Join more than 3500 gas turbine professionals from over 50 countries for ASME Turbo Expo 2010 – a premier 5-day Technical Congress and a 3-day, premium exhibition of gas turbine products and services supported by leading companies in the industry, such as GE, Pratt & Whitney, Rolls-Royce, and many others. This year Turbo Expo is being held June 14-18, at the Scottish Exhibition & Conference Centre in Glasgow, UK. Register today at www.turboexpo.org.

Why YOU Should Come to Glasgow:
- Networking
- Leading R&D
- Industry Leaders
- Targeted Leads
- Fundamental Training
- High ROI
- Cutting-Edge Technology
- Career Development
- Practical Application

Keynote Speakers Announced
Three leaders in the turbomachinery industry will address the theme “Extending Limited Natural Resources Through Energy Technology Innovations” at Turbo Expo in Glasgow.

Peter Christman, Jr., President of Pratt & Whitney Power Systems in East Hartford, Connecticut, USA; Colin Smith, Director of Engineering and Technology at Rolls-Royce plc in Derby, UK; and Walter D. Downing, P.E., Executive Vice President at Southwest Research Institute in San Antonio, Texas, USA, will all speak at the opening keynote on Monday, June 14. These speakers will address how turbomachinery manufacturers, universities, consultants, and equipment users are working together currently and may work together in the future to develop the necessary solutions for the energy and aircraft engine industry.

Don’t miss these Turbo Expo events:
TECHNICAL CONGRESS – Turbo Expo has a well-earned reputation for bringing together the best and brightest experts from around the world to share the latest in gas turbine technology, research and development, and application. Now, the IGTI community is enhancing its leadership role in turbomachinery as it broadens the program scope to include related topics from wind and steam turbine technology. The 2010 Technical Congress proceedings, alone, are worth the price of admission, as the DVD will contain over 1,000 peer-reviewed publications!

EXPOSITION – Turbo Expo is known for its high-quality, 3-day exhibition of gas turbine products and services, supported by prestigious companies such as ANSYS, CD-adapco, GE, Pratt & Whitney, and many more! New this year is the Do-It-Yourself (DIY) Gas Turbine Booth that will feature some interesting homemade creations including a twin turbo unit and single stationary engine with afterburner. Daily lunches plus afternoon networking receptions in the Expo Hall are included in the registration package for delegates and exhibitors.

CAREER DEVELOPMENT COURSES – Taking place just before the conference opens, the Turbo Expo short courses provide focused, fundamental training from two ASME institutes. Choose from several courses to be held Saturday and Sunday, June 12-13, 2010. Register for the conference and then take advantage of the opportunity to attend short courses while you are in Glasgow! See page 2 for more details and visit www.turboexpo.org to register.

Turbo Expo 2010 in Glasgow: Extending Limited Natural Resources Through Energy Technology Innovations

...CONTINUED ON PAGE 5
View From The Chair
By Knox T. Millsaps, Ph.D., Chairman of the IGTI Board of Directors

Knox is a Professor and the Chairman of the Department of Mechanical and Aerospace Engineering at the Naval Postgraduate School in Monterey, California. millsaps@nps.edu.

Welcome to the Global Gas Turbine News (GGTN). I hope you enjoy reading this edition and becoming more aware of all the exciting gas turbine and energy related activities we offer, as well as reading interesting articles of gas turbine technology from our readers.

This year’s Turbo Expo will be in Glasgow, Scotland and will be the largest Turbo Expo in history with more than one thousand (1,000) technical papers, with special technical paper tracks and panel discussions in Steam Turbines and Wind Turbines. IGTI is aggressively expanding the scope of our organization to include other energy related technologies where our members have interests and the technical know-how to contribute to advancing the state of the art.

