

MINUTES OF THE BOARD MEETING

PAU, FRANCE, 14-15 DECEMBER 2011

Present:

Bernard Quoix, President (BQ)	TOTAL
Catherine Goy, Vice President (CG)	E.ON UK
Andy Williams (AW)	Wood Group
Gary Lock (GL)	Frazer Nash Consultancy
Giovanni Cerri (GC)	University Roma TRE
Jacques Maunand (JM)	EDF
Jonathan Clarke (JC)	Shell
Uwe Kaltwasser (UK)	MTU
Christer Björkqvist (CB)	ETN
Julie Linde Kjeldsen (JK)	ETN

Invited Observers:

André Mom, President Emeritus (AM)	ETN
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Apologies:

Pericles Pilidis (PP)	Cranfield University
Herwart Hönen, Treasurer (HH)	RWTH Aachen

Content:

1. Welcome
2. Review and approval of the MoM Brighton October 2011
3. Review of Action List from the MoM Brighton October 2011
4. Review of ETN Activities Update
5. Discussion of the renewal and relaunch of the ETN website
6. Review of upcoming ETN-partnership events and meetings
7. Project Proposal by Gary Lock on Lifetime Consumed by Multi-Starting Engines
8. Presentation and review of progress of TopCycle initiative
9. Discussion on IGTC-12 technical papers, keynote sessions and agenda, as well as gala dinner
10. Review and discussion of the ETN internal structure
11. Gas Turbine Short Courses
12. Upcoming ETN Activities 2011
13. Closing of the Board Meeting

Annex: Review of Action list from previous Board meeting (Brighton October 2011)

1. Welcome

B. Quoix opened the meeting and welcomed the Board members. H. Hönen and P. Pilidis sent their apologies for not being able to join the Board meeting.

2. Review and Approval of the MoM Brighton October 2011

The Board unanimously approved the October 2011 Board Meeting minutes.

3. Review of Action List from the MoM Brighton October 2011

See Annex.

4. Review of ETN Activities Update

The Board took note of the ETN Activities Update, which was circulated ahead of the meeting. The following points were discussed further:

ETN members and partnerships: the aim for 2012 in terms of ETN members is for membership to pass the 100 mark.

CB stressed that GDF Suez and Laborelec should remain separate members. Potential members mentioned included OMV, BE in Reading, UK, and Italian members: Cofely (engineer Santili).

With regard to unpaid membership fees for 2011, AW mentioned that Gas Turbine Efficiency Sweden has been bought by Wood Group, and recommends contacting their office in the US for further information.

Action: AW to send information on contact person from Gas Turbine Efficiency in US.

Action: CB to send membership package to AW to be forwarded to Ronnie Glen at Scottish & Southern Energy.

Briefing Paper on Natural Gas:

The EU policy section of the paper has been edited, and parts of it have been added to the annex. The Board approved of the content of the paper. As the next step the Board proposed to verify that the main points are clearly summarised in the executive summary.

Action: CB to verify that the key points are included in the summary, and to disseminate it widely.

Exhaust Systems Project Group: Members of the Exhaust Systems group have requested additional involvement by utilities. Utilities representatives in the Board expressed interest in the initiative, however they would need to both justify participation to higher management and identify the correct representative within the organisation. It was suggested to prepare an information package on the current status, agenda and goals of the upcoming meeting in Bergen, Norway, 15 March 2012, which can be used to encourage participation among Utilities.

Action: CB to prepare information on the status, agenda and goals of the upcoming meeting in Bergen, Norway, which is to be circulated to the potentially interested ETN members.

Position Paper on Boroscopying: JM mentioned a proposal for a new project which had been circulated by EDF, with the end goal of producing a Position Paper on Boroscopying. The Board members agreed that this could potentially be of interest to the ETN members, and suggested that he developed the initiative within the new proposed ETN internal structure and project proposal development process. The ETN office will send JM the template for project proposals to evaluate and adjust his original suggestion.

Action: CB to send JM the template for project proposals.

5. Discussion of the renewal and relaunch of the ETN website

The ETN Office is currently designing and developing a new website, with the aim of presenting and demonstrating it to the General Assembly at the AGM in April 2012.

