

MINUTES OF THE BOARD MEETING

9 JULY 2014, BRUSSELS, BELGIUM

Present:

Bernard Quoix, President (BQ)	TOTAL
Uwe Kaltwasser (UK)	MTU
Herwart Hönen, Treasurer (HH)	RWTH Aachen University
Giovanni Cerri (GC)	University Roma TRE
Gary Lock (GL)	Frazer Nash Consultancy
Robert Rijdsdijk (RR)	Shell
Andy Williams (AW)	EthosEnergy
Pericles Pilidis (PP)	Cranfield University
Christer Björkqvist (CB)	ETN
Dominique Cornut (DC)	ETN

Apologies

Catherine Goy, Vice President (CG)	E.ON UK
Chris Lappee (CL)	Vattenfall

Content:

1. Welcome
2. Review and approval of the MoM, Board meeting teleconference, 1 April
3. Review and report of actions list from the MoM, Board meeting teleconference, 1 April
4. ETN Activities Update

Implementation of ETN's Strategy

1. Project Board
 - a. Technical Committees
2. Strengthening the user community
 - a. Increase of membership (Affiliate members and Full members)
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 - c. Cooperation with GTUsers.com (Yrjö Komokallio)
 - d. ETN user questionnaire
 - e. Users courses
3. High Level User Meeting
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 - a. Speakers/Topics
5. International Gas Turbine Conference (IGTC-14)
 - a. Keynote speakers
 - b. OEM Panel Discussion: List of questions for the panellists
 - c. Sponsorship
5. Upcoming Board meetings
6. Closing of the Board meeting

Annex 1: Review of Action List from previous Board meetings

1. Welcome

B. Quoix opened the meeting and welcomed the Board members. C. Goy and C. Lappee sent their apologies for not being able to join the Board meeting. A. Williams also updated the Board about the new name of his company after the Joint Venture (EthosEnergy) and circulated his new contact details.

2. Review and approval of the MoM Board meeting in Paris, April 2014

The Board unanimously approved the April Board meeting minutes.

With regards to the minutes, R. Rijsdijk suggested to have a summary table with a traffic light colours system covering the key issues of importance for the ETN Board. C. Björkqvist acknowledged this proposal and will verify how this could be added in future Board meeting documentation.

3. Review and report of action list from the MoM Board meeting in Paris, April 2014

The status of all actions is updated in the Annex. The following comments were added by the Board:

Industrial Emissions Directive

C. Björkqvist informed the Board about the latest developments on the review of the LCP BREF. Neil Dawson from National Grid attended the Technical Working Group (TWG) meeting in Seville, Spain on 17-18 June on behalf of ETN and reported that out of 8500 comments submitted on the LCP BREF in September 2013, only 1750 comments have been selected to follow-up on. The European Integrated Pollution Prevention and Control (IPPC) Bureau (EIPPCB) have stated that the final TWG meeting would be organised early in 2015 in order to present and discuss the final BREF document. Furthermore, the EIPPCB have said that they would only circulate the revised chapters two weeks before the final meeting. As this would not provide sufficient time to review the final BREF, Eurelectric have stated that they would push for an extended review time.

R. Rijsdijk suggested having a one-pager or a PowerPoint presentation which would summarise the key issues related to the IED BREF, as it is important for the industry to understand this Directive and to know what to do next. R. Rijsdijk proposed to include in the document a brief summary, the main issues, ETN's actions, potential solutions and important dates. A. Williams proposed to have this ready at the IGTC-14 since this could be useful to many ETN members. C. Björkqvist welcomed this idea but highlighted that this would be time consuming due to the complexity of the document. He proposed to set-up a meeting with the liaisons offices of Total\Shell in Brussels as they might already have some useful information on this issue. He would also bring forward this idea to the ETN IED Committee, as they are experts on the IED itself. B. Quoix stated that he would send some documentation he received from Total's office (OGP) as well as the contact details of his contact person to C. Björkqvist.

C. Björkqvist also informed the Board on the Medium Combustion Directive (MCD) which is now being developed by the European Commission in order to be proposed to the European Parliament and Council and said that ETN would only follow this process if ETN members believe there would be a need for this.

