FUEL CELL SEMINAR & ENERGY EXPOSITION

PROGRESS AND CHALLENGES FOR HYDROGEN FUELING STATIONS PART 1
WEDNESDAY, NOVEMBER 6 - ROOM 103-A/B, 1:30 PM - 3:30 PM

- **Safety Standards for Hydrogen and Fuel Cell Technology** - *Brent Hartman, CSA Group*

  - This presentation will provide an overview of CSA Group's hydrogen and fuel cell standards – those published, those in development, and our future work plan. The presentation will highlight recent North American codes and standards efforts, demonstrating how CSA's standards contribute to the broader regulatory landscape.

    The presentation will also provide an overview of CSA Group's hydrogen certification and testing services, such as: hydrogen component testing and certification, weights and measures for dispensing, fuel quality compliance, and dispenser performance testing via CSA's mobile Hydrogen Dispenser Testing Apparatus.

- **Quality Control and Material Compatibility for Hydrogen Station Components** - *Mike Peters, National Renewable Energy Laboratory*

  - This talk will highlight lessons learned from the operation of a hydrogen station as it relates to quality control and material compatibility with components. Data will be presented that shows examples of poorly controlled setpoints and quality on pressurized systems and the effect that can have on the safe operation of a hydrogen station. The presentation will highlight some gray areas in the hydrogen code that require improvement to help alleviate pressure on AHJs related to making material compatibility decisions. Finally, best practices will be discussed to help inform system operators on what to check for on individual components when performing their own quality control.

- **Hydrogen Risk Assessment Models 2.0: An Open Source Quantitative Risk Assessment Framework** - *Ethan Hecht, Sandia National Laboratories*

  - Sandia developed software, Hydrogen Risk Assessment Models (HyRAM), to quantitatively assess the risk at hydrogen fueling stations. In this work, we present HyRAM 2.0, the newly open-source version of the software and discuss new capabilities, including editable fault trees, user defined fault tree results, and the current capabilities related to liquid hydrogen installations. We present an example quantitative risk assessment to demonstrate the current capabilities. In addition to the Windows GUI executable, the source code is also available to users. We discuss the source code structure and how users can perform their own quantitative risk assessments using the underlying Python modules or integrate their own code developments into HyRAM.

- **On-site, Near Real-time Analysis of Critical Impurities in Hydrogen** - *William Buttner, National Renewable Energy Laboratory*

- **Influence of Hydrogen Compatibility Research on Codes & Standards** - *Joseph Ronevich, Sandia National Laboratories*