ETN NEWS

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ETN is a non-profit association bringing together the entire value chain of the gas turbine technology community in Europe and beyond. Through cooperative efforts of our members, ETN facilitates and optimises research and technology development, advocating efficient and environmentally sound applications of turbine systems with reliable and low cost operation.



Christer Björkqvist Managing Director

Power to consumers under new energy proposal

The Brexit and the US elections in 2016 serve as an evidence of the change in the dynamics of power. In the past, the big industries and the political communities had the loudest voice and the public was not sufficiently empowered to challenge it. Today, Internet and social media have provided tools for a non-violent revolt against the "system". The phrase 'power to the people' was used as a slogan by the Black Panther movement in the US, and as a catchphrase in the 1970s. It is clear that there is no turning back on the wide use of internet and social media resulting in an increasing engagement of the public and the consumers. As such our industry needs to engage and

interact in this debate and to some extent provide education as well as highlighting our visions of future technology development opportunities.

Today, the new catchphrase in energy politics is "prosumers". In line with the European Commission's "Energy Union Strategy", a 1200 pages package of measures entitled 'Clean Energy for All Europeans' was presented in November with the objective to keep the EU competitive during the energy transition to a low carbon energy market. The European Commission's Vice-President Šefčovič recently stated "the proposal aspires to score a hat-trick on the three goals of achieving global leadership in renewables, putting energy efficiency first and giving a fair deal to consumers". The proposal is providing a roadmap to accomplish its vision of a future, energy-efficient and integrated EU energy market based on a decentralised renewable energy production with a new role for consumers as "prosumers". Under this proposal, consumers will be entitled to generate electricity for their own consumption, store it, or sell back access energy to the grid. The proposal will now be intensively debated in the European Parliament and the Member States as it would create a further energy revolution in both the way that we produce and use energy, if adopted. With the recent announcements of the closure of a number of old coal-plants in the UK, France, Germany and the Netherlands due to political pressure and stricter emission standards (Industrial Emission Directive), it is clear that the European energy transition is already on its way. In the medium term, several countries have also announced a phase out of their coal power plants: Austria by 2020, France no later than 2023, UK by 2025, the Netherlands by 2030 and Finland by 2030, with a complete ban of coal plants. The International Energy Agency's newly released World Energy Outlook projects a dominant period ahead for gas-fired power along with renewables for the next 25 years, mainly replacing coal.

It is evident that turbines, as a proven, reliable and efficient technology, can already provide significant contributions to a global low emission pathway, but it will require additional investments in research to explore the technology's full potential. Within ETN, we are following up on the many future promising developing paths where turbine technology, with supportive R&D collaboration programmes and the right market incentives, could provide future cost-efficient and secure integrated energy solutions in line with the requirements of the Paris Agreement.

Finally, I would like to share with you with the main conclusion from ETN's International Gas Turbine Conference (IGTC) in October where it was agreed that we need to take cooperation to a new level to reduce costs and risks but also increase our innovativeness and reduce the time of bringing new developments to the market. I look forward to exploring different ways to accomplish this in close cooperation with you in 2017 and beyond.

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THE QUARTERLY FOCUS

Proactive contributions of ETN to the SET-Plan

For the last year, ETN has been a proactive contributor to one of the most essential tools for the European Union energy transition: the <u>Strategic Energy Technology Plan</u> (SET-Plan). This issue of ETN's quarterly newsletter takes stock on the most recent developments and exposes the fruitful inputs submitted by our network.

Under the presidency of Jean-Claude Juncker, the European Commission has listed 10 priorities, on which the EU must deliver during its term (2014-2019). One of those is the Energy Union, which aims at transforming the EU economy and energy system in depth to "ensure that Europe has secure, affordable and climate-friendly energy." This Energy Union holds 5 dimensions. One of them is called "Research, innovation and competitiveness" and the SET-Plan has been developed to give reality to it. Through these R&I targets set in the ten key actions, the SET-Plan aims to accelerate the decarbonisation of the energy system and the transport sector by making technologies more cost-effective with improved performance. It intends to put a strong focus on the technologies that have the largest potential to transform our energy system and ETN is precisely convinced that the turbine technology has a key-role to play in the future; that is why ETN is actively contributing by providing input and expertise of its network to different actions related to our industry.

