



SOUTHWEST RESEARCH INSTITUTE



Industrial Processes Emissions Reduction (IPER) Technology Workshop January 29 – 30, 2025

Overview

There is significant global interest in emissions reduction to mitigate climate change, embodied by political activism, industry pledges, and government policies. Many governments have identified climate change mitigation as national priorities, including the United States through Executive Order 14008 directing multiple government agencies to “spur innovation, commercialization, and deployment of clean energy technologies and infrastructure...to achieve net-zero emissions, economy-wide, by no later than 2050.” As part of this effort, the Energy Act of 2020 established a new Industrial Emissions Reduction Technology Development cross-cutting program for the Department of Energy to promote research focused on reducing emissions in the non-power sector, and multiple recent and current funding announcements seek to develop technologies for meeting these aggressive targets. Subsequent legislation and government initiatives worldwide continue to incentivize decarbonization of electricity and heat used in industry through a variety of technology pathways including carbon capture and utilization, hydrogen, energy storage, waste heat recovery, electrified heat, combined heat and power, small modular nuclear, geothermal/solar heat, novel processes, and more.

Industrial processes provide essential supply chain support for global-scale manufacturing needs, including basic commodities such as steel and other metals, cement, plastics, paper, and chemicals including fertilizers. These processes also emit approximately 1/3 of all greenhouse gases. Without new technology development and implementation, emissions from these sources are likely to increase due to higher global demand for these products. In order to achieve net-zero emissions from industrial processes, significant research and technology development are required to develop and validate new and modified processes, systems and components that are more efficient and greatly reduce or eliminate the emission of carbon dioxide and other greenhouse gases. This invitation-only 2-day in-person workshop will provide a mix of keynote speakers, technical

presentations, panels, open forum discussions, and networking functions to address a wide variety of mechanical and chemical engineering technology developments and significant projects focused on achieving industrial decarbonization.

This invitation-only 2-day in-person workshop will provide a technical networking and collaboration opportunity to advance technology for reducing industrial process emissions. The agenda will include focused keynote presentations, panels, and technology updates with invited attendance from end users, manufacturers, technology developers, researchers, and government agencies. Speakers will present on a variety of technology development efforts, challenges and research needs to achieve net-zero emissions from industrial processes.

Anticipated Topics:

- Carbon Capture and Utilization
- Electrification
- Hydrogen Production and Utilization
- High-Temperature Heat Pumps
- Nuclear, Solar, Geothermal Heat
- Novel Low-Emission Processes
- Gasification
- Leak Prevention
- Chemicals and Plastics Recycling
- Biomass and Biofuels
- Efficiency Improvements
- Waste Heat Recovery
- Onsite Power Generation and Energy Storage

For more information, please contact:
Veronica Encino 210.522.3500
veronica.encino@swri.org

Planning Committee Members

Melissa Allin – Baker Hughes
Tim Allison, SwRI – IPER Chair
Klaus Brun – Elliott Group
Juben Chheda – Shell
Joe Cresko – DOE Advanced Manufacturing Office
Peter Debock – DOE ARPA-E
Maruthi Devarakonda – Barker Hughes
Colin Duncan – Hanwha Power Systems Americas Inc.
Daniela Ferrari – Dow
Eloy Flores, SwRI – IPER Co-Chair
Christopher Fraughton – MAN Energy Solutions USA Inc.

Dan Hancu – DOE NETL
Doug Hofer – SwRI
Mike Huckman – SABIC
Jayanta Kapat – University of Central Florida
Jack Lewnard – DOE ARPA-E
Isa Mbaraka – Dow
Jeff Moore – SwRI
Jason Mortzheim – GE Research
Chendhil Periasamy – Air Liquide
David Ransom – Siemens Energy
John Repasky – Oxy Low Carbon Ventures
Luke Rose – Malta, Inc.

Kwadwo (Kojo) Sarpong – Electrified Thermal Solutions Inc.
Avi Shultz – DOE EERE (SETO)
Shane Siebenaler – SwRI
Dave Snyder – Chemours
Matthew Thomas – Kiewit
Ben Bollinger – Malta, Inc.
Doug Wicks – DOE ARPA-E
Karl Wygant – Elliott Group
Tian Ong – Malta