



# GOETZE VALVES NA HYDROGEN TRAINING

## 2-Day Hydrogen Seminar & Workshop

Aloft Hotel Charlotte Ballantyne



### AGENDA DAY 1, October 15th, 2024

Time	Topics
08:30 – 10:00 am	<p><b>Hydrogen Basics</b></p> <ul style="list-style-type: none"> <li>• Characteristics of hydrogen</li> <li>• Gas purity</li> </ul> <p><b>Fluid System Components in Hydrogen Plants</b></p> <ul style="list-style-type: none"> <li>• Hydrogen generation and storage</li> <li>• Hydrogen in fuel cells, hydrogen as a reducing agent in the chemical industry, steel production, desulfurization in the petrochemical industry, food industry, mobile sector, and many other applications</li> </ul>
10:00 – 10:30 am	Coffee break
10:30 – 12:00 am	<p><b>Tubing, Flanges, Threads, and Fittings in Hydrogen Plants</b></p> <ul style="list-style-type: none"> <li>• Material requirements</li> <li>• Corrosion - Hydrogen embrittlement</li> <li>• Cleaning requirements</li> <li>• General requirements for tubes (steel - stainless steel)</li> <li>• Fittings, threads, and flanges</li> <li>• Tube cutting and bending in hydrogen systems</li> <li>• Dimensioning of tubes - Permitted flow velocities</li> </ul>
12:00 – 01:00 pm	Lunch break
01:00 – 02:30 pm	<p><b>Valves and Pressure Regulators in Hydrogen Systems</b></p> <ul style="list-style-type: none"> <li>• Requirements for valves and pressure regulators in hydrogen systems</li> <li>• Material, lubricants, cleaning requirements</li> <li>• Design considerations for valves</li> <li>• Sizing and calculation of valves and pressure regulators</li> <li>• Hydrogen and Hydrogen/Natural Gas Mixtures</li> </ul>
02:30 – 03:00 pm	Coffee break
03:00 – 04:30 pm	<p><b>Other Fluid System Components:</b> Check valves - Deflagration safety devices Filters - Pressure transducers - Sensors Control valves - Coaxial valves - Butterfly valves - Safety valves – Solenoids</p> <p><b>Technically Permanently Leak-Proof Fluid System Components</b></p>
4:30 pm	End of day 1

### AGENDA DAY 2, October 16th, 2024

Time	Topics
08:30 am – 04:30 pm	<p><b>Hydrogen Workshop</b></p> <p>Group work is encouraged during the workshop, fostering collaboration, idea exchange and shared problem-solving among participants.</p> <p>During the workshop, participants design and size a complete hydrogen supply system, including nitrogen purging.</p> <p>The following questions will be addressed during our workshop:</p> <ul style="list-style-type: none"> <li>• Where should a check or safety valve be placed?</li> <li>• Why should we use double-block-and-bleed configurations?</li> <li>• Where should O<sub>2</sub> and H<sub>2</sub> sensors be installed?</li> <li>• How to integrate a purging system?</li> </ul>
	<p><b>Workshop Activity</b></p> <p>Level 1: Design and sizing of a hydrogen system from H<sub>2</sub> production to gas treatment and storage in a low-pressure tank.</p> <p>Level 2: Design and sizing of a high-pressure system from compression and gas distribution to high-pressure storage at 6000 psi.</p> <p>Level 3: Design and sizing of a pressure panel. Pressure reduction from 6000 psi to 360 psi.</p> <p>Level 4: Design and sizing of a nitrogen purging system.</p> <p>Level 5: Operation and safety.</p> <p>Level 6: Technically permanent leak tightness regarding operation and maintenance.</p>
	2 coffee breaks and 1 lunch break included
	<b>Participants are required to bring a calculator/cell phone and a laptop/tablet</b>