

**Organized Sessions**

**OS1: Fluid Machines for Irrigation and Urban Drainage Systems**

**OS2: Fluid Machines for Renewable Energy**

**OS3: Computational Fluid Dynamics for Analysis and Design of Fluid Machinery**

**OS4: Experiments and Flow Measurements for Fluid Machinery**

**OS5: General Sessions for Fluid Machinery**

**October 7, Tuesday Morning**

**9:30**

**Opening Ceremony** (Room: 409, 410)

**10:00**

**Plenary Lecture I** (Room: 409, 410)

Chair: Prof. Furukawa, A. (Kyushu Univ.)

Speaker: Prof. Shimizu, Y. (Mie Univ.)

**Present Development of Wind Power in Japan**

**11:00**

**Break**

**11:10**

**Plenary Lecture II** (Room: 409, 410)

Chair: Prof. Cao, S. (Tsinghua Univ.)

Speaker: Prof. Wu, Y. L. (Tsinghua Univ.)

**Experimental Study on Flow through Pump Suction Sumps**

**12:10**

**Lunch & Exhibition Time**

**13:20**

October 7, Tuesday Afternoon

13:20

<p><b>OS5-1</b> (Room: 411) Chair: Prof. Adachi, T. (Osaka Sangyo Univ.) <b>[50007] Bidirectional Cooling Fan for Motors</b> Roy, B., Kumar, P., Mallik, P., Prasad, T. V., Reddy, C. S., Srivatsava, P.V.R.  <b>[50001] Critical Assessment of Design Methodologies for Radial Tipped Centrifugal Fans/Blowers</b> Channiwala, S., Vibhakar, N., Patel, C. <b>[50023] Effects of Flow in the Volute Casing on the Performance of a Sirocco Fan</b> Adachi, T., Sugita, N.</p>	<p><b>OS3-1</b> (Room: 412) Chair: Dr. Goto, A. (Ebara Research) <b>[30010] A System -Based on CFD and Numerical Optimization- for Designing a Propeller Fan</b> Iwase, T., Sugimura, K., Tanno, T.  <b>[30021] Turbine Airfoil Optimization by Genetic Algorithm</b> Matsuo, A., Hirano, Y., Tsutsumi, M., Kondo, T.  <b>[30013] A Multi-objective Optimization Procedure for the Inverse Computation of Kaplan Turbine Runner</b> Peng, G.</p>	<p><b>OS4-1</b> (Room: 413) Chair: Prof. Mizuki, S. (Hosei Univ.) <b>[40003] The Effect of Zero Clearance on Internal Flow in a High Specific-Speed Diagonal Flow Fan</b> Shiomi, N., Kaneko, K., Nishimura, M., Setoguchi, T.  <b>[40019] Effect of Tip-Clearance on Performance in Ultra-Highly Loaded Turbine Cascade</b> Yamamoto, A., Kashiwa, K., Ohneda, N., Tsujita, H., Mizuki, S. <b>[40005] Study of Swept Blades in Axial Flow Compressor</b> Roy, B., Sivadas, P. M.</p>	<p><b>OS5-2</b> (Room: 414) Chair: Prof. Setoguchi, T. (Saga Univ.) <b>[50002] Experimental Study of the Sonic/Supersonic, Coaxial, Free, Jet with Annular Swirl Flow</b> Lee, K. H., Setoguchi, T., Matsuo, S., Kim, H. D. <b>[50012] Study of the Weak Shock Wave Discharged from the Exit of an Annular Duct</b> Lee, D. H., Kweon, Y. H., Kim, H. D., Aoki, T., Setoguchi, T. <b>[50015] A Study of the Supersonic Free Jet Discharging from a Petal Nozzle</b> Lee, J. H., Kim, H. D., Kim, J. B., Lim, C. M., Setoguchi, T.</p>
--	--	---	---