Action: BQ to send documentation on the IED received by OGP as well as his contact person at OGP.

Action: CB to prepare a one-pager on the IED in time for the IGTC-14.

4. ETN Activities Update

The Board took note of the Activities Update, which was circulated ahead of the meeting by the ETN office.

IMPLEMENTATION OF ETN'S STRATEGY

C. Björkqvist stated that as the General Assembly accepted the proposed strategy from the Board at the AGM in April 2014, we now need to focus on the implementation process.

1. Project Board

C. Björkqvist informed the Board that the ETN office received the Evaluation Summary Report from the European Commission on the two EU project proposals (stage 1) submitted in April 2014: *BioCHP-MGT* and *CO2ReTurn*. Due to extremely high competition and high evaluation criteria, the projects were not selected for EU-funding, however opportunities for resubmission under future calls are being explored.

Two other proposals are currently being prepared for the next call in September 2014. The project Hybrid Solar Methane Gas Turbine (former HYCOSOL) is set to be submitted under the call *LCE3 Demonstration of renewable electricity and heating/cooling technologies* and the Flexible Generation Project is set to be submitted under the call *LCE17 Highly flexible and efficient fossil fuel power plants*.

C. Björkqvist also presented the Board the new project section of the ETN website, which was launched on 1 July 2014. He explained that this section of the website has been restructured in order to increase the visibility of on-going initiatives and projects. The aim is to make ETN's projects, documents and material easily identifiable and the project section easier to navigate.

a) Technical Committees (TC)

Before the meeting, C. Lappee asked C. Björkqvist to bring forward his concerns that too much focus has been put on the long-term research in the TC's. He would like to see the focus on the issues that are on the agenda of the users today. It was agreed by the Board that there should be a balance between EU-funded research projects and industry-funded projects. To achieve this balance, ETN should try to launch projects addressing the users' needs in a short term perspective. However, it was acknowledged that this would require a focus on issues that have a high financial impact in order to build a solid business case that could release the required funding. C. Björkqvist highlighted that the new ETN strategy – which objectives are to enforce the industry participation in the TC's, to increase the user membership, to set-up an ETN user questionnaire and to connect with other user groups – have been put in place to achieve this which would strengthen the support to the user community.

C. Björkqvist reiterated the role of the TCs, which is to identify gaps and opportunities for current/new initiatives and projects. The Board added that the TCs' role is also to give the users' more input and to propose new technical solutions that would address the users' needs. C. Björkqvist informed the Board that the Project Board have appointed two/three Chairpersons for each TC, respectively one representative from the industry and one/two representatives from the R&D community. He added that the Chairpersons are currently reviewing the vision and research areas of their respective TC, which would be published on

the ETN website and in ETN's newsletters upon completion. ETN is also working on new guidelines in order to give clear instructions to the Chairpersons on their role and responsibilities, which would be made available in November 2014.

He also informed the Board that a meeting would be organised with both the Project Board and the TCs' Chairpersons on 24-25 November 2014 in order to align the Project Board and TCs' vision with the conclusions of:

- the High Level User Meeting (13 October 2014);
- the International Gas Turbine Conference (14-15 October 2014);
- the user e-questionnaire (to be launched in the autumn 2014);
- the input from specific GT-models user group meetings.

2. Strengthening the user community

a) Increase of membership (Affiliate and Full members)

C. Björkqvist stated that it is important to bring in both users from Europe (Full members) and users outside Europe (Affiliate members). The Board decided that a list of all the users should be created (oil & gas and utilities) both in the European Economic Area, Switzerland and outside in order to invite them to join ETN. C. Björkqvist stated that ETN already started to create such list and would circulate it to the Board before the IGTC-14. For the Affiliate members, the Board agreed that ETN should target the key global markets such as the Middle East (United Arab Emirates, Qatar, Kuwait and Oman), Brazil, Australia, China and Japan. A. Williams also suggested using organisations such as EPRI to get Affiliate members, as their headquarters are outside Europe and offered to follow-up with them.

Action: ETN to circulate the list of potential users (oil & gas and utilities) both in the European Economic Area or Switzerland and outside in order to invite them as an ETN member.

