November 4 Tuesday 9:00 - 11:00

Speaker's Name is underlined.

	Session A-3 Thermal Barrier Coating	Session B-3 Internal Flows 1	Session C-3 Heat Transfer & Flow Transition	Session D-3 Micro Gas Turbine	Session F-3 Throughflow Modeling
	Chairpersons: Dr. Yoshiatsu Kojima (Hitachi Ltd.) Mr. Hideaki Kaneko (Mitsubishi Heavy Industries, Ltd.)	Chairpersons: Prof. Wolfgang Schröder (Aachen University, Germany) Prof. Makoto Yamamoto (Tokyo University of Science)	Chairpersons: Prof. Lee Langston (University of Connecticut, USA) Mr. Nobuaki Kizuka (Hitachi Ltd.)	Chairpersons: Prof. Terry Simon (University of Minnesota, USA) Dr. Toshiaki Tsuchiya (Tokyo Electric Power Company)	Chairpersons: Prof. Xiaofeng Sun (Beijing University of Aeronautics and Astronautics, P.R.China)
9:00	TS-129 *Recent Developments in the Field of Plasma-Sprayed Thermal Barrier Coatings* R. Vaßen (Institut für Werkstoffe und Verfahren der Energietechnik (IWV 1), Germany), J. -E.. Döring, M. Dietrich, H. Lehmann, D. Stöver	TS-031 *The Simulation of 3D Flows in Blade Rows and Exhaust Systems using a Multiblock Navier-Strokes Solver* J. Liu (Chinese Academy of Sciences, P.R.China)	TS-066 *Construction of Cooling Effectiveness Database Applied to the Virtual Gas Turbine in HTM21 Project* M. Matsushita (Japan Aerospace Exploration Agency), T. Yoshida	TS-115 *The Development of 300kW Class High Efficiency Micro Gas Turbine "RGT3R"* R. Shibata (Niigata Power Systems Co., Ltd.), Y. Nakayama, S. Machiya, K. Kobayashi	TS-050 *Theory and Design of the Regenerative Flow Compressor* A. Engeda (Michigan State University, USA), M. Raheel
9:30	TS-130 *Development and Evaluation of Thermal Barrier Coatings for the 1700 ℃-class Closed-Cycle Gas Turbine Corresponding to CO2 Collection* M. Okada (Central Research Institute of Electric Power Industry), M. Nakayama, T. Torigoe, T. Kameda, H. Arikawa, T. Hisamatsu	TS-032 *3D Configuration of Shock Wave in Transonic Centrifugal Impeller Using 2D-PIV* M. Hojo (Japan Aerospace Exploration Agency), H. Hayami, S. Aramaki	TS-068 *Effects of Periodic Wake Passing Upon Bypass Transition of Blade Boundary Layer and Unsteady Loss* E. Koyabu (Sophia University) , K. Funazaki, M. Kimura	TS-116 *Microturbocompressor Fuel Cell - Based Plants for Hybrid Engine Applications* A. Soudarev (Boyko Research-Engineering "Ceramic Heat Engines" Center (NIZ KTD), Russia), A. Souryaninov, A. Molchanov, P. Arvan, L. Lelait	TS-051 *Flow in a High Speed Compressor Due to Axisymmetric Tip Clearance* H. S. Joo (Seoul National University, Korea), S. J. Song
10:00	TS-131 *Thermal Conductivity and Sintering Behavior of Hafnia-based Thermal Barrier Coating Using EB-PVD* K. Matsumoto (Toshiba Corporation), Y. Itoh, Y. Ishiwata	TS-033 *Numerical Study on Blade Roughness Effect on the Performance of Turbomachines* S. H. Kang (Seoul National University, Korea), Y. S. Kang, K. H. Han	TS-069 *Studies on Effects of Periodic Wake Passing upon a Blade Leading Edge Separation Bubble: Transitional Behaviors of Separated Boundary Layer* K. Funazaki (Iwate University), K. Yamada, Y. Kato	TS-117 *Combined Thermal Efficiency Evaluation and Dynamic Characteristics of Micro Gas Turbine Centered Co-generation System* S. Kaneko (The University of Tokyo), G. Fukuyama, T. Watanabe	TS-052 *The Reduced Order Through-Flow Modeling of Axial Turbomachinery* O. Dubitsky (Concepts NREC, USA), A. Wiedermann, T. Nakano, J. Perera
				TS-113 *Development of a Small Jet Engine Test System for University Education* M. Tanabe (Nihon University), T. Kuwahara, K. Aoki	