Glasgow is part of a new and rejuvenated Scotland, and is much more than the old industrial city it once was. So if you join us for Turbo Expo, it will be well worth your while to stay a few extra days and see the City and maybe make a side trip or two to see the castles in the countryside. As always, Turbo Expo will have a variety of interesting tours related to the gas turbine industry, so sign up early because the space will be limited.

On behalf of the IGTI Board of Directors, I thank Prof. Seung Jin Song of Seoul National University who has led the very successful initiative to increase participation in leadership roles of our Asian members for this year’s Turbo Expo. In Glasgow, 28 of the sessions will be chaired by Asian professionals; this number is up from 10 or fewer in previous conferences. This is a very important change, since the “East” represents the largest emerging market for gas turbines and related equipment. While IGTI has long been “International” in our North American and European composition, we need to expand our horizons to include all areas of the world with OEMs, part and service suppliers, as well as users. Again, Prof. Song’s efforts were instrumental in making this happen.

Finally, the GGTN is a forum for short, general interest, technical articles. Take some time and enjoy the articles contained in this, past (at http://igti.asme.org – click the “News” button), and future editions. Also, if you or somebody in your technical committees, work, etc. has an interesting article that would be of interest to our readership, please contact our editorial board, GGTN Editor Rebecca Watrous (watrousr@asme.org), or me. We depend on you to supply the really interesting articles for the GGTN. Don’t be shy!

Thank you for reading the Global Gas Turbine News. ✪

CALENDAR OF EVENTS

APRIL 4-9, 2010
13th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery (ISROMAC-13)
Sheraton Moana Surfrider Hotel | Honolulu, Hawaii USA
Contact: Prof.Toshinori Watanabe (University of Tokyo, Japan)
Email: isromac-13@aerost.u-tokyo.ac.jp

MAY 10-14, 2010
Mechanical Integrity of Gas Turbines Course
Cranfield University, UK
For more information, contact: c.bellis@cranfield.ac.uk or visit http://www.cranfield.ac.uk/soe/shortcourses/gte/page4588.jsp

JUNE 7-9, 2010
Canadian Society of Mechanical Engineers (CSME) Forum
Hotel Grand Pacific | Victoria, BC Canada
The purpose of the Forum is to facilitate networking, as well as to disseminate research results and new technologies. Early registration discount deadline is April 15. http://www.csme2010.uvic.ca

JUNE 7-11, 2010
Gas Turbine Performance Course
Cranfield University, UK
For more information, contact: c.bellis@cranfield.ac.uk or visit http://www.cranfield.ac.uk/short/courses.jsp?subjectid=1015

JUNE 12-13, 2010
ASME Turbo Expo Courses
Scottish Exhibition & Conference Center | Glasgow, Scotland, UK
June 12, 2010
• Thermal Spray and Other Coatings for Gas Turbine Selection and Application for OEM and Maintenance & Repair
• Failure Investigation of Gas Turbines
June 13-13, 2010
• Gas Turbine Aerothermodynamics & Performance Calculations
• Pipeline Engineering for Gas Turbine Industry
June 13, 2010
• Basic Gas Turbine Metallurgy and Repair Technology
• Film Cooling & Technology for Gas Turbine Workshop

JUNE 14-18, 2010
ASME Turbo Expo 2010
Scottish Exhibition & Conference Center | Glasgow, Scotland, UK
IGTI’s flagship event comprises a major turbine conference and exhibition. Visit www.turbexpo.org for more details.

JUNE 21-25, 2010
Combined Cycle Gas Turbines Course and Gas Turbine Combustion Course
Cranfield University, UK
For more info on the Combined Cycle course, visit: http://www.cranfield.ac.uk/soe/shortcourses/gte/page4421.jsp
For more info on the Combustion course, visit: http://www.cranfield.ac.uk/soe/shortcourses/gte/page4511.jsp

JULY 12-14, 2010
Engineering Systems Design and Analysis (ESDA) 2010
Yeditepe University | Istanbul, Turkey
The biennial ESDA conference is the major scientific and engineering event of the ASME European District. Call for submission of abstracts and further information can be found at: http://www.asmeconferences.org/ESDA2010/

JULY 25-28, 2010
AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit
Nashville Convention Center & Renaissance Hotel | Nashville, Tennessee USA
The objective for JPC 2010 is to identify and highlight how innovative, green aerospace propulsion technologies are powering both new and evolving systems. Visit www.aiaa.org for more details.

