Preliminarily distributed documents

ASIAN CONGRESS ON GAS TURBINES 2012 (ACGT2012)

— Tradition, Challenge and Future

Shanghai, P. R. China

August 20-22, 2012

Organized by

Institute of Engineering Thermophysics, Chinese Academy of Sciences

Gas Turbine Society of Japan

Korean Fluid Machinery Association

中国科学院工程热物理研究所
Institute of Engineering Thermophysics, Chinese Academy of Sciences

公益社団法人 Gas Turbine Society of Japan
日本ガスタービン学会

사단법인 유체기계공업학회 Korean Fluid Machinery Association

ASIAN CONGRESS ON GAS TURBINES 2012

Contents

Organization of Asian Congress on Gas Turbines 2012

◆ Organizing Society

Institute of Engineering Thermophysics, Chinese Academy of Sciences (IET/CAS)
Gas Turbine Society of Japan (GTSJ)
Korean Fluid Machinery Association (KFMA)

◆ Organizing Committee

Osamu Kawaguchi	(Keio University, Japan)
Toshinori Watanabe	(University of Tokyo, Japan)
Makoto Yamamoto	(Tokyo University of Science, Japan)
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Chen Jingyi	(Institute of Engineering Thermophysics / Chinese Academy of Sciences, China)
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Huang Weiguang	(Shanghai Advanced Research Institute / Chinese Academy of Sciences, China)

◆ Local Organizing Committee

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Su Ming	(Shanghai Jiaotong University)	
Zang Shusheng	(Shanghai Jiaotong University)	
Yuan Xin	(Tsinghua University)	
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Lin Feng	(China Shipbuilding Industry Corporation)
Zhu Junqiang	(Institute of Engineering Thermophysics / Chinese Academy of Sciences)
Lin Feng	(Institute of Engineering Thermophysics / Chinese Academy of Sciences)
Zhang Hongwu	(Institute of Engineering Thermophysics / Chinese Academy of Sciences)

- **Local Organizers**

Shanghai Jiao Tong University (SJTU)
Shanghai Electric Group Company Limited (SEC)
Shanghai Advanced Research Institute / Chinese Academy of Sciences (SARI/CAS)

Message from the Organizing Committee

On behalf of the Organizing Committee, I would like to extend my warm welcome to you all to the Asian Congress on Gas Turbines ACGT 2012 in Shanghai China from August 20th to 22nd 2012.

The ACGT is an international congress on gas turbines started in 2005 and the ACGT2012 is the third one jointly organized by the Institute of Engineering Thermophysics, Chinese Academy of Sciences (IET/CAS), the Gas Turbine Society of Japan (GTSJ) and the Korean Fluid Machinery Association (KFMA). Following the tradition set at the first and second ACGT conferences held in Korea 2005 and in Japan 2009, the ACGT2012 will once again aim to provide an international platform for extensive exchange of information among gas turbine researchers, users and manufacturers within and outside Asian region.

The ACGT2012 program consists of a keynote lecture by Dr. Aoki Sunao, three keynote speeches by experts from China, Korea and Japan, a forum session and a plant tour. A total of 100 papers will be presented during the general sessions, and gas turbine related technologies will also be exhibited at the congress site. Through the enhancement of interaction and cooperation among researchers and students, the ACGT2012 is expected to promote Pan-Asian cooperative effort in gas turbine research and development.

Thanks to the dedication and cooperation of many individuals and organizations, including members of the Organizing Committee and Local Organizing Committee, session chairs and authors, exhibitors and all participants, who make this congress possible and successful. I hereby extend my gratitude and appreciation to all of the above-mentioned organizations and individuals for their contribution and efforts.

Shanghai, as a world-wide known dynamic city, has made great progress in many technologies including Gas Turbines. I am honoured and delighted to host all of you, my distinguished guests, and wish Shanghai become a new international platform for researchers and engineers to exchange their ideas in Gas Turbine technology.

Once again, thank you for attending the ACGT2012, we wish you will enjoy the congress.

Look forward to seeing you all in Shanghai.

Weng Shilie
Chairman
Organizing Committee of the ACGT2012

About Asian Congress on Gas Turbines 2012

◆ Term of Session

August 20(Mon.)-August 22(Wed.)

◆ Congress Venue

Shanghai Jiao Tong University, Minhang Branch Campus

800 Dongchuan Road, Minhang District, Shanghai 200240, China

◆ Objectives

Following the tradition set at the first and second ACGT conferences held in Korea 2005 and Japan 2009, the ACGT2012 will once again aim to provide an international forum for exchange of information related to gas turbine technology, especially among researchers in Asian Region. Through the enhancement of interaction and cooperation among Asian researchers and students, the ACGT2012 is expected to promote Pan-Asian cooperative effort in gas turbine research and development. The ACGT2012 will also act as a platform to promote interactions for gas turbine researchers, users and manufacturers within and outside Asian region.

◆ Keynote Lecture

Title: To be determined

Lecturer: Prof. Sunao Aoki (Chief Research Fellow, Mitsubishi Research Institute, Inc., and Special adviser to Mitsubishi Heavy Industries, Ltd.)

◆ Keynote Speech

Speech 1—Title: To be determined

Speaker: Prof. Yasukata Tsutsui (the Ex-President of GTSJ)

Speech 2—Title: To be determined

Speaker: Prof. LI Ye (Director-General, Department of Energy Conservation and Scientific Equipment, National Energy Administration)

Speech 3—Title: “Optimization of a Novel Film-Cooling Hole for Turbine Blade Cooling”

Speaker: Prof. Kwang-Yong Kim (Inha Fellow Professor, School of Mechanical Engineering, Inha University)

◆ Forum

Topic -- The Trends of Gas Turbine Development Facing the Challenge of Future Energy Structure

◆ Topics of Technical session

- Aerodynamics
- Combustion
- Control, Diagnostics and Instrumentation Heat
- Transfer and Thermodynamics
- Innovative Clean/Renewable Energy Technology
- Manufacturing Materials & Metallurgy
- Maintenance and User Experience
- Structure and Dynamics
- Applications

Location of Congress and Banquet Venue

◆ **Map to Shanghai Jiao Tong University, Minhang Branch Campus**

◆ **Direction Map from Pudong Airport / Hongqiao Airport to Shanghai Jiao Tong University, Minhang Branch Campus**

1.Taxi

The distance to Pudong Airport is about 55km.(about RMB 180-200)

The distance to Hongqiao Airport is about 28km.(about RMB 100-120)