November 4 Tuesday 14:50 - 16:50

	Organized Session 1 Ultra Micro Gas Turbine 1	Session B-4 Internal Flows 2	Session C-4 Turbulence Model	Session D-4 Combustor Development	Session E-4 Advanced Material	Session F-4 Diagnostics, Control & Measurement 1
	Chairpersons: Prof. Yves Ribaud (ONERA, France) Prof. Shimpei Mizuki (Housei University)	Chairpersons: Prof. Abraham Engeda (Michigan State University, USA) Dr. Osamu Nozaki (Japan Aerospace Exploration Agency)	Chairpersons: Dr. Robert Kiml (Tokyo University of A&T) Dr. Yoshitaka Fukuyama (Japan Aerospace Exploration Agency)	Chairpersons: Dr. George K. Vedeshkin (Central Institute of Aviation Motor, Russia) Dr. Takashi Tamaru (Central Research Institute of Electric Power Industry)	Chairpersons: Dr. Hiroshi Harada (National Institute for Materials Science)	Chairpersons: Mr. Masanori Endoh (Japan Aerospace Exploration Agency)
14:50	OS-101 *Aerothermal Optimization of Micro-gasturbine Compressor Including Heat Transfer* R. A. Van den Braembussche (von Karman Institute for Fluid Dynamics, Belgium), A. A. Işlek, Z. Alsalihi	TS-027 *Numerical Simulation of Stall Suppression by Micro Air Injection in a Low-Speed Axial Compressor* G. Xu (Chinese Academy of Sciences, P.R.China), H. Zhang, C. Nie, W. Huang, J. Chen	TS-059 *The SST Turbulence Model with Improved Wall Treatment for Heat Transfer Predictions in Gas Turbines* F. Menter (ANSYS CFX, Germany), J. Carregal Ferreira, T. Esch, B. Konno	TS-149 *The Effects of Specifications of a Fuel Supply Unit with a New Concept for a Dry Low NOx Gas Turbine Combustor* T. Wakabayashi (OSAKA GAS CO., LTD.), K. Moriya, S. Ito, S. Koga, K. Shimodaira, Y. Kurosawa, K. Suzuki, O. Kawaguchi	TS-126 Low Cost Manufacturing Process of Titanium Matrix Composite Ring A. Kono (Mitsubishi Heavy Industries, Ltd.), T. Yamada, M. Hirota, Y. Kawachi	TS-001 *Fault Diagnosis System for an Industrial Gas Turbine by Means of Neural Networks* J. Arriagada (Lund University, Sweden), M. Genrup, A. Loberg, M. Assadi
15:20	OS-102 *Conceptual Design of Recuperator for Ultramicro Gas Turbine* T. Nagasaki (Tokyo Institute of Technology), R. Tokue, S. Kashima, Y. Ito	TS-028 *Numerical Investigation of two 3-D Designed Profiles in a 2-stage Turbine with Shrouded Bladings* D. E. Bohn (Aachen University, Germary), I. Balkowski, C. Tümmers, M. Sell	TS-060 *Large-Eddy Simulation of Film Cooling* X. Guo (Aachen University, Germany), W. Schröder, M. Meinke	TS-150 *The Development of LPP Combustor for ESPR* T. Oda (Kawasaki Heavy Industries, Ltd.), Y. Kinoshita, M. Kobayashi, H. Ninomiya, H. Kimura, S. Hayashi, H. Yamada, K. Shimodaira	TS-127 *Development of Turbine Disk Materials for Aircraft Engines* S. Takahashi (Ishikawajima-Harima Heavy Industries Co., Ltd.), S. Nishikiori, M. Hosoya, M. Arai, M. Takekawa, K. Tahara	TS-002 *A Study on Intelligent Performance Diagnostics of a Gas Turbine Engine Using Neural Networks* C. D. Kong (Chosun University, Korea), J. Y. Ki , M. C. Kang, S. H. Kho
15:50	OS-103 *Towards the Development of Finger-Top Gas Turbines* E. Matsuo (The University of Tokyo,), H. Yoshiki, T. Nagashima, C. Kato	TS-029 *Aerodynamic Blade Optimal Design of Turbomachinery* R. S. Amano (University of Wisconsin-Milwaukee, USA), C. Xu	TS-061 *Second-moment Turbulence Closure in Prediction of Channel Flow with System Rotation* M. Ichikawa (Keio University), S. Obi, S. Masuda	TS-151 *Development of Ultra Low-NOx Combustor Technology for Next Generation Superso ic Transport Engines in ESPR Project* S. Hayashi (Japan Aerospace Exploration Agency), H. Yamada, K. Shimodaira, S. Yoshida, T. Oda, H. Ninomiya, B. Jones	TS-125 *Technology Research on High Efficiency Gas Turbines Utilizing Melt-Growth Composite Ceramics* K. Kobayashi (Engineering Association for High Performance Gas Turbines(HPGT)), Y. Waku, N. Nakagawa, S. Yokoi	TS-003 *Neural Networks for the Study of Gas Turbine Engines Air System* G. Torella (Italian Airforce Academy, Italy), F. Gamma , G. Palmesano
		TS-030 *Numerical Analysis of Tip Leakage Flow Field in a Transonic Axial Compressor Rotor* K. Yamada (Iwate University), M. Furukawa, M. Inoue, K. Funazaki	TS-062 *Large-Eddy Simulation of Trailing-Edge Blowing* J. Krömer (Rheinisch-Westfälische Hochschule Aachen ,Germany), M. Meinke, W. Schröder	TS-152 *Study on Pre-vaporized and Premixed Gas Turbine Combustion Technology for High Carbon Ratio Fuel (HCRF)* Y. Marutani (Ishikawajima-Harima Heavy Industries Co, Ltd.), T. Fujimori, D. Riechelmann, T. Mizutani, M. Mikami	TS-128 *Research and Development of Niobium-Based Superalloys for Hot Components of Gas Turbines* R. Tanaka (Japan Ultra-high Temperature Materials Research Institute(JUTEMI)), A. Kasama, M. Fujikura, I. Iwanaga, H. Tanaka, Y. Matsumura	TS-004 *Statistical Analyses to Improve Gas Turbine Diagnostics Reliability* R. Bettocchi (University of Ferrara, Italy), M. Pinelli, P. R. Spina, M. Venturini

November 5 Wednesday 9:00 - 11:30

Speaker's Name is underlined.