The ETN Board discussed possible features which this new website could include, to make it more user-friendly, and to stimulate more interest and activity within the ETN membership, as well as for potential members or partners.

One key aspect of the new website should be to combine the currently numerous ETN platforms into one, which will allow ETN members to access all features using only one username and password. It should possibly include the option of remaining logged-in on private computers.

DGTA also renewed their website a few years back, and at the time opted for cloud computing, which brought considerable advantages in the long run, and was recommended by AM.

As a potential new service it was suggested to create a forum for non-ETN member young engineers. It was agreed that engaging young engineers in the ETN network would be beneficial, to encourage their continued participation as they progress in their career, however no conclusion was reached on how this should be done. One suggestion was to have a section on the ETN website, where information can be posted by the ETN Office and members, and where visitors can comment and communicate with each other, essentially creating a dynamic forum. However, the challenge of successfully launching such a forum was highlighted by the Board members. Moreover, the possibility of circulating information with relevant information (PHD opportunities, job vacancies, events, etc.) to a set mailing list was discussed.

Action: CB to progress the design and development of the new website, and research possibilities that will enable simple login, as well as allowing members to easily add comments or files.

Action: CB to discuss with HH and Alexis (ETN IT consultant) with regard to cloud computing and website hosting platforms.

Action: Board members to come forward with suggestions of creating a young engineers platform, with information on ETN activities for non-members.

6. Review of upcoming ETN-partnership events and meetings

The Board discussed the benefits of advocating ETN at various events and meetings. However, it was agreed that it is necessary to be selective to ensure the high quality of conference partners which ETN cooperates with. It was agreed that ETN should be advertised as both a platform to explore ideas and issues, as well as to initiate research projects and demonstration activities.

Gas to Power: BQ was supposed to partake in the panel discussion at the event in Berlin in January 2012, however will now be unable to attend. ETN will be represented at the event, and will have a stand to disseminate information and advertise the IGTC-12.

Action: BQ to verify topic of panel discussion, and identify a suitable replacement.

O&M and Lifecycle Management Strategies for CCGT Power Plants: It was acknowledged that ETN gets valuable benefits in return for the partnership (10% discount for ETN members, a free pass, distribute ETN material), however we should aim for increased visibility, to highlight ETN's relevance to the participants of the event. AW highlighted that simply distributing an information leaflet on ETN will not be sufficient. In 2013 ETN should aim to be a Chairman of a session, in order to give a detailed account of ETN's role and activities.

Action: CB to investigate possibility of ETN having increased visibility at the 2012 event, and of chairing a session at the 2013 event.

Electric Power Research Institute (EPRI): JM proposed to set up a meeting with EPRI to introduce the organisations to each other, as well as define possible areas for cooperation. JM has been in contact with Rob Steele of EPRI's GT and Combined Cycle team, who will be visiting Europe in the spring of 2012. The Board agreed that this could be a good opportunity. The possibility of EPRI participating and presenting an overview of research projects in the US at the IGTC-12 was also discussed (please see Point 8).

Action: JM to confirm the dates when EPRI is in Europe and propose a meeting.

7. Project Proposal by Gary Lock on Lifetime Consumed by Multi-Starting Engines

GL presented an idea for a potential ETN project. Frazer Nash Consultancy has two power generation customers who have requested studies into the effect of multi-starting engines on materials in gas turbines, and in the lifetime consumed by this mode of operation. Frazer Nash has extensive information on the topic, however are missing materials (hot-path, and maybe high-nickel alloy) to do the testing.

GL proposed establishing a project consortium that could combine their experiences, research efforts and funding to investigate the creep and fatigue behaviour on materials which are widely used.

This initiative would be related to the ETN position paper on the increasing amount of renewable energy sources being added to the grid requiring cyclic operation from GTs, and hence could possibly apply for funding from the European Commission in a future call for projects.

Action: GL to write a project proposal which can be evaluated by the ETN Project Board.

