



ETN is a non-profit association bringing together the entire value chain of the gas turbine technology community in Europe. Through the co-operative efforts of our members, ETN facilitates gas turbine research and technology development, promoting environmentally friendly stationary gas turbine technology with reliable and low cost operation.

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Christer Björkqvist
Managing Director

ETN strengthen its user voice and reaches out to global markets

In our last newsletter I addressed the difficulties our industry is facing and the challenge to move R&D forward with today's increasing amount of uncertainties and reduced R&D budgets. I also highlighted the opportunities we have to optimise R&D and reduce costs and risks through an increased cooperation. With this in mind I was very pleased to see the amount of new initiatives that were brought to the ETN platform at our Annual General Meeting (AGM) in April at Total's offices in Paris. Several R&D proposals for EU-funded projects under the new Horizon2020 framework are being prepared. Not only R&D projects are in progress but also projects that address the development of best practise guidelines and standards, by sharing experiences among the stakeholders. Extensive progress has been made over the last years in the Exhaust Systems Project that aims at developing an ISO Standard for Exhaust Systems. Another example is the Air Filtration Project, where a working group is currently being formed. The aim of this project is basically to reduce the cost of operation by looking at ways to increase the reliability and availability of operations through an increased communication and a better understanding of the specific needs and requirements of the stakeholders. You can read more on this project in this issue.

At the AGM, ETN's President Bernard Quiox (Total) made it clear that it is the Board's objective to continue their efforts to bring in even more gas turbine users, both oil & gas operators and utilities, as the active participation of the users is crucial for the success of ETN. Two steps are being taken to follow this strategy. Firstly it has been decided that major issues faced by the users should be addressed and highlighted by a coordinated voice of ETN's user community. This will be initiated by creating an e-questionnaire identifying the users' main technical issues. The expertise and knowledge within ETN's platform could then be used to address and to help solve these issues. Secondly, it has been decided to open-up ETN membership to GT-users located outside Europe, through the creation of a new "Affiliate Member" category. The implementation strategy for this would be to set-up courses/ workshops for GT-users in interesting and strong markets outside Europe. The first course would be held in Dubai, the United Arab Emirates on 11-15 January 2015 and the second course is currently being planned in China.

Finally I would like to highlight the importance to follow the development of European emission directives. Currently the focus is on the Large Combustion Plant Directive and the development of its BREF (Best Available Techniques Reference document) under the umbrella of the IED (Industrial Emission Directive). Additionally, a new EC proposal for medium combustion plants is under development; the Medium Combustion Plant Directive (MCPD). You will find valuable information on these Directives as well as on the new EU 2030 Energy and Climate Package in this newsletter.

ETN Annual General Meeting and Workshop 2014

ETN held its Annual General Meeting (AGM) and Workshop on 2-3 April 2014 in Paris, France. During the event, over 70 participants joined to discuss ETN's activities over the past year and its vision for the future.

AGM

In its welcoming speech, Bernard Quiox, ETN Board President (Total) welcomed the participants to the 2014 ETN Annual General Meeting and welcomed the 8 new members who joined ETN in 2013. ETN has now 95 members from 17 countries.

Key topics addressed during the event included ETN activities for 2013-2014, ETN finances and budget, EU energy and research policies, including Horizon 2020, the reviewing process of the IED LCP Directive, ETN future strategy and activities, the Project Board Recommendation Report 2014 and many more.

New membership category: Affiliate Members

Christer Björkqvist, ETN Managing Director, presented ETN's future strategy and activities for the years to come. Since ETN's creation in 2005, the number of members has significantly increased along with the amount of initiatives and activities brought to the ETN platform. In order to encompass this growth, reflect ETN's current needs and strengthen the user community within ETN, it was decided at the AGM to open membership to users outside of Europe (Affiliate Members).

The benefits of opening membership to the global user community include to:

- give a stronger voice to ETN's user community;
- allow ETN members to benefit from a wider user-driven organisation;
- provide wider operational experiences from different markets;
- have a stronger impact on the issues identified by the users;
- increase the possibility to set-up industry-funded R&D projects;
- increase the visibility of the European research community;
- provide ETN members with a better knowledge of global markets;
- widen the uptake of potential projects and initiatives-wider market.