	Organized Session 2	Session B-5	Session C-5	Session D-5	Session E-5	Session F-5
	Ultra Micro Gas Turbine 2	Internal Flows 3	Ribbed Passage Flow & Heat Transfer	Low Emission Combustor	Rotor Dynamics & Bearing	Diagnostics, Control & Measurement 2
	Chairpersons: Prof. Rene Van den Braembussch (von Karman Institute, Belgium) Dr. Eito Matsuo (The University of Tokyo)	Chairpersons: Mr. Patrick Avran (Boyko Research-Engineering, France) Prof. Ken-ichi Funazaki (Iwate University)	Chairpersons: Prof. Ryoichi S. Amano (University of Wisconsin-Milwaukee, USA) Prof. Takanari Okamura (Hachinohe Institute of Technology)	Chairpersons: Prof. Francesco Martelli (University of Florence, Italy) Mr. Mitsuru Inada (Mitsubishi Heavy Industries,Ltd.)	Chairpersons: Dr. Yasutomo Kaneko (Mitsubishi Heavy Industries,Ltd.) Mr. Kouichi Namba (Mitsui Engineering & Shipbuilding Co., Ltd.)	Chairpersons: Prof. Giovanni Torella (Italian Airforce Academy, Italy) Dr. Masahiro Kurosaki (Ishikawajima-Harima Heavy Industries Co.,Ltd.)
9:00	OS-104 *Numerical Analysis of 2.5 Dimensional Geometry Turbine Performance* N. Watanabe (The University of Tokyo), S. Teramoto, T. Nagashima	TS-114 *Development of a New High-Speed Multi-Stage Compressor Facility ; Experimental Set Up* D. Lippett (Cranfield University, United Kingdom), P. Timmis, P. Ivey, D. Bailey, G. Woollatt	TS-078 *Rib-Induced Secondary Flow Structures inside a High Aspect Ratio Trapezoidal Channel - Application to Cooling of Gas Turbine Blade Trailing Edge -* R. Kiml (Tokyo University of A&T), S. Mochizuki, A. Murata, M. Sulitka	TS-139 *Intensification of Kinetic Combustion Performance in Hydrocarbon Fuels When the Oxidizing Conversion Products are Used* V. V. Azatyan (Russian Academy of Sciences, Russia), G. K. Vedeshkin, E. D. Sverdlov	TS-017 *Experimental Invesigation of 150 mm Diameter Large Hybrid Foil/Magnetic Bearing* H. Heshmat (Mohawk Innovative Technology, Inc., USA), D. S. Xu	TS-005 *Detection and Prediction of the Performance Deterioration of a Turbofan Engine* L. Marinai (Cranfield University, United Kingdom), R. Singh, B. Curnock, D. Probert
9:30	OS-105 *Some Aerodynamic Performances of Small Size Compressor and Turbine Stages* I.V. Gaydamaka (Central Institute of Aviation Motor, Russia), A.V. Efimov, M.Ja. Ivanov, O.I. Ivanov, R.Z. Nigmatullin, N.I. Ogarko	TS-023 *Experimental Investigation on Shock Wave and Turbulent Boundary Layer Interactions in a Square Duct at Mach 2 and 4* H. Sugiyama (Muroran Institute of Technology), K. Fukuda, K. Mizobata, L. Sun, R. Minato	TS-079 *PIV Flow Field Measurements in a Rotating U-Shaped Channel. Comparison of smooth and 90°rib-roughened walls.* Y. Servouze (Office National d'Etudes et de Recherches Aérospatiales, France), C. Brossard, P. Gicquel	TS-141 *Conical Flameholder with Pilot Burner for Lean Premixed Combustion* T. Yamamoto (Japan Aerospace Exploration Agency), Y. Kurosawa, S. Tachibana, S. Yoshida, K. Shimodaira, K. Suzuki	TS-018 *Static and Dynamic Characteristics of High Speed Multilobe Journal Bearings* S. Strzelecki (Technical University of Lodz, Poland)	TS-006 *Performance Analysis and Diagnostics of a Small Gas Turbine* J. Yin (Cranfield University, United Kingdom), M. S. Li, W. M. Huang
10:00	OS-106 *Structural Analysis of Rotating Parts of an Ultra-micro Gas Turbine* M. Ishihama (Kanagawa Institute of Technology), Y. Sakai, K. Matsuzuki , T. Hikone	TS-024 *Computation of the Flow in a H.P.Compressor Drive Cone Cavity* K. M. Tham (University of Sussex, United Kingdom), C. A. Long, A. B. Turner, J. A. Dixon	TS-080 *Heat Transfer Characteristic of a Triangular Channel with Turbulence Promoter* K. Takeishi (Mitsubishi Heavy Industries Ltd.), T. Kitamura, M. Matsuura, K, Shimizu	TS-142 *Injection of Lean Mixtures into Hot Burned Gas for Maintaining Low-NOx Emissions over an Extended Range of Fuel-Air Ratios in Prevaporized Combustion* N. Aida (Hosei University), T. Nishijima, H. Yamada, S. Hayashi, T. Kawakami	TS-019 *Prototyping of Radial and Thrust Air Bearing for Micro Gas Turbine* S Kitazawa (The University of Tokyo), S. Kaneko, T. Watanabe	TS-007 *A Study on Applying Nonlinear Control to Gas Turbine Systems* M. Ashikaga (Kawasaki Heavy Industries, Ltd.), Y. Kohno, M. Higashi, K. Nagai , M. Ryu
10:30	OS-107 *Prototyping of Small-sized Two-dimensional Radial Turbines* K. Matsuura (The University of Tokyo), C. Kato, H. Yoshiki, E. Matsuo, H. Ikeda, K. Nishimura, R. Sapkota	TS-025 Experimental and Numerical Investigation of Sealing Performance of Turbine Rim Seals K. Teramachi (Ishikawajima-Harima Heavy Industries Co., Ltd.), M. Hamane, T. Manabe, N. Yanagidani	TS-081 *Effects of Rotation Speed on Heat Transfer in a 90°-Rib Roughened Two-Pass Duct* Y. Y. Kim (Yonsei University, Korea), K. M. Kim, D. H. Rhee, H. H. Cho	TS-135 *Development of Low NOx Diffusive Burner Applying Spiral Flame Combustion* N. Hiromitsu (Ishikawajima Harima Heavy Industries Co., Ltd.), J. Hosoi, H. Toh , O. Kawaguchi	TS-015 *Experimental Investigation into the Behavior of Misaligned Shafts on Balanced Rotors* G. Hanish (Northumbria University, United Kingdom), P. S. Leung, P. K. Datta	TS-153 *The Development of Operation System of a Liquid-fueled Micro Gas Turbine* Y. Mori (The University of Tokyo), S. Kaneko, T. Watanabe
11:00		TS-026 *CFD Studies of Industrial Gas Turbine Exhaust Diffusers* K. Ishizaka (Mitsubishi Heavy Industries Ltd.), S. Wakazono , M. Yuri , R. Takahashi	TS-082 *The Effects of Oblique Discrete Rib Arrangement on Heat Transfer Performance of a Square Duct* K. Tatsumi (Kyoto University), H. Iwai, K. Suzuki	TS-136 *Characteristics of Low NOx Diffusion Combustion with Strong Swirl Flow* J. Yajima (Keio University), T. Hasegawa, O. Kawaguchi, N. Hiromitsu, J. Hosoi, H. Toh	TS-016 *Dynamics of Asymmetric Rotors using Solid Models* J. S. Rao (Quality Engineering and Software Technologies, India), R. Streenivas	TS-008 *Numerical Correction of Pyrometry Data from Gas Turbines* J. Nickel (Technical University Berlin, Germany), H. Pucher, M. Lüdtke