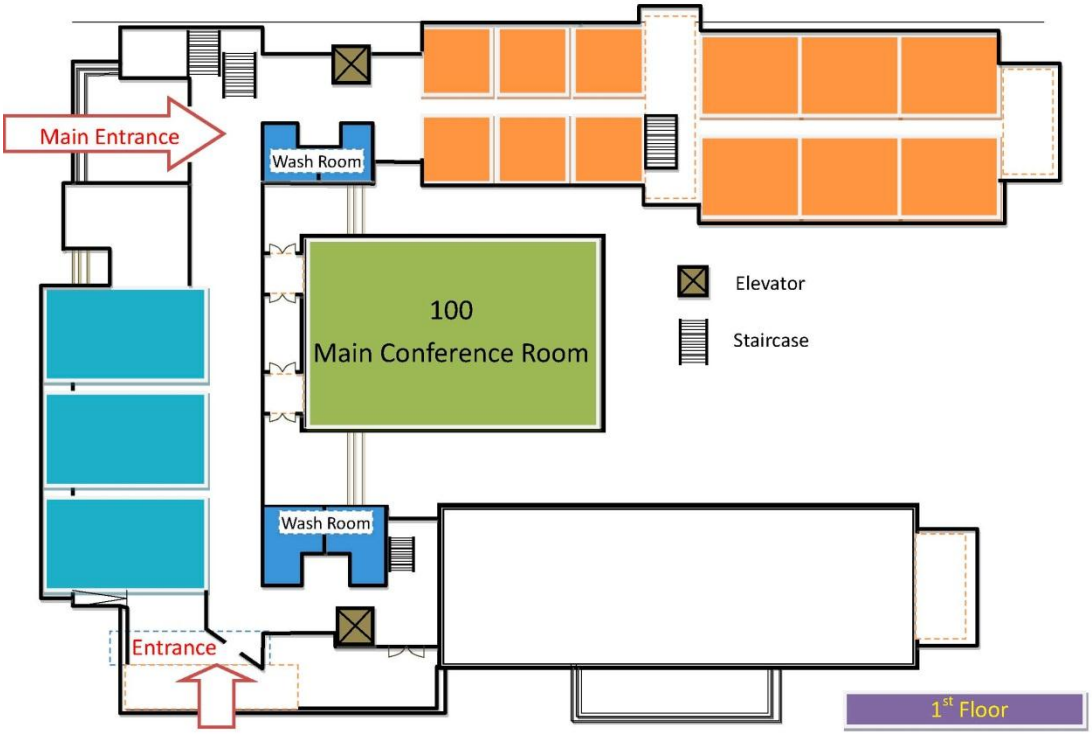
2. Subway

Line 2(Pudong Airport / Hongqiao Airport to People's square) → **Line 1** (People's square to Xinzhuang) → **Line 5** (Xinzhuang to Dongchuan Rd.) (about RMB 5-10)

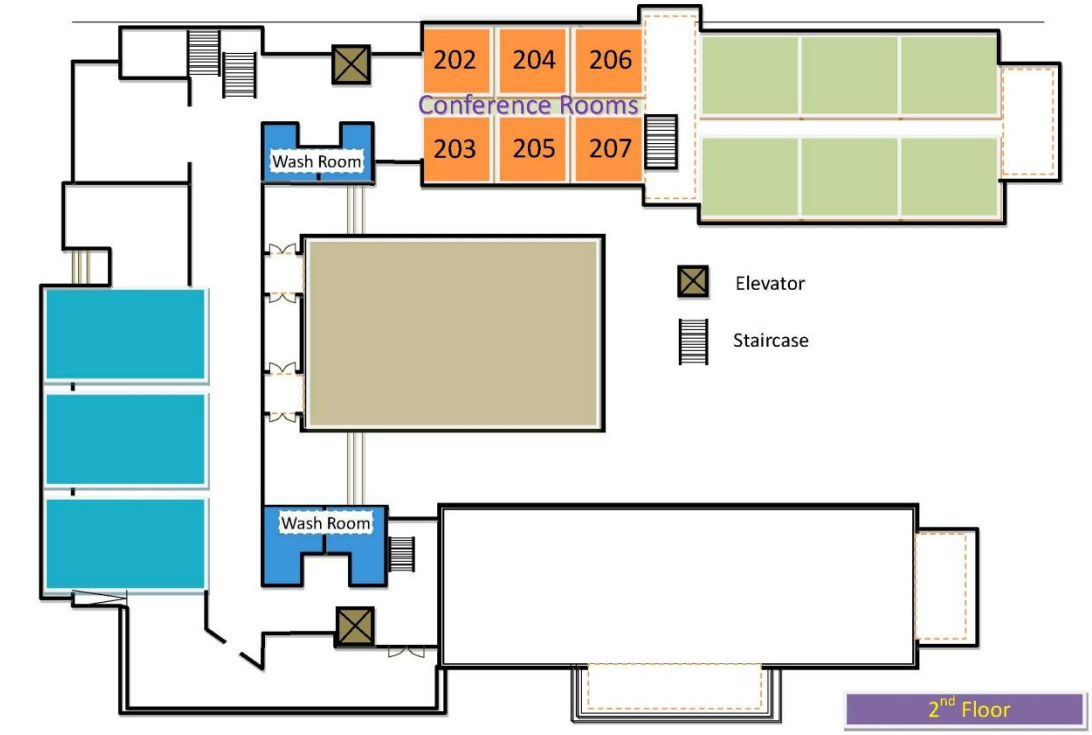
◆ **Map of Shanghai Jiao Tong University, Minhang Branch Campus**

◆ Congress Room in Chen Ruiqiu building

Main Congress Room is on the first floor.



Congress Rooms are on the second floor.



◆ Banquet Venue

A cruise on the Huangpu River

Mingxin No.3 Cruise（in Chinese:名信号游船 3 号船）

Address:No.171, South Zhongshan Road, Shanghai(in Chinese:上海市中山南路 171 号）

Shuttle Bus Drive Route and Departure Time

	Departure Time	Drive Route
August 20, (Monday)	06:40/07:00/07:20	Huating Hotel→ Graduate School of Shanghai Jiao Tong University, Minhang Branch Campus (Hereinafter referred to as “Congress Venue”)
	12:15	Congress Venue→ Dazhiju Cafeteria
	13:20	Dazhiju Cafeteria→ Congress Venue
	17:45	Congress Venue→ Dazhiju Cafeteria
	19:30	Dazhiju Cafeteria→ Huating Hotel/ Jianguo Hotel
August 21, (Tuesday)	07:40/08:00/08:20	Huating Hotel→ Congress Venue
	12:15	Congress Venue→ Dazhiju Cafeteria
	13:20	Dazhiju Cafeteria→ Congress Venue
	17:20	Congress Venue→ Dada Wharf (Zhongshan South Road 171#, Near Fuxing East Road)
	21:00	Dada Wharf→ Huating Hotel/ Jianguo Hotel
August 22, (Wednesday)	07:40/08:00/08:20	Huating Hotel→ Congress Venue
	12:30	Congress Venue→ Dazhiju Cafeteria
	13:30	Dazhiju Cafeteria→ Shanghai Turbine Plant (Minhang District, Jiangshan Road 333#. Near Hongyuan Road)
	16:30	1. Shanghai Turbine Plant→ Pudong Airport 2. Shanghai Turbine Plant→ Hongqiao Airport 3. Shanghai Turbine Plant→ Shanghai Branch of Chinese Academy of Sciences

