

**American Institute of Chemical Engineers,  
Cleveland Section**

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**Wednesday, October 13, 2021, 6:00 to 6:45 PM**

**1. Anatomy of a Hydrogen Fitting**

Webinar hosted by H2 TECH and presented by Swagelok Company

**Chuck Hayes**, Principal Applications Engineer for Transportation, Swagelok Company



FK series fittings are available for your hydrogen fuel system needs.

**Abstract:**

Hydrogen must be stored at high pressures to achieve the energy density required for use in fuel cell vehicles and infrastructure. This presentation will demonstrate the performance attributes required of fittings used in these systems. As a small-molecule gas, hydrogen can migrate through tiny crevices and diffuse into the materials designed to contain them.

Also, high storage and dispensing pressures, as well as rapid thermal and pressure changes, are challenges for the processing of hydrogen as a fuel source. Specification of high-performing fluid system fittings designed for these challenging applications will help ensure the long-term, leak-tight operation of the system.

**Speaker Bio:**

Chuck is a 30-year veteran of Swagelok Company, a World leader in the development of fluid system products, assemblies, and services. He has spent the last 25 years developing a wide range of fluid system products and the past 20 years focused exclusively on fitting technology for alternative fuel applications. Chuck currently holds 7 patents in the U.S. and numerous patents internationally.

He is an active member of CSA (Canadian Standards Association Group) committees for both CNG and Hydrogen and has recently been the chair of HGV (Hydrogen Gas Vehicles) 4.10 for fittings. Chuck also sits on ISO-TC97 (Technical Committee) and participates in international working groups. During his time as Principal Applications Engineer for the transportation market, Chuck has supported numerous on-vehicle platform development projects globally.

Today, he concentrates most of his time on the development of hydrogen mobility solutions for both infrastructure and on-vehicle applications. Outside of work, Chuck has been an active leader in the Boy Scouts of America movement and serves as Scoutmaster for a troop that has recently welcomed 2 of the first female Eagle Scouts in the nation. He also runs an Explorer Scouts post focused on engineering with local high school students at Swagelok.

**Wednesday, October 13, 2021, 7:00 to 7:45 PM**

**2. Hydrogen demand: H<sub>2</sub> in Transportation-policy**

**landscape, technology, and business models**

Virtual Panel Discussion from the “First Element Conference”

Panelists from **Chevron, Cummins, and Toyota**

“First Element Panel Discussion” hosted by: **Stuart Penson**, Contributing Editor, Hydrogen Economist



Stuart Penson  
Contributing Editor



Danielle Lincoln  
General Manager  
Renewables



Amy Adams  
Vice President of Fuel  
Cell & Hydrogen Technologies



Craig Scott  
Group Manager – Portfolio  
Business Management



The presentation will be on a Zoom virtual meeting format, and those interested in attending will make their arrangements through the AIChE link below. Please email Joseph Yurko if you plan to attend so AIChE will be able to send you the email Zoom links before the meetings and a PDH certificate after attending the presentation(s) in the series. Thank you!

**Meeting Location:** *Zoom link to be emailed the day of the meeting time by AIChE*

6:00 - 6:45 pm: Zoom meeting Swagelok webinar  
7:00 - 7:45 pm: Zoom meeting H2 Panel Discussion

**Cost:** (no cost)

**Menu:** (Zoom Virtual Meeting, no meal)

**RSVP by October 10<sup>th</sup>** with Joseph Yurko and AIChE: [j.yurko@sbcglobal.net](mailto:j.yurko@sbcglobal.net)

