CAME GT

Second International Conference on Industrial Gas Turbine Technologies
29/30 April, Golf Hotel, Bled, Slovenia

Conference Programme

(subject to final alteration)

Background

The aim of the Conference is to bring together researchers in gas turbine technology from the European Union, Accession Countries, Japan and the US, to discuss current progress and future developments. Current research is directed towards reducing CO_2 and NOx emissions by enhancing cycle efficiencies through improved aerodynamics, combustion materials and systems of plant. The Conference will cover RTD projects in these disciplines and look to the future of gas turbine plant burning fossil fuels. It will demonstrate that if there is not to be a dramatic reduction in the efficiency of electricity production when CO_2 removal and disposal are introduced in the cycle, then the efficiency of basic gas turbine components will have to rise substantially.

Format

The Conference will be held on 29/30 April 2004 in Bled, Slovenia.

The first day consists of a Plenary Session with contributors from organisations and companies setting the scene of the current situation of Gas Turbine Technology and pointing to the future. This is followed by Parallel Sessions covering the main technologies. The second day continues with the Parallel Sessions and concludes with Closing Comments.

Keynote speakers are drawn from the European Commission, the Gas Turbine Society of Japan (GTSJ), the US DoE, and major gas turbine companies. The Parallel Sessions includes projects from the 5th RTD Framework Programme of the European Union and from research projects being carried out in Member States and Accession Countries. The GTSJ is represented by researchers from Japanese industry and universities and the US is represented by the Department of Energy's NETL

Organisation

The Conference is organised by CAME-GT, a Thematic Network on Gas Turbine Technology supported by the European Commission under the 5th RTD Framework Programme and EuMIGT (European Manufacturers of Industrial Gas Turbines), with the participation of the Gas Turbine Society of Japan. The CAME-GT (www.came-gt.com) network includes major partners from the EU Member States as well as partners from Accession Countries of the EU.

Conference Organization
Dr. D. Pollard, Alstom Power, UK
Christer Bjorkqvist, EuMIGT

Scientific Committee
Prof. M. Aigner, DLR, Germany
Dr M-P. Bacos, ONERA, France
Dr P. Barnard, Alstom Power, UK
Dr C. Berat, Turbomeca, France
Dr R.C. Carroni, Alstom Power, Switzerland
Dr R. Dennis, DoE, US
Prof.De Ruyck, VUB, Belgium
Dr M. Flamme, Gaswärme-Institut, Germany
Dr A. Gökalp, CNRS-LCSR Orléans, France
Prof A. Goulas, AUTh, Greece
Mr M. Hagen, Gastec, The Netherlands
Dr I. Hardalupas, Imperial College, UK
Prof. F. Heitmeir, Graz University, Austria
Prof E. Kakaras, NTUA, Greece
Prof. B. Kalitventzeff, Belsim, Belgium
Prof. Y. Levy, Technion, Israel
Dr R. Knight, Rolls Royce, UK
Dr S. Minett, Cogen-Europe, Belgium
Dr M. Novak, Turboinstitut, Slovenia
Mr M. Oechsner, Siemens AG Power Generation, Germany
Dr P.A. Pilavachi, DG-Research, European Commission
Dr D. Pollard, Alstom Power, UK
Dr A. Poullikkas, Electricity Authority of Cyprus, Cyprus
Dr B. Sirok, University of Ljubljana, Slovenia
Prof. A.M.K.P. Taylor, Imperial College, UK
Dr A. Wiedermann, MAN Turbomaschinen AG, Germany
Mr M. Whiteman, Rolls Royce, UK

Administrative Issues
Rana Baroud, EuMIGT (eumigt@skynet.be)

	DAY 1 – 29th April 2004	
08:00	***Registration***	
09.00	Welcome to the Conference – Matej Novak, University of Ljubljana, Slovenia	
	Plenary Session 1 – International Positions Chairman: David Pollard, Co-ordinator CAME-GT	
	Gas Turbine RTD Strategy for Europe	*Peter Holmes, CAME-GT*
	Industrial Gas Turbines and Related Research Activities in Japan	*Eisuke Outa, Gas Turbine Society of Japan*
	US Department of Energy's Office of Fossil Fuel Energy Turbine Research Programme – Turbines for Coal Derived Synthesis Gas and Hydrogen Fuels	*Richard Dennis, NETL US DOE*
	An Overview of Energy and RTD Policies of the European Union	*Pierre Dechamps, European Commission*
10.30	*Coffee*	
11:00	***Plenary Session 2 - Stakeholders and Networks*** Chairman: Pierre Dechamps, European Commission	
	Thematic Network - CAME-GT	*David Pollard, CAME-GT*
	Thematic Network - CE-IGT	*Herwart Honen, IJPT, Aachen, Germany*
	FENCO – an EC ERANET Specific Supporting Action for Clean Fossil Power Generation in Europe	*Nick Otter, FENCO*
	Coal and Clean Coal Technologies for the Future	*Andrew Minchener, Powerclean*
	CO2NET2 – Gasification projects and CO2 capture	*David Hanstock, Progressive Energy, UK*
	Gas Turbine research in the Accession Countries members of NAS-CAME-GT Thematic Network	*Dimityr Popov, Technical University of Sofia, Bulgaria*
13.00	*Lunch*	
14.00	***Plenary Session 3 – Key Manufacturers*** Chairman – Eisuke Outa, Gas Turbine Society of Japan	
	High-Efficiency Industrial Gas Turbine Designed for Multiple Fuels and Flexible Load Service	*Bernard Becker and Volker Thien, Siemens AG Power Generation*
	Gas Turbines for the next European investment cycle – the ALSTOM view	*Edwin Kraemer, ALSTOM Power Turbo-Systems*
	Validation Progress of Advanced Gas Turbine Technology	*Robert Gleitz, GE Energy*
15.30	*Coffee*	

16.00	***Technical Session 1 – Gas Turbine Technologies***		
	Combustion *Chairman: Brian Pitt, CAME-GT*	**Materials** *Chairman: Peter Holmes, ALSTOM Power*	**Systems** *Chairman: S. Mizuki, Hosei University, Tokyo, Japan*
	Keynote: Combustion for Gas Turbines *M. Aigner & B.Noll, DLR, Germany*	Keynote: Materials for Gas Turbines *Volker Thien, Siemens AG, Power Generation, Germany*	Keynote: Investigations into Power Plant Systems *F Heitmeir, Graz University, Austria*
	New Combustion Systems for Gas Turbines *M .Flamme et. al., Gaswarme-Institut, Germany*	Development of High Temperature Materials for Advanced Gas Turbines in Japan *H. Harada, National Institute for Materials, Ibaraki, Japan*	Latest Operating Experience and Technologies of Large Industrial Gas Turbine *K Tsukagoshi, Mitsubishi Heavy Industries Ltd*
	Lean-Lean Staged Combustion for Extending Range of Ultra-Low-NOx Engine Operation of Gas Turbines *S Hayashi and H. Yamada, Japan Aerospace Exploration Agency*	Multi-Domain Boundary Point Method for problems with Inhomogeneities *V. Kompis, et al, University of Zilina, Slovakia*	Application of a Gas Turbine with Air Bottoming Cycle in the Natural Gas Compressor Stations *D. Popov, et al, Technical University of Sofia, Bulgaria*
	Progress in Component Development for a Novel Hybrid Burner *R.Carroni and G Kelsall, ALSTOM Power Turbo-Systems*	Studies on Innovative NDT Techniques able to detect Damage of Thermal Barrier Coatings for GT Hot Parts, *C Rinaldi et al CESI, Italy*	New Type of Gas Turbine Cycle – Preliminary Investigations *N. Kolev et al, Institute of Chemical Engineering, Bulgarian Academy of Sciences*
	Measurements and Large Eddy Simulation of Combustion Instabilities in a Scaled Gas Turbine Combustor *S. Roux, et. al. CERFACS, France*		
17.30	***End of Session***		
20.00	***Gala Dinner***		

09:00	**Day 2 – 30th April 2004** ***Technical Session 2 – Gas Turbine Technologies***		
	Combustion *Chairman : M Aigner, DLR, Germany*	**Turbomachinery, Heat Transfer and Zero Emission** *Chairman: R Dennis, NETL US DOE*	**Micro Turbine Systems** *Chairman: Petros Pilavachi*
	New Burner Systems with High Fuel Flexibility for Gas Turbines *A. Al-Halbouni et al. Gaswarme-Institute, Germany*	Keynote: Turbomachinery in Zero Emission Power Plant Systems – Future Research and Development Needs *A. Wiedermann, MAN Turbo*	Is there a future for Microturbines? *H. Antoine, ACTE SA France*
	Possibilities of Reducing Emissions in Burning Natural Gas in Gas Turbine Combustors *S. Vesely, Brno, Czech Republic*	Flow Properties in an Axially Rotating Diffuser *T Bajcar et al. University of Ljubljana, Slovenia*	Design and Prototyping of Micro Centrifugal Compressor for Ultra Micro Gas Turbine *S. Mizuki, et al. Hosei University, Tokyo, Japan and E.Outa and Y. Ohta, Waseda University, Tokyo, Japan*
	Flame Front Analysis of High pressure Turbulent Lean Premixed Methane-air Flames *T. Lachaux et al. CNRS and I.G. Shepherd EETD, Berkley, USA*	Turbulence in a Tip-Leakage Vortex: a Factor Influencing Gas Turbine Exhaust Diffuser Flow *R. Willinger and H Haselbacher, Vienna University of Technology, Austria*	Design and Testing of Small Turbomachinery Components at NTUA *G. Sieros, NTUA, Greece*
	Development of Coal Gasified Fuelled Gas Turbine Combustion Technology for IGCC *M Sato, Yokosuka, Japan*	Experimental Evaluation of Heat Transfer on Rotor Blades using Optical Techniques *M. Mori et al. University of Ljubljana, Slovenia*	Operational Experiences from Micro-turbine Energy Systems - the OMES project *A.H. Pedersen, DONG, Denmark*
	Power Density in the Low NOx FLOXCOM Gas Turbine Combustor *Y. Levy, et.al. Turbo and Jet Engine Laboratory, Technion, Israel*		Goals and First Results of the State Funded Project - Biogas Powered Micro Gas Turbine *J. Muller, ISET e.V. Germany*
10.30	***Coffee***		