8. Presentation and review of progress of TopCycle initiative

As proposed at the previous Board meeting in Brighton, UK, CB reported that a 2-day workshop has taken place at Cranfield University, to ascertain the technical feasibility of the initiative. The first 1.5 days of the Workshop was comprised of presentations and discussions, after which there was an independent discussion among the reviewers to ascertain the feasibility and to identify key areas requiring further investigation.

The Workshop concluded that the concept is promising, but that further investigations into the technical and financial feasibility are required. It was recommended that an independent feasibility study is conducted to:

- Investigate open issues in each technical field
- Define an R&D development programme for technical fields:
 - Combustion (major effort);
 - Turbomachinery (medium effort);
 - Transient behaviour (medium effort)
- Produce an application and market analysis report:
 - Explore the technical merit versus cost
 - Produce a risk assessment report
 - Define a Techno-Economic Environmental Risk Analysis programme

GL questioned the status of the patent of TopCycle, which is currently owned by EuroTurbine AB, and what will happen with this, as well as the intellectual property generated by the study. It was suggested that EuroTurbine AB should share the patent with the collaborating partners, and that partners providing in kind should have the right to the intellectual property, whereas the independent experts (who are paid) would not.

Action: CB to identify independent experts, discuss the legal rights to the patent and the intellectual property generated with the collaborating partners and try to initiate a feasibility study.

9. Discussion on IGTC-12 technical papers, keynote sessions and agenda, as well as gala dinner

Topics of technical papers:

On the topic of technical papers the Board stressed the importance of relevance as well as quality over quantity. To ensure this, it was recommended to investigate past topics of interest at the IGTC-10 (especially during the creativity session) and at other relevant conferences (for example ASME and PowerGen). Moreover, high-quality presenters of earlier IGTCs could be invited to present again.

CG suggested doing a presentation on combustion of the power plant on the picture of the conference brochure.

It was mentioned that other events specialise on the presentation of academic papers, hence the IGTC-12 should focus on the interplay between future high-level policy and market dynamics, and how this will influence GT User requirements and technology development.

Action: CB to research results of IGTC-10 and the creativity session, as well as other conferences, to identify topics of interest for technical papers.

Action: CB to collect results of the review of the technical abstracts submitted for the IGTC-12, and present it at the next Board meeting.

Theme of keynote sessions:

It was suggested that one keynote session could be comprised of the European vs. the US future outlook. First, the Department of Energy and the European Commission could give the political framework being established for future research in energy technology. Thereafter, EPRI and KEMA could present the research and demonstration programmes being currently developed as well as those foreseen in the future. The increasing importance of the Asian market for the worldwide GT industry was highlighted, thus the potential of the corresponding Asian institutions being represented was mentioned.

The Head of the International Energy Agency has been invited to do a keynote presentation, as well as attend a panel session. Relevant European Commission delegates should also be invited.

The second day of keynote sessions could be presented as debates between representatives of OEMs, who have received questions in advance of the IGTC-12 and have the chance to respond. Several different set-ups were discussed, however a final decision is pending, and the topic will also be considered at the January 2012 CAB meeting.

UK knows Mark Axeford, an independent market analyst, who could do a presentation.

JC suggested a fixed timeline when doing the future outlook – for example, 2020 and 2050.

CB suggested a presentation which focuses on the physical boundaries of technological advances.

Possible speakers for the 4th keynote session:

- Senior Professor of Energy, Politecnico Milan
- Walter Fenton Bryon
- Claudio Santiago, Former CEO of GE Oil & Gas

Action: Each Board member to propose relevant speakers.

Action: Each Board member to propose 1 question for OEMs during the keynote debate of the IGTC-12, to be submitted to the ETN Office by 27 January 2012.

Action: UK to contact Mark Axeford about giving a presentation.

Action: BQ to approach Claudio Santiago about being a speaker in the final IGTC-12 keynote session.

Gala dinner:

AM knows of a Dutch presenter who does sketches on innovation and the future.

Action: AM to identify name of the Dutch presenter and contact him to enquire after his availability and possible themes.

Structure of agenda:

JC pointed out that the formal close of the conference needs to be a final joint session, which reports on the results of the conference. JC suggested changing the title into something catchy – i.e. ‘take away’ or ‘a glimpse into the future’.