Targeted actions for ETN's commitment

Out of the 10 actions listed by the SET-Plan, ETN has selected four where inputs would be especially decisive and for which it has hence been decided to contribute.

Action 4: Increase the resilience, security and smartness of the energy system

As an overarching target, the SET-Plan R&I will aim at developing, maturing and demonstrating (up to TRL7 to 9) technologies, systems and services, which have the potential of being cost effective, so that the EU electricity system is capable of hosting 45% of variable renewables by 2030 and operate in a safe, stable and secure way. To achieve this, four flexibility options should be combined in an optimum way:

- Energy grids, system and integration
- Storage
- Demand-response
- Flexible backup and generation

ETN had firstly provided comments to the initial issue paper released by the European Commission to launch the action, as it was done for every actions listed in the SET-Plan. The European technology and innovation platform called "Smart networks for energy transition" (ETIP-SNET) has been set up by the EC in order to discuss and agree on research activities needed in the above listed flexibility options. In total, 6 working groups have been launched to define a vision for the European energy system and the contribution of various technologies to it, from now up to 2040 and beyond. ETN has launched in December 2016 a call for experts to populate the ETIP-SNET Working Groups.

Action 5: Develop new materials and technologies for, and the market uptake of, energy efficiency solutions for buildings

ETN has submitted <u>comments</u> to the <u>Issue paper</u> that was released to launch this action, jointly with <u>Cogen Europe</u> and the European Biomass Association (<u>AEBIOM</u>). This contribution underlines the high potential of micro-CHP in the future, especially if coupled with micro turbines, which the European Commission has acknowledged and has included micro-CHP/CCHP as one of the key areas for research activities.

Action 6: Continue efforts to make EU industry less energy intensive and more competitive

ETN submitted comments (available

here) to the Issue paper released by the Commission together with EUTurbines, which underlines the potential gains that could be achieved by further developments of the turbine technology, especially if applied in sectors such as the chemical industry or petroleum refineries and with cross-cutting technology for waste heat recovery. ETN's contribution listed fields where research initiatives could be especially beneficial.

Action 9: Renewing efforts to demonstrate carbon capture and storage (CCS) in the EU and developing sustainable solutions for carbon capture and use (CCU)

This action received <u>comments by ETN</u> following the release of an <u>Issue paper</u> in May 2016.

Cooperation efforts for the future

By encouraging cooperation and coordinating EU-wide research efforts, the SET-Plan chimes with the philosophy of ETN, highlighted during the last edition of the International Gas Turbine Conference in October. It is of utter importance to bring stakeholders together to agree on the most critical technical development needs and then cooperate in an integrated way towards cost efficient solutions that can met the agreed future emission reductions. ETN's commitment to the implementation of the SET-Plan will hence continue and the contribution of its members is altogether prized and welcome.

Tweet with us #EnergyUnion #SETPlan #EnergyEfficiency #CCS #Innovation Follow them @ETIPSnet @CogenEurope @AEBIOM @MarieCDonnelly @stracma

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INSIDE THE NETWORK

8th International Gas Turbine Conference

eight technical sessions during this twoday event. The major conclusion was that we should take collaboration to a new level in order to reach our ultimate goal: to enhance the developments, which can deliver a flexible, environmentally-sound gas turbine technology with reliable and low-cost operation as

well as to highlight the high relevance

of the gas turbine technology in both

the current and future low-carbon sce-

narios beyond 2030. ETN Members and

attendees can access the proceedings

and papers produced for this event on

ETN's website. Non ETN members inter-

ested in buying an access to those doc-

uments can contact Thibault Boutherin:

tb@etn-gasturbine.eu



The 8th edition of the International Gas Turbine Conference (IGTC-16) took place in October in Brussels. No less than 169 attendees from 27 different countries and 6 continents joined to discuss the future of the GT technology, hear top-level speakers in four plenary sessions and technical experts presenting their latest developments in

Feedback quotes of IGTC-16:

"It is the perfect size and format to get significant positive interaction between all key industry stakeholders: OEMs, Customers, and Governments. I will join again at IGTC18!"



