles in Hydrogen Projects
- › 2.4 Develop a Project Plan Specific to Hydrogen Fuel Tanks
- › 2.5 Assess Risks and Mitigation Strategies in Hydrogen Projects
- › 2.6 Implement Project Tracking and Evaluation Techniques for Hydrogen Initiatives

• 3 Risk Assessment and Mitigation Strategies for Hydrogen Projects

— 6 classes

- › 3.1 Identify Key Risks in Hydrogen Projects
- › 3.2 Analyze Risk Factors for Gaseous Hydrogen Fuel Tanks
- › 3.3 Evaluate the Impact of Identified Risks on Project Success
- › 3.4 Develop Risk Mitigation Strategies for Hydrogen Initiatives
- › 3.5 Implement Monitoring Techniques for Risk Management
- › 3.6 Review and Update Risk Assessments Throughout Project Lifecycle

• 4 Stakeholder Engagement and Communication in Hydrogen Initiatives — 6 classes

- › 4.1 Identify Key Stakeholders in Hydrogen Initiatives
- › 4.2 Analyze Stakeholder Interests and Influence
- › 4.3 Develop Effective Communication Strategies for Stakeholders
- › 4.4 Engage Stakeholders through Targeted Outreach Methods
- › 4.5 Facilitate Feedback Mechanisms for Continuous Improvement
- › 4.6 Evaluate the Impact of Stakeholder Engagement on Project Success

• 5 Monitoring, Reporting, and Compliance for ISO 15869 Projects —

6 classes

- › 5.1 Define Key Metrics for Monitoring ISO 15869 Compliance
- › 5.2 Develop an Effective Reporting Framework for Hydrogen Projects
- › 5.3 Analyze Data Collection Methods for Gaseous Hydrogen Tanks
- › 5.4 Implement Compliance Checks Throughout Project Lifecycle
- › 5.5 Evaluate Risks and Challenges in Monitoring Compliance
- › 5.6 Prepare a Compliance and Reporting Action Plan for Stakeholders

• 1 Understanding Hydrogen Properties and Risks — 6 classes

- › 1.1 Identify Key Properties of Hydrogen Gas
- › 1.2 Analyze the Physical and Chemical Risks of Hydrogen
- › 1.3 Examine the Behavior of Hydrogen in Various Environments
- › 1.4 Evaluate Safety Standards Relevant to Hydrogen Systems
- › 1.5 Implement Best Practices for Handling Hydrogen Safely
- › 1.6 Develop a Risk Assessment Plan for Hydrogen Fuel Tanks

• 2 Regulatory Framework and Standards for Hydrogen Safety — 6

classes

- › 2.1 Identify Key Regulatory Bodies for Hydrogen Safety
- › 2.2 Explore ISO 15869 Standards for Fuel Tanks
- › 2.3 Analyze the Impact of Regulations on Hydrogen Vehicle Design
- › 2.4 Assess Compliance Strategies for Hydrogen Safety Standards
- › 2.5 Examine Case Studies on Regulatory Failures in Hydrogen Systems
- › 2.6 Develop a Compliance Checklist for Hydrogen Safety Regulations

• 3 Risk Assessment and Management in Hydrogen Systems — 6

classes

- › 3.1 Identify Key Hazards in Hydrogen Systems
- › 3.2 Evaluate Risk Factors Associated with Hydrogen Storage
- › 3.3 Analyze the Impact of Hydrogen Leakage Scenarios
- › 3.4 Develop Risk Mitigation Strategies for Hydrogen Systems
- › 3.5 Implement Safety Management Practices in Hydrogen Systems
- › 3.6 Review and Revise Risk Assessment Procedures Regularly

• 4 Safety Engineering Principles for Hydrogen Use — 6 classes

- › 4.1 Identify Key Safety Principles in Hydrogen Systems
- › 4.2 Assess Risks Associated with Gaseous Hydrogen Use
- › 4.3 Explore Design Considerations for Hydrogen Fuel Tanks
- › 4.4 Implement Safety Management Strategies for Hydrogen Vehicles
- › 4.5 Evaluate Emergency Response Procedures for Hydrogen Incidents
- › 4.6 Create a Safety Training Plan for Hydrogen System Operators

• 5 Emergency Response Planning for Hydrogen Incidents — 6 classes

- › 5.1 Identify Hydrogen Hazards in Emergency Scenarios
- › 5.2 Assess Risks Associated with Hydrogen Fuel Tanks
- › 5.3 Develop Emergency Response Strategies for Hydrogen Incidents
- › 5.4 Establish Communication Protocols During Hydrogen Emergencies
- › 5.5 Conduct Simulated Emergency Response Drills for Hydrogen Incidents
- › 5.6 Review and Improve Emergency Response Plans for Continuous Safety

• 1 Understanding the Regulatory Framework for Hydrogen Fuels — 6

classes

- › 1.1 Analyze the Importance of ISO 15869 in Hydrogen Fuel Regulation
- › 1.2 Identify Key Stakeholders in the Hydrogen Fuel Regulatory Framework
- › 1.3 Examine the Impact of Regulatory Compliance on Hydrogen Vehicle Safety
- › 1.4 Differentiate Between International and National Regulatory Standards for Hydrogen Fuels
- › 1.5 Assess the Role of Certification in Promoting Hydrogen Fuel Technology Adoption
- › 1.6 Develop a Strategic Plan for Navigating Regulatory Challenges in Hydrogen Fuel Deployment

• 2 Technological Innovations in Hydrogen Fuel Tank Design — 6

classes

- › 2.1 Analyze Current Trends in Hydrogen Fuel Tank Technologies
- › 2.2 Evaluate Key Materials Used in Hydrogen Fuel Tank Construction
- › 2.3 Identify Safety Standards and Regulations Impacting Design
- › 2.4 Explore Innovative Design Solutions for Hydrogen Storage
- › 2.5 Assess the Role of Environmental Impact in Design Decisions
- › 2.6 Propose Practical Applications of Advanced Hydrogen Fuel Tank Designs

• 3 Risk Management Strategies in Hydrogen Fuel Systems — 6

classes

- › 3.1 Identify Key Risks in Hydrogen Fuel Systems
- › 3.2 Analyze Existing Risk Management Protocols
- › 3.3 Develop Strategies for Mitigating Identified Risks
- › 3.4 Evaluate the Effectiveness of Risk Management Strategies
- › 3.5 Implement Communication Plans for Stakeholder Engagement
- › 3.6 Create a Risk Management Framework for Compliance with ISO 15869

• 4 Strategic Planning for Hydrogen Infrastructure Development — 6

classes

- › 4.1 Assess Current Hydrogen Infrastructure Landscapes
- › 4.2 Identify Key Stakeholders in Hydrogen Development
- › 4.3 Analyze Regulatory Frameworks Impacting Hydrogen Adoption
- › 4.4 Develop Strategic Vision for Hydrogen Integration
- › 4.5 Create Action Plans for Infrastructure Implementation
- › 4.6 Evaluate and Adjust Strategic Plans for Continuous Improvement

• 5 Leadership in Sustainable Energy Transition: Case Studies — 6

classes

- › 5.1 Analyze Case Studies of Leadership in Energy Transition
- › 5.2 Identify Key Leadership Qualities in Sustainable Energy Initiatives
- › 5.3 Evaluate the Impact of Strategic Leadership on Energy Policies
- › 5.4 Discuss Challenges Faced by Leaders in Sustainable Energy Projects
- › 5.5 Propose Solutions for Effective Leadership in Energy Transition
- › 5.6 Create a Leadership Action Plan for Sustainable Energy Implementation