**Level 4 Award in Hydrogen Safety Practices: Module Overview**

**Awarding Body : TLM**

| *Guided Learning* | *Type of qualification* | *Assessment* |
|---|---|---|
| 5 days | Accredited Level 4 Award | End point assessment |

**Purpose – In-depth Understanding of Hydrogen Safety Practices**

This level 4 course provides an in-depth exploration of hydrogen safety. The science of hydrogen's properties and characteristics is explored and then linked to hazard risk reduction strategies used to keep workers safe. Learners will leave the course with a thorough understanding of hydrogen systems and stay up to date with the latest advancements in technology and safety practices.

This course provides the opportunity to:

- Engage in learning that is relevant and will provide opportunities to develop a range of skills and techniques; including personal skills and attributes essential for safe working practices
- Achieve a nationally recognised Level 4 qualification
- Develop personal growth and engagement in learning more about this exciting industry.

**Unit 1: Advanced Hydrogen Science & Applications (4 Credits)**

| **1.** Understand the advanced properties of hydrogen as an energy carrier | **2.** Understand hydrogen production methods and their wider implications | **3.** Understand the applications of hydrogen in current and emerging sectors |
|---|---|---|
| **1.1** I can analyse the physical and chemical properties of hydrogen. | **2.1** I can critically compare established hydrogen production methods in terms of cost, safety, and efficiency. | **3.1** I can assess hydrogen's role in transport, industry, and energy systems. |
| **1.2** I can explain how these influence safety and application. | **2.2** I can analyse the environmental and sustainability impacts of different hydrogen production technologies. | **3.2** I can evaluate the safety considerations associated with hydrogen use in public facing and high-risk settings. |
| **1.3** I can compare hydrogen's behaviour to other fuels. | **2.3** I can evaluate emerging hydrogen production techniques. | **3.3** I can describe the potential of including hydrogen as part of an energy infrastructure. |
| **1.4** I can evaluate implications for industry adoption. | **2.4** I can explain the potential advantages and limitations of emerging hydrogen production. | **3.4** I can explain the challenges for the use of hydrogen. |
| **1.5** I can evaluate hydrogen isotopes and their relevance to industrial and research contexts. | **2.5** I can analyse how emerging hydrogen production techniques may influence future developments in the hydrogen sector. | **3.5** I can analyse current data about trends in hydrogen demand and innovation. |

**Unit 2: Hydrogen Safety, Risk & Regulatory Management (4 credits)**

| **1.** Understand how to apply advanced risk assessment techniques to hydrogen systems | **2.** Understand hazard mitigation strategies and emergency response planning | **3.** Understand hydrogen storage and distribution safety considerations | **4.** Understand regulatory frameworks and compliance requirements for hydrogen use | **5.** Understand how to design safety and compliance strategies for hydrogen systems |
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| **1.1** I can conduct detailed risk assessments for hydrogen production, storage, and transport. | **2.1** I can evaluate hazard mitigation strategies in hydrogen operations | **3.1** I can analyse the technical and safety implications of different hydrogen storage methods. | **4.1** I can interpret key UK regulations governing hydrogen use. | **5.1** I can design a compliance plan that aligns with industry best practice and regulatory requirements. |
| **1.2** I can compare qualitative and quantitative risk assessment approaches | **2.2** I can recommend improvements to hazard mitigation strategies for different operational contexts. | **3.2** I can evaluate distribution systems for hydrogen | **4.2** I can explain the practical application of UK hydrogen regulations. | **5.2** I can evaluate strategic decisions around safety and compliance using evidence and sector benchmarks. |
| **1.3** I can evaluate when to apply qualitative or quantitative risk assessment approaches in different scenarios | **2.3** I can evaluate an emergency response plan for a hydrogen-related incident. | **3.3** I can explain associated risks for hydrogen distribution. | **4.3** I can compare UK and international codes, standards, and certification processes for hydrogen. | **5.3** I can assess how effective safety and compliance strategies are in reducing risk and supporting innovation. |
| **1.4** I can evaluate case studies of hydrogen-related incidents to identify lessons for risk management | **2.4** I can describe the effectiveness of detection, monitoring, and suppression systems in managing hydrogen risks. | **3.4** I can analyse data on hydrogen embrittlement to identify its risks and implications | **4.4** I can evaluate the implications of regulatory non-compliance for industry and public Safety. | |
| | | **3.5** I can propose strategies to minimise the impact of hydrogen embrittlement | | |