Tom Scarinci, Senior Vice-president for Aeroderivative Gas Turbines, Siemens Canada

"The ETN conference is the ideal place to get an update, from several perspectives, on the GT industry in Europe. The users, the technology providers, the policy makers and the service providers, they all get a forum to discuss their views."

Pascal Decoussemaeker, Product Manager O&M, MYA Product Line, GE Power Services

"I enjoyed meeting such a wide range of experts across the value chain at the IGTC-16- this conference serves as a valuable exchange platform for the rest of the community."

Tomi Motoi, International Energy Agency



ETN has taken the voice of the Gas turbine community to another level. After <u>LinkedIn</u>, ETN has recently opened its official account on Twitter: <u>@etngasturbine</u>. This will be another convenient way to stay in touch and hear about the latest news of our network and the gas turbine technology. Do not hesitate to follow us, like and retweet our posts!





"It is of utmost importance for us to ensure that the user communities prosper in order for everyone in the gas turbine value chain to benefit from this." Catherine Goy, Uniper and Vice President of ETN

ETN's Annual General Meeting 2017

ETN will organise its next Annual General Meeting on 10 and 11 May 2017 in Oberhausen, near Düsseldorf, in the Ruhr region, the industrial heart of Germany. The event will be kindly hosted by MAN Diesel & Turbo, who will welcome us in their PrimeServ Academy. This AGM will be back to back with meetings of the different Technical Committees and working-groups of ETN. For sponsorship opportunities, please contact Thibault Boutherin: tb@etn-gasturbine.eu



KEPCO joins ETN as a new Global Member

ETN is very pleased to announce the arrival of Korea Electric Power Corporation as a new global member. KEPCO is the largest electricity utility in South Korea, providing generation (93% of the electricity generation in South Korea), transmission and distribution. We look forward to working with KEPCO! More information on www.kepco.co.kr

They are on Twitter @iamkepco

EUROPEAN TURBINE NETWORK

ETN AT WORK

The OMSoP project moves forward

Since its launch in 2013, ETN is an active member of the consortium developing the OMSoP project. This EUfunded project, which gathers eight partners, intends to explore technical solutions for the use of state-of-the-art concentrated solar power system (CSP) coupled to a micro-turbine to produce electricity, with the financial support of the European Union. The intended system will be modular and, using different layouts, capable of producing electricity up to 30 kWe per unit. The aim is to make such a system available to provide energy needs for domestic and small commercial applications. It can be integrated with medium and long term energy storage and/or co-firing with conventional fuels or biofuels. The primary technical challenge is to enable the production of small scale cost effective, efficient, reliable and easy to maintain units for either on or off-grid applications.



OMSoP is now moving closer to its final demonstration phase. The micro turbine, the solar receiver and the solar dish are now in place at ENEA's facilities outside Rome. In the coming months, the main focus will be on the system integration and the development of a reliable control system. The complete system demonstration is expected to start in early spring 2017. More information can be found on www.omsop.eu

#GasTurbine #SolarPower #Renewables #Innovation

#Energy

Follow them @CityUniLondon @UnivRoma3 @ENEAOfficial @KTHResearch @UniSevilla

ETN's User Groups



In 2017, ETN will continue to develop its initiatives towards gas turbines users in cooperation with GTUsers.com. The LM2500 user group, which was launched in 2016, has been a success and it has proven that the methodology is relevant and suitable; it will be duplicated for the Industrial RB211 gas turbines this year. Prior to the meeting, ETN collects data from the user community regarding the recurring issues that users have been confronted with, as well as specific development needs. Those are then transmitted to the OEMs so they can prepare for the meeting where the prioritised issues and demands are discussed between the users' and the OEM's experts. The next meeting of the LM2500 will take place on 13-14 June in Amsterdam. The first meeting for the Industrial RB211 shall take place in May, with a tentative date of 3-4 May 2017. More information will come on the websites of <u>ETN</u> and <u>GTUsers.com</u> our <u>Twitter</u> and on <u>LinkedIn</u>!

