



# IAGT Newsletter

January 2011

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## 2011 IAGT Committee

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## IAGT Chairman's Corner



Welcome to our latest issue of the IAGT Canadian Gas Turbine Newsletter. We hope this newsletter provides you with valuable information and new developments in the Canadian gas turbine industry along with new contacts should you have any questions. The current 2011 IAGT Committee names are provided with this newsletter. If you have any questions, please contact the committee members directly via our website [www.iagtcommittee.com](http://www.iagtcommittee.com).

The Industrial Application of Gas Turbines (IAGT) Committee, formed in 1973 under the sponsorship of the National Research Council of Canada, is a Technical Advisory Group to Canadian industry and government. The group provides a forum for the exchange and dissemination of ideas and the communication of new developments related to the industrial application of gas turbines in Canada.

Presently under the sponsorship of the Canadian Gas Association and the National Research Council, the IAGT Committee's specific functions relate to the organization of a biennial technical symposium for the presentation of technical papers and discussion panels covering all aspects of industrial gas turbine operation as well as providing a forum for reviewing directives, guidelines, codes and practices, as issued by Regulatory Agencies, which impact directly on the application of gas turbines.

Thank you to everyone that attended our recent IAGT Fall 2010 Course in Hamilton, Ontario. The Fall Course was very successful thanks in part to all the speakers and organizers. A special thank you to Siemens Canada Limited, for opening their doors for a tour enjoyed by all.

As we enter 2011 there are many interesting opportunities in the gas turbine industry. Gas turbine based power generation remains to be very popular, yet there are questions surrounding the longer-term role of gas turbine-based power generation. Future energy policy will have an impact on gas turbine technology. Gas turbine manufacturers are currently working on solutions that will increase turbine efficiency and reduce emissions. There is also significant activity ongoing to adapt gas turbines to run on alternative fuels. Many of these questions will be addressed in our next symposium. Scheduled for October 2011 in Banff, Alberta we will once again have an opportunity to take a fresh look at the gas turbine industry and to keep abreast of both current and emerging technologies.

Hope to see you all in 2011.

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Chairman, IAGT Committee

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## IAGT Fall 2010 Course

The Fall 2010 Course was held on October 21<sup>st</sup> and 22<sup>nd</sup>, 2010 at the Sheraton in Hamilton, Ontario. Approximately 50 delegates were in attendance for the training sessions and papers. Training sessions focused on Applications and Advancements of Gas Turbines and Fuels, Emissions and Life Cycle Considerations. The sessions were led by Operators, Engineers and OEM's. You can find a complete listing of the presentations on our website and you are encouraged to download them.

Thanks to Siemens Canada Limited for opening their doors to a tour for the group. This was an opportune time for the group to visit this historic facility due to the recent announcement of Siemens that the production of 60-Hertz gas turbines at the Hamilton site in Canada will be phased out. Plans are in place by Siemens to build a new production plant for 60-Hertz gas turbines at its existing facility in Charlotte, North Carolina



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## Contact Us

[www.iagtcommittee.com](http://www.iagtcommittee.com)

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## Upcoming Events

### 2011 IAGT Symposium

October 17<sup>th</sup>-19<sup>th</sup>

Banff Springs Hotel  
Banff, Alberta, Canada

Once again Banff, Alberta will be home to our 2011 IAGT Symposium. Please mark your calendars for October 17th to 19th, 2011. The Call for Papers is out with a deadline of the end of February for papers. A block of rooms at the Banff Springs Hotel has been reserved. Sponsorship opportunities are available.

We will be presenting the 2009 IAGT Symposium Best Paper Award to Randy Bohl of Chinook Engineering Ltd. Randy's paper, titled "Waste Heat Recovery from Existing Simple Cycle Gas Turbine Plants – A Case Study" was selected by a compilation of votes from the audience.

For more information on the upcoming Symposium please visit our website at [www.iagtcommittee.com](http://www.iagtcommittee.com).

### IGTI Turbo Expo

June 6<sup>th</sup>-10<sup>th</sup>, 2011

Vancouver Convention & Exhibition Centre  
Vancouver, BC, Canada

Plan to join more than 3,000 turbomachinery colleagues from around the world at ASME TURBO EXPO, ASME's premier turbine technical congress and exposition, set for June 6-10, 2011, in Vancouver, Canada, at the Vancouver Convention & Exhibition Centre.

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. To address the world's increasing energy demands, IGTI's leadership is broadening the scope of the ASME Turbo Expo technical program to include related technical topics in Steam Turbines, Wind Turbines, Fans & Blowers and Solar Brayton & Rankine Cycle.

For more information please visit [www.igti.asme.org](http://www.igti.asme.org).

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## Recent Announcements

### Combined Cycle Power Plants

TransCanada's Halton Hills Generating Station commenced operating on September 1, 2010. This combined cycle power plant is nominally rated at 683 MW. Located west of Toronto, the plant consists of two Siemens SGT6-5000F combustion gas turbines. Each CTG exhausts into an Alstom triple pressure Heat Recovery Steam Generator equipped with natural gas fuelled duct firing. The two HRSGs supply steam to one Alstom Steam Turbine Generator which exhausts into an SPX air-cooled condenser.

Aecon Group Inc. announced that its wholly-owned subsidiary Innovative Steam Technologies (IST), has been awarded a contract to supply its Once-Through Steam Generators (OTSG) to British Columbia Hydro and Power Authority. IST will design and supply one OTSG unit to B.C. Hydro and Power Authority, a public utility company in British Columbia. The OTSG will recover waste heat from one LM6000 engine at B.C. Hydro's facility in Fort Nelson, which is being converted from a simple cycle steam injection plant to a full combined cycle facility.