14:35

Break

14:55

<p><b>OS2-1</b> (Room: 411) Chair: Dr. Kawata, Y. (MHI) <b>[20008] Proposition of Gyro-Type Hydraulic Turbine Applicable to Shallow Stream (To Coexist with Natural Ecosystem in Hydroelectric Power Development)</b> Inagaki, A., Kanemoto, T. <b>[20011] Proposition of Runner Performances of Counter-Rotating Type Hydroelectric Unit</b> Tanaka, D., Kanemoto, T.  <b>[20018] Application Method of Runner with Splitter Blades for Improvement of Ancillary Services by Using Reversible Pump-turbine</b> Inagaki, M., Umeda, N., Miyagawa, K., Namba, T.  <b>[20021] A Method of Application for a Micro Hydraulic Turbine</b> Tsukamoto, T., Inagaki, M., Suzuki, A., Ishiguro, M., Yamato, S., Nishi, M. <b>[20006] Experimental Study on Water Turbine Characteristics of Darrieus Type Runner with Staggered Blade Arrangement</b> Matsuda, Y., Ikeda, M., Okuma, K., Furukawa, A., Watanabe, S.</p>	<p><b>OS3-2</b> (Room: 412) Chair: Prof. Kato, C. (Univ. Tokyo) <b>[30007] Computational and Experimental Studies on Stall Suppression in a Centrifugal Blower</b> Surana, T., Ishida, M., Ueki, H., Fukunaga, T.  <b>[30036] A Numerical Approach to Investigate the Volute Flow with Distorted Inlet Conditions</b> Wang, Q., Dai, R., Chen, K.-M.  <b>[30009] Virtual Operation of Fluid Machinery by a Vortex Element Method</b> Ojima, A., Kamemoto, K.  <b>[30012] Some Performance Predictions for Volute-type Mixed-flow Pump Using CFD</b> Inoue, Y., Kimura, S., Ono, H., Harada, I.  <b>[30020] Thrust Prediction in Screw-type Centrifugal Pump</b> Tatebayashi, Y., Tanaka, K., Kobayashi, T.</p>	<p><b>OS4-2</b> (Room: 413) Chair: Dr. Uranishi, K. (DMW Corp.) <b>[40002] Relationship between Pressure Fluctuation and Floating Condition of a Shaftless Centrifugal Pump Impeller</b> Uno, M., Kawashima, R., Ishihara, T., Aotani, I.  <b>[40011] What will Happen After the Impeller is Trimmed for a Commercial Centrifugal Oil Pump When Handling Viscous Oil</b> Li, W. G., Ye, Z. M., Su, F. Z., Wei, Y. T. <b>[40016] Turbulence Kinetic Energy and Dissipation Developing inside the Passage of an Unshrouded Centrifugal Impeller</b> Miyamoto, H., Ohba, H.  <b>[40030] Theoretical Head of Semi-Open Impeller</b> Kurokawa, J., Choi, Y.-D., Ishii, M., Matsui, J., Imamura, H. <b>[40004] Flow Conditions around Counter-Rotating Impellers with Superior Ability to Control Smartly Rotational Speeds</b> Oba, S., Kanemoto, T.</p>	<p><b>OS5-3</b> (Room: 414) Chair: Prof. Kamemoto, K. (Yokohama Nat. Univ.) <b>[50005] Development of a Controlled Diffusion Airfoil for a Variable-pitch Axial-flow Fan Application</b> Nishioka, T., Watanabe, M., Kuroda, S., Kozu, T., Kashiwabara, Y. <b>[50006] An Experimental Study of Vortex Shedding and Lock-in Characteristic for a Thin Cambered Blade</b> Zhu, B., Kamemoto, K. <b>[50014] Study of the Aerodynamic Characteristics of an Aerofoil in Accelerating and Decelerating Free Streams</b> Kim, H. D., Kim, T. H., Szwaba, R., Shon, M. H., Setoguchi, T. <b>[50016] Large Eddy Simulation of Swirling Flows in a Cyclone Separator</b> Matsuzaki, K., Kudo, Y., Munekata, M., Ohba, H.  <b>[50021] Experimental Study on Surge Inception in a Centrifugal Compressor</b> Tamaki, H., Nakao, H., Aizawa, T.</p>
---	--	---	---

