

SWAGE-TSDE-H2

TUBING SYSTEM DESIGN ELEMENTS – HYDROGEN APPLICATIONS

One of the most formidable challenges in the development of safe, dependable, and leak-tight hydrogen fluid systems is the nature of hydrogen itself. Hydrogen is a small-molecule gas that can easily escape through the tiniest of crevices and diffuse into the materials designed to contain them. In many industrial applications, hydrogen must also be stored at pressures in excess of 700 bar for maximum cost efficiency and to achieve the necessary energy density. Further, the handling and management may require rapid thermal and pressure changes can also impact system integrity.

Designing tubing systems to overcome these challenges requires the right components, the right materials, the right expertise, and the right training. That is why we developed the Swagelok® Tubing System Design Elements for hydrogen applications. This course provides training for those responsible for designing hydrogen tubing systems.





ABOUT THE COURSE

Topics:

- Hydrogen Basics and Myth Busting
- Industry Breakdown
 - *Making the Molecule*
 - *Distribution*
 - *Infrastructure*
 - *Vehicle*
- Industry Standards
- Materials Science
 - *Hydrogen Embrittlement*
 - *Hydrogen Compatible Materials*
- Tubing System Design Considerations
 - *Oil and Gas vs Hydrogen Tubing System Design*
 - *Hydrogen Characteristics*
 - *Detonation and Deflagration*
 - *Fluid Dynamics*
 - *Component Selection*
 - *Sampling*
 - *Gas Distribution and Purging*
- System Environment Considerations
- Leak Detection
- System Integrity and Maintenance



Target Audience:

This course is aimed at existing and graduate design/engineering discipline personnel who require increased awareness of fluid system and small-bore tubing design in accordance industry best practices.

Course Format:

Designing, engineering, installing, and maintaining a high-performance hydrogen tubing system for maximum safety and integrity means starting with the basics. That is why this training program provides in-depth, comprehensive focus areas beginning with a foundational understanding of hydrogen and progressing through critical aspects such as industry standards, materials science, tubing system design, leak detection, system integrity and maintenance considerations.

The course combines theoretical instruction with hands-on activities including tube fitting installation, basic tube bending, and leak detection to provide attendees with an in-depth understanding of the design considerations for tubing systems in hydrogen applications.

Successful attendees will receive a Swagelok® Certificate of Completion which is valid for three years. For added customer assurance, training certificates are tracked using a centralized Swagelok Customer Training Records System. This enables those who have completed the course and their employers quick and easy verification of training records..

Instructor:

This course is facilitated by a Swagelok-certified subject matter expert.

How to Register

To register for training, reach out to nordival@nordival.com