Action: AW to follow-up with EPRI in order to increase the number of Affiliate members.

b) User Groups' meeting list

C. Björkqvist informed the Board that the ETN office started to make a list of the user group meetings, which would increase the input from the users and also increase the visibility of ETN.

c) Cooperation with GTUsers.com (Yrjö Komokallio)

C. Björkqvist mentioned that he had a discussion with Yrjö Komokallio from GTUsers.com (GASRE) where they discussed potential cooperation opportunities. Yrjö Komokallio suggested organising a meeting to discuss how GASRE could assist ETN as they already have different tools available for end users that could be used/created for ETN purposes such as: questionnaire forms, feedback forms and discussion FORUM. The Board agreed that strengthening ETN's position with Yrjö Komokallio would be useful.

Action: CB to follow-up with Yrjö Komokallio to discuss further cooperation opportunities.

ORAP

C. Björkqvist presented the Strategic Power Systems (SPS) Operational Reliability Analysis Program (ORAP) to the Board. Both a potential cooperation as well as the creation of a similar programme by ETN was proposed but it was finally decided not to follow-up on this at the moment as it was pointed out that this kind of programme is more designed for smaller users that only have single or a few engine models in their fleet.

LinkedIn User Group

C. Björkqvist reported that there is an opportunity for ETN to connect with existing Gas Turbine Users Groups on LinkedIn. He specifically mentioned one that has more than 14 000 members. However, as the majority of the questions are basic questions from smaller users in the Middle East, key questions would then need to be filtered out. B. Quoix suggested instead setting-up a similar group for ETN members. R. Rijsdijk concurred this and stated that this could also be extremely useful for the requests of spare parts.

Ask your question on the ETN website

The Board agreed that it would be useful to have a new page/section on the ETN website where users would be able to ask questions to the ETN community. This new feature would only be available to ETN members and all ETN representatives would receive an automatic email with the question and would be able to answer it directly. Someone from the ETN office would then have to regroup the key issues in order to have them discussed in the relevant TCs before they would be brought to the OEMs. C. Björkqvist welcomed this idea and would see how to implement this new feature on the website.

Following the categorisation of the questions, the following set-up was proposed by the Board to address the questions raised on the ETN platform as well as those collected in the user e-questionnaire:

1. Organisation of a roundtable for the users to discuss the common issues;
2. Organisation of a roundtable with the TCs' Chairpersons and the R&D community to discuss potential solutions to the users issues;
3. Organisation of a meeting where the issues would be highlighted to the OEMs and where the R&D community would present potential solutions to the technical issues faced by the users or ongoing research in these fields.

Action: CB to explore different options further (new page/section on the ETN website where users would be able to ask questions to the ETN community) in order to propose and start something along those lines later this year.

Action: In order to address the questions raised on the ETN platform as well as those collected in the user e-questionnaire, CB to take the proposed meeting set-up (organisation of roundtables) into account once ETN starts to receive a flow of feedback from the users.

d) ETN user questionnaire

G. Lock reported that he sent the draft questionnaire to B. Quoix and R. Rijsdijk in order to receive some feedback from Total and Shell. R. Rijsdijk's team provided some suggestions for changes and proposed drop-down menus which narrowed the pages of the questionnaire to one page, which would make it much easier for users to answer. B. Quoix stated that a representative from Total should send its feedback shortly. G. Lock also expressed his concern on whether the numbers in the questionnaire are applicable also to the utilities. It was decided to provide the updated draft questionnaire to C. Goy and C. Lappee after receiving Total's input, in order to have a review from a utility perspective. G. Lock would then select the 10 main issues per engine for both the oil & gas companies and the utilities and implement it to the e-questionnaire and send it to the ETN office who would implement it into a professional layout. It was decided that the results of the questionnaire would be

presented at the AGM in 2015 (to be clearly indicated on the e-questionnaire), which would incentivise non-member organisations to become an ETN member.

Action: BQ to send the feedback of the draft questionnaire to GL.

Action: GL to send the draft questionnaire to CG and CL for a utility review.

Action: CG and CL to send feedback on the draft questionnaire to GL.