Workshop

On 3 April, ETN held a workshop which allowed the participants to get an overview of on-going projects and initiatives that were brought on the ETN platform during the past year. Several pro-



jects or initiatives could be proposed under the Horizon 2020 funding programme (call LCE-2014-2015). The sessions gave the participants the opportunity to further discuss these projects and to set-up new groups for new initiatives.

ETN is also performing major changes to the project section of the ETN website. The new project section will include pages on: project description, project partners, useful documentation (agenda and minutes of meetings, reports, studies, links, etc.).

Proceedings

All presentations and the minutes of the AGM and Workshop have been uploaded on the ETN website (members' area) and are available exclusively to ETN members. Please note that you need to be logged in before accessing these documents. For more information on the AGM and Workshop or on ETN activities, please contact the [ETN office](#). ■

New ETN Board Members 2014-2016



Bernard Quoiq
President, Total



Catherine Goy
Vice President, E.ON



Herwart Hönen
Treasurer, RWTH Aachen
University



Giovanni Cerri
University Roma TRE



Uwe Kaltwasser
MTU Maintenance



Chris Lappee
Vattenfall



Gary Lock
Frazer-Nash Consultancy



Pericles Pilidis
Cranfield University



Robert Rijdsdijk
Shell



Andy Williams
Wood Group

New ETN members

- Norwegian University of Science and Technology (Norway)
- Iberdrola (Spain)



NTNU – Trondheim
Norwegian University of
Science and Technology



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Member of the year



At the AGM in Paris, Roger Brandwood, E.ON New Build & Technology, was awarded member of the year for his active involvement in the ETN IED Committee as well as for his valuable contribution during the comments submission process on the Best Available Techniques Reference Document related to the Industrial Emissions Directive.

Other nominees were Dominique Orhon, Total, for his continuous active involvement in the Conference Advisory Board, for his enthusiasm



and contribution during the Air Filtration Workshop and for his general support on several on-going ETN activities and James Spelling under KTH for his active involvement and for taking a leading role in the European Commission re-negotiation of the HYCOSOL proposal in 2013.

Congratulations!

Summary of the Air Filtration Workshop

The European Turbine Network (ETN) together with AAF, Camfil and Donaldson organised an Air Filtration Workshop, as a follow-up to ETN's Filtration Technology Project.



During the Workshop which took place on Thursday 20 February 2014 in Brussels, 36 participants joined to discuss the new developments on air filtration products and standards. Participants also had the opportunity to highlight their experiences and requirements in dedicated working groups (divided by offshore and onshore). A survey was distributed ahead of the event in order for the organising companies to better understand the participants' needs and to adjust the workshop discussions accordingly.



At ETN's AGM on 2 April 2014 in Paris, France, James Ross, AAF, presented the preliminary results of the survey. He explained that the 38-question survey was designed to capture the most important issues related to turbine filtration and engine operation. They received 22 completed questionnaires where a contrast in areas of importance and a gap in the market satisfaction were noticed. A report including the survey data and the working group outcomes (onshore and offshore group discussions) will be published in the coming weeks, which will be made available to ETN members.



More details on the event can be found on the [ETN website](#), however presentations given during the Air Filtration Workshop and the final report are available exclusively to ETN members (members' area).

Quotes from participants

"The Air Filtration Workshop organised by ETN presented to the filtration companies an effective way for direct, objective communication with the ac-

tual operators of air inlet filtration systems – and vice versa. The Workshop provided great added value to both parties and we, the filtration companies, hope this will become a sustainable platform to continue sharing such valuable experiences and feedback."

*Wim Van Gelder,
Principal Engineer of Gas Turbine Systems EMEA, Donaldson Europe*

"It has been very interesting to have direct discussions and debates with the ISO contributors and to explain them our real needs as gas turbine operators. I did appreciate the opportunity to share experiences and best practices among gas turbine operators."

*Marcus Brochant,
Gas Turbine Engineer, EDF*

"Many thanks to ETN and Air Filter Manufacturers for this excellent workshop feeding discussions on air filtration improvement."

*Dominique Orhon,
Rotating Equipment Specialist, TOTAL*

"I was happy to see that operators shared their daily technical issues and experiences with filter companies in an open and constructive way. I believe that this enhanced collaboration is the best way to find ways to increase the reliability and availability based on best practice of current technology as well as developing innovative solutions to improve the technology of the future."

