OS07 – Fluids Machinery for Low-Carbon Society (Cryogenic Fluids)

Organizers: Teiichi Tanaka, Satoshi Kawasaki,
Keita Yamamoto, Takeshi Sano, Kazuki Niiyama

Efforts to combat global warming and achieve a carbon-neutral society are heightening expectations for energy technologies utilizing cryogenic fluids such as hydrogen, ammonia, LNG, and so on. As the foundation supporting these technologies, improving the efficiency, reliability, and advanced control of fluid machinery operating in cryogenic environments is a critical challenge.

This session will broadly discuss fundamental research and applied technologies concerning equipment specifically designed for cryogenic fluids—such as turbomachinery, pumps, and valves—as well as compressors and expanders aimed at decarbonization. The focus is on fluid machinery technologies contributing to building a low-carbon society. The goal is to share the latest research results and technological trends, including thermal and flow phenomena unique to cryogenic fluids, material and structural design, numerical analysis and measurement techniques, and new technology development for decarbonization.

Furthermore, researchers and engineers from industry, academia, and government involved in these carbon-neutral fluid machinery technologies will gather together. Through interdisciplinary exchange, the conference aims to clarify future research topics and technological outlooks, promoting the creation of insights that contribute to next-generation energy system development.

Non-exhaustive list of suggested topics

- Pump for Cryogenic Fluids
- Valve for Cryogenic Fluids
- Heat Exchanger for Cryogenic Fluids
- Special Measurement and Analysis Technique for Cryogenic Fluids
- Low-carbon Combustion System for Power Generation
- Turbomachinery for carbon-neutral society
- Analysis and Evaluation of Cryogenic Fluid Flow Phenomena
- Numerical Analysis Methods for Cryogenic Fluid Machinery and Equipment
- Improving Performance and Reliability of Cryogenic Fluid Machinery and Equipment
- Cryogenic Fluid Transportation and Storage Technologies

Organizers

Teiichi Tanaka is working as a Professor at National Institute of Technology, Kumamoto College. While teaching fluid mechanics, I am also evaluating the performance of cryogenic pumps for liquid nitrogen and elucidating the dynamic characteristics during transient pump operation.

Satoshi Kawasaki is working as a Senior Researcher of Research and Development Directorate, Japan Aerospace Exploration Agency(JAXA). He is in charge of research and development of turbopump in rocket engine. He especially does experimental research work using cryogenic fluid.

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Keita Yamamoto is working as…

Takeshi Sano is working as a Deputy General Manager of Fluid Machinery Research Department, Mitsubishi Heavy Industries, Ltd. He is specialized for turbo pumps. Added to this, he is leading a development of many machineries, such as, cryogenic reciprocating pumps, hydraulic turbines, and compressors, not only technical aspects but also marketing and business development.

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Kazuki Niiyama is working as

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