Action: CB to implement the final questionnaire into an e-questionnaire.

e) Users' courses

C. Björkqvist explained that ETN could organise courses in key markets on the main issues faced by the users (identified by the e-questionnaire). The courses would be given in key international markets and use the ETN network of experts to create/give these courses. This would be an opportunity to highlight the existing expertise on these matters in Europe which could pave the way for industry-funded research projects. C. Björkqvist said that Chinese representatives had expressed interest in 2013 in courses to fix a series of specific issues. C. Björkqvist added that a course was proposed earlier this year and he is waiting for their management decision.

C. Björkqvist also informed the Board that ETN is now organising a GT course in Dubai, United Arab Emirates in January 2015, in cooperation with Cranfield University, and asked the Board for other potential key locations where similar courses could be organised. P. Pilidis stated that Brazil/South America could be a good location and mentioned that he was already in contact with a former Cranfield University student at Petrobras to explore this opportunity. Board members also mentioned Singapore, Kuala Lumpur and Indonesia as good locations and proposed that we should try to get an Affiliate member for each region in order to have a good base for the organisation of the course.

3. High Level User Meeting

C. Björkqvist presented the agenda of the High Level User Meeting, which was welcomed by the Board. B. Quoix suggested having a higher focus on the oil & gas sector than last meeting, where the focus was more on the utility sector. It was agreed that we should aim at a balance between the two sectors.

Update of ETN's position/briefing papers

As the market changes rapidly, the Board suggested to update every 3 years ETN's position/briefing papers. For the papers "*The Potential of Gas and Carbon Capture and Storage in Meeting the EU's 2050 Energy Goals*" and "*Enabling the increasing share of the renewable energy in the grid*", it was agreed that Andre Mom would be asked to update these papers, with some support from Riti Singh or Dick Van der Vecht. The Board also proposed to maybe create a new briefing paper addressing the high energy prices in Europe, and highlighting how gas turbine research could have a positive impact.

Action: CB to contact Andre Mom to ask him to update the papers with input from Riti Singh and/or Dick Van der Vecht.

Action: CB to explore the possibility to write a new briefing paper addressing the high energy prices in Europe, and highlighting how gas turbine research could have a positive impact.

4. High Level Dinner Debate

C. Björkqvist presented the agenda of the High Level Dinner Debate, which would take place at the European Parliament after the HLUM. He reported though that so far no Member of the European Parliament has been secured to host the meeting. Once an MEP has been secured, the Board suggested having a meeting with him/her to know what they know about the gas turbine sector in order to fill the gaps and to help educating the MEPs.

For the focus of this year's debate, the Board proposed to emphasise on the security of supply and have an attractive title such as "*What would happen if Russia stops providing gas to Europe – The role of gas turbine in the security of supply and in reaching the 2030 energy and climate targets*".

Action: CB to follow-up with potential MEPs and update the agenda of the Dinner Debate.

5. International Gas Turbine Conference (IGTC-14)

a) Speakers

C. Björkqvist presented the agenda to the Board as well as the list of confirmed speakers. He mentioned that for the *Keynote session II: Development needs for utilities and oil & gas operators for their current and future gas turbine fleets*, we have space for a third speaker that could come from the Middle East. The Board proposed to ask a representative of Saudi Electric. The Board also proposed Yrjö Komokallio to chair this Keynote session. If he cannot attend, it was suggested that a market analyst could play this role.

C. Björkqvist reported that no confirmation was received from MOST for the *Keynote session III: National and regional markets: opportunities and challenges for gas turbine stakeholders*. Therefore we might need an alternative speaker from China. Speakers from Japan could also be considered. C. Björkqvist could contact the Gas Turbine Society of Japan.

Action: CB to secure a Chinese speaker from MOST for the Keynote session III.