*Christer Björqvist,
Managing Director, ETN*



7th International Gas Turbine Conference

The International Gas Turbine Conference (IGTC), organised biennially by ETN will be held on 14-15 October in Brussels. The Conference aims to highlight market opportunities and to raise the awareness of gas turbine technology development needs – from both oil & gas and power generation operators' perspectives.

This will be a perfect opportunity to meet and exchange ideas with policy makers, high level industry delegates and gas turbine experts from the whole value chain attending from Europe, North and South America, the Middle East and Asia. The conference will highlight the energy market outlook in Europe and globally, as well as to present and discuss on-going R&D activities and new developments on flexible, efficient and environmentally sound gas turbines.

This event will focus on the future GT technology development needs in different markets from a user's perspective and within the future energy policy and emissions targets, highlighting:

- The role played by gas turbines in the future international energy policy mix, where intermittent sources of renewable energy may significantly increase and nuclear capacity may drastically decrease by 2030, while the emerging economies' demand for cheap and secure energy will rapidly rise to assist their economic growth;
- The current and future technology trends and the different stakeholders' views on required technology developments to ensure efficient, flexible, reliable and environmentally sound gas turbine operation.

Keynote sessions

The keynote sessions and panel discussions will address critical issues related to climate change mitigation in the context of the different and fast changing markets. Special attention will be given to increased fuel flexibility and operational flexibility, while retaining reliability, high efficiency and lower emissions for both single cycle and combined cycle

operation. Energy policies, regional market opportunities and initiatives for gas turbine technology development in Europe and globally will be presented, followed by panel discussions with high level policy makers, distinguished executives and experts from the industry.

Technical sessions

ETN has received more than 50 abstracts for technical papers of extremely high quality for a very limited number of technical sessions, including:

- Innovative Low Carbon Cycle
- Optimising Combined Cycle Operations
- Material and Lifetime
- Optimising Oil and Gas Operations
- Turbomachinery
- Combustion
- Flexible Operation and Fuel Flexibility

The technical sessions will address critical research and development activities necessary for the advancement of gas turbine technology, from operational, environmental and cost perspectives. Recent gas turbine technology and new, innovative solutions will be explored. The technical sessions will combine research initiatives and experience reports of real case applications, with the aim to give a balanced view of current developments and future needs for research in gas turbine applications.

Sponsorship opportunities

Sponsorship opportunities for the IGTC-14 are still available! ETN offers several Sponsorship Packages as well as flexible options that should correspond to



your specific needs for visibility. You can view the Sponsorship Information Package by [clicking here](#). Please contact Audrey Krzemien, Event Coordinator at ak@etn-gasturbine.eu should your organisation be interested in sponsoring the IGTC-14.

Registration will open shortly. Visit www.etn-gasturbine.eu for more information.



EU news summary

Future 2030 Energy and Climate Change Package

As the 20-20-20 targets are set to expire in 2020 and considering the long investment cycles inherent to the energy sector, the priority for the European Union (EU) is to put a new energy and climate framework in place as soon as possible in order to provide investors with the regulatory certainty required. The new framework would also aim at keeping the EU on track to meeting its long term objective of cutting emissions of 80-95% below the 1990 level by 2050 as stated in the Energy Roadmap 2050.

On 22 January 2014, the European Commission (EC) published its plan for climate and energy policies until 2030. The EC proposed a mandatory reduction in greenhouse gas (GHG) emissions of 40% below the 1990 level, an EU-wide target for renewable energy of 27% and a reform of the EU Emissions Trading System (ETS). The EC did not include a target on energy efficiency as it would be implemented through the Energy Efficiency Directive published in 2012. On this regard, Member States have until April 2014 to deliver their new energy efficiency action plans and until June 2014 to transpose the rest of the 2012 Energy Efficiency Directive into their

national law. Only then the EC plans to review the progress made on energy efficiency and determine new measures, if needed.