OCTOBER 4-7, 2010
ASME Gas Turbine Users Symposium (GTUS)
Co-located with 39th Turbomachinery Symposium
George R. Brown Convention Center | Houston, TX USA
With its focus on gas turbine drivers, the GTUS program will complement the excellent technical content pertaining to rotating equipment offered at the Turbomachinery Symposium.

JUNE 6-10, 2011
ASME Turbo Expo 2011
Vancouver Convention & Exhibition Centre | Vancouver, British Columbia, Canada
IGTI’s flagship event comprises a major gas turbine conference and exhibition.

JUNE 11-15, 2012
ASME Turbo Expo 2012
Bella Center | Copenhagen, Denmark
IGTI’s flagship event comprises a major gas turbine conference and exhibition.
Last year in September, while in Switzerland, I went to see the very first industrial gas turbine which started operation in the Swiss city of Neuchâtel, in 1939. This 4 MWe machine is now on display in a special museum on the grounds of Alstom in Birr, a village not far from Zürich. Here I will give a short account of my visit to this ASME Mechanical Engineering Landmark*, for GGTN readers interested in gas turbine history and those who may want to see this impressive inaugural power plant themselves.

Reza Abhari, past chair of IGTI’s Board of Directors, and professor at the Swiss Federal Institute of Technology (ETH Zürich) invited me to be an external examiner for the thesis work of one of his Ph.D students, Peter Schübach. Reza holds the same ETH professorship that was held by the famous turbomachinery pioneer, Aurel Stodola (1859–1942). Professor Stodola wrote one of the first definitive texts on steam turbines and gas turbines (1906) and figured prominently in the development and testing of the 1939 Neuchâtel power plant.

The ETH Zürich Campus is situated on the slopes of Zürichberg, a high hill above the old city, providing views of Lake Zürich and, way in the distance to the south, faint views of the Swiss Alps. The day after doctor-to-be Schübach successfully defended his thesis, I set off to the Alstom museum. Following directions given to me by IGTI member Dietrick Eckardt of Alstom, I took a 40 minute train ride from the Zürich train station to Brugg where I boarded a local bus for a short trip to the Alstom Rotor Factory in the village of Birr.

I was met by Alstom’s Jürg Eugster who gave me a tour of the Rotor Factory and the museum. Alstom is the only gas turbine manufacturer that welds the entire gas turbine rotor together to form one piece and seeing the welding process performed on a 115 ton rotor is quite impressive.

The museum for the first industrial gas turbine is in an attractive glassed-in building, adjacent to the rotor plant. The gas turbine had originally been in operation for 63 years in a bombproof building, serving the city of Neuchâtel as a standby and peaking unit for electrical power. It was closed down in 2002 after damage to the generator occurred, and then was moved to Birr by Alstom for restoration. It was put on display in its new museum home in 2006.

According to IGTI’s founder, R. Tom Sawyer, official testing of the world’s first operational industrial gas turbine began on July 7, 1939, just over 70 years ago. In his 1945 textbook, The Modern Gas Turbine, Sawyer reviewed the test program carried out under the personal supervision of Professor Stodola (then 80 years of age) at the Baden works of the Brown Boveri Company (now Alstom).

Burning fuel oil, this very first industrial gas turbine powered an electrical generator with a peak output of 4 MWe. Professor Stodola reported that the plant had an overall thermal efficiency of 17.38% (compared to today’s simple cycle gas turbines which can be in the 30 – 40% range).

