International PtX Hub

Supported by:
Federal Ministry for Economic Affairs and Climate Action
on the basis of a decision by the German Bundestag

IKI INTERNATIONAL CLIMATE INITIATIVE

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

INTERNATIONAL POWER-TO-X-HUB Catalysing defossilisation globally

PtX.Safety training

The global economy needs to move away from fossil fuels. In this transformation, Power-to-X (PtX) technologies play a critical role in shaping the future of energy. Green hydrogen, ammonia, and methanol are key components of this transition, offering sustainable alternatives for industry and transport. However, the handling of these substances requires specialist knowledge and a strong focus on safety.

> Successful implementation of PtX projects is risky without well-designed safety concepts. Clear impact assessments and thorough safety training for all key personnel are essential.

Fortunately, the industry has many years of experience in handling hydrogen, ammonia, and methanol. These substances have long been used in various industrial processes and safety standards are well established. Nevertheless, anyone handling these substances must be aware of the specific hazards and associated safety measures.

Discover the essentials of safety in PtX projects with this training module!

The PtX Hub's safety training outlines the risks and hazards associated with key substances such as hydrogen, oxygen, ammonia, and methanol, while highlighting their specific properties and how these can lead to hazardous situations.

The course examines the specific properties of each substance - such as the flammability of hydrogen, the toxicity of ammonia, and the volatility of methanol - and explains how these properties contribute to potential risks when handling these materials.

The training content covers the established safety measures and protocols that are in place to mitigate these risks, focusing on best practices which have been developed and refined over time. In addition, the training reviews the key safety standards and codes that govern the safe handling of PtX substances, ensuring compliance with industry regulations and protecting both workers and the environment.

At the end of the training, participants will have a sound understanding of the risks and safety requirements for handling PtX substances. They will be equipped with the knowledge to implement essential safety measures and follow established protocols to minimise risks and ensure a safe operating environment. However, it is important to note that the safety guidelines provided in this training are intended for informational purposes only. It is not a substitute for statutory safety training as required by local authorities.

Training outline

0. Introduction
1. What are safety, risk, and hazard?
2. Introduction to risk management and risk assessment techniques
3. **Hydrogen**
   Hazards, risk mitigation measures and regulations
4. **Oxygen**
   Hazards, risk mitigation measures and regulations
5. **Ammonia**
   Hazards, risk mitigation measuresand regulations
6. **Methanol**
   Hazards, risk mitigation measures and regulations

Duration and format:
2 hours – 1 day | on site, hybrid or virtual

This training can be tailored to the specific interests of the target groups. The six chapters can be freely combined and are independent of each other, allowing for a flexible approach that meets the needs of different participants.

Target audience

- Decision-makers in public ministries, e.g., energy, environmental, economic, infrastructure (OECD, non-OECD)
- Private sector professionals (industry, energy utilities, project developers)
- Experts of regulatory authorities and other relevant administrations
- Project managers, consultants
- Professionals from the academic sector
- NGOs

What does the International Power-to-X Hub offer?

- Access to cutting-edge research and insights on PtX
- Training on PtX for key decision makers
- Exchange platforms for PtX experts & enthusiasts
- Advisory on regulatory frameworks, partnerships, and financing for PtX projects
- Access to 120 GIZ cooperation countries

What is Power-to-X?

To reach climate neutrality by 2050, we must transform our economies to operate emission-free fast. While 100 % renewable energy is key for this transformation, some industries and transport sectors cannot yet directly use renewable electricity to become climate neutral. Until they can, Power-to-X (PtX) is the missing link.

PtX enables us to produce anything historically dependent on fossil feedstocks, now using renewable electricity. These sustainable, climate neutral e-fuels and chemicals can defossilise high-emission industries, including the chemical, fertiliser, steel, and cement industry, as well as aviation and maritime transport.

PtX offers a tremendous potential for many countries all over the world. Due to their favorable conditions for renewable energy production, they can leverage new business opportunities with PtX and become frontrunners in emerging global PtX markets.

The PtX.Academy

Since 2019, the International PtX Hub offers trainings and workshops for decision-makers on green hydrogen and PtX. The goal is to train and connect a critical mass of people who are enthusiastic about renewable PtX and can accelerate the uptake of PtX production, usage, and trade in their countries.

To date, the PtX Hub has delivered more than 100 trainings in 27 countries to more than 1,800 learners.

The training offer consists of our standardised **Renewable Power-to-X Basic Training**, add-on modules for 7 topics, 3 e-learning courses and a Train-of-Trainers programme, which has already certified 100 trainers. The PtX.Community connects the training alumni and enables an international exchange of experts around the globe.

The on-site trainings are organised at the request of GIZ projects and political partner institutions in selected countries. If you are interested in individual training, please check out our e-learning courses.

Add-on modules:

- Sustainability
- Aviation
- Shipping
- Sustainable Chemistry and Power-to-Chemicals
- Certification of PtX products
- PtX project finance
- Carbon Border Adjustment Mechanism (CBAM)
- PtX safety
- Coming soon: Green steel and green fertiliser

Free e-learnings (self-paced):

- Renewable PtX Basic Training
- PtX.Sustainability & EESG Framework
- Green Hydrogen & PtX Certification

More information on the training offers:
https://ptx-hub.org/academy/

Contact

Email: info@ptx-hub.org

LinkedIn @ International Power-to-X Hub

Learn more about the project activities on the website:
www.ptx-hub.org

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