The Fundamentals of Hydrogen Energy (G903)

Tutor(s)

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Overview

The aim of this course is to give an overview of the fundamental aspects of the current hydrogen energy landscape. This will include a range of topics, including what hydrogen is and why it can potentially be a significant fuel and energy carrier, the different methods in which it can be produced, its potential role in decarbonization of energy and heat, how it can be stored in the subsurface, and its place overall within the energy transition.

Duration and Logistics

Classroom version: A half-day course comprising a mix of lectures, case studies and exercises. The manual will be provided in digital format and participants will be required to bring a laptop or tablet computer to follow the lectures and exercises.

Virtual version: One 3-hour interactive online session. A digital manual and exercise materials will be distributed to participants before the course.

Level and Audience

Awareness. The course is aimed at non-technical staff and those who do not have a scientific background but want a basic introduction to the topic. The subject matter will be covered from very basic principles and will be of interest to staff from a range of departments, including legal, graphics, administration and technical support.

Objectives

You will learn to:

1. Understand what hydrogen is and why it can be used as a fuel and energy carrier.
2. Describe how hydrogen can be produced and the resulting different types and terminology.
3. Appreciate the role hydrogen can play in decarbonizing energy and heat, and the competing demands in the hydrogen energy landscape.
4. Appreciate the different storage options for hydrogen, particularly in the subsurface.
5. Recall details of the developing hydrogen supply chains, including infrastructure and distribution networks.

Course Content

Course Details

This short course covers the key aspects of the emerging hydrogen economy and will give participants a fundamental understanding of the possible role of hydrogen in the energy transition. Topics to be covered include:

- Producing hydrogen
- Storing and moving hydrogen
- What hydrogen can be used for
- Developing hydrogen supply chains
- How hydrogen can be stored underground