

COMBUSTION WEBINAR

Methods of Combustion Instability Suppression and Outlook for Combustor Design

Speaker: Jacqueline O'Connor, Pennsylvania State University

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Abstract: Low-emissions gas turbine engines are a critical technology in power generation, aviation, and industrial sectors. One challenge in achieving low-emissions, however, is the risk of thermoacoustic combustion instability, which is driven by the coupling between combustor acoustics and flame heat release rate oscillations. In this talk, we'll discuss the key driving mechanisms and how fundamental knowledge of combustion instability processes can inform better design of instability suppression mechanisms. We'll review instability suppression mechanisms that are in use today as well as other more novel methods that have been proposed recently in literature. The talk will conclude with some discussion of how this fundamental knowledge can inform more stable combustor design.

Biography: Dr. Jacqueline O'Connor is an Associate Professor of Mechanical Engineering at The Pennsylvania State University and the head of the Reacting Flow Dynamics Laboratory. She is also the director of the Penn State Center for Gas Turbine Research, Education, and Outreach. Her research focuses on unsteady combustion phenomena in power and propulsion technologies, including power generation gas turbines, aircraft engines, and diesel engines, using high-speed laser diagnostics. Previously, she was a post-doctoral researcher at Sandia National Laboratories in Livermore, California in the Engine Combustion Department. She received a BS from MIT in Aeronautics in 2006, and a MS and Ph.D. in Aerospace Engineering from Georgia Tech in 2009 and 2012. She is an Associate Fellow of the American Institute of Aeronautics and Astronautics and a Fellow of the American Society of Mechanical Engineers.

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