Debate on the 27% target

The EC's own study shows that the share of renewable in the EU energy mix is likely to reach 27% if the 40% reduction in greenhouse gas (GHG) emissions is met. It also states that renewable energy would increase to about 24% in 2030 even if there were no targets at all. Therefore some Members States are asking why there is even a target on renewable if the EU is most likely to reach the 27% target. On the other hand, renewable supporters such as the European Wind Energy Association would prefer to see a more ambitious proposal for renewable and proposes a 30% target. The same applies to the European Parliament, where Members of the European Parliament (MEPs) voted in February for a more ambitious target of 30%. The vote itself is not legally-binding but an agreement will need to be reached between the EC, the Parliament and Member States before a final proposal can be signed later this year.

In its communication, the EC proposes to bind the renewable target at EU level and not at Member State level, which means that Member States are completely free on how to achieve it. The achievement of the EU renewable target would be ensured by a new governance system based on national energy plans which would be delivered by each Member State.

Timeline

Member States are still divided on when these targets should be set for and how ambitious they should be. The EC's proposal was supposed to be discussed in length during the last European Council meeting in March 2014. However, the discussions instead focussed on the tensions with Russia and the now growing concerns of security of supply and competitiveness. The EU Council is planning to discuss energy and climate issues at the next meeting in June 2014. However, the Member States have already postponed the decision on the 2030 package to the EU Council meeting in October 2014. This delay will prevent the EU from adopting its common position prior to the upcoming international negotiations on climate action taking place in September 2014 in New York, USA. But it might not be too late for the December preparatory conference in Lima, Peru, ahead of a possible global deal at the 21st United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties (COP) set to take place in December 2015 in Paris. ■



For more information go to:
www.iagtcommittee.com

Delta Vancouver Airport
May 15th & 16th, 2014

LNG TECHNICAL WORKSHOP

The Industrial Application of Gas Turbines committee is a Technical Advisory Group to Canadian industry and government. This technical event is intended to describe basic gas turbine and LNG energy process systems, and to clarify various design choices, unique operating risks and environmental opportunities in order to move forward on major gas pipeline and LNG liquefaction facilities.

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EU news summary *continued*

EU Emission Trading System (ETS)

To make the EU ETS more robust, the European Commission (EC) presented a legislative proposal on 22 January 2014 to reform the system by establishing a market stability reserve at the beginning of the next ETS trading period in 2021. The reserve would both address the surplus of emission allowances that has built up in recent years and improve the system's resilience to major shocks by automatically adjusting the supply of allowances to be auctioned.

The creation of such a reserve - in addition to the recently agreed delay in the auctioning of 900 million allowances until 2019-2020 (also known as 'back-loading') - is supported by a broad variety of stakeholders. Under the new legislation, the reserve would operate entirely according to pre-defined rules which would leave no discretion to the EC or Member States in its implementation. According to the EC, this would raise the carbon price to an average 35 EUR/ton in the next decade.

How will it work?

The market stability reserve would operate at the start of Phase IV (2021). It would manage surpluses and shortages

of allowances based on volumes:

Surpluses of allowances: 12% of the total number of allowances that was still in circulation 2 years before should be placed in a reserve mechanism, unless these 12% are equivalent to less than 100 million.

Shortages of allowances: If there are less than 400 million allowances in circulation or if for more than 6 consecutive months the carbon price is more than three times the average carbon price during the two preceding years, 100 million allowances should be released from the reserve (if not available, all remaining allowances in the reserve).

Postponement of auctioning

In its communication published on 22 January, the EC also proposed to postpone the auctioning (similar to back-loading) at the end of each phase. Therefore, if the volume of allowances exceed by 30% the expected average volume for the two first years of the following period (Phase IV), 2/3 of the difference shall be set aside and auctioned in equal instalments during year 1 and 2 of Phase IV.

The EU ETS is the world's largest carbon market and aims to encourage companies to invest in low-polluting technologies by allocating or selling them allowances to cover their annual emissions. It is currently failing its role as a driver towards low carbon investment, due to the very low carbon price (currently around 5 EUR) caused by the economic crisis and the over-allocation of allowances. For more information on the market stability reserve, please [click here](#). ■



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3-day-short-course on CFD in Turbomachinery

City University London, an ETN member organisation, is organising a short course on CFD for turbomachinery delivered by leading experts. This three-day-course is organised as a series of lectures covering all key aspects that need to be faced by a turbomachinery engineer to achieve a reliable numerical prediction and to estimate the associated uncertainties. The list of lecturers includes some of the most prestigious academic figures, leading professionals in the turbomachinery industry and developers of commercial CFD software.