The Neuchâtel gas turbine looks surprisingly “modern”. The axial flow compressor, axial flow turbine and electrical generator are inline, and directly coupled, and ran at 3000 rpm to produce 4 MWe. It is roughly 3-5 times larger than the 7 MWe Solar Taurus gas turbines in our University of Connecticut cogen plant.

The stator vanes in both the compressor and the turbine are cantilevered from the case. I noted that the pressure gauges all read in kg/cm². As Sawyer writes in his 1945 textbook, the unit does not have a recuperator (heat exchanger) since it was designed for emergency power, where fuel consumption would be of secondary importance.

The compressor air exits into a double inlet volute and then into an overhead combustor. The very large overhead combustor is parallel to the machine’s axis of rotation, with combusted flow exiting down into the turbine. I would guess the large size and long length of the combustor was necessary to evaporate fuel droplets, given the early state of liquid fuel combustion technology in 1939. (One can remember that both Whittle and von Ohain had to combust hydrogen gas in their 1930’s independent invention and development of the first jet engines, before they solved liquid fuel combustion problems.) *

The Neuchâtel gas turbine at Neuchâtel (1939)

It is a great experience to see this historic electric power gas turbine. In 1939 it was a true new prime mover, the first of its kind, and not arising from small changes to previous energy converters. To learn more about this remarkable machine, you can go to the ASME Historic Mechanical Engineering Landmark website (#135) or go visit it yourself!
Why Should I Choose IGTI Webinars?

**AFFORDABLE** – priced under $200 for a site license per webinar; train your entire staff in your conference room

**TIMELY** – 1 hour bite-sized training on topics beneficial to you and your job

**PRODUCTIVE** – learning that is convenient and fits your schedule

**ACCESSIBLE** – No special software or add-on equipment required (system requirements: PC, Internet connection and phone)

If you have a topic you think will be of interest to the gas turbine industry, please contact Shirley Barton at bartons@asme.org and she can schedule a webinar for you.

IGTI Professional Development Highlights:

- In FY2010, IGTI will deliver 12 short courses/workshops and several webinars.
- Based on YTD statistics, 64% of the attendees to IGTI Training Classes fall into the category of “Early Career Engineers.”
- This past September, two courses were held in conjunction with the Texas A & M Turbomachinery Symposium in Houston.
- IGTI and the Southwest Research Institute (SwRI) partnered to offer a “Training Week” in February at their facility in San Antonio. Four hands-on courses were offered.
- IGTI is partnering with ASM International to do a Gas Turbine Metallurgy Coatings & Repair Technology Workshop May 2, 2010 in Singapore with the International Thermal Spray Conference (ITSC).
- In addition to these partnerships, IGTI will partner with the von Karman Institute (VKI) to offer a Film Cooling Science & Technology for Gas Turbines Workshop in conjunction with Turbo Expo 2010 in Glasgow.
- Our “sister” institute, IPTI, will also partner with us at Turbo Expo 2010 by offering a customized course, Pipeline Engineering for the Gas Turbine Industry.
CONTINUED FROM PAGE 1

ANNUAL WOMEN’S DINNER – Women working in the turbomachinery industry who register for Turbo Expo are eligible to attend the annual women’s networking reception and dinner. The dinner will be held during Turbo Expo on Tuesday evening, June 15, 2010. Registered female delegates will receive an RSVP email from IGTI later this spring. Be sure to respond promptly! This year the dinner is generously sponsored by both Pratt & Whitney and Siemens.

SPECIAL NETWORKING EVENT FOR YOUNG ENGINEERS – Featuring the top experts and leading companies in the field of turbomachinery, there is no better place for young engineers to be than Turbo Expo! While attending Turbo Expo 2010, young engineers won’t want to miss a special networking event on Wed., June 16, for rising engineers. This special networking event will give young engineers the opportunity to meet a variety of representatives from the turbomachinery industry as well as members of IGTI’s technical committees. Join IGT’s fan page on Facebook and click the Events tab. Visit www.turboexpo.org to register! Students qualify for discounted registration.