Action: CB to contact the Gas Turbine Society of Japan to find an alternative speaker, if no Chinese speaker would be secured.

b) OEM Panel Discussion

For the OEM session, C. Björkqvist informed the Board that we received confirmation from all the OEMs for high level speakers. C. Björkqvist suggested creating a list of questions that could be submitted to the OEMs ahead of the IGTC-14, in order for the OEMs to prepare adequately for the panel discussion. Board members agreed with this approach and would each provide the ETN office with a series of potential questions for the OEM panel discussion. It was also decided to give each OEM maximum 10 minutes to speak – the rest of the time would be dedicated for the panel discussion where they would answer the questions from the moderator as well as the audience. C. Björkqvist also proposed to provide delegates with the opportunity to fill-in questions that could be handed to the moderator on day 1 of the conference so he could group them into different topics. This approach, which would result in a more focused discussion, was appreciated by the Board. With regard to who would moderate this session, it was proposed to have one representative from an oil & gas company and one representative from a utility.

Action: The Board to send the ETN office a series of questions for the OEM panel discussion.

Action: CB to identify one moderator from an oil & gas company and one representative from a utility.

c) Sponsorship

D. Cornut presented the current sponsors and informed the Board on the outstanding sponsorships:

- 2 lunches' sponsors: 4000 EUR each
- 1 conference bags sponsor: 4000 EUR
- 1 event mobile application sponsor: 4000 EUR
- 1 exhibitor sponsor: non-profit 1500EUR/profit 2500 EUR

The Board suggested the ETN office to make a list of all ETN industry members and indicate if they were a sponsor in 2010 or 2012 in order to target the companies which did not sponsor any of the previous events yet.

Action: DC to make a list of all ETN industry members and indicate if they were a sponsor in 2010 or 2012.

5. Upcoming Board meetings and events

It was decided that the next Board meeting would take place on **Thursday 4 December**, between 8:00-16:00. It was agreed that Board members would arrive the night before in order to start/finish earlier the meeting.

Name of Meeting	Date	Location
High Level User Meeting and Dinner Debate (afternoon/evening)	13 October 2014	Brussels
International Gas Turbine Conference	14-15 October 2014	Brussels
Project Board and Chairpersons (TCs) Meeting	24-25 November 2014	Brussels
Board Meeting	4 December 2014	Brussels

6. Closing of the Board meeting

B. Quoix closed the Board meeting and wished everyone happy summer holidays.

ACTION LIST

No	New Actions	Resp.	Date
1	BQ to send documentation on the IED received by OGP as well as his contact person at OGP.	BQ	July 2014
2	CB to prepare a one-pager on the IED in time for the IGTC-14.	CB	Oct 2014
3	ETN to circulate the list of potential users (oil & gas and utilities) both in the European Economic Area or Switzerland and outside in order to invite them as an ETN member.	CB	Oct 2014
4	AW to follow-up with EPRI in order to increase the number of Affiliate members.	AW	Oct 2014
5	CB to follow-up with Yrjö Komokallio to discuss further cooperation opportunities.	CB	Oct 2014
6	CB to explore different options further (new page/section on the ETN website where users would be able to ask questions to the ETN community) in order to propose and start something along those lines later this year.	CB	Oct 2014
7	In order to address the questions raised on the ETN platform as well as those collected in the user e-questionnaire, CB to take the proposed meeting set-up (organisation of roundtables) into account once ETN starts to receive a flow of feedback from the users.	CB	Oct 2014
8	BQ to send feedback of the draft questionnaire to GL.	BQ	July 2014
9	GL to send the draft questionnaire to CG and CL for a utility review.	GL	Aug 2014
10	CG and CL to send feedback on the draft questionnaire to GL.	CG/CL	Aug 2014
11	CB to implement the final questionnaire into an e-questionnaire.	CB	Oct 2014
12	CB to contact Andre Mom to ask him to update the papers with input from Riti Singh and/or Dick Van der Vecht.	CB	Oct 2014
13	CB to explore the possibility to write a new briefing paper addressing the high energy prices in Europe, and highlighting how gas turbine research could have a positive impact.	CB	Nov 2014
14	CB to follow-up with potential MEPs and update the agenda of the Dinner Debate.	CB	July 2014
15	CB to secure a Chinese speaker from MOST for the Keynote session III.	CB	Aug 2014
16	CB to contact the Gas Turbine Society of Japan to find an alternative speaker, if no Chinese speaker would be secured.		
17	The Board to send the ETN office a series of questions for the OEM panel discussion.	Board	Sept 2014
18	CB to identify one moderator from oil & gas company and one representative from a utility.	CB	Aug 2014
19	DC to make a list of all ETN industry members and indicate if they were a sponsor in 2010 or 2012.	DC	July 2014