For further information please contact Ignacio Lescano: <u>il@etn-gastur-</u> <u>bine.eu</u>

Sponsorship opportunities are available for those user groups. If you are interested, please contact us at Im2500@etn-gasturbine.eu and irb211@etn-gasturbine.eu

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ETN becomes a member of the Bio-HyPP project

Bipp



ETN has been invited to be a member of the Stakeholders Group of the Bio-HyPP project, which aims at developing a full scale technology demonstrator of a hybrid power plant fed by biogas blended with natural gas. This plant will combine solid Oxide Fuel Cells (SOFC) and a Micro Gas turbine (MGT). The ultimate goal is to realise the best possible coupling of both sub-systems and to establish a European technology leadership on high efficient biogas and CHP systems. The project will deliver a demonstration plant, which will constitute the solid premises

for a large scale market deployment, at a subsequent stage. Bio-Hypp is funded by the EU Horizon 2020 research and innovation programme.

Becoming a member of this stakeholder group, ETN will be informed about the progression of the project and will be invited to review the relevant achievements and perspectives of the Bio-HyPP project, thus providing the consortium with the necessary external feedback from an industrial and market point of view. You can find more information on www.bio-hypp.eu

ETN AT WORK

Interoperability and gas quality standards



The European Network of the Transmission System Operators for Gas (ENTSOG) organised in Brussels the 3rd workshop regarding the implementation of the <u>Network Code on inter-</u> <u>operability</u> that the EU has adopted for gas in 2015. This edition was dedicated to gas quality and the standard EN 16726:2015, which CEN (European Committee for Standardization) has adopted. A report is available on <u>ETN's</u> <u>website</u>.

During this meeting, it was highlighted that a working group set by CEN is focusing on the harmonisation of the quality of high calorific gas (H-gas). ETN expressed interest in supporting this working group: any member of ETN willing to take part on ETN's behalf is invited to contact Thibault Boutherin, at the office in Brussels: tb@etn-gasturbine.eu.





ETN members are entitled to a 10% reduction in registration fee and exhibitor's booth fee



What does the Clean Energy Package mean for the gas turbine community?

Last November, the European Commission unveiled the "Clean Energy for all Europeans" package. This group of texts, reports and communications (binding and non-binding) was eagerly expected by the actors of the energy sector as it opens a new stage towards the completion of the Energy Union. The Quarterly newsletter proposes an overview of the main proposals and their potential implications for the gas turbine community.



The Energy Union is moving forward and the Clean Energy package intends to take it to another level. This proposal by the European Commission opens the phase where the texts go through the democratic debate and the adoption process at the European Parliament and the Council. The ambition is tremendous and this is reflected in the extent of this package, embracing the energy system in numerous aspects.

Integrated Market and Renewables: any room for gas?

The first set of proposals to give life to the Energy Union focused on security

of supply, especially regarding gas, at a moment when Russian imports to the EU have reached a record-high. This new impetus embraces a wider range of aspects. Firstly, it intends to break barriers for electricity between member states and further integrate markets, so power can circulate smoothly across the continent, where needed. It needs to be watched as there are plans for an eventual similar move for gas market. So far, the EU has been working to reduce hurdles between member states but never to that extent. This proposition for an EU electricity market design could require the use of energy storage and solutions implying the use of gas turbine technology (such a power to gas technology, for instance).

The Clean Energy Package also proposes to better integrate an ever-growing share of renewables (RES) in the European energy mix, so to reach the targeted share of 27% of RES in the 2030 energy consumption. To do so, the European Commission proposes to increasingly expose renewables to the market conditions, decreasing the priority dispatch that they have enjoyed until now, reducing the support schemes

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EU POLICIES

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and unify them at EU-scale. Commissioner Cañete underlined that those "rules focus on creating the right conditions for renewables to thrive". Solutions involving gas not only as a back-up but combining gas and RES hence offer a window of opportunity that ETN is precisely trying to harness, with its proposals for the SET-Plan Actions. Heating and Cooling is also identified as a key priority and member states will be asked to increase by 1% per year the share of RES in their heating and cooling systems. This is also a field where the gas turbine technology can provide solutions in combination with RES.