Plant Tour

◆ Introduction of Shanghai Turbine Plant

The Plant was Resources Commission General Machinery Co., Ltd. built on March 28, 1946. After foundation of the People's Republic of China, it was named by the state Shanghai Turbine Works, China's first plant which designed and manufactured turbines. In 1955, China's first 6MW turbine was successfully manufactured by using Czechoslovak technology and the plant was reputed as the "cradle of turbine in China". In December 1995, Shanghai Turbine Co., Ltd. was established with itself as the controlling shareholder as a Joint-Venture with Westinghouse. In 1999 the equity of Westinghouse was transferred to Siemens and the plant became a global cooperative partner of Siemens. With an area of ca.1 km², the plant has nearly 1200 sets of main equipment. Now affiliated to Shanghai Electric Power Generation Equipment Co., Ltd., a Joint-Venture of Shanghai Electric and Siemens, the plant reached the annual production output of 36000MW in 2006, which ranked first in the world. Its domestic market share approached nearly 40% and its products entered international markets. The plant absorbed others' advantages and innovated based on introduction of the world's advanced technology and management methods. 1000MW-class nuclear turbine and heavy duty gas turbine were developed and manufactured. Introduced 300MW turbine reached the world's advanced level and was awarded the only gold quality prize of national high quality products in China's mechanical industry. 600MW-class turbine accomplished remarkable achievements. After operation of the first 1000MW-class ultra-supercritical turbine, which reached world's advanced level, it was awarded "the gold prize in China International Industry Fair 2007" and "the special prize of China Mechanical Industry Science and Technology 2009".

STP is the first plant in China which has passed the qualification of ISO9001 Quality Management System. Besides, it has passed the qualification of ISO14001 Environmental Management System and OHSMS Occupational Health and Safety Management System. STP has been honored with "National Model Enterprise in Establishing Harmonious Labor Relationships", "National Advanced Enterprise in Implementing Performance Excellence Model", "Home of National Model Staff", "National Excellent Unit in Enterprise Culture Construction", "Top 500 Enterprises in China Mechanics", "Leading Enterprise in China Industry", "National Advanced Unit in Enterprise Culture Construction in Mechanical Industry", "National Model Unit in Mechanical Industry" etc.

Shanghai Turbine Plant now takes the personal inspection of General-Secretary Hu Jintao on July 28, 2004 as the motive force and is innovating and transforming to contribute to the development of power generation equipment manufacturing industry.

◆ Workshop visit arrangement

1. Safety education
2. Gas Turbine Assembly Shop:

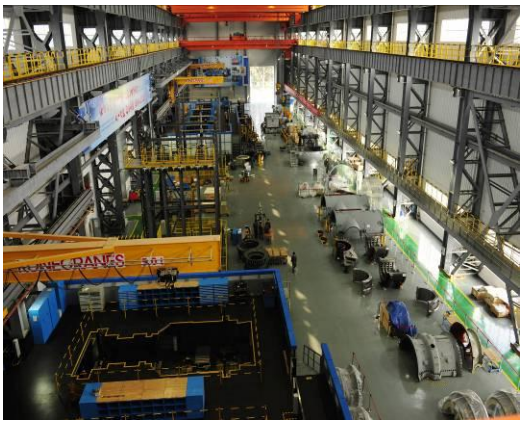
Visit Gas Turbine Assembly Shop on sightseeing platform, including component assembly，rotor assembly and final assembly etc.

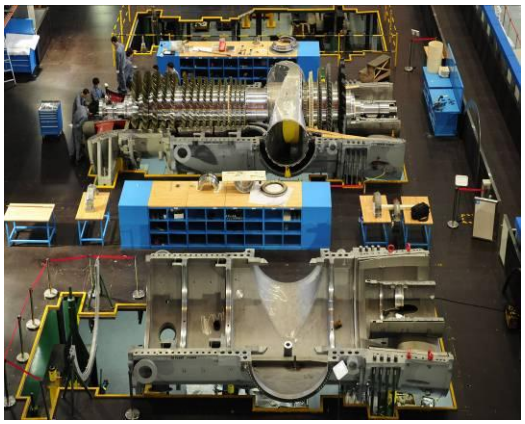
◆ Brief Introduction of Gas Turbine Assembly Shop

The Gas Turbine Assembly Shop of STP was completed in September 29, 2010. The shop is a manufacturing industrial base for heavy-duty gas turbine localization built by STP ,for speeding up the "four changes", enhancing the "five abilities", building the "world-class facility", and invigoration of Shanghai Heavy equipment manufacturing industry.

Located along Huangpu River .It is a workshop of enclosed and temperature construction, with an area of 8733 square meters, 34 meters high, 46 meters wide, 168 meters long, an air transport network with 9 cranes in three different layers, the maximum lifting capacity of the cranes is 350 tons. There are 8 "heavy" assembly platforms for gas turbine, steam turbine and nuclear steam turbine, and two vertical rotor stacking facilities, it can assembly the gas turbine of E-class, F-class; HP-IP unit of combined-cycle steam turbine; High-pressure unit of

1000MW nuclear steam turbine; HP-IP unit of 1000MW Ultra Super Critical steam turbine. The Gas Turbine Assembly Shop has a world-class assembly capacity of power plant equipment and will contribute the upgrading of Shanghai Electric Cooperation Group industry, and the “re-starting” after changing the development mode.





