OS08 – Experimental and Flow Visualization Techniques

Organizers:
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Reliable experimental data and flow visualization are indispensable for unraveling complex flow phenomena, represented by flows within fluid machinery. As the demand for higher efficiency and wider operating ranges grows, deeply understanding these physical phenomena becomes increasingly critical.

This session **Experimental and Flow Visualization Techniques** aims to provide an opportunity for researchers and engineers from diverse backgrounds to exchange their latest findings. We welcome studies on specific machines such as pumps, compressors, fans, and turbines but also fundamental research that paves the way for future advancements in fluid machinery. Furthermore, presentations on experimental and visualization techniques with potential applications in this field are also welcome.

In addition to quantitative measurements, we also look forward to presentations on flow visualization (whether experimental or CFD-based). Whether your work utilizes conventional or the latest methods, if it contributes to elucidating flow mechanisms, it is welcome in this session.

Non-exhaustive list of suggested topics

- Experiments on fundamental flow dynamics
- Particle Image Velocimetry (PIV) and Laser Doppler Velocimetry (LDV)
- Flow visualization (Experimental and/or CFD-based)
- Unsteady pressure, velocity and flow rate measurement
- Flow, separation and boundary layers control
- Flow instability mitigation
- Advanced and novel experimental techniques

Organizers

Koichi Nishibe is working as a Professor at Department of Mechanical Engineering of Tokyo City University (Tokyo, Japan). His research interests include topics related to multi-phase and particulate flows, performance improvement and active control of unsteady internal flow of turbomachinery such as pump, fan, compressor, based on understanding obtained by comparison between Experimental Fluid Dynamics (EFD) and Computational Fluid Dynamics (CFD).

Toru Shigemitsu is working as a Professor at Department of Mechanical Engineering of Tokushima University (Tokushima, Japan). He is now doing the research related to PIV measurement of a mini centrifugal pump and visualization of internal flow of the fluid machinery using a High-speed camera. Much energy is dedicated to the improvement of performance and high-performance design of the fluid machinery based on the internal flow clarified by the experimental techniques.

Hyoung-Ho Kim is a Professor in the School of Aerospace Engineering at Gyeongsang National University, Republic of Korea. He received his Ph.D. degree from Soongsil University. His research interests encompass biofluid dynamics, including hemodynamics, respiratory flows, and urinary system flows; turbomachinery, such as pumps and hydraulic turbines; and computational fluid dynamics (CFD), with an emphasis on advanced numerical modeling and simulation of complex fluid–structure interaction phenomena.

Hojin Ha is an Associate Professor in the Department of Mechanical and Biomedical Engineering at Kangwon National University, Republic of Korea. He received his B.S. and Ph.D. degrees in Mechanical Engineering from POSTECH. His research expertise lies in experimental fluid mechanics, Particle Image Velocimetry (PIV), and Computational Fluid Dynamics (CFD), with a primary focus on the optimization of fluid machinery. He is currently the lead for the establishment of the Hydropower Joint Research Center at Kangwon National University.

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