November 5 Wednesday 14:10 - 15:40

	Organized Session 3	Session B-6	Session C-6	Session D-6	Session E-6
	Ultra Micro Gas Turbine 3	Development & Verification of CFD codes	Unsteady Flow & Noise 2	Conjugate Heat Transfer Analysis	Performance Analysis of Gas Turbines: Intake Air Humidifying & Filtration
	Chairpersons: Prof. Michael J. Ivanov (Central Institute of Aviation Motor, Russia) Prof. Chisachi Kato (The University of Tokyo)	Chairpersons: Dr. Hartmut Krain (DLR, Germany)	Chairpersons: Dr. Victor I. Mileshin (CIAM, Russia) Prof. Nobuhiko Yamasaki (Kyushu University)	Chairpersons: Dr. Mike Wilson (University of Bath, UK)	Chairpersons: Prof. Wei Wang (Chinese Academy of Sciences, P.R.China) Mr. Eiichi Koda (Central Research Institute of Electric Power Industry)
14:10	OS-108 *Concepts and Combustion Characteristics of a n Ultra-micro and a Micro Combustor* S. Yuasa (Tokyo Metropolitan Institute of Technology), K. Oshimi, M. Uehara	TS-020 *The Experience of CFD Calculations for Flow Analysis in Centrifugal Compressor Stages* Y. B. Galerkin (TU Saint-Petersburg, Russia), V. P. Mitrofanov, A. Y. Prokofiev	TS-056 *An Experimental Study on Unsteady Flow Behaviors in an Axial-Flow Turbine* S. Kasuga (Tokyo Denki University), A. Yamamoto, T. Miyachi, T. Okaniwa	TS-083 *Conjugate Heat Transfer Analysis of a Test Configuration for a Film-cooled Blade* K. Kusterer (Aachen University, Germany), D. E. Bohn , T. Sugimoto, R. Tanaka	TS-090 *A Study of Performance on Advanced Humid Air Turbine Systems* S. Higuchi (Hitachi, Ltd.), S. Hatamiya, N. Seiki, S. Marushima
14:40	OS-109 *Internal Heat Mixing and External Heat Losses in an Ultra Micro Turbine* Y. Ribaud (ONERA, France)	TS-021 *Numerical Prediction of Humid Effect to Transonic Flows in Turbomachinery* Y. Sasao (Tohoku University), S. Yamamoto	TS-057 *Wake Decay within the Stator Vane in a High-Speed Axial-Flow Compressor* R. Nohara (Ishikawajima-Harima Heavy Industries Co.,Ltd.), K. Imanari, I. Fujii, Y. Ooba	TS-084 *Numerical Parametric Study on Full Coverage Cooled Multi-Layer Plates* D. E. Bohn (Aachen University, Germany), N. Moritz	TS-091 *High Fogging Tests and Performance Model for High Fogging* J. Hoffmann (Alstom (Schweiz) AG, Switzerland), C. Ojo
15:10	OS-110 *Performance of a Micro-scale Radial-Flow Compressor Impeller Made of Silicon Nitride* J. P. Johnston (Stanford University, USA), S. Kang, T. Arima, M. Matsunaga, H. Tsuru, F. B. Prinz	TS-022 *High Accuracy Multigrid Method of the Unsteady Convection Diffusion Equation and Calculations of Heat and Fluid Flow* W. Wu (The University of Shanghai for Science and Technology, P.R.China) , Y. Ge	TS-058 *Effects of Airfoil Clocking on Aero-performance and Unsteady Blade Loading in a High-Speed Axial Compressor* D. Kato (Ishikawajima-Harima Heavy Industries Co., Ltd.), K. Imanari	TS-085 *Conjugate Simulations of Flow and Heat Conduction for Turbine Cooling* T. Yamane (Japan Aerospace Exploration Agency), F. Mimura, T. Yoshida, S. Yamawaki, C. Nakamata, R. Imai	TS-092 *Outstanding Operational Behavior of Taylor-Made Nonwovens Filters for Intake Air Filtration of Gas Turbines* M. Schmidt (Freudenberg & Vilene Nonwovens (Suzhou) Co., Ltd., P.R.China), S. Berbner, A. Klink, M. Waldenmaier, R. Schulz

November 6 Thursday 9:00 - 11:00

Speaker's Name is underlined.

	Organized Session 4	Session B-7	Session C-7	Session D-7	Session E-7	Session F-7
	Marine Gas Turbines & Turbocharger	**Surge/Stall 1**	**Industrial Gas Turbine & Power Plant 1**	**Impingement & Film Cooling**	**Combustor Design**	**Performance Analysis of Gas Turbines & New Systems**
	Chairpersons: Mr. Katsuhide Hiraoka (National Maritime Research Institute) Mr. Masatoshi Chiba (Ishikawajima-Harima Heavy Industries Co.,Ltd.)	Chairpersons: Prof. Frans A.E. Breugelmans (von Karman Institute, Belgium) Prof. Yutaka Ohta (Waseda University)	Chairpersons: Mr. Masafumi Fukuda (Toshiba Corporation) Mr.Nobuo Doi (Mitsui Engineering & Shipbuilding Co., Ltd.)	Chairpersons: Dr. Boris Kurmanov (ALSTOM Power Uniturbo, Russia) Dr. Toyoaki Yoshida (Japan Aerospace Exploration Agency)	Chairpersons: Dr. Shigeru Hayashi (Japan Aerospace Exploration Agency) Dr. Hidemi Toh (Ishikawajima-Harima Heavy Industries Co.,Ltd.)	Chairpersons: Dr. Juergen Hoffmann (Alstom (Schweiz) AG, Switzerland) Dr. Hideto Moritsuka (Central Research Institute of Electric Power Industry)
9:00	OS-201 *Turbocharger Technology for Personal Water Craft* Y. Matsuyama (Ishikawajimaharima Heavy Industries CO., LTD.), H. Furukawa, T. Mineta, T. Fukuda	TS-037 *A Stability Model for Transonic Axial Compressors* W. Yu (Beijing University of Aeronautics and Astronautics, P.R.China), X. Sun	TS-098 *High-efficiency Gas Turbines Operating in Intermediate Duty* B. Becker (SIEMENS POWER GENERATION, Germany), V. Thien	TS-074 *Jet Impingement onto a Dimpled Surface with Different Crossflow Schemes* K. Kanokjaruvijit (Imperial College London, United Kingdom), R. F. Martinez-Botas	TS-143 *Investigation of Cooling Structure with MGC Material for a High Temperature Gas Turbine Combustor* T. Hagari (Kawasaki Heavy Industries, Ltd.), K. Ishida, Y. Kinoshita	TS-086 *A Comparative Investigation of Reheat in Gas Turbine Cycles* K. Sarabchi (University of Tabriz, Iran)
9:30	OS-202 *Research and Development of Gas Turbine for Next-Generation Marine Propulsion System (Super Marine Gas Turbine)* M. Arai (Technological Research Association of Super Marine Gas Turbine), T. Sugimoto, K. Imai ,H. Miyaji, K. Nakanishi, Y. Hamachi	TS-038 *Prediction and Active Control of Surge Inception of a Centrifugal Compressor* N. Hagino (Kanagawa Institute of Technology), K. Uda, Y. Kashiwabara	TS-099 *Modernization and Upgrade Programs for Mitsubishi Heavy-duty Gas Turbines* K. Watanabe (Mitsubishi Heavy Industries, Ltd.), H. Arimura, K. Akagi, H. Sakuma	TS-075 *Enhanced Impingement Heat Transfer: Comparison of Co-flow and Cross-flow with Rib Turbulators* G. E. Andrews (The University of Leeds, United Kingdom), R.A.A. Abdul Hussain , M. C. Mkpadi	TS-144 *Effect of Primary Equivalence Ratio on Reducing both Fuel-NOx and Thermal-NOx Emissions of the Gas Turbine Combustor for Oxygen-blown IGCC with Hot/Dry Syngas Cleanup* T. Hasegawa (Central Research Institute of Electric Power Industry), M. Sato	TS-087 *A Novel LNG and Oxygen Stoichiometric Combustion Cycle without CO_2 Emission* W. Wang (Chinese Academy of Sciences, P.R.China), R. Cai, N. Zhang, H. Jin
10:00	OS-203 *The WR-21 Intercooled Recuperated Gas Turbine Engine- Integration Into Future Warships* C. R. English (Royal Navy, United Kingdom)	TS-039 *The Measurements of Unsteady Flow Fields in an Axial Flow Fan under Stalled Condition* K. H. Kim (Korea Institute of Science and Technology, Korea) , Y. H. Shin, C. S. Kang	TS-100 *Development and In-house Shop Load Test Results of M701G2 Gas Turbine* A. Maekawa (Mitsubishi Heavy Industries, LTD.), R. Magoshi, Y. Iwasaki	TS-076 *Heat Transfer in Impingement/Effussion Cooling System with Rib Turbulators* Y. W. Nam (Yonsei University, Korea), D. H. Rhee, H. H. Cho	TS-145 *Numerical/Experimental Methodology for the Retrofitting of Combustion Chambers for Gas Turbines* F. Martelli (The University of Florence, Italy), G. Riccio, P. Adami, G. Benelli, G. Tanzini	TS-089 *Off-Design Analysis of the GRAZ Cycle Performance* A. Miller (Warsaw University of Technology, Poland), J. Lewandowski, K. Badyda, S. Kiryk, J. Milewski, J. Hama, N. Iki
10:30	OS-204 *Rolls-Royce MT30 Design, Certification, Launch and Growth* S. Wilmshurst (Rolls-Royce plc, United Kingdom)	TS-040 *Development of a Surge Prediction System for Multi Stage Axial Compressors* H. Hoenen (RWTH Aachen University, Germany), T. Arnold		TS-077 *Experimental Investigation on Heat Transfer and Film Cooling of High Loaded Transonic Turbine Vanes and Blades* R. Nogami (Mitsubishi Heavy Industries, LTD.), K. Shimizu, K. Takeishi, T. Kitamura	TS-134 *Numerical Prediction of Turbulent Combustion Flows in Staged Combustor Using LES and Extended G-Equation* T. Tominaga (The University of Tokyo), Y. Itoh, N. Taniguchi, T. Kobayashi, T. Hagari, Y. Nonaka	