Schedule at a Glance

◆ August 20, 2012 （Monday）

08:00 - 18:00	Registration	
09:15 - 09:30	Opening Address	Convention Hall
09:30 - 10:20	Keynote Speech 1	Convention Hall
10:20 - 10:35	Coffee Break	
10:35 - 12:15	Technical Sessions	5 rooms
12:15 - 13:30	Lunch Break	
13:40 - 15:15	Forum	Convention Hall
15:15 - 15:30	Coffee Break	
15:30 - 17:35	Technical Sessions	5 rooms
18:00 - 19:30	Reception	

◆ August 21, 2012 （Tuesday）

09:10 - 18:00	Registration	
09:30 - 10:20	Keynote Speech 2	Convention Hall
10:20 - 10:35	Coffee Break	
10:35 - 12:15	Technical Sessions	5 rooms
12:15 - 13:30	Lunch Break	
13:40 - 15:45	Technical Sessions	4 rooms
15:45 - 16:00	Coffee Break	
16:00 - 17:00	Keynote Lecture	Convention Hall
18:30 - 21:00	Banquet	

◆ August 22, 2012 （Wednesday）

09:10 - 12:00	Registration	
09:30 - 10:20	Keynote Speech 3	Convention Hall
10:20 - 10:35	Coffee Break	
10:35 - 12:15	Technical Sessions	4 rooms
12:15 - 12:30	Closing Address	
12:30 - 13:45	Lunch Break	
13:45 - 16:30	Technical Tour	SEC
18:00 - 20:30	Committee Meeting	CAS

Program Overview

		Room A Main Congress Room 100	Room B 202	Room C 203	Room D 204	Room E 205	Room F 206
Aug.20 (Mon)	9:15 9:30	Opening Address					
	9:30 10:20	Keynote Speech 1					
	Break						
	10:35 12:15		CFD Analysis of 3D Flow (I)	Advanced Gas Turbine System (I)	Leakage Flow	Cooling and Conjugate HT	Liquid and Low-Btu fuels Combustion (I)
	Lunch						
	13:40 15:15	Forum					
	Break						
	15:30 17:35		Unsteady Flow and Flow Control (I)	Innovative Clean/Renewable Energy Technology	Centrifugal Compressor	Rotor Dynamic Analysis And Lifetime Prediction	Combustion Numerical Simulation
	Closing						
Aug.21 (Tue)	9:30 10:20	Keynote Speech 2					
	Break						
	10:35 12:15		CFD Analysis of 3D Flow (II)	Unsteady Flow and Flow Control (II)	Advanced Gas Turbine System (II)	Film Cooling	Components Aerodynamic And Failure Analysis (I)
	Lunch						
	13:40 15:45		CFD Algorithm and Modeling	Optimization Design	Advanced Gas Turbine System (III)	Structure Strength Analysis And Experimental Investigation	
	Break						
	16:00 17:00	Keynote Lecture					
	Closing						
	18:30 21:00	Banquet					
Aug.22 (Wed)	9:30 10:20	Keynote Speech 3					
	Break						
	10:35 12:15		Premixed Combustion	Components Aerodynamic And Failure Analysis (II)	Cooling and HT Enhancement	Liquid and Low-Btu fuels Combustion (II)	
	12:15 12:30	Closing Address					
	Lunch						
	13:45 16:30	Technical Tour (SEC)					
	18:00 20:30	Committee Meeting (CAS)					

Keynote and Forum Session

Keynote and Forum Session are held in Room A (Main Congress Room 100)

◆ **Keynote Lecture August 21 (Tue) 16:00 - 17:00**

Title: To be determined (he will summarize his 40 years effort to develop the advanced gas turbine technology and new frames)

Prof. Sunao Aoki (Chief Research Fellow, Mitsubishi Research Institute, Inc., and Special adviser to Mitsubishi Heavy Industries, Ltd.)

◆ **Keynote Speeches**

Keynote Speech 1 August 20 (Mon) 09:30 - 10:20

Title: To be determined

Speaker: Prof. Yasukata Tsutsui (the Ex-President of GTSJ)

Keynote Speech 2 August 21 (Tue) 09:30 - 10:20

Title: To be determined

Speaker: Prof. LI Ye (Director-General, Department of Energy Conservation and Scientific Equipment, National Energy Administration)

Keynote Speech 3 August 22 (Wed) 09:30 - 10:20

Title: “Optimization of a Novel Film-Cooling Hole for Turbine Blade Cooling”

Speaker: Prof. Kwang-Yong Kim (Inha Fellow Professor, School of Mechanical Engineering, Inha University)

◆ **Forum Session August 20 (Mon) 13:40 - 15:15**

“The Trends of Gas Turbine Development Facing the Challenge of Future Energy Structure”