ETN members are entitled to a 20% discount on the registration fee. To register, visit the [CFD short course website](#) or email [Cecile Bremont](#). To download the brochure, please [click here](#). ■

Latest developments on the IED LCP Directive

Roger Brandwood, Chairman of the ETN IED Committee, E.ON Technologies

During 2013, members of the ETN IED Committee met with the Authors in charge of revising the Large Combustion Plant Best Available Techniques Reference document (LCP BREF) under the Industrial Emissions Directive (IED). The initial engagement with the Authors in Seville was due to the major concerns of the membership regarding the treatment of liquid fuel fired gas turbines in the IED and the LCP BREF. However, on reviewing the draft document, it soon became apparent that there were concerns around the conclusions being drawn in the BREF revision process for all categories of plants.

In September 2013, the ETN IED Committee submitted more than 70 comments (mainly focusing on Chapter 10) on the Draft 1 (D1) of the BREF document.

Following this, a strategic discussion between ETN members took place during the 2014 ETN Annual General Meeting in April with regards to the reviewing process of the LCP BREF D1. During the event, the Chairman of ETN's IED Committee Roger Brandwood, E.ON, presented the developments over the last year, the current status and the roadmap with regards to the finalisation of the Draft 1 (D1) document. The implementation of the IED calls for the achievement of new Emissions Limit Values for almost all combustion plants, including those based on gas turbine technology. Furthermore, it also strengthens the role of Best Available Techniques (BAT) in the setting of permit conditions for plants as defined within the LCP BREF. The performance levels stated in this draft document, which is currently in revision, are beyond those stated in the Directive and will in essence form the basis of the limits to be included in permits. Whilst the timeline for this is unclear within the next 4-5 years, it is likely that LCPs may require two permit reviews, one for IED implementation from 1 January 2016 and then another one to ensure that BAT as defined in the BREF is implemented. This might have a significant cost and operational impact on gas turbine plants.

As a member of the Forum and the LCP BREF Technical Working Group, ETN has the capacity to formally submit information to the Seville team and organisations have until the middle of the year to provide comments, concerns and evidence to be considered in the drafting process for D1. The importance of a coordinated approach was stressed during ETN's AGM and that every industry members need to ensure that they

have assessed the impact of the current BREF D1. Based on that, it was agreed that ETN should explore opportunities to provide technical input to the D1 in a coordinated way.

In April a teleconference was organised where the following questions were addressed:

1. Do you know what impacts the D1 requirements will have on your fleet/product lines?
2. Have you determined an economic penalty associated with this?
3. What is the level of engagement in your organisations with the LCP BREF review, and with who are these interactions with?
 - a. For example: ETN, Regulators, National Trade Groups...
4. Based on this, do you feel the issues you foresee are well understood on a national level?
5. Based on this, do you feel the issues you foresee are well understood on the European level?
6. What do you think ETN should do to support the understanding of these issues?
 - a. For example, a position paper on flexibility impacts.
 - b. What evidence are members prepared to provide?
 - c. Do we need to engage with other third parties or the Seville Team?
 - d. Any new collaborative project work to develop solutions?
7. Are members prepared to commit resources to completing any positioning work?

Feedback from the European Integrated Pollution Prevention and Control Bureau (EIPPCB)

The full EIPPCB assessment of the 'major' comments received on D1 will be presented to the TWG as part of a 'Background Paper' (BP), in advance of the final TWG meeting. The EIPPCB plans to release this BP about 8 weeks before the final TWG meeting. This BP will be the main tool used to prepare the discussions at the final meeting, especially regarding BAT and BAT-AEPLs (Associated Environmental Performance Levels) (including BAT-AELs (Associated Emission Levels)).

In its most recent communication, the EIPPCB stated that the most efficient way forward for taking the concerns expressed into consideration would be to organise an intermediate informal TWG meeting (set to take place in June 2014) before holding the final TWG meeting. This intermediate informal TWG meeting would focus on the issues raised by the subgroup proposals, as well as on some other transverse issues, limited in number, identified by the EIPPCB in the comments assessment. The EIPPCB stated that additional information about the format, duration and location of this meeting, including a pro-

visional agenda, will be circulated in April 2014.