### Cogeneration Plants

TCPL's Bear Creek cogeneration plant near Grande Prairie, Alberta is a 1 X 1 combined-cycle cogeneration with steam augmentation from an existing wood waste boiler. The plant is configured around a single 50 MW natural gas-fired Rolls Royce Trent gas turbine generator with dry low emissions system, which exhausts into a HRSG to produce high pressure and low pressure superheated steam. A recent addition (summer 2009) to the power plant was an evaporative inlet fogging system to augment the Trent's power production.

StandardAero has announced that its Energy Business Unit in Winnipeg, Manitoba has been awarded a contract for the turnkey supply and installation of a cogeneration system for the London Health Science Center (LHSC), in London, Ontario. The cogeneration system includes a gas turbine skid housing, a Rolls Royce 501KB5S turbine an electrical generator and a heat recovery steam generator. The system is part of a powerplant expansion that will supply electricity and steam to the LHSC campus.

### Peaking Plants

Aecon Group Inc. announced that a joint venture, in which its Industrial Division is a partner, has been awarded an engineering, procurement, and construction contract by Northland Power for an 86 MW gas-fired peaking plant in Spy Hill Saskatchewan. Aecon will provide comprehensive project management and construction services including civil, mechanical, electrical and instrumentation installation work for the project. Black & Veatch will perform the balance of plant engineering including the integration of the gas turbines and engineered equipment procurement, as well as plant start-up management and commissioning. Completion of the Spy Hill Peaking Plant is expected in the fall of 2011.

Siemens Energy has been given full notice to proceed from York Energy Centre LP for the supply of two highly efficient SGT6-PAC 5000F gas turbine-generators and supporting gas turbine auxiliaries for the York Energy Centre power plant located in the Township of King, Ontario (approximately five kilometers north of Toronto). The 400-MW, natural gas-fired plant will supply highly efficient and environmentally compatible power to over one million people living in the northern York region. The York Energy Centre power plant will be commissioned in the second quarter of 2012.

### Opportunities for Clean Energy Applications

With all of the recent talk of Cleaner Energy systems in North America, we do not often hear about the many and varied examples of gas turbine-based systems having been built to provide power and heat to our industries and communities. However several international organizations such as the IEA World Energy Outlook, US Department of Energy and the EPA, have identified such opportunities in recent study reports. Along with energy conservation and all types of renewable energy, gas turbine systems are an important source of Cleaner Energy production, with low air pollution and GHG emissions. Mostly fueled by natural gas or light oil, gas turbine engines can also use bitumen or coal-based synthetic gas fuels, which can be related to hydrogen-based IGCC or polygeneration with carbon capture alternatives. It is quite possible that these systems will be able to provide solutions to about 30% of the

world's stationary air pollution and GHG reduction needs as older thermal energy systems become due for retirement.

Recent additions of gas turbine plants have been the most prolific of any energy technology choice in Canada, providing about half of total new capacity since 1995. Efficient cogeneration and combined cycle systems have employed gas turbine units across the full size range (0.1 to 180 MWe) and have already helped to avoid about 30-40 Mt/yr of CO<sub>2</sub> and 200 kT/yr of air pollution in the energy sectors. There are over 1100 small and large gas turbine units in Canadian stationary applications, with almost 24000 MW of aero-derivative and industrial frame systems in service by end of 2010. There is real potential of a doubling of this activity over the next two decades, if North American environmental and energy security policy objectives become well established, and if clean natural gas and syngas fuel supplies can be enhanced.

## Research and Development

New combustion R&D and technical training in energy system design will lead to solutions for addressing many environmental and economic objectives. Research is needed on reliable Dry Low NO<sub>x</sub> combustion in several operating conditions, small and efficient gas turbine units, and waste heat recovery methods. Solid Fuel Gasification is also a critical transformational opportunity for large gas turbine systems where natural gas is at a premium, where coal or petcoke is abundant, and where CO<sub>2</sub> capture and storage can be done. High pressure hydrogen-rich fuel combustion must be reliable and safe to provide for effective carbon capture, with moderate NO<sub>x</sub> emissions. The National Research Council Gas Turbine Labs in Ottawa have begun construction in November 2010 on a syngas delivery and combustion system for scheduled completion in 2012.

Organizations such as the International Gas Turbine Institute (IGTI), the European Turbine Network (ETN), the US CHP Association and Cogen Europe are facilitating technical and economic research for these issues. Important R&D functions being proposed at Canadian facilities such as CanmetENERGY, Alberta and Saskatchewan Research Councils, the National Research Council, along with universities and industrial partners are;

Gasification - to develop pilot gasification reactors for various Canadian feedstocks, producing cost-effective syngas products.

Combustion - high pressure combustion test cells would allow improved and reliable gas turbine combustion with high H<sub>2</sub> and CO design mixtures which have high flame speeds, temperatures and flashback characteristics.

Carbon Capture, Delivery and Storage - collaborative work with western Canadian R&D centers will prove various delivery technologies for coal power and oilsands operations.

System Integration and Economic Optimization – developing a business case for climate change and air pollution solutions, with designs to integrate individual modules of polygen and processing plants.

Outreach and Management – disseminating knowledge and developing consensus on Clean Energy criteria, with operating experience that can lead to lower risk for the technical and financial aspects of new alternative energy systems for all regions of Canada.