November 6 Thursday 13:30 - 15:00

	Session A-8	Session B-8	Session C-8	Session D-8	Session E-8	Session F-8
	Force/Vibration	**Surge/Stall 2**	**Industrial Gas Turbine & Power Plant 2**	**Flows in Rotating or Bended Duct**	**Optimization & Inverse Method**	**Performance Analytic Modellings & Tool**
	Chairpersons: Dr. Herwart T. Hoenen (RWTH Aachen University, Germany) Dr. Dai Kato (Ishikawajima-Harima Heavy Industries Co.,Ltd.)	Chairpersons: Prof. Yasushige Kashiwabara (Kanagawa Institute of Technology)	Chairpersons: Dr. Bernard Becker (SIEMENS POWER GENERATION, Germany) Dr. Shinya Marushima (Hitachi Ltd.)	Chairpersons: Prof. Dieter Bohn (Aachen University, Germany) Dr. Kenichiro Takeishi (Mitsubishi Heavy Industries,Ltd.)	Chairpersons: Dr. David C. Wisler (GE Aircraft Engines, USA) Dr. Hidekazu Kodama (Ishikawajima-Harima Heavy Industries Co.,Ltd.)	Chairpersons: Mr. Stewart Wilmshurst (Rolls-Royce plc, UK) Dr. Tadaharu Kishibe (Hitachi Ltd.)
13:30	TS-053 *Study on Blade Forced Vibration Response of Radial Inflow Turbine* K. Nakano (Ishikawajima-Harima Heavy Industries Co. Ltd), H. Hattori, Y. Hirata	TS-044 *Early Pre-stall Investigation by Sensitive Stall Warning Technique* N. Tahara (Ishikawajima-Harima Heavy Industries Co.,Ltd.), M. Kurosaki , Y. Ohta , E. Outa , H. Shinohara	TS-101 *Repowering of Lowshan Power Plant* M. R. Shahnazari (Niroo Research Institute, Iran), D. Foroughi, H. Fakharian	TS-063 *Pressure Loss Characteristics in Rotating Coolant Passages of Gas Turbine (Effect of Inlet Flow Angle in Intermediate Shaft)* H. Matsuda (TOSHIBA Corporation), F. Otomo, A. Inomata, K. Kitayama, Y. Fukuyama	TS-034 *New Quasi-3D Inverse Navier-Stokes Based Method Used to Design Highly Loaded Axial Compressor Stages* V. I. Mileshin (Central Institute of Aviation Motors, Russia), S. K. Shchipin, A. N. Startsev	TS-093 *Thermodynamic Table for Performance Calculations in Gas Turbine Engine* M. Iwai (Shenyang Institute of Aeronautical Engineering, China)
14:00	TS-054 *Euler/N-S Analysis of Linear Unsteady Aerodynamic Forces on Vibrating Annular Cascade* T. Nagasaki (Kyushu University), N. Yamasaki	TS-045 *Experimental Investigation of Rotating Stall Inception in Axial Flow Fans* S.K.Sane (Indian Institute of Technology Bombay, India), D. Sekhar, N. V. Patil, P. Tagade	TS-102 *Gas Turbine Based Power Plants Repowering Reduces Emissions and Increase Efficiency of Existing Plants while Re-utilising Available Assets* H. -R. Schenk (ALSTOM), G. Ehren, Yu TatMing	TS-064 *Effects of Swirl and Flow Rate on the Flow and Heat Transfer in a Pre-swirl Rotating-disc System* M. Farzaneh-Gord (University of Bath, United Kingdom), M. Wilson, J. M. Owen	TS-035 *Geometry Optimization of Turbine Blade with Surface Injection* T. Nagumo (Tokyo University of Science), K. Toda, M. Yamamoto	TS-094 *Low Bypass Ratio Turbofan Performance Modelling with Fan Radial Flow Profiles* M. S. Li (Cranfield University, United Kingdom), J. F. Yin, B. Curnock
14:30	TS-055 *Numerical Analysis of Active Cascade Flutter Control with Smart Structure* J. Kazawa (The University of Tokyo), T. Watanabe	TS-046 *Unsteady Phenomena during Transient Process in Radial Vanelss Diffuser* N. Hayashi (Chiba Institute of Technology), T. Tagawa, M. Koyama, I. Ariga, M. Sano	TS-103 *Design for F Class Blast Furnace Gas Firing 300 MW Gas Turbine Combined Cycle Plant* T. Komori (Mitsubishi Heavy Industries, Ltd.), H. Hara, H. Arimura, Y. Kitauchi	TS-065 *Predictions of a Turbulent Flow Inside a Sharp U-Curve Duct for a Turbine Blade Cooling Passage* R. S. Amano (University of Wisconsin-Milwaukee, USA), B. Song	TS-036 *The Development of a Genetic Algorithm Code for Secondary Flow Injection Optimization in Axial Turbines* C. F. F. Favaretto (Iwate University), K. Funazaki, T. Tanuma	TS-095 *An Improved Analytic Model to Predict Fouling Phenomena in the Axial Compressor of Gas Turbine Engines* T. W. Song (Seoul National University, Korea), J. L. Sohn, T. S. Kim, J. H. Kim, S. T. Ro

5. GENERAL INFORMATION

5.1 Language

The official language of the Congress is English. English-Japanese interpretation will not be provided in any of the sessions.

5.2 Registration & Information Desks

Congress Registration and Information Desks will be open at the times and places indicated below:

Nov. 2 (Sun) 16:00–18:00

Nov. 3 (Mon) – 6 (Thu) 9:00–17:00

Tower Hall Funabori (Edogawaku Sohgoh Kumin Hall), 2F

5.3 Information for Speakers and Chairpersons

・Session Reception Desk

The Session Reception Desk will be set up at the same location as the Congress Registration Desk at the entrance of the Congress site.

・Bulletin Boards

The latest information on sessions is available on Bulletin Boards near the Session Reception Desk. Speakers and chairpersons are requested to check the boards.

・Speaker's Meeting

There will be a Speaker's Meeting immediately before each Technical and Organized Session in the Speaker's Meeting Room (Room No. 406・407). Speakers and chairpersons are kindly requested to attend the Meeting.

・Report on Arrival

Speakers and chairpersons are requested to report their arrival to the Session Reception Desk by submitting a "Speaker's Arrival Notice" or "Chairperson's Arrival Notice" no later than 20 minutes prior to the start of the speaker's Meeting.

・Allocation on Presentation

About 30 minutes are allotted for each paper, 20 minutes for presentation and 10 minutes for discussion. Elapsed time will be indicated by the chairperson.

・AV Equipment

Each session room is equipped with a PC projector and an overhead projector (OHP) with a screen. A video set (NTSC only) will be provided, according to the audiovisual requirement stated on the previously submitted "Speaker's Biographical Form".

For details, please refer to "Notice to Speakers" or "Notice to Chairpersons" included in the Congress kit.

6. REGISTRATION AND PROCEEDINGS

6.1 Registration Fee

The registration fee for speakers, members, non-members and students includes a packet of Congress proceedings. All of the Congress registrants are invited to attend the Exhibition and Welcome Reception. The registration fee will vary according to the your membership or status, as shown in Table 1.

For the On-Site fee payments, cash (Japanese Yen) or credit card (American Express, Diners Club, Master Card or Visa) will be accepted.

Table 1

	Registration Fee
Members*	¥55,000
Non-members	¥65,000
Students	¥15,000

*Members of the sponsoring society, collaborating societies and cooperative societies.

6.2 Registration at the Congress Site

All participants are requested to register at the Registration Desk and receive the necessary documents and name tags. The registration card you received must be presented at the Registration Desk.

6.3 Proceedings

CD-ROM Proceedings and a Book of Abstracts containing all papers to be presented at the Congress will be distributed to every registrant at the Registration Desk.

7. SOCIAL PROGRAMS AND OPTIONAL PLANT TOURS

7.1 Welcome Reception

November 2 (Sun) 17:00–19:00

Foyer (5F), Tower Hall Funabori (Edogawaku Sohgoh Kumin Hall)

All registered participants and accompanying persons are invited to attend the Welcome Reception. Only drinks and snacks will be served (free of charge).

7.2 Banquet

November 5 (Wed) 17:30–20:30

Restaurant in Tokyo Sea Life Park, Kasairinkai Park

The Banquet will be hosted by the Chairman of the Organizing Committee of the Congress. All registered participants and accompanying persons are invited.

After a tour of the aquarium, dinner will be served with live Japanese traditional music performances from 18:30 . The fee for the banquet is ¥8,000 per person.

7.3 Tea Ceremony

November 3 (Mon) – 6 (Thu)

Japanese-style Rooms (4F), Tower Hall Funabori (Edogawaku Sohgoh Kumin Hall)

Japanese style tea will be served during the Congress with introductory lessons for the Japanese tea ceremony, as shown in Table 2. On Wednesday and Thursday, tea service only.

