

**join the best:** Hydrogen as an energy carrier

# Tube



15 to 19 April, 2024

## Innovations for transmission pipelines and storage

Intensive efforts are being undertaken across the globe to reduce greenhouse gases and create attractive options, particularly also for energy-intensive industries. As a result, the **rapid development of comprehensive hydrogen distribution networks** has become an urgent requirement. The consequence: growing **demand for suitable pipeline solutions**.



## The race for the best solutions

Science and industry are urgently working on storage and transport systems for hydrogen. In order to safely store hydrogen, any raw materials must be able to permanently resist the gas. Especially welding seams with a microstructure that differs from that of the base raw material, must not display any increased susceptibility to damage on contact with hydrogen. It must be possible to operate transport and storage systems safely and reliably under mechanical, thermal, chemical and electromagnetic stress. Tube 2024 will address **present and future challenges associated with hydrogen** as an energy carrier with, of course, a strong focus on transport pipelines.

## One of many challenges: Transfer pipelines for liquid hydrogen

Transporting gaseous hydrogen is complicated, and transporting liquid hydrogen even more. The transport pipelines for liquid hydrogen must be particularly well insulated to prevent losses and ensure optimum safety. Liquid hydrogen possesses a temperature of  $-252,9\text{ }^{\circ}\text{C}$ , which is extremely cold.

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When transporting liquid hydrogen, safety is of the utmost importance. On contact with oxygen, the cryogenic liquid can cause explosions. If icy cold liquid hydrogen escapes through a leak in a transferring pipe or as a result of insufficient insulation, there is a high probability that the surrounding oxygen will condense. This condensed oxygen can, in combination with liquid hydrogen, cause hazardous situations. Therefore the requirements for transfer pipelines for liquid hydrogen are stricter than those for the transport of liquid oxygen or liquid nitrogen. In addition: Hydrogen can cause components and materials to become brittle.

In short: Compliance with all the regulations governing the transport and storage of hydrogen is a complex matter, particularly as they vary widely around the world. **Therefore it is all the more important to experience the latest developments live at Tube 2024.**

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