IGTI salutes the companies that are supporting Turbo Expo 2010 through sponsorship. Please let them know you appreciate their support:

Platinum
GE
Pratt & Whitney
Rolls-Royce

Silver
Ansys

Bronze
Oxsensis
Numeca International
Solar Turbines

Additional
ALSTOM
Flowmaster
Parker
Siemens
Southwest Research Institute
Dean’s Shortbread

Turbo Expo Facility Tours* Announced!

Alstom – Torness Power Station  
Torness nuclear power station was the last of the UK’s second generation nuclear power plants to be commissioned. The station consists of two Advanced Gas-cooled Reactors (AGR) capable of producing a peak rating of 1364 MWe. Torness nuclear power station is located approximately 30 miles east of the city of Edinburgh at Torness Point near Dunbar in East Lothian, Scotland. The tour is restricted to 30 participants. Each delegate wishing to take the tour must complete a security application posted on the Turbo Expo web site and submit it with a copy of your passport no later than 11 May 2010.

CLYDEUNION  
CLYDEUNION Pumps provides pumping solutions through pump technology, hydraulic design and engineering as well as global aftermarket support. The tour will be at the company’s largest facility in Glasgow that has been manufacturing there for over 120 years. The Glasgow site provides centrifugal pumps for all six of its business sectors, including conventional power, and specializes in products for the upstream oil and nuclear power industries.

Doosan Babcock Energy Ltd.  
Doosan Babcock is offering a tour at its headquarters near Glasgow, focusing on the Research and Development Centre. You will have the opportunity to see work on the development of advanced clean energy technologies and to visit the combustion test facilities, where Doosan Babcock is currently carrying out work on carbon dioxide capture and, in particular, is running the world’s largest demonstration of Oxyfuel combustion.

GSE Systems Power Station Simulation Training Centre at Strathclyde University  
The university’s Department of Electronic and Electrical Engineering is home to the only academic, fully flexible GSE Power Station simulator suite designed for training in Europe. This $4 million simulation training and education centre offers a unique facility that provides the basis for research and education in the areas of real-time simulation, power station control and advanced diagnostics. The simulator replicates actual control rooms with instrumentation and controls driven by computer models that replicate a plant’s actual response to normal operating conditions.

Inchinnan Manufacturing Facilities  
Rolls-Royce plc is hosting this combined tour to both the Rolls-Royce Inchinnan Centre of Excellence for Compression System Component Manufacture and the adjacent Advanced Forming Research Centre (AFRC) which is due to open in the Spring of 2010. AFRC is a partnership between the University of Strathclyde and global industrial manufacturing companies including Rolls-Royce, Boeing and Mettis Aerospace and specialist suppliers such as GKN, Bodycote, EKES and Fanuc.

Whitelee Windfarm  
Whitelee Windfarm is Europe’s largest windfarm and is located on Eaglesham Moor just 20 minutes from central Glasgow. Over the past ten years Whitelee has been carefully planned and designed to work in harmony with the existing environment, and after three years of construction, the windfarm is fully operational and producing clean, green energy. The windfarm has 140 turbines which can generate 322MW of electricity, enough to power 180,000 homes.

*For facility tour details and stipulations, visit www.turboexpo.org.
30-Year Anniversary of Friction Damper Technology in Turbine Blades

By Dr. Jaroslaw Szwedowicz, Program Manager Internal Projects, Alstom Power, Switzerland

From the beginning of time friction has accompanied mankind, who has empirically applied its nature to create fire for roasting and safety. A little later mankind invented the wheel to reduce frictional drag when carrying goods. Up to date the demand on frictionless motion in rotating machines is an engineering challenge, providing magnetic bearings as a solution. On the other hand, frictional drag is readily utilized for friction clutches, breaks, welding, and friction dampers.

At the end of the 15th century, Leonardo da Vinci had experimentally shown the proportional relationship between frictional drag to external loading as well the independency of friction drag to the contact area. 150 years later, da Vinci’s unpublished findings were confirmed by two Amontons’s laws (1699), which were verified mathematically as non-linear friction forces by de Coulomb in 1781. Finally, in 1956 a physical interpretation of these laws were explained by Bowden and Tabor, who proved that the true contact area is determined by the asperities at the contact surfaces whose higher numbers come into contact by enlarging the normal force.

In the lifetime assessment, the alternating stress against the mean stress determines the fatigue damage of a mechanical component, as determined with the Haigh’s Mean Stress Diagram. Reduction of the alternating stress has a direct impact on the lifetime extension, especially for engines operating with variable rotational speed. With respect to turbine blades, one approach is to decrease flow excitations, which is a challenge since higher demands on turbine performance can be achieved with 3D blading technology. Now blade excitation mechanisms, which are traditionally empirically defined, are being intensively investigated with a growing number of different Fluid-Structure Interaction projects. Another alternative is to increase damping capabilities based on internal material dissipation, aero-damping and frictional dissipation at the blade interfaces. Although material damping increases for higher alternating stresses, its overall influence on suppressing vibration can be neglected in the design process. High aero-damping basically means bigger imperfection in the aerodynamic design of the turbine profile, so that this phenomenon is any key driver for reducing the alternating stress. Then, there is nothing left besides an increase in the frictional dissipation at the blade interfaces.

The first analytical analysis of forced vibrations with friction sliding was performed by den Hartog (1931), who approximated the non-linear friction Coulomb force as an equivalent viscous damping. Earliest theoretical investigations of blade vibrations with friction sliding appeared in the 70s. The major motivation of those works was based upon old design practice, which allowed for adding additional lacing wires or zigzag bolts between blades for reducing resonant amplitudes to an acceptable level. Earles and Williams (1972) extended Hartog’s formulation by developing a new linearization concept of the non-linear friction force on a rigid contact (Fig. 1a). For dynamic modeling of tuned and mistuned assemblies, similar models for a single contact point representing a rigid contact coupling were applied by different researchers (Muszynska and Jones, 1978).

Already then, den Hartog’s measurement demonstrated hysteresis relationships between the tangential force and tangential contact displacement (Fig. 1c-d), caused by local elastic deformations between contacting bodies. The frictional hysteresis loop can be represented by the resulting elastic stiffness C_f for the sticking contact condition (Fig. 1), friction coefficient μ, normal contact load F_N and the relative contact oscillation u_τ, which depends on the excitation load. Concerning periodic vibrations, non-linear friction forces are defined by applying the Harmonic Balance Method either with a one-term or with multi-term harmonics (Fig. 1). The reliability of the numerical solution increases by applying more Fourier harmonics in the linearization of the non-linear friction hysteresis loop. In this modeling, the friction coefficient is a physical input depending on the material pair in contact, and the contact stiffness can be either measured experimentally or computed with the Finite Element Method (FEM).

The centrifugal loading acting on the blade induces high contact stresses in the rotor groove, which generate sticking contact conditions. Also, shroud or winglet connections require the reliable sticking contact condition, which integrates all rotating airfoils into the disc assembly in service. In 1980, Jerry Griffin published an integrated approach for the under-platform friction damper design, utilizing this centrifugal loading. His idea was to apply an individual metal piece, which is pressed by the centrifugal load against the platforms of vibrating turbine blades (Fig. 2). The dissipation energy is then produced by friction sliding between the vibrating platforms and the pressed damper. For a real gas turbine blade, his experimental data confirmed well the numerical results, which were calculated with the macro-slip approach (Fig. 1b). Griffin identified that the tangential contact stiffness C_f is a key parameter in the damper optimization (Fig. 2).
Besides a good understanding of blade mechanics, the design process for the friction airfoil damper requires proper numerical tools solving non-linear dynamic equations, as well as the measured frictional coefficients and contact stiffness at different temperatures. Therefore, several universities have followed Griffin’s idea and developed numerical tools considering micro-slip, roughness of the contact surface, 3-dimensional motion of the damper including sliding, sticking and open contact modes on different forms of dampers as well as shrouds, winglet, zigzag and wire couplings. Until now, these methodologies have not been implemented in commercial FEM suits. Close collaborations have been ongoing between different OEM (Original Equipment Manufacturer) and academia to assure further progress of this technology.