Action: CB to adjust draft IGTC-12 agenda to reflect above mentioned alterations.

10. Review and discussion of the ETN internal structure

Projects:

The Board agreed that projects should have a wider meaning than previously, with the end goal ranging from technology watch or a position paper to an industry- or EC-funded R&D project.

The key issues explored in the current Technical Committees (TCs) would then be regarded as independent projects, if there is sufficient interest and commitment from involved members.

The role of TCs would change to a forum where ETN members who are not partaking in a specific project could participate and where ideas for new projects could be generated.

Role of the Project Board and nominees:

GL especially stressed that the role of the Project Board should be to facilitate and assist in the further development and progress of project proposals, but not to hinder or judge them. The Project Board would assist in improving and maximising the potential of the project, as well as in identifying potential project partners. There would be guidelines to facilitate the development of a successful project proposal; however the Project Board members would not block a proposal, but rather help bring it to the ETN platform, where it would be evaluated through the display of interest among the members.

CB suggested that the Project Board should consist of 4-6 members, each covering a different area of expertise, as well as exercising a different sphere of influence (countries and networks).

It was agreed that the Project Board members should meet at least once a year face-to-face, as well as having teleconference meetings, where submitted project proposals can be discussed.

The Board approved the proposed nominees to date:

- Peter Jansohn, PSI
- Peter Breuhaus, IRIS
- Naser Sayma, Sussex University
- Andre Zeijseink, KEMA

- Sauro Pasini, Enel (transversal, mainly focusing on combustion and systems)
- One Oil & Gas representative (not Total or Shell, but perhaps Statoil or Exxon).

Action: BQ and JC to suggest nominees for the Project Board, especially from the Oil & Gas industry.

Project proposal submission, gate review and dissemination:

It was agreed that when an ETN member propose a project proposal, it should firstly be sent to the ETN Office, where it will be ascertained whether it has been submitted in the correct format, and contains the required information. Next, it will be ensured that the objective of the project is clearly defined, and the proposal will receive suggestions for possible improvements from the ETN Project Board. Finally, it will be disseminated to the wider ETN members, to inform them of the possibility of partaking in the project, and to form a committed consortium.

The project proposal should be disseminated to the ETN membership in various ways. Firstly, all project proposals could have a designated webpage on the ETN website where it is presented, and where other ETN members can post their comments and suggestions. Secondly, the ETN members could be informed of proposals through the Monthly News Summary and the Quarterly Newsletter (both of which will have links to the related webpage). Thirdly, when a project proposal has been formulated, a designated email should be circulated to the ETN membership, with a 'Yes/No' reply function, to indicate whether they are interested in receiving further information, and participating in upcoming meetings on the topic.

Action: AM to send the criteria used by the EC in evaluating project proposals.

Action: CB to investigate website options for presenting the project proposals, as well as e-mails with an attached 'Yes/No' reply function.

Action: CB to describe the new internal structure and its processes, circulate announcement of it to the ETN membership and circulate a call for project outlines for the ETN AGM in April 2012.

11. Gas Turbine Short Courses

ETN plans to organise a Gas Turbine Short Course in collaboration with Cranfield University and Total, taking place in May 2012, in Paris, France. Finding confirmation on initiative from Total is pending.

The possibility of having a webpage on the ETN website with information on this new initiative, as well as other possible future courses in collaboration with other ETN partners was discussed. The webpage could also include information on other general gas turbine courses as well as product specific courses, organised by ETN members. The option of requesting specific tailor-made courses should also be available to ETN members.

Action: CB to investigate options to set up a webpage with information for gas turbine courses.

