



### Session 3D:

### Energy Storage and Data Centers: Developments in Batteries, Hybrid Super-capacitors, and Edge Technologies

This presentation explores the latest advancements in energy storage and emerging energy technologies for powering data centers, emphasizing the impact on fire and life safety considerations. We will cover developments in battery systems, including lithium-ion and solid-state batteries, the role of hybrid supercapacitors, and how the various use cases of these technologies can change the approach to fire safety. Additionally, the presentation will delve into “edge technologies” such as hydrogen fuel cells, small modular reactors (SMRs), and other innovative energy sources poised to revolutionize data center operations. The discussion will focus on the fire risks, explosion hazards, and life safety challenges that may be introduced by these technologies, along with best practices and mitigation strategies. Attendees will gain insights into how these cutting-edge energy solutions can be safely and effectively integrated into data center infrastructure.

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#### Noah Ryder Fire and Risk Alliance, LLC



For over 20 years Dr. Noah Ryder has focused on understanding fire and explosion’s interaction with both built and natural environments. He is Co-Founder and Chief Operating Officer at Fire & Risk Alliance, LLC. He is a licensed professional fire protection engineer and focuses on how safety can be improved through the use of quantitative risk assessments, computer modeling, applied research, and performance-based design. Dr. Ryder has received numerous awards throughout his career and continues to serve the industry with his involvement in various safety focused organizations. He is the former chair of the Technical Committee of the SFPE Foundation and continues to serve as a board member, actively serves on multiple NFPA technical committees, is the former SFPE Chesapeake Chapter President, and frequently publishes and presents his work.

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