

# OS04 – Gas Turbine

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Gas turbines are technologically advanced turbomachinery and are widely used for aircraft propulsion and power generation. Research and development have been actively pursued worldwide to achieve higher efficiency and reduce environmental impact. In particular, recent strong societal demands for carbon neutrality have brought even more attention to gas turbine research and development. This session aims to discuss and exchange information on all technical challenges related to gas turbines, including the aerodynamics and thermodynamics of compressor/turbine blades and vanes, combustion, sustainable aviation fuels, innovative materials such as ceramics matrix composites (CMCs), control procedures, thermal cycling, maintenance, and other topics. Furthermore, this session will also cover technical challenges related to turbochargers.

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## **Non-exhaustive list of suggested topics**

- aerodynamics of compressor/turbine blades and vanes
  - thermodynamics of compressor/turbine blades and vanes
  - turbulent flow control
  - optimization of structures
  - fluid/structure interaction
  - hydrogen or ammonia combustion
  - sustainable aviation fuels
  - innovative materials such as ceramics matrix composites (CMCs)
  - advanced control procedures
  - thermal cycle analysis
  - thermal management
  - maintenance and inspection
  - Vibration
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## Organizers



**Makoto Yamamoto** is working as a professor in the Department of Modern Mechanical Engineering at Waseda University, Japan. He earned his Dr. Eng. from the University of Tokyo in 1988. He is a specialist in computational fluid dynamics (CFD). Especially, he is challenging in the modeling and simulation of multi-physics phenomena in jet engines, such as icing, sand erosion, and particulate deposition.

**Katsuya Hirata** is working as a professor in the Department of Mechanical Engineering at Doshisha University, Japan. He earned his Dr. Eng. from Kyushu University in 1993. He is a specialist in experimental fluid dynamics (EFD). Especially, he is challenging in observation and understanding non-linear flow phenomena using experiments together with CFD, such as the flow separation in diffuser, the ground effect, the air entrainment in a pump sump, and thermal convection.



**Tetsuya Sato** is working as a professor in the Department of Applied Mechanics and Aerospace Engineering at Waseda University, Japan. He earned his Dr. Eng. from the University of Tokyo in 1992. He is a specialist in aerospace propulsion engineering. Especially, he is challenging in the development study of hypersonic turbojet engines, intake aerodynamics, and gas-liquid two-phase flows.

## Contacts

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