Session Program

Aug.20 (Mon) am

	Room A Main Congress Room 100	Room B 202	Room C 203	Room D 204	Room E 205	Room F 206
9:15 9:30	Opening Address					
	Keynote Speech 1 Chairperson: From China					
9:30 10:20	*Prof. Yasukata Tsutsui (the Ex-President of GTSJ)*					
		CFD Analysis of 3D Flow (I) Chairperson: From China	Advanced Gas Turbine System (I) Chairperson: Form Korea	Leakage Flow Chairperson: Form Japan	Cooling and Conjugate HT Chairperson: From China	Liquid and Low-Btu fuels Combustion (I) Chairperson: From China
10:35		ACGT2012-1016 Numerical Study on the Combination of Simultaneous Adjustment of Inlet Guide Vanes and Diffuser *Tian Ye (Beijing University of Aeronautics and Astronautics, China), Hou Anping, Shan Shujun, Ni Qifeng*	ACGT2012-1003 Performance Prediction for an Axial Compressor of an Industrial Gas Turbine with Inlet Fogging *Chihiro Myoren (Hitachi Research Laboratory, Hitachi, Ltd. Japan), Tadaharu Kishibe, Takanori Shibata and Yasuo Takahashi*	ACGT2012-1031 Numerical Investigation of Unsteady Tip Clearance Flow in a Low Speed Axial Compressor *Baojie Liu, Bo Zhang, Yangwei Liu (Beijing University of Aeronautics and Astronautics, China)*	ACGT2012-4025 Aerodynamic Performance of Purge Flow Endwall Cooling in High Pressure Turbine Cascade *W Ghopa Wan Aizon (University of Iwate, Japan), Ken-ichiFunazaki, TakemitsuMiura1*	ACGT2012-1102 Developing a model to predict droplet size and velocity distribution of a liquid fuel swirl nozzle spray *E. Movahednejad (MAPNA Turbine Engineering & Manufacturing Co. (TUGA), Iran,), A. Tabatabaei, A.R. Ranjbaran*
11:00		ACGT2012-1022 Numerical Simulation of Four-Stage Gas Turbine with Variable Gas Properties *Qiang Xu (Shanghai Electric Power Generation R & D Center, China), Mei-bao Zhang, Lian-hui Zhao, Lei He*	ACGT2012-1066 Power enhancement of gas turbo-compressor in gas stations in hot and dry climate with inlet air cooling by use of cold storage system *Ebrahim Khalili (National Iranian Gas Company - Shahrekord Gas Company, Iran), Seyyed Mostafa Hoseinalipour, Esmaeil Heybatian*	ACGT2012-1085 Passive Tip Clearance Flow Control Using Winglet for a Linear Compressor Rotor Cascade *Shaobing Han (Dalian Maritime University, China), Jingjun Zhong, Huawei Lu, Xiaoxu Kan*	ACGT2012-4026 Experimental and Numerical Investigations on Aero-Thermal Interaction of Cooling Airs Ejected from Multiple Cooling Holes *Kamil Abdullah (Universiti Tun Hussein Onn Malaysia, Malaysia), Ken-Ichi Funazaki*	ACGT2012-2065 Prediction of Sauter Mean Diameter Based on Energy Conservation Law *Chihiro Inoue (University of Tokyo, Japan), Toshinori Watanabe, Takehiro Himeno, Seiji Uzawa, Mitsuo Koshi*
11:25		ACGT2012-1029 Numerical Simulation of the Effect of Inlet Distortion to a Transonic Axial-Flow Compressor Rotor *Fu Lei, Song Xizhen (Beijing University of Aeronautics and Astronautics, China), Li Qiushi*	ACGT2012-1072 Experimental Investigation and Analytical Study on the Operation Performance of a Small-sized Humid Air Turbine Cycle *Chenyu Wei, Shusheng Zang (Shanghai Jiao Tong University, China)*	ACGT2012-1097 Investigation of Stability Range Extension Mechanism with Tip Air Injection in a Low-Speed Axial Compressor *Jichao Li (Institute of Engineering Thermophysics, Chinese Academy of Sciences, China), Le Liu, Zhiting Tong, Feng Lin, Chaoqun Nie, Jingyi Chen*	ACGT2012-4033 Study on Conjugate Heat Transfer and Stress of Gas Turbine Blade *Yajun Song, Le Liu, Di Zhang, Yonghui Xie (Xi'an Jiaotong University, China)*	ACGT2012-2081 Effects of CO/H2 Molar Ratio on Flame Structures in Double-Swirled Non-premixed Humid Air/Syngas Burner *Bing Ge (Shanghai Jiaotong University, China), Shusheng Zang, Yinshen Tian*
11:50 12:15		ACGT2012-1062 Numerical Analysis of the Effect of Dihedral on the Performance of a Highly Loaded Transonic Compressor Rotor *Song-lin Yu (Shanghai Electric Power Generation Group, China), Bin Wang, Lian-hui Zhao, Lei He*	ACGT2012-1076 Performance Prediction and Simulation of Gas turbine Inlet Air Cooling with Inlet Fogging *J. Nagesh Kumar (National Productivity Council, India), T. Alwarsamy*	ACGT2012-1060 Effects of the Axial Fins Distance and Cavity Depth on the Leakage Flow Characteristics of the Labyrinth Seal *Qing Gao, Yangzi Huang, Jun Li (Xi'an Jiaotong University, China), Zhenping Feng, Lei He, Qiang Xu*	ACGT2012-4109 Research on Conjugate Heat Transfer of Turbine Blade with Thermal Barrier Coating *Zhang Jingjing (Beijing University of Aeronautics and Astronautics,China), Fang Xiangjun, Wang Lianfu, Liu Siyong*	ACGT2012-2105 Numerical and Experimental Investigation of a Pressure-swirl Atomizer Spray *Cunxi Liu (Institute of Engineering Thermophysics, Chinese Academy of Science, China), Yanhui Mao, Fuqiang Liu, Jinhu Yang, Yong Mu, Gang Xu*

Aug.20 (Mon) pm

	Room A Main Congress Room 100	Room B 202	Room C 203	Room D 204	Room E 205	Room F 206
13:40 15:15	Forum The Trends of Gas Turbine Development Facing the Challenge of Future Energy Structure					
		Unsteady Flow and Flow Control (I) Chairperson: From China	Innovative Clean/Renewable Energy Technology Chairperson: From China	Centrifugal Compressor Chairperson: Form Japan	Rotor Dynamic Analysis And Lifetime Prediction Chairperson: From China	Combustion Numerical Simulation Chairperson: From China
15:30		ACGT2012-1015 Effect of Circumferential Single Grooved Casing Treatment On Flow Field of Transonic Compressor *Yasunori Sakuma (University of Tokyo, Japan), Toshinori Watanabe, Takehiro Himeno, Dai Kato, Motohiro Imaeda*	ACGT2012-5068 The Impact of the Wall Thickness on the Outer Wall Temperature in a Tubular Solar Air Receiver *Dunjin Wang (IET/CAS, China), Feng Lin*	ACGT2012-1045 Behavior of Pressure Fluctuation Rotating around Impeller Periphery in A Centrifugal Compressor Equipped with Vaned Diffuser *Takashi Goto (Waseda University, Japan), Atsuhito Mizuno, Kazuyoshi Miyagawa, Yutaka Ohta, Eisuke Outa*	ACGT2012-8001 Assessment of service-induced microstructural and mechanical properties of Nimonic 80A turbine blade and its lifetime prediction *M. S. Shahriary (Mavadkaran Eng. Co., Mapna Group, Iran), M. Shahmiri, M. Cheraghzadeh*	ACGT2012-2021 Parametric CFD Simulation of a Gas Turbine Combustor *Duan Dong-Xia (Institute of Engineering Thermophysics, Chinese Academy of Science, China), Cui Yu-Feng*
15:55		ACGT2012-1082 Effects of Single Circumferential Groove at Different Axial Locations on a Low-Speed Axial Compressor's Tip Region Flow *Le Liu (IET/CAS, China), Hongwei Zhang, Jichao Li, Feng Lin, Chaoqun Nie*	ACGT2012-5134 Economic Assessment of a Gas Turbine Combined Heat and Power System Using Biogas as Fuel *Jun Young Kang, Do Won Kang, Tong Seop Kim (Inha University, Korea), Kwang Beom Hur, Jung Keuk Park*	ACGT2012-1110 Numerical investigation on the mechanism of stall margin improvement of a centrifugal compressor *Liu Haiqing(IET/CAS, China), Gao Chuang , Geng Shaojuan, Zhang Hongwu*	ACGT2012-8120 Three dimensional numerical simulations for estimation of burst speed of gas turbine disk *Tirumala Rao Koka (Honeywell Technology Solutions Lab Pvt. Ltd., India), Ramachandra Krishnaswamy*	ACGT2012-2046 Optimization of the Fuel Distribution in a DLN Combustor by Simulation *Kun Wang (IET/CAS, China), Yufeng Cui, Aibing Fang, Chaoqun Nie*
16:20		ACGT2012-1090 Peak Efficiency improvement of a Transonic Fan Rotor by Shaping Circumferential Casing Grooves *Xi Nan (IET/CAS, China), Juan Du, Feng Lin, Jingyi Chen*	ACGT2012-9127 Investigation of gas turbines for concentrating solar power applications *Mojtaba Bozorgmehr (Tarbiat Modares University, Iran)*	ACGT2012-1117 An investigation on the Flow-induced Noise Characteristics of Centrifugal compressor *Taebin Jeong (Seoul National University, Korea), Chanyoung Lee, Kyoung-ku Ha, Shin-hyoung Kang*	ACGT2012-8129 Rotor dynamic analysis of a large turbo generator applying finite element method *Hossein Badr Rezaei (Mapna Turbine Engineering & Manufacturing Co. Iran), Aboozar Shaebani*	ACGT2012-2077 Large Eddy Simulation of an Industry Gas-Turbine Model Combustor Using REDIM Technique *P. Wang (Jiangsu University, China)*
16:45		ACGT2012-1083 Low Speed Axial Compressor Stall Margin Improvement by Unsteady Plasma Actuation *Li Gang (IET/CAS, China), Yang Lingyuan, Nie Chaoqun, Zhu Junqiang, Xu Yanji, Sergey Leonov*	ACGT2012-2103 Influence of different carbon capture technologies on the performance of the combined cycle power plant *Ji-Ho Ahn, Tong Seop Kim (Inha University, Korea)*	ACGT2012-1093 Aerodesign and Flow Field Analysis of a High Transonic Impeller with Total Pressure Ratio 12.0 *Chuang Gao (Shanghai Advanced Research Institute, Chinese Academy of Sciences,China), Weiguang Huang, Hongwu Zhang*	ACGT2012-6091 Development of Rough MCrAlY Bond Coat in Thermal Barrier Coatings System *Yongqing Wang (Chromalloy, USA), Matthew Wilson, Gerard W Milidantri, Mahinda Wanigasinghe*	ACGT2012-2079 Numerical Analysis of Exit Temperature Profile of a Gas Turbine Combustor *Fan Fan (Tsinghua University, China), Haiying Qi, Chong Feng, Junzong Zhu*
17:10 17:35		ACGT2012-1088 Investigation of boundary layer development in Low Pressure Turbine Cascades with unsteady incoming wakes – Effect of Reynolds Number *Ayumi Mamada (IHI Corporation, Japan), Hidekazu Kodama, Kazuki Okamura, Ken-ichi Funazaki*			ACGT2012-8098 Application of Diffusion-Brazing Repair Technology for Land-base Gas turbine Nozzles *Daizo Saito (Toshiba Corporation, Japan), Yomei Yoshioka, Kazuhiro Kitayama, Yoshiaki Sakai*	ACGT2012-2135 Time-dependent motion in one turbulent swirling non-premixed flame *Yang Yang, Xiaodi Tang (IET/CAS, China)*

Aug.21 (Tue) am

	Room A Main Congress Room 100	Room B 202	Room C 203	Room D 204	Room E 205	Room F 206
9:30 10:20	Keynote Speech 2 Chairperson: Form Korea *Prof. LI Ye (Director-General, Department of Energy Conservation and Scientific Equipment, National Energy Administration)*					
		CFD Analysis of 3D Flow (II) Chairperson: From China	Unsteady Flow and Flow Control (II) Chairperson: From China	Advanced Gas Turbine System (II) Chairperson: Form Japan	Film Cooling Chairperson: From China	Components Aerodynamic And Failure Analysis (I) Chairperson: From China
10:35		ACGT2012-1080 Computation of Particulate Erosion in a Jet Engine Fan *Masaya Suzuki (Japan Aerospace Exploration Agency, Japan), Makoto Yamamoto*	ACGT2012-1058 Experimental Study on Plasma Aerodynamic Control for Improving Wind Turbine Performance *Hisashi Matsuda (TOSHIBA Corporation, Japan), Motofumi Tanaka, Shohei Goshima, Kiyoyuki Amemori, Masahiro Nomura, Toshiki Osako*	ACGT2012-2119 The Improved Air Cooled Combustor for Mitsubishi G Class Gas Turbine *Keizo Tukagoshi, Satoshi Tanimura, Koichi Nishida, Keijiro Saitoh, Hiroaki Kishida, Kentaro Tokuyama (Mitsubishi Heavy Industries, ltd, Japan)*	ACGT2012-4004 Effects of CO2 Coolant Mass Fraction on the Film Cooling Performance of Gas Turbine Blade *Sang-Gwon Kim, Sung-Ryong Lee, Youn-Jea Kim (Sungkyunkwan University, Korea)*	ACGT2012-8010 Aerodynamic Numerical Simulation of a Failure Three-Stage Centrifugal Compressor *GUI Xing-min (Beihang University, China), Meng Xiang-wei, Wei Bao-feng, JIN Dong-hai*
11:00		ACGT2012-1084 Simulation of a Gas Turbine Cascade within the Full Test Cell Environment *R O Evans, Q Zhang, W Chen, W N Dawes (Cambridge University Engineering Department, UK), C F Favaretto*	ACGT2012-1061 Study on Vortical Structure of Separation Flow Control Using Synthetic Jets on a High-lift Low-pressure Turbine Blade *Ye Dongting (Shanghai Turbine Works, China), He Haiyu, Xie Yonghui, Shen Guoping, Lu Wei*	ACGT2012-7138 Verification Test Of Newly Developed High Efficient 30mw Class Gas Turbine The Kawasaki L30a *Ryozo Tanaka (Kawasaki Heavy Industries, LTD., Japan), Koji Take, Masanori Ryu, Akinori Matsuoka, Atsushi Okuto*	ACGT2012-4075 Film Cooling Prediction on a Turbine Vane using Algebraic Anisotropic Eddy Viscosity Method *Li Xueying (Tsinghua University, China), Ren Jing, Jiang Hongde*	ACGT2012-8017 Multimode Flutter Analysis based on Time-Domain Fluid-Solid Interaction Simulation and System Identification *Atsushi Tateishi (University of Tokyo, Japan), Toshinori Watanabe, Takehiro Himeno*
11:25		ACGT2012-1094 Mechanism Research of End-Wall Flow Response to the Inlet Total Pressure Distortion in a Supersonic Compressor *Sun Peng (Dalian Maritime University, China), Gao Haiyang, Du Kun, Zhong Jingjun*	ACGT2012-1099 Reduction of Supersonic Jet Noise With Impinging Microjet *Ryuichi Okada (University of Tokyo, Japan), Toshinori Watanabe, Seiji Uzawa, Takehiro Himeno, Tsutomu Oishi*	ACGT2012-9108 Development of 1.7MW Class High Efficiency Gas Tur bine M1A-17 *Yasufumi Hosokawa (Kawasaki Heavy Industries, LTD., Japan), Takahiro Nakasuji, Yoshihiro Yamasaki, Makoto Gouda*	ACGT2012-4086 Numerical Investigation of Film Cooling Using a Chemical Heat Sink *Keyong Cheng (Institute of Engineering Thermophysics, Chinese Academy of Sciences, China), Shiqiang Liang, Xiulan Huai, Wei Chen, Yongxian Guo*	ACGT2012-8020 Failure Analysis for Compressor S1 Vane of PG9351FA Gas Turbine *Junfeng Xiao (Xi'an Thermal Power Research Institute Co., Ltd., China), Song Gao, Xiaobing Yu, Yonghai Zhang, Weiwei Gu*
11:50 12:15		ACGT2012-1118 Effects of Surface Roughness and Adverse Pressure Gradient on Turbulent Boundary Layer Characteristics *Ju Hyun Shin, Semin Jang, Seung Jin Song (Seoul National University, Korea)*	ACGT2012-1126 Reynolds Number Effects on Flow Separation Control of Low-Pressure Turbine Using Plasma Actuators *Takayuki Matsunuma (National Institute of Advanced Industrial Science and Techonology, Japan), Takehiko Segawa*	ACGT2012-9115 Development and Test Results of a New 1600 degreeC Turbine Inlet Temperature J Series Gas Turbine *Yuji Komagome (Mitsubishi Heavy Industries, LTD, Japan), Satoshi Hada, Masanori Yuri, Junichiro Masada*	ACGT2012-4123 Effect of Wall Curvature on Film Cooling Flows Along a 1st Stationary Vane *Hideyuki Sakamoto, Kenichiro Takaishi (Osaka University, Japan), Yutaka Oda, Tetsuji Nagao*	