17:00

Break

17:30

Reception Party (Restaurant "Raconter" on the first floor)

**October 8, Wednesday Morning**

9:30

**Plenary Lecture III** (Room: 409, 410)  
 Chair: Prof. Moon, Y. J. (Korea Univ.)  
 Speaker: Prof. Kim, K. Y. (Inha Univ.)  
**Design Optimization of Turbomachinery Using Three-Dimensional Navier-Stokes Analysis**

10:30

**Break**

10:45

<p><b>OS2-2</b> (Room: 411)                  Chair: Prof. Shimizu, Y. (Mie Univ.)  <b>[20026] The Potential of Low Wind Speed Wind Turbine Farm in Malaysia</b>                  Wahab, A. A., Fadhil, A. M.</p> <p><b>[20020] Wind Tunnel Investigation of Flow over Various Escarpment Shapes</b>                  Imamura, H., Tsumanuma, T., Kurokawa, J., Katsuchi, H.</p> <p><b>[20004] Aerodynamics and Performance Study of a V-Shaped Three Bladed Savonius Rotor</b>                  Islam, M. R., Islam, M. D., Firoz, M., Choudhury, O.F.M.M.I.</p>	<p><b>OS3-3</b> (Room: 412)                  Chair: Prof. Kato, C. (Univ. Tokyo)  <b>[30008] Simulation of Unsteady Flow with Combined Method of Finite Volume Method and Discrete Vortex Method</b>                  Hayashi, H., Sasaki, S., Kodama, Y.</p> <p><b>[30015] Overview of Aeroacoustic Analysis of Fan Noise</b>                  Jeon, W.-H.</p> <p><b>[30019] Performance and Aeroacoustic Noise Prediction of Variable Pitch Cross Flow Fans by Unsteady Viscous Flow Computations</b>                  Cho, Y., Moon, Y. J.</p>	<p><b>OS4-3</b> (Room: 413)                  Chair: Prof. Kanemoto, T. (Kyushu Inst. Tech.)  <b>[40013] A Study on Flow Characteristics of Water Pump Intake in a Pump Station by PIV</b>                  Choi, J. W., Kim, B. S., Kim, Y. T., Lee, Y. H.</p> <p><b>[40015] An Experimental Study of Flow around a Cross-Flow Impeller by PIV</b>                  Kimata, N., Okamoto, T., Funaki, J., Hirata, K.</p> <p><b>[40017] Discussion on Torque Estimation Method for Windmill with Particle Image Velocimetry</b>                  Murai, Y., Ishikawa, M., Ido, T., Yamamoto, F.</p>	<p><b>OS5-4</b> (Room: 414)                  Chair: Prof. Tsukamoto, H. (Kyushu Inst. Tech.)  <b>[50009] Development of Valve-less Micro-pump with an Asymmetric Micro-channel</b>                  Kidera, M., Miyazaki, K., Tsukamoto, H.</p> <p><b>[50010] Impeller Inlet Geometry for a Mini Turbo-pump (The Effect of Front Shroud and Blade Lean on Pump Performance)</b>                  Luo, X., Nishi, M., Yoshida, K., Miura, K.</p> <p><b>[50045] Experimental Research on Design of Circulating Loop of Canned Motor Pump</b>                  Kong, F., Chen, S., Yuan, S., Shi, W., Liu, J., Jiang, Q.</p>
--	---	---	---

12:00

**Lunch & Exhibition Time**

13:20

October 8, Wednesday Afternoon

13:20

<p><b>OS2-3</b> (Room: 411) Chair: Prof. Wahab, A. A. (Univ. Teknologi Malaysia) [20009] Aerodynamic Noise Simulation around a Wind Turbine Blade Using Compressible LES and Linearized Euler Equations Fleig, O., Iida, M., Suzuki, M., Arakawa, C. [20022] Three-Dimensional Flow Analysis around a Wind Turbine with Brimmed Diffuser Kim, S. H., Furukawa, M., Inoue, M., Ohya, Y. [20007] Field Measurement of Pressure Distribution on Rotating Blade of Horizontal Axis Wind Turbine Maeda, T., Kawabuchi, H., Shimizu, Y., Kamada, Y., Kato, A., Bruining, A., van Rooij, R.</p>	<p><b>OS3-4</b> (Room: 412) Chair: Dr. Goto, A. (Ebara Research) [30022] Numerical Analysis of 3D Internal Flow with Unstable Phenomena in a Centrifugal Pump Iino, M., Tanaka, K., Miyagawa, K., Okubo, T. [30031] The Performance Prediction of Centrifugal Pump with Diffuser Yang, J., Zhang, R., Wang, C., Mou, J. [30034] Centrifugal Fan Modeling and Numerical Experiment Cai, Z., Li, Z.</p>	<p><b>OS4-4</b> (Room: 413) Chair: Prof. Kurokawa, J. (Yokohama Nat. Univ.) [40010] Broad Band Noise Radiation from a Multi-Blade Sirocco Fan by the Wake Vortices in the Separated Shear Layer Sasaki, S., Hayashi, H., Kodama, Y. [40020] Experimental Investigation of Oscillatory Flow in a Circular Duct for High Reynolds Number Vijayakumar, K., Santhakumar, S. [40026] Study of Vibration Mechanism for Hydraulic Turbine Stay Vanes Miyagawa, K., Kawata, Y., Iwasaki, Y.</p>	<p><b>OS5-5</b> (Room: 414) Chair: Dr. Iino, T. (Hitachi) [50031] Investigation on the Solutions to Mechanical Seal Leakage of Side Cantilever Agitator by Magnetic Driver Li, D., Ma, X. [50032] Development of High-Pressure Combination Seal Li, X., Sheng, Y., Chen, Z., Huang, Y., Gao, Y. [50040] Development and Application of Combined Screw-floating Bushing Seal Wang, Y., Chen, R., Xia, X., Zhai, Y., Wang, H., Duan, X., Yang, H.</p>
--	---	---	---

14:35

Break

14:55

<p><b>OS2-4</b> (Room: 411) Chair: Prof. Kaneko, K. (Saga Univ.) [20001] The Effect of Rotor Geometry on the Performance of a Wells Turbine for Wave Energy Conversion Takao, M., Setoguchi, T., Kaneko, K., Thakker, A. [20002] Study of the Hysteretic Flow Characteristics of Biplane Wells Turbine Kim, T. H., Kinoue, Y., Setoguchi, T., Mohammad, M., Kaneko, K., Inoue, M. [20003] Hysteretic Characteristics in Deep Stall Condition of Wells Turbine Kinoue, Y., Setoguchi, T., Kim, T. H., Mohammad, M., Kaneko, K., Inoue, M. [20010] Prediction of Large Scale Wells Turbine Performance by CFD for Wave Power Generating System Suzuki, M., Arakawa, C., Setoguchi, T. [20014] Numerical Analysis of the Wells Turbine Having Hysteresis Characteristics Kim, Y. K., Kim, T. H., Lee, Y. W., Setoguchi, T.</p>	<p><b>OS3-5</b> (Room: 412) Chair: Matsui, J. (Yokohama Nat. Univ.) [30030] Numerical Simulation on Blade Erosion in Suspended Solid Particles Centrifugal Fans Ying J., Chen, L., Chen, H., Zhang, B., Su, X. [30002] Efficient Modeling of Small Sand Particle Motion and Erosion in Centrifugal Pumps Pan, Y., Nohmi, M., Goto, A., Sugiyama, K., Hattori, S. [30038] Numerical Analysis of 3-D Turbulent Flow in a Multiphase Rotodynamic Pump Impeller Yu, Z., Cao, S., Zhang, M., Tsukamoto, H. [30014] Refractory and Anti-corrosion Magnetic Pump Design and Its Performance in H<sub>2</sub> Recycling Test for Nuclear Heat Chemical IS Hydrogen Production Process Ishiyama, S. [30039] Investigation on Vertical Hydrodynamic Herringbone Grooved Journal Bearings Rondonuwu, C. C., Winoto, S. H.</p>	<p><b>OS4-5</b> (Room: 413) Chair: Prof. Uno, M. (Kyushu Kyoritsu Univ.) [40008] An Ultrasonic Pulsed Doppler Flowmeter for Measuring Pump Discharge Okamura, T., Yamada, M., Ono, S., Katakura, K., Kobayashi, M. [40009] Effect of Vortex Generator Jets with Rectangular Orifices of Different Aspect Ratios on Active Separation Control Yoshikawa, M., Hasegawa, H., Matsuuchi, K. [40027] Study on the Mechanism of High Pressure Pulse Jets Generating by Gas-Liquid Transient Yong, Q., Pu, J., Yang, Y. [20025]* Test and Research of Stability Control of Blast Furnace Top Pressure in a TRT Unit Yin, J., Zhang, B., Liu, L., Wang, D., Zhang, S., Shen, X., Li, P., Li, X.</p>	<p><b>OS5-6</b> (Room: 414) Chair: Dr. Okamura, T. (Hitachi Industries) [50004] Pump Station Vibration/Noise Prediction Technology and Related Problems Matsuda, M., Sase, T., Guo, S. [50019] New Method of Welding Repair for Hydro-Turbine Runner -Annealing of 13% Cr Cast Runner in Field- Aoyama, J., Hagiwara, H., Yamamoto, K., Satou, A., Kawakami, M. [50020] Development of Condition Based Maintenance Technology for Hydraulic Turbine by Analyzing Operation and Maintenance Data Fujii, T., Uno, M., Izuwara, T., Yamamoto, S. [50022] Cavity Flow Simulation Using Two-fluid Model Liu, S. H., Xu, Y., Wu, Y. L., Okamura, T. [50039] Phenomena on Tribo-Fatigue in Pivot-Copper Bushing Pairs of a Large Kaplan Turbine Ai, Y.-Z., Lu, J.-Y., Gao, W.-Z., Li, J.</p>
---	--	---	---

17:00

Break

18:00

Banquet ("Fukuoka San Palace"\*)

October 9, Thursday Morning

9:30

<p><b>OS1-1</b> (Room: 411)                  Chair: Dr. Yoda, H. (Hitachi Industries)                  Chair: Dr. Takeda, H. (DMW Corp.)  <b>[10001] Optimized Operation Theory and Its Application in Integrated Automation System of Pumping Station</b>                  Chen, H., Ma, Z., Yang, L.  <b>[10002] Introduction to Reverse Siphon Type Underground River Drainage System (The Metropolitan Area Outer Discharge Channel)</b>                  Uchida, Y., Suzuki, S.    <b>[10006] The Structure Analysis of the Tri-eccentric Butterfly Valve and Its Kinematics Research</b>                  Du, Z., Wu, J.    <b>[10004] Measurements on the Complex Pressure Fluctuations and Vibrations in a Large Capacity Drainage Pump Station</b>                  Guo, S., Maruta, Y., Okamoto, H., Kanno, H., Tano, M., Kubota, H., Sato, K.  <b>[10003] Reduction of Vortex-induced Vibration by Using Tripping Wires in a Pump-water-tunnel System</b>                  Okamoto, H., Guo, S., Kanno, H., Sato, K.  <b>[10005] Study on Hydraulic Design Method of Double-channel Submersible Sewage Pump Impeller</b>                  Liu, H., Yuan, S., Shi, W., Kong, F.</p>	<p><b>OS3-6</b> (Room: 412)                  Chair: Dr. Miyagawa, K. (MHI)  <b>[30011] Numerical Trial for Darrieus-type Ducted Turbine</b>                  Ishimatsu, K., Kage, K., Okubayashi, T.    <b>[30005] New Type Runner with Splitter Blades for 700m Class Head and Large Capacity Pump-Turbine -Design and Hydraulic Performance of Splitter Runner-</b>                  Enomoto, Y., Matsumoto, K., Tezuka, K., Kubota, K., Inagaki, M., Umeda, N.  <b>[30026] Numerical Simulation of the Unsteady Swirl Flow in an Elbow Draft Tube under Part Load Condition</b>                  Zhuge, W. L., Liu, G. L., Jiang, J., Fu, X. Q.  <b>[30004] CFD of Swirling Flow in Bent Draft Tube for Francis Turbine</b>                  Han, F., Kubota, T., Wang, L., Xiao, Y.    <b>[30003] CFD of Semi-Free Water Jet in Pelton Turbines</b>                  Kubota, T., Han, F., Kamiyama, T.    <b>[30024] Experimental and Numerical Studies on a Pump as a Turbine</b>                  Singh, P., Kshirsagar, J. T., Nestmann, F.</p>	<p><b>OS3-7</b> (Room: 413)                  Chair: Prof. Tanaka, K. (Kyushu Inst. Tech.)  <b>[30001] Computational Fluid Dynamics Simulation of Unsteady Evolvement of Vortices Flow in Cross Flow Fan</b>                  You, B., Wu, K.  <b>[30006] Simulation of Tip Leakage Flows and Their Effects in Axial Flow Fan Using Computational Fluid Dynamics</b>                  Wu, K., Elhadi, E.    <b>[30025] Behavior of Tip Vortex in a Propeller Fan Rotor</b>                  Kim, S. H., Furukawa, M., Inoue, M., Ohnishi, T., Yamamoto, J.  <b>[30027] Three-Dimensional Viscous Numerical Simulation of Tip Clearance Flow in Axial-Flow Pump</b>                  Chen, C., Yang, C., Song, W., Ji, Q., Xia, P.</p>	<p><b>OS5-7</b> (Room: 414)                  Chair: Prof. Ohba, H. (Kumamoto Univ.)  <b>[50003] Study on a Flowmeter with Wells Turbine for Bi-directional Airflow</b>                  Takao, M., Kametani, H., Setoguchi, T.    <b>[50011] Improved Design of Speedy Cutting Off Valve in TRT Based on TRIZ</b>                  Cao, G., Tan, R., Zhang, R.    <b>[50028] Development and Running Experience of Chinese FCC Hot Gas Expander</b>                  Lu, P., Ji, J., Yu, K., Yang, L.    <b>[50029] Development of Chinese 33 MW Large Scale FCC Hot Gas Expander</b>                  Ji, J., Lu, P., Ding, Q., Lin, Z., Huang, Y.    <b>[50030] Analysis of the Energy-Saving Methods for Equipments of Vapor-Compression Refrigeration</b>                  Chen, Z.-S., Hu, P., Cheng, W.-L.    <b>[50047] High Efficiency Compressor for Turbo-chiller (NART-Series)</b>                  Seki, W., Ueda, K., Masutani, J., Koga, J.</p>
---	--	--	---

12:00

**Official Lunch Time**  
**Closing Ceremony (Room: 409, 410)**

13:00

\* Paper 20025 was moved from OS2 to OS4-5, 8th October.  
 \*\* Fukuoka San Palace is joined to the Fukuoka International Congress Center by a walkway.