12. Upcoming ETN Activities 2011

Sensors Initiative	12 January 2012	Teleconference
TopCycle Meeting	3 rd Week January 2012	Teleconference
Exhaust Systems	27 January 2012	Teleconference
CAB 2012 meeting	30 January 2012	London
Combustion Instabilities	7 February 2012	TBC.
Board meeting	8 February 2012	Shell, The Hague, Holland
Exhaust Systems	15 March 2012	Bergen, Norway
Board meeting	16 April 2012	TBC.
AGM & ETN Workshop	17-18 April 2012	TBC.
H2-IGCC meeting	9-11 May 2012	Venice, Italy
Board meeting	Potential: 7 th June/ 9-13 July	TBC.
High-Level User Meeting	16 October 2012	Brussels, Belgium
IGTC-12	17-18 October 2012	Brussels, Belgium
Board meeting	December 2012	TBC.
H2-IGCC meeting	December 2012	TBC.

13. Closing of the Board meeting

B. Quoix closed the Board meeting.

ACTION LIST

No.	Action	Responsible
1	Send information on contact person from Gas Turbine Efficiency in US.	AW
2	CB to send membership package to AW to be forwarded to Ronnie Glen at Scottish & Southern Energy.	AW/CB
3	CB to prepare a summary of the main points in the briefing paper, and to disseminate it widely.	CB
4	CB to prepare information on the status, agenda and goals of the Exhaust Systems PG for the upcoming meeting in Bergen, Norway, which is to be circulated to the potentially interested ETN members.	CB
5	CB to send JM the template for project proposals.	CB
6	CB to progress the design and development of the new website, and research possibilities that will enable simple login, as well as allowing members to easily add comments or files.	CB
7	CB to discuss with HH and Alexis (ETN IT consultant) with regard to cloud computing and website hosting platforms.	CB/HH
8	Board members to come forward with suggestions of creating a young engineers platform, with information on ETN activities for non-members.	All Board Members
9	BQ to verify topic of Gas to Power panel discussion, and identify a suitable replacement.	BQ
10	CB to investigate possibility of ETN having increased visibility at the 2012 O&M Conference, and of chairing a session at the 2013 event.	CB
11	JM to confirm the dates when EPRI is in Europe and propose a meeting.	JM
12	GL to write a project proposal on Lifetime Consumed by Multi-Starting Engines which can be evaluated by the ETN Project Board.	GL
13	For TopCycle initiative CB to identify independent experts, discuss the legal rights to the patent and the intellectual property generated with the collaborating partners and try to initiate a feasibility study.	CB
14	CB to research results of IGTC-10 and the creativity session, as well as other conferences, to identify topics of interest for technical papers.	CB
15	CB to collect results of the review of the technical abstracts submitted for the IGTC-12, and present it at the next Board meeting.	CB
16	Board members to propose relevant speakers for IGTC-12.	All Board Members
17	Board members to propose 1 question for OEMs during the IGTC-12 keynote debate, to be sent to the ETN Office before 27 January 2012.	All Board Members

18	UK to contact Mark Axeford about giving a presentation.	UK
19	BQ to approach Claudio Santiago about being a speaker in the final IGTC-12 keynote session.	BQ
20	CB to adjust draft IGTC-12 agenda to reflect discussed alterations.	CB
21	BQ and JC to suggest nominee from the Oil & Gas industry for the Project Board.	BQ/JC
22	AM to send the criteria used by the EC in evaluating project proposals.	AM
23	CB to investigate website options for presenting the project proposals, as well as emails with an attached 'Yes/No' reply function.	CB
24	CB to describe the new internal structure and its processes, circulate announcement of it to the ETN membership and circulate a call for project outlines for the ETN AGM in April 2012.	CB
25	CB to investigate options to set up a webpage with information for gas turbine courses.	CB

Annex

Actions (from Oct 2011 Board meeting)	Outcome / Next action	Responsible
Review the proposed internal ETN structure, and prepare recommendations for improvements or alterations for the next Board meeting, in Pau, France.	<i>Ongoing.</i> On agenda.	All Board Members
The CNRS (Iskender Gokalp) ETN membership fee is still outstanding. CB to request payment for outstanding fee, interest rate and upcoming membership fee for CNRS. Once payment has been made BQ is to contact I. Gokalp to announce issue as closed.	<i>Done.</i> Membership has been approved and will be paid, but internal processes are slow. CNRS can only be part of the GT CSP project if they pay the membership fee in advance.	BQ/CB
Collect short courses on GTs. Karen Geris to research courses on VGT's website, and make a summary to circulate to member and ask for similar courses.	<i>Done.</i> On agenda.	CB
Investigate more cost-efficient WIKI hosting.	<i>Ongoing.</i>	CB
Follow-up with EP and EC contacts for feedback on the position paper for renewables integration in the grid.	<i>Done.</i> It was suggested that we should follow up with more detailed R&D actions and project proposals.	CB

Follow-up with the Head of the IEA regarding participation in the EP HL User Meeting and Dinner Debate, and the Keynote Session of the IGTC-12.	<i>Ongoing.</i>	CB
CB to inquire with MEP of the ITRE Committee about the availability for the EP event.	<i>Ongoing.</i>	CB
Formulate a clear representation of the new internal ETN structure, to be approved by the ETN Board and presented to the General Assembly at the upcoming AGM.	<i>Ongoing.</i> On agenda.	CB
Potential Project Board members should be identified and presented to the Board.	<i>Ongoing.</i> On agenda.	CB
Progress with the organisation of the logistics of the Cranfield course and present the concrete modules which will be included in the course.	<i>Ongoing.</i> On agenda.	PP/JW
Urge increased User involvement in the Exhaust System PG, especially from E.ON Anlagenservice, Vattenfall and possibly NEM.	<i>Ongoing.</i> AM to arrange meeting with NEM.	HH/AM/CB
Identify potential E.ON, Shell, EDF and Vattenfall delegates that can participate in upcoming Exhaust System PG meetings.	<i>Ongoing.</i> CB to prepare information on the status, agenda and goals of the upcoming meeting in Bergen, Norway, which is to be circulated to the potential members and posted on the ETN website, to encourage participation.	CG/JC/JM/ CB
Propose an independent feasibility study for TopCycle initiative.	<i>Ongoing.</i>	CB
Contact Siemens (Uwe Pagenkopf) regarding ETN membership.	<i>Done.</i> Membership has been approved, but the money has not been received yet.	CB
Contact MAN (Ulrich Orth and Sven Boye) regarding ETN membership, as a prerequisite to allowing them to participate in the ETN CSP-GT Project Proposal.	<i>Ongoing.</i> CB and HH will forward the requirement of them becoming an ETN member.	CB/HH
Contacted Volvo (Simon Raymond) regarding ETN membership.	<i>Ongoing.</i> Interest in ETN membership has been shown; however the management has changed so development pending. New contact: Johan Rano.	UK
Contact Helsingin Energia (Sauri Makinen) regarding ETN membership.	<i>Pending.</i> CB to visit them.	CB

Contact Exxon Mobil regarding ETN membership. BQ to inquire through M. Pepper who is the appropriate European contact, and GL to visit their offices if situated in the UK.	<i>Ongoing.</i> BQ was in contact and got a good response. Stan Eptigrove is the main contact.	BQ/GL
Contact Gasunie regarding ETN membership.	<i>Ongoing.</i> AM contact them – Molenk and Frazer should be contacted regarding membership. Have not understood the full benefit of ETN membership as a User.	AM
Contact GE Energy (Emmanuel Kerrand and Yves Menat) regarding ETN membership.	<i>Ongoing.</i> BQ sent email, no response yet. Will call Y. Menat regarding this.	BQ
Contact Tanque Poline regarding ETN membership for AirLiquide.	<i>Ongoing.</i> Akim Bouteria is new contact, and has been sent info on ETN.	UK
Contact Turbocare (Helge Reymann, Frits de Jong) regarding ETN membership, and the meeting their Italian and Dutch offices are having to discuss it.	<i>Ongoing.</i> Two key contacts have been identified, who should be further lobbied – Augustino Mirolla and Helge Reymann.	CB/AM
Contacted Bo Petersen of Maersk Oil regarding ETN membership.	<i>Ongoing.</i> Awaiting reply.	UK
Contact Linz AG regarding 2012 membership.	<i>Ongoing:</i> Alexander Hess is interested in ETN membership in 2012, and asked to be contacted in March, in time to attend the ETN AGM taking place in April 2012.	AM