11.00	***Technical Session 3 – Gas Turbine Technologies***		
	Hydrogen and Liquid Fuel Combustion *Chairman: Matej Novak, Ljubljana University, Slovenia*	**Turbomachinery, Heat Transfer and Zero Emission** *Chairman: A Wiedermann, MAN Turbo, Germany*	**Systems** *Chairman: A.H.Pedersen, DONG, Denmark*
	Modelling of a Turbulent Lean Premixed Prevapourized n-Heptane Flame using the 'FIRST' Combustion Model *B de Jager et al University of Twente, Netherlands*	Gas Powered Zero Emissions Powerplant Design *R.A. Wall ALSTOM Power Turbo-Systems, UK*	Development of Future Marine Gas Turbines in Japan (Super Marine Gas Turbine) *M. Arai, TRASMGT, Tokyo, Japan*
	Hydrogen and Natural Gas Blends Utilisation in Gas Turbine Combustors *G Benelli, et al, ENEL, and L. Castellano, Universita di Milano, Italy*	CO_2 Sequestration for the Combined Cycle Power Plant with Integrated Low Temperature Heat *E. Kakaras et al. NTUA, Athens, Greece*	Contributions to Promote Research in the Field of Gas Turbines in Romania *A. Adam, et al, ICEMENERG Romania*
	Hydrogen Fuelled Gas Turbines: A Prospective Insight into Performance, Emissions and Safety Aspects *M Moliere, GE Energy , France*	AZEP - an EC Funded Project for Development of a CCGT Power Plant without CO_2 Emissions *S-G. Sundkvist, Demag Delaval Industrial Turbomachinery AB, Sweden, H. Eklund, Norsk Hydro, Norway and T. Griffin, ALSTOM Power, Switzerland*	Minimizing Preventative Maintenance Cost via Combination of Monte Carlo Simulation and Genetic Algorithms *S. Pietrzyk and T. Uhl, University of Science and Technology, Krakow, Poland*
	Development and Testing of Ultra Low Emissions Gas Turbine Burners for Liquid Fuels *M. Caruggi and F. Pittaluga, University of Genoa, Italy*	Catalytic Industrial Gas Turbine Prototype Test *G. Nutini, Nuovo Pignone, GE Energy, Italy*	A Review of Current and Future Gas Turbine Technologies *S. Poullikkas, Electricity Authority of Cyprus*
13.00	***Lunch***		

14.00	***Technical Session 4 – Gas Turbine Technologies***		
	Combustion *Chairman : Michel Moliere, GE Energy*	**Gas Turbine Instrumentation and monitoring** *Chairman: Claudia Rinaldi, CESI, Italy*	**Systems** *Chairman: Franz Heitmeir, Graz University, Austria*
	Modelling of Flameless Oxidation Combustion Characteristics and Application in a Gas Turbine Combustor *I.O.Awosope et al, Imperial College, UK*	Keynote*:* Gas Turbine Instrumentation *P. Loftus, Rolls-Royce, UK*	Optimal Choice of CHP Systems for Particular Applications *G. Goral and T Uhl, University of Science and Technology, Krakow, Poland*
	An Acoustically Forced Gas Turbine Dump Combustor for Characterisation using 3D PIV and LIF *A Ruggles and J.B. Kelman, Cranfield University, UK*	Local Measurement of Equivalence Ratio of the Reacting Mixture in a Model Gas turbine Combustor *Y. Hardalupas, et al Imperial College, UK and J Moran and M Whiteman, Rolls Royce, UK*	Combined High Temperature heat and power generation using an advanced gas turbine – Application to a Hydrogen Plant *D. Popov, Technical University of Sofia, Bulgaria*
	Geometrical Aspects of the Gas Turbine Flameless Oxidation Combustion *Y. Levy et al., Turbo and Jet Engine Laboratory, Technion, Israel*	Application of a Diagnostic Tool to Improve the Operation of a Gas Turbine *S. Bellagamba et al. ENEL, Italy*	The Fields of Low Calorific Natural Gases in Western Poland as a Potential Way to the Lowering Emissions of CO_2 by Burning in Small CHP Gas Turbines *T. Dobski et al Poznan University of Technology, Poland*
15.00	***Final Plenary Session*** Chairman: David Pollard, Co-ordinator CAME-GT		
	Exploitation and Dissemination of results from FP5 gas turbine RTD programme. *B. Pitt and M. Hagan CAME-GT*		
	A future direction for EuMIGT *C. Bjorkqvist, Director EuMIGT*		
	Closing remarks: *N.Otter, ALSTOM Power*		
16.00	***Close and Coffee***		