Aug.21 (Tue) pm

	Room A Main Congress Room 100	Room B 202	Room C 203	Room D 204	Room E 205
		CFD Algorithm and Modeling	Optimization Design	Advanced Gas Turbine System (III)	Structure Strength Analysis And Experimental Investigation
		Chairperson: Form Korea	Chairperson: From China	Chairperson: From China	Chairperson: Form Japan
13:40		ACGT2012-1028 Studies on Unsteady Characteristics of Corner Separation in a Compressor Cascade based on Hybrid LES/RANS Methods *Zhong-Nan Wang (Tsinghua University, China), Xin Yuan*	ACGT2012-1011 Optimization of Endwall Contouring in Axial Compressor Transition Duct *Zhao Wei-Guang (Beihang University, China), Jin Dong-Hai, Gui Xing-Min*	ACGT2012-4002 Thermodynamic Investigation of Typical 25MW Simple Cycle Gas Turbine and Effectiveness Evaluation of Intercooler, Reheat and Regenerator *Shahrokh Sorkhkhah (MAPNA Turbine Engineering & Manufacturing Company, Iran), M.R.shahrifabadi*	ACGT2012-8053 Conjugate Heat Transfer and Stress Analysis of Vanes in a Gas Turbine *Heeyoon Chung, Jun Su Park, Hokyu Moon, Sanghoon Lee, Hyung Hee Cho (Yonsei University, Korea)*
14:05		ACGT2012-1056 Implementation and Validation of the Spalart-Allmaras Turbulence Model in Transonic Compressor Flows *Yangwei Liu (Beijing University of Aeronautics and Astronautics, China), Baojie Liu, Lipeng Lu*	ACGT2012-1014 Aerodynamic Optimization Design of Turbomachinery Cascade Based on Discrete Adjoint Method *Chaolei Zhang (Xi'an Jiaotong University, China), Juan Lu, Zhenping Feng*	ACGT2012-4024 Dynamic Simulation Saturated Steam to Superheated steam Process in Superheater on PT. BOC (British Oxygenate Company) Gresik Power *Dewi Anggraeni (PUSTEKBANG, LAPAN, Indonesia), DR. Totok Suhartanto*	ACGT2012-8107 Coupling Method between Conjugate Heat Transfer Simulation and Thermal Stress Analysis *Takashi Yamane (Japan Aerospace Exploration Agency, Japan)*
14:30		ACGT2012-1064 Direct Numerical Simulation of Shock/Turbulence Interaction by Using Low-Dissipative Monotonicity-Preserving Scheme *Jian Fang (Beihang University, China), Zhaorui Li, Lipeng Lu*	ACGT2012-1047 A Numerical Investigation on Parameterized Sweep Design Impacting on the Aerodynamic Performance of Transonic Fans *Ren Peng (Beijing University of Aeronautic and Astronautic, China), Yuan Wei*	ACGT2012-5040 Introduction to GT and GT Auxiliary Equipments in Some IGCC Power Plant *Zhang Qiu-Chi (Shanghai Electric Power Generation Equipment Co., Ltd., China), Zhang Dong-Fang*	ACGT2012-8131 Fir-Tree Tenon/Mortise Structure Design Under Real Aero-Engine Turbine Environment Based On UG and ANSYS *Yang XiaoJie (IET/CAS, China), Du Qiang, Zhu JunQiang*
14:55		ACGT2012-1114 Investigation Of Large Eddy Simulations For Internal Flow Using New Flux-Reconstruction High Order Method *Yi Lu (Tsinghua University, China), Kai Liu, Xin Yuan , W.N.Dawes*	ACGT2012-1063 An Aerodynamic Optimization System For Axial-Flow Turbines *Xiao-Dong Zhang (IET/CAS, China), Jian-Jun Liu, Yun-Tao Zeng*	ACGT2012-5051 Performance Analysis of a 400MW SOFC/IGCC Combined System *Ma Zheshu (Jiangsu University of Science and Technology, China), Xu Chen*	ACGT2012-8136 An Experimental Investigation of the Last Stage Vibration Stress of an Actual Size Steam Turbine in Various Low Load Conditions *Naoki Shibukawa (Toshiba Corporation, Japan), Yoshifumi Iwasaki, Mitsunori Watanabe*
15:20		ACGT2012-1101 Numerical Study on a Boundary Source Method for Simulating the Effect of Shroud Cavity Flow in an Axial Turbine	ACGT2012-1067 Highly Loaded Aerodynamic Design of the Helium Compressor	ACGT2012-1070 Numerical Study on a Kiel Probe Used in Rotor Wake of a High Speed Axial Compressor	ACGT2012-3140 Error Analysis and Compensation of a Four-Coordinate Measuring System for Turbine Blades
15:45		*Mao Ning, Zhang Dongyang (IET/ CAS, China)*	*Tingfeng Ke (Shanghai Advanced Research Institute, CAS, China), Jingxuan Zhang*	*Sichen Wang (IET/CAS, China), Scott C. Morris, Kai Wang, Feng Lin*	*Jianlu Wang (Dongfang Steam Turbine Co., Ltd., China), Lei Chen, Xueyun Liu, Huajie Liu, Bing Li*
16:00 17:00	Keynote Lecture Chairperson: From China *Prof. Sunao Aoki (Chief Research Fellow, Mitsubishi Research Institute, Inc., and Special adviser to Mitsubishi Heavy Industries, Ltd.)*				

Aug.22 (Wed) am

	Room A Main Congress Room 100	Room B 202	Room C 203	Room D 204	Room E 205
9:30 10:20	Keynote Speech 3 Chairperson: Form Japan Optimization of a Novel Film-Cooling Hole for Turbine Blade Cooling *Prof. Kwang-Yong Kim (Inha University, Korea)*				
		Premixed Combustion Chairperson: From China	Components Aerodynamic And Failure Analysis (II) Chairperson: Form Korea	Cooling and HT Enhancement Chairperson: From China	Liquid and Low-Btu fuels Combustion (II) Chairperson: Form Japan
10:35		ACGT2012-2009 Experimental Study on Flow Losses of Cavity-Base Strut Flame Stabilizer *Liu Denghuan (Beihang University, China), Jin Jie*	ACGT2012-8049 Characteristics of Gas Journal Bearings in Micro Gas Turbine Considering Rarefaction Effect *Haijun Zhang (Jiaxing University, China), Qin Yang*	ACGT2012-4122 Heat Transfer Enhancement of Impinging Jet Cooling by Circle-Rib *Yuichi Ichikawa (Osaka University, Japan), Kenichiro Takeishi, Yutaka Oda, Kiyoshi Sugeta*	ACGT2012-2019 Non-equilibrium Plasma Assisted Combustion of Low-BTU Fuels in a Gas *Hongbin Hu (IET/CAS, China), Gang Li*
11:00		ACGT2012-2012 Experimental investigation of dynamic and emission characteristics of a dry low NOX gas turbine combustor *Xing Shuang-xi (IET/CAS, China), Fang Ai-bing, Song Quan-bin, Cui Yu-feng, Nie Chao-qun*	ACGT2012-4054 The Sensitive Parameter Study of Axial Flow Compressor Fouling *Yang Hua-dong (North China Electric Power University, China), Xu Hong*	ACGT2012-4078 Rib Induced Heat Transfer Development inside a Gas Turbine Internal Cooling Channel *Kan Rui (Tsinghua University, China), Yang Li, Ren Jing, Jiang Hongde*	ACGT2012-2044 Development of Leading Technology for a Low-BTU Gas-firing Gas-turbine Combined-cycle Plant at a Steelworks *Toyoaki Komori, Koichiro Yanou, Takashi Kishine, Nobuyuki Yamagami, Yutaka Shimamura (Mitsubishi Heavy Industries, Ltd., Japan)*
11:25		ACGT2012-2042 Combustion Instability Analysis based on a Low-order Ther-moacoustic Model for Premixed Swirling Flame *Yang Fujiang (BeiHang University, China), Guo Zhihui*	ACGT2012-4142 Three-dimensional numerical simulation of non-uniform growth of the thermally grown oxide in thermal barrier coating systems *Yan Wang (Dongfang Turbine Co., Ltd , China), Luochuan Su, Weixu Zhang, Tiejun Wang*	ACGT2012-4095 Pressure loss and Heat Transfer in channels with pin fin-dimple combined arrays for gas turbine cooling application *Yu Rao (Shanghai Jiaotong University, China), Xiang Zhang, Chaoyi Wan*	ACGT2012-2121 Application of Bio-Fuel in a Single-Sector Combustor for a Small Experimental Aero-Engine *Keiichi Okai (Japan Aerospace Exploration Agency, Japan), Hitoshi Fujiwara, Motoyuki Hongoh, Kazuo Shimodaira*
11:50 12:15		ACGT2012-2074 Performance Test of a DLN Combustor on Emission and Temperature Traverse Quality *Junzong Zhu, Haiying Qi (Tsinghua University, China), Chong Feng*		ACGT2012-4052 Heat transfer characteristics of impingement/effusion cooling on a concave duct *Eui Yeop Jung, Chan Ung Park Dong Hyun Lee, Kyung Min Kim, Hyung Hee Cho (Yonsei University, Korea)*	ACGT2012-1143 CFD Study on Double Radial Swirlers in Combustor *Song Ai (Dong Fang Turbine Co., LTD., China), Yong Yang, Gang Xie, Jian Tao*

General Information

◆ Language

The official language of ACGT2012 is English.

◆ Registration and Information Desk

Aug. 20 (Mon) 08:00 - 18:00
Aug. 21 (Tue) 09:10 - 18:00
Aug. 22 (Wed) 09:10 - 12:00
at 2nd floor in “Chen Ruiqiu Building”

◆ For Speakers in Technical Sessions

1. Author biography form

Presenting authors, who haven’t submitted the biography form to chairperson, should fill out the form and hand it over to chairperson before their sessions start.

2. Arrival at the session room

All speakers should arrive at their session rooms well before their sessions start. Authors who will use the beam projector can upload the presentation files to the PC equipped in the room. Authors can use their own PC on their own responsibility. All the time required for the computer setting for presentation will be included in their presentation time.

3. Presentation time

25 minutes, including 5 minutes for discussion, are allotted to each presentation.

◆ For Chairperson in Technical Sessions

Session chairpersons should arrive at the session room well before the session begins. Check if all presenting authors come and their biography forms have been submitted. Please keep the allocated presentation time and allow sufficient time for discussion.

◆ Registration

The registration fee is USD250 (USD100 for students). The registration fee includes access to all sessions, final program with paper abstracts, USB proceedings, daily working lunches, banquet, coffee breaks, shuttle bus between xujiahui district and congress venue.

◆ Proceedings

A USB flash disk including all the full papers of ACGT2012 will be distributed to all registrants.

◆ Wireless Network

Mobile devices such as notebook computer, mobile phone and Ipad etc. are able to connect to wireless networks in conference room, teaching building and laboratory building on campus.

The name of wireless network is: “SJTU”.

There are two login ID:

1. ID：ACGT20121 PASS：3320prkr
2. ID：ACGT20122 PASS：3743ohct

◆ Lunch

Restaurant is located next to the Academic Activities Center. Walk needs about 15 minutes, there are shuttle bus to and from restaurant and congress venue.