Griffin’s findings have opened up friction damping technology, which is now commonly utilized by many OEMs in gas and steam turbines. A huge number of research papers and patents have been published during the last 30 years. Every year, new publications show the development of sophisticated inter-disciplinary knowledge for predicting the non-linear blade dynamic behavior in the most reliable manner. Friction dampers reduce resonance amplitudes several times with respect to that for sticking contact condition. But they only act efficiently in a narrow frequency range for the resonance of interest. Therefore, other technologies are continuously being developed, based for instance on piezo-materials, which can extend the allowable limits of High Cyclic Fatigue for the conventional blade alloys.

References

GAS TURBINE USERS TO MEET IN HOUSTON, OCT 4-7, 2010

Focused on the daily operational and managerial challenges faced by turbomachinery users, the ASME Gas Turbine Users Symposium (GTUS) is a unique forum for current, practical and interactive exchange among gas turbine users, manufacturers and consultants.

The symposium offers users a great opportunity to learn about the most recent industry best practices, new technology and developments arranged in a series of discussions, panels and tutorials, an ideal setting for the exchange of information with other industry practitioners.

Registrants may expect to network and exchange the latest in technology and best practices with experts from across the spectrum of gas turbine design, application and field proficiency. Program topics emphasize operations and maintenance, as well as gas turbine design, advances and environmental issues.

Preceding the symposium, IGTI will also present three, one-day workshops offering in-depth, fundamental training.

In addition, GTUS will again co-locate with Texas A&M’s Turbomachinery Symposium, to be held Oct. 4-7, 2010, at the George R. Brown Convention Center in Houston. Thus, GTUS registration not only provides admission to all GTUS sessions but also includes free access to the 39th Turbomachinery Symposium exhibit floor, complimentary lunches and evening meals, gas turbine users networking, and an invitation to the Turbomachinery welcome address. For a nominal upgrade fee, delegates can be registered for both GTUS and the 39th Turbomachinery Symposium.

Visit www.asmeconferences.org/gtus10 for more details and the latest updates on GTUS 2010.

Why YOU Should Attend GTUS 2010

- Job-related Information
- Networking
- 39th Turbomachinery Symposium Exhibition
- Latest Technology

- Best Practices
- High Quality Presentations from Experts
- Timely Answers
- High ROI

In this challenging economy, get the most for your training/education/conference budget by attending IGTI training workshops, the ASME Gas Turbine Users Symposium and the 39th Turbomachinery Symposium, all together in Houston, October 4-7, 2010.
A SUPPLEMENT TO MECHANICAL ENGINEERING MAGAZINE

Global Gas Turbine News
April 2010

IGTI is sad to learn of the recent passing of Dr. Jeffrey N. Shinn, a former Chair of the IGTI Board of Directors. Shinn served on the IGTI Board from 1994–2000. He was also active in IGTI’s Controls, Diagnostics and Implementation Technical Committee and served as Chair, 1988–1990.

Shinn graduated from the University of Connecticut with BS and MS degrees in mechanical engineering. He then continued his studies at Yale University, receiving another MS degree and then a doctorate of engineering in 1957.

Shinn began his career at General Electric, where he developed control systems for industrial and aeroengine gas turbines and new fluid control concepts, including fluidics. He was awarded 10 patents involving control concepts for various sensor and actuator technology. After 20 years with GE, Shinn left to manage controls development for Solar Turbines; he was considered to be a turbomachinery industry pioneer.

In addition, Shinn held a private pilot fixed wing license and built an Experimental Aircraft Association design Thorp T-18 aircraft in his basement. He is survived by his wife Joyce, three sons and grandchildren.

ASME Turbo Expo 2011
Set for Vancouver, Canada

Plan now to join 3,500 turbomachinery colleagues from around the world at TURBO EXPO, ASME’s premier gas turbine technical congress and exposition, set for June 6-10, 2011, in Vancouver, Canada, at the Vancouver Convention & Exhibition Centre.

Turbo Expo 2011 highlights include:

• A FIVE-day Technical Congress that sets the world standard for turbomachinery technology events
• A three-day, premium exhibition of turbine products and services supported by leading companies in the industry
• A dynamic keynote session featuring prominent industry leaders
• A value-packed registration package that includes proceedings, access to all activities and abundant networking opportunities, including receptions and daily lunches
• In-depth workshops providing fundamental study on career development subjects

LEADERSHIP

Leading the organization of Turbo Expo 2011 are Executive Conference Chair, Dr. Ibrahim Yimer, Conference Chair Dr. Thomas Sattelmayer and Technical Program Chair, Timothy Snyder.

Dr. Yimer is Director of the Gas Turbine Laboratory, Institute for Aerospace Research at National Research Council Canada (NRCC) in Ottawa, Ontario, Canada. He joined NRCC in 1999 as a Research Scientist and spent close to nine years focusing on applied research in emerging technologies. He has authored over 45 technical publications and is a member of the Aerospace Industries Associations of Canada (AIAC) and the Canadian Aeronautics & Space Institute (CASI).

Dr. Sattelmayer is a professor and chair of thermodynamics at Technische University, München, in Germany. He has served as a former chair of the ASME IGTI Combustion, Fuels & Emissions Committee and Technical Program Chair for Turbo Expo 2008. He has also been a recipient of IGTI’s John P. Davis Award and the 2000 ASME Gas Turbine Award.

Snyder is Manager, Combustor Aerothermal Group with Pratt & Whitney in East Hartford, Connecticut. He has over 20 years of industry and academic experience developing combustion systems and combustion technologies. He is an active member of the ASME IGTI Combustion, Fuels, & Emissions Committee, having served as committee point contact, vice chair, and chairman of the committee from 2003 to 2009.

TECHNICAL CONGRESS

The ASME Turbo Expo Technical Congress is globally recognized as the most important annual, international event for gas turbine technology. It is highly respected for presenting cutting edge, state of the art gas turbine technology from around the world, including contributions from academia and industry. The program scope has also been expanded to include related topics in wind and steam turbine technology. To offer your work for publication in 2011, please note that abstracts are due by September 6, 2010 with drafts due November 8, 2010.

EXPOSITION

When you exhibit at Turbo Expo, you will be among other key industry players. Turbo Expo brings together the top players in the gas turbine industry and academia – attracting a key audience from aerospace, power generation and other prime mover-related industries. Exhibiting at Turbo Expo will maximize your ROI by placing your company in front of a focused target market, enabling you to generate high-quality leads to achieve your marketing objectives.

Exciting brand-enhancing sponsorship packages are also available! Packages are designed around your particular corporate goals and are an extremely effective way for your company to really stand out from the crowd – before, during and after the Show.

To insure your company’s participation in the 2011 exposition, contact IGTI at +1-404-847-0072 x1646 or via e-mail at igtiexpo@asme.org.

IN MEMORIUM

Dr. Jeffrey N. Shinn

Dr. Jeffrey N. Shinn graduated from the University of Connecticut with BS and MS degrees in mechanical engineering. He then continued his studies at Yale University, receiving another MS degree and then a doctorate of engineering in 1957.

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