Table 2

Introductory lessons

Data	Time	Reservation (Foyer 5F)
Nov.3 (Mon)	12:00－17:00	Needed
Nov.4 (Tue)	11:00－16:00	Needed

Tea service (No Lesson)

Data	Time	Reservation
Nov.5 (Wed)	at any time	Not needed
Nov.6 (Thu)	at any time	Not needed

7.4 Optional Plant Tour Program

Two plant tours are arranged as shown below. Those who wish to attend are asked to fill the relevant column in the registration form before the Congress. Both tours will depart from and return to Tower Hall Funabori (Edogawaku Sohgoh Kumin Hall), and the fee is ¥7,000 including lunch and transportation.

・Tour A

November 7 (Fri) (8:00–17:30)

The bus will leave at 8:30 from the Congress site and return to the same place at 17:30.

1. Japan Aerospace Exploration Agency (JAXA) – (National Aerospace Laboratory of Japan (NAL))
2. Tanashi Plant of Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI)

Timetable

08:00 Meeting at Tower Hall Funabori
08:30 Departure
10:00 Arrive at JAXA (NAL)
12:00 Lunch
13:00 Departure
13:30 Arrive at IHI
15:30 Departure
17:30 Return to Tower Hall Funabori

・Tour B

November 7 (Fri) (8:30–16:30)

The bus will leave at 9:00 from the Congress site and return to the same place at 16:40.

1. All Nippon Airways (ANA) Power Plant Maintenance Center
2. Shinagawa Thermal-Power Station of The Tokyo Electric Power Co., Ltd. (TEPCO)

Timetable

08:30 Meeting at Tower Hall Funabori
09:00 Departure
10:00 Arrive at ANA
12:00 Lunch
13:00 Departure
13:40 Arrive at TEPCO
15:40 Departure
16:40 Return Tower Hall Funabori

8. EXHIBITION

8.1 Exhibition 1

In conjunction with the IGTC'03 Tokyo, the following Exhibition will be held in the exhibition hall on the first floor of Tower Hall Funabori (Edogawaku Sohgoh Kumin Hall). Admission to the exhibition is free to all visitors.

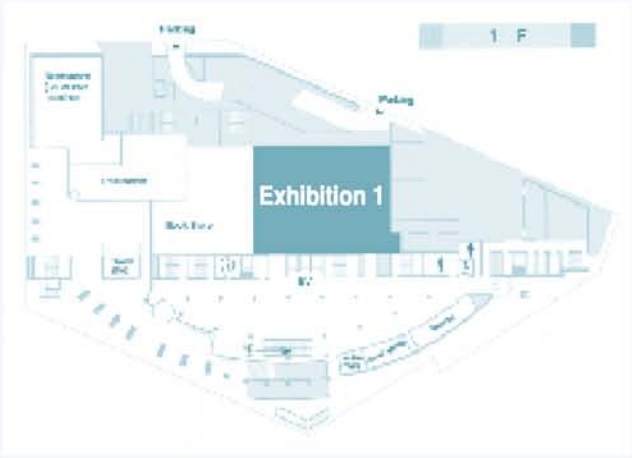
Duration: Nov 3 (Mon) – 6 (Thu)

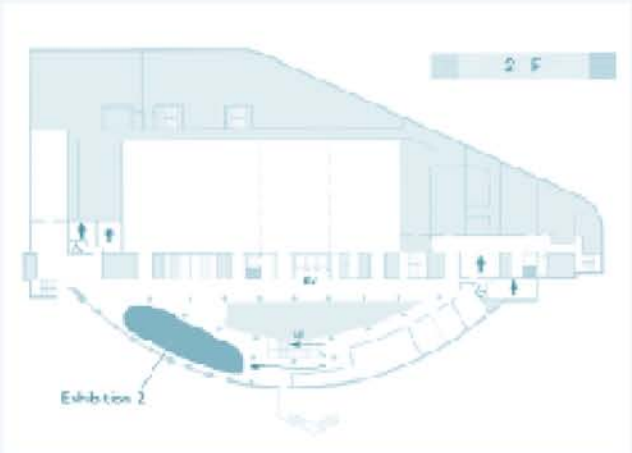
Hours: Nov. 3 10:00–17:00
Nov. 4–6 09:00–17:00

Exhibits: Gas Turbines, Turbochargers and Accessories, Parts, Materials, Measuring Instruments/Devices, Data Processors, Computer Hardware/Software, Publications, and so on.

Number of Exhibitors : 36

Access to Exhibition Hall





Exhibitors:

- AIKOKU ALPHA CORPORATION
- CFX ASIA·PACIFIC
- Concepts NREC
- EAGLE INDUSTRY Co., Ltd.
- Engineering Research Association for Supersonic Transport Propulsion System
- Fluent Asia Pacific Co., Ltd.
- GE Aircraft Engines
- Hitachi, Ltd.
- IHI AEROSPACE Co., Ltd.
- Ishikawajima-Harima Heavy Industries Co., Ltd.
- ISHIKAWAJIMA PRECISION CASTINGS Co. , Ltd.
- Japan Aerospace Exploration Agency (JAXA)
- JAPAN vilene COMPANY, Ltd.
- KAWASAKI HEAVY INDUSTRIES, Ltd.
- Kawasaki Thermal Engineering CO., Ltd.
- Maruwa Electronic Inc.
- MINEBEA.CO., Ltd.
- Mitsubishi Heavy Industries, Ltd.
- Mitsubishi Material Corp
- MITSUI ENGINEERING & SHIPBUILDING Co., Ltd.
- National Institute for Material Science
- National Institute of Advanced Industrial Science and Technology
- National Maritime Research Institute
- New Energy and Industrial Technology Development Organization (NEDO)
- Newton Works Corporation
- Niigata Power Systems Co., Ltd.
- Nippon Donaldson, Ltd.
- SANYO TRADING CO., Ltd.
- SEALTECH INC.
- SHINWA CORPORATION
- Technological Research Association of Super Marine Gas Turbine
- TOSHIBA CORPORATION
- Toshiba-GE Turbine Service Co., Ltd.
- UBE INDUSTRIES Ltd.
- Vinas Co., Ltd.
- WOODWARD GOVERNOR (JAPAN) Ltd.