Next steps Throughout 2014

The EIPPCB will continue the detailed assessment of the comments received on D1 and will release intermediate 'working documents' (mainly updates of draft BREF sections) together with updated figures showing plant-specific emission data linked to the techniques used.

April 2014 (tentative)

- Provisional agenda of an intermediate informal TWG meeting;
- Additional information (at plant level) submission.

June 2014 (tentative)

- Intermediate informal TWG meeting.

Second semester 2014 (tentative)

- BP paper about 8 weeks before the final TWG meeting;
- Final TWG meeting.

Medium Combustion Plant (MCP) Directive

The European Commission has issued a proposal - COM (2013) 919 - for a Directive to address pollutant emissions from Medium Combustion Plants (MCP). The key features of the proposed MCP Directive are:

- Scope: from 1 up to 50MW thermal input installations (CHP included);
- Pollutant emissions to be regulated: SO_x, PM & NO_x;
- Installations must be registered at national level;
- Emissions values to apply to new installations (most optimistic timeline could be 2017-2018) and by 2025 and 2030 for existing installations above and below 5 MW respectively.

ETN is currently assessing if it should provide any comments to the draft Directive. If you are interested in the MCPD, please contact the ETN office. For more information, please click on the following links: [Review of the EU Air Policy](#) and [EC Press Release on the new policy package to clean up Europe's air](#).

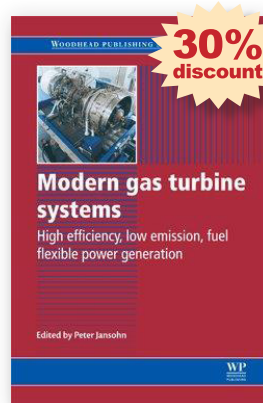
Background of the LCP Directive

The Industrial Emissions Directive (IED) was adopted in November 2010. It entered into force on 6 January 2011 and had to be transposed into national legislation by Member States by 7 January 2013. The IED replaces the IPPC Directive and the sectoral directives as of 7 January 2014, with the exemption

of the Large Combustion Plant (LCP) Directive, which will be removed with effect from 1 January 2016. It aims to limit pollution from large-scale industrial installations (not covered under the EU ETS). The new stricter limits have to be complied with by 2016, measured against the Best Available Techniques (BATs) reference document.

However, Member States are able to deviate from the limitations if, for specific technical reasons or local circumstances, the implementation cost would be disproportionate to the level of environmental protection obtained. LCPs are also allowed a longer transition period, as a result of pressure from the United Kingdom, Poland and Italy. These Member States host a large number of ageing coal plants, and will be allowed to have Transitional National Plans (TNP) which permit LCPs to be operational until July 2020. The TNPs apply from 2016 to 2020 for plants dating back from before 2002-2003. In addition, these plants can stay operational until 2023, if their operating hours do not exceed 17,500 hours from 2016 onwards. ■

Special discount for ETN members on the book *Modern gas turbine systems*



In September 2013, Elsevier/Woodhead Publishing published a book edited by Peter Jansohn, Chairman of ETN Project Board / Paul Scherrer Institute, titled "**Modern gas turbine systems: High efficiency, low emission, fuel flexible power generation**".

Five other ETN member organisations also contributed to this book (University of Leeds, Cranfield University, Alstom, Siemens and Endesa Generacion). A. Mom, in his role as ETN's President Emeritus, is also the author of the introduction chapter.

ETN members are entitled to a special price (30% discount). Please contact the ETN office should you wish to purchase the book. ■

Past and upcoming ETN meetings and events

ETN Meeting/Event	Date	Location
Turbine Forum	7-9 May 2014	Nice, France
H ₂ -IGCC Final Meeting*	13-14 May 2014	Brussels, Belgium
Power-Gen Europe 2014 (ETN is a participating organisation)	3-5 June 2014	Cologne, Germany
OMSoP Meeting*	4-5 June 2014	Stockholm, Sweden
ASME Turbo Expo 2014 (ETN is a participating organisation)	16-20 June 2014	Düsseldorf, Germany
ETN Board Meeting*	9 July 2014	Brussels, Belgium
International Gas Turbine Conference 2014	14-15 October 2014	Brussels, Belgium

* Event open exclusively to ETN members

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