ANNEX 1

STATUS OF ACTION LIST (from MoM April Board meeting, Paris France)

No	Actions	Outcome / Next action	Resp.
1	CB to keep the Board informed on the cooperation opportunities with the <i>Gas Turbine Power Generation Special Committee (AGTPG)</i> and to circulate the contact details of AGTPG.	On-going. CB to follow-up with his Chinese contacts with regards to the proposal to set-up an ETN course in China.	CB
2	CB to explore the Fuel Quality Directive to see whether ETN should respond to the Directive.	On-going. CB explained that the focus is on the IED. He contacted some members to see if they would like ETN to act on this Directive.	CB
3	CB to set-up a meeting with GL to discuss the questionnaire.	Done	CB/GL
4	GL to update the draft questionnaire based on the Board's suggestions and make a list of elements that operators should focus on and review.	Done	GL
5	GL to send the draft questionnaire and the list of elements to be reviewed to BQ and RR for them to send it to the right representative within their organisation.	Done RR sent his comments to GL and BQ reported that the comments should be sent sometime soon.	GL/BQ/RR
6	CB to incorporate the final questionnaire into an online version.	On-going. Will be done when CB will receive the final version of the questionnaire.	CB
7	CL to contact a representative from DNV GL Energy to see if they could provide some information on the impacts of the LCP Directive and maybe present this at the HLU meeting or be involved in the dinner debate.	On-going	CL

PENDING ACTION LIST (from MoM February 2014 Board meeting)

No	Actions	Outcome / Next action	Resp.
1	BQ to send the contact details of Dominique Louveton (Wamar-France) to the ETN office. CB to send an email on membership payment to Nabil Barakat, copying M. Louveton and UK.	On-going.	CB
2	BQ to send contact details of Barbara Stanley to the ETN office.	Done. BQ reported that B. Stanley will not come to IGTC-14 but Gil Amengual would replace her.	BQ
3	CB to send a formal invitation to Thierry Toupin, Siemens and Barbara Stanley Solar Turbines to participate in the Keynote session 4: OEM panel discussion.	Done	CB
4	BQ to send an email to Luca Maria Graci from GE with regards to the dinner sponsorship.	Done	BQ
5	CB to set-up a meeting with GL to discuss the questionnaire.	Done	CB/G L
6	CB to spread ETN reserves into different banks.	On-going. CB reported that it takes more time than expected due to the traceability law.	CB
7	CB to circulate the agenda of the HLUM and a list of potential participants.	Done	CB
8	CB to contact Yrjo Komokallio, GTUsers to discuss partnership opportunities.	Done	CB
9	BQ to invite contacts in Brazil and Middle East to speak at the IGTC-2014 under <i>Keynote Session 3: Opportunities in Regional Markets</i> .	Done BQ reported that Marcelo Accorci Miranda, Petrobras would speak at IGTC.	BQ
10	BQ to provide the name and contact information of the representative from Siemens Energy and Solar Turbine with regards to <i>Keynote Session 4: OEM Panel Discussion</i> .	Done	BQ
11	AW to follow-up with TransCanada, Shanahan and Rolls Wood Group.	On-going. AW will follow-up with TransCanada to know if they have a branch in the UK. If they have, they would be invited to become an ETN member.	AW
12	CL to contact RWE about membership.	On-going. CL to inform the Board on the status of this action.	CL
13	CL to contact Mitsubishi about membership.	On-going. BQ reported that he could follow-up with MHI if CL has not received any answer. CL to inform the Board on the status of this action.	CL
14	UK to follow up with GKN for membership in a meeting set to take place at the end of December 2013	On-going. UK reported that he did not receive an answer to his emails. It was agreed that he will invite them to the IGTC-14.	UK/CB
15	UK to meet with Bo Pedersen of Maersk to discuss ETN membership.	On-going. UK reported that there is a new contact person and he would send CB his contact details as well as sending him ETN membership information.	UK