- BOSE PSYCHO PHYSICS RESEARCH Inc.(5F)

8.2 Exhibition 2

As part of the Exhibition, a panel session will be held in the lobby of the 2nd floor. The laboratories of Japanese Universities will exhibit their research activities in the session. The exhibition is free to all visitors.

Duration: Nov 3 (Mon) – 6 (Thu)
Number of Exhibitors : 11

Exhibitors

- Jet Propulsion Laboratory, Department of Aeronautics and Astronautics, The University of Tokyo
- Turbulence and Heat Transfer Laboratory / Frontier Energy System Laboratory, Department of Mechanical Engineering, The University of Tokyo
- Turbomachinery Laboratory, Department of Engineering, Faculty of Engineering, Hosei University
- Nagashima Lab. The University of Tokyo
- Kawaguchi Laboratory, Faculty of Science and Technology, Keio University
- Tokyo Metropolitan Institute of Technology (TMIT), Dept. of Aerospace Engineering, YUASA Lab.
- Tohoku University, Nakata Laboratory
- GAS TURBINE RESEARCHES IN TUS (Tokyo University of Science) - Honami Labo. and Yamamoto Labo.-
- Aerospace Propulsion System Laboratory, Department of Mechanical Engineering, Iwate University
- Fluids Mechanics Laboratory, Department of Mechanical Engineering, Waseda University
- Gas Turbine Society of Japan

9. CONGRESS OFFICE

Room Hourai (2F)
Phone / Fax: (03)5676-0918
(Available during the Congress only)

10. CORRESPONDENCE

- Inquiries concerning the technical program should be addressed to:
Professor T. Watanabe
E-mail: igtc2003paper@nal.go.jp
Fax: +81-3-5841-6622

- Inquiries concerning registration, banquet, optional plant tours, and hotel accommodation, should be addressed to:
IGTC2003 Desk
c/o Nippon Travel Agency Co., Ltd.
Event & Convention Sales Division
9F, New Shimbashi Bldg., 2-16-1
Shimbashi, Minato-ku, Tokyo 105-0004, Japan
Tel: +81-3-3581-2751
Fax: +81-3-3581-2875
E-mail: mcs_center@nta.co.jp

-Inquiries concerning the exhibition should be addressed to:
IGTC'03 Tokyo Exhibition Office
c/o TSP TAIYO Inc.
1-17-6 Higashiyama, Meguro-ku, Tokyo 153-0034, Japan
Tel: +81-3-3719-3721
Fax: +81-3-3791-0953
E-mail: katori@tsp-taiyo.co.jp

MESSAGE FROM GTSJ PRESIDENTS

On behalf of the Gas Turbine Society of Japan, GTSJ, we would like to welcome all the participants of the International Gas Turbine Congress 2003, Tokyo. This Congress provides a forum for the exchange of information and ideas among the participants on the latest developments in gas turbines and related technologies.

The GTSJ has been providing up-to-date information on all aspects of gas turbine technology through various conferences for more than 30 years, one of the most important of which is the International Gas Turbine Congress, which is held every four years.

It is our pleasure to host this Congress during the most pleasant season in Tokyo. We hope all the participants will enjoy the technological contents of the Congress.

We sincerely thank the cooperating societies, the members of the International Advisory Committee, the supporting foundations, and the corporate members of the Gas Turbine Society of Japan for their contributions, without whom this Congress would not have been possible. Special thanks are also due to the members of the Organizing Committee and the Executive Committee for their dedicated efforts in preparing for the Congress.

Eisuke Yoshioka
President

Masaharu Sumikawa
Vice-president

Gas Turbine Society of Japan (GTSJ)

ACTIVITIES OF GTSJ

The Gas Turbine Society of Japan (GTSJ), the sponsor of IGTC'03 Tokyo, was founded in 1976, based on the Japan Gas Turbine Congress established in 1972. Members encompass a wide variety of fields such as gas turbine manufacturing companies, users, universities, national laboratories, and other corporations. The number of members currently exceeds 2,100, and they are flourishing in their fields as members of GTSJ. In addition, more than 125 corporate members support the activities of GTSJ.

Related fields of GTSJ include not only gas turbines and turbo-chargers for aircraft, power generation, industry, automobiles and ships, but also co-generation equipment as well as materials, measurements, control, fuel and other technologies.

MEMBERSHIP

The Society consists of Members, Student Members, and Corporate Members.

Members: shall be persons who have good knowledge and experience in gas turbine and/or turbo-charger technologies and agree with the objectives of our Society.

Student Members: shall be students who agree with the objectives of our Society.

Corporate Members: shall be organizations which agree with the objectives of our Society and support our activities.

Enrolment and Annual Membership Fees

Membership	Enrolment Fee	Annual Membership Fee
Member	500 yen	5,000 yen
Student Member	500 yen	2,500 yen
Corporate Member	1,000 yen	70,000 yen

PUBLISHING ACTIVITIES

Journal of the Gas Turbine Society of Japan
(Free bimonthly subscription, in Japanese)

The Journal provides information on a variety of gas turbine and turbo-charger technologies and contains original technical papers, reports, and introductions to new products. It also serves to promote communication among society members.

Bulletin of GTSJ
(Free yearly subscription for foreign members, published online in English)

The bulletin contains a summary of the GTSJ's activities, abstracts of latest technical papers, letters from R&D groups, and also new models and products.

MEMBERSHIP APPLICATION

GTSJ offers several ways for you to apply for membership.

- Download the membership application form from:
  http://wwwsoc.nii.ac.jp/gtsj/english/enyukai.html
- Fax (03)3365-0387 or outside of Japan fax +81-3-3365-0387, and we will mail you an application form.
- E-mail us at gtsj@wwwsoc.nii.ac.jp and request an application form.

OFFICE OF GTSJ

Office director: Ms. A. Miura
Address: Dai-3-Kohshin Bldg., 7-5-13 Nishi-Shinjuku, Shinjuku-ku, Tokyo 160-0023, JAPAN
Fax: +81-3-3365-0387 E-mail: gtsj@wwwsoc.nii.ac.jp
http://wwwsoc.nii.ac.jp/gtsj/english/eindex.html

Gojunoto, Sensoji temple

Sakurada niju yagura turret of Edo castle

Gate of Kanda myojin

Kaminarimon gate, Sensoji temple