In addition, the package suggests a change regarding capacity mechanisms (power supply put on standby and ready for use as a backup). The vice-president of the Commission Maroš Šefčovič ac-knowledged that "there are situations where you need them" but they should only be used as a last resort. The introduction of environmental standards is proposed with a limit of 550 grams of CO_2 per kilowatt hour, which would end up in pushing the coal-fired plants out and leaving room for gas-fired plants.

The main focus: energy efficiency

The other main field of action of this Clean Energy package is energy efficiency, which the European Commission considers as "an energy source in its own right". It is estimated that any



Vice-President of the European Commission in charge of the Energy Union Maroš Šefčovič and Commissioner Cañete.

additional 1% energy savings induces a reduction of gas import by 2.6%. The big move would be to adopt a 30% binding target of energy savings by 2030 (it is currently "at least 27%"). The Commission suggests partially reviewing the existing directive, modifying the default Primary Energy Factor (PEF) for electricity [the PEF indicates the ratio of energy consumption to produce final energy. It accounts what is consumed and/or lost in energy transformation, transmission and distribution processes]. The current European PEF is 2.5; it is proposed to lower it to 2. This would have direct consequences on existing pieces of European legislation, such as Eco-design and Energy labelling regulations, and the Energy Performance of Buildings directive. The latter is of interest for ETN, where research topics combining micro gas turbines and solar power have been proposed (see article p2).

The Clean energy Package: what is in it?

This Clean Energy for all Europeans package encloses initiatives on 10 aspects:

- 1. <u>Electricity market</u> revision of existing directive and regulations
- 2. Energy efficiency directive revision of the directive
- 3. Energy performance of buildings revision of the directive
- 4. Ecodesign work plan, not binding
- 5. <u>Renewables & bioenergy sustainability</u> revision of the directive
- 6. <u>Governance for the Energy Union</u> new regulation
- 7. Energy prices & costs report, not binding
- 8. Energy funding report, not binding
- $\textbf{9. } \underline{Innovation} \text{ (see also p2 our article about the SET-Plan)} communication, not binding \\$
- **10.** <u>Transport</u> communication, not binding

Figures

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legislative proposals

10

aspects of the energy sector are targeted

30%

is one of the striking figures of this package: it is the binding target for energy efficiency finally proposed by the Commission

1200

pages of documents compose the package

900.000

jobs could be created thanks to the implementation of this package (according to the European Commission)

9 to 24 months

Between 9 months (for the very optimistic) to 24 months should be necessary to take the whole package through the whole decision process.

ETN will be monitoring the progress of those propositions through the legislative process at the EU level, and it is already actively participating to the Research and Innovation section of the Energy Union. By doing so, it is trying to ensure that the gas turbine technology remains relevant and offers solution for the EU to meet its targets and cuts emissions of greenhouse gases and others. This is why the expertise of ETN members is so prized and any input or contribution is welcome.

Tweet with us #EnergyUnion #CleanEnergyEU #Energy #EnergyEfficiency #Innovation Follow them @MarosSefcovic @MAC_Europa @jerzybuzek @Energy4Europe @Ristori20

EU POLICIES

Brexit: business as usual?



Michel Barnier, EU's chief Brexit negotiator

Theresa May, Prime minister of the UK, has repeatedly confirmed the intention of her cabinet's to complete Brexit and to trigger the Article 50 of the Lisbon Treaty in March 2017, opening the negotiations. Several key aspects remain unclear however: will the UK stay in or leave the single market? Switzerland, Iceland and Norway have a direct access to the latter without being full EU-members. Will then the UK accept the freedom of movement, enshrined in the rules of this single market? Will the Parliament have to vote on the mandate to trigger the Article 50, and on the outcome of the negotiations? Numerous uncertainties still need to be clarified but ETN has decided, on its side, to adopt a proactive approach to ensure all of its British members that they will be able to keep their full membership. A statement shall be circulated shortly.

to give a special impetus but

still working closely with the

other EU institutions (Commis-

sion and Parliament, mainly).

Malta is in charge until 1 July

2017, then handing over to Es-

tonia. The UK was supposed to

have its turn, but passed it due

to Brexit. More on the website of the

Maltese presidency: www.eu2017.mt

The EU Strategy for LNG and gas storage

In October, the European Parliament has adopted the <u>EU strategy for liquefied</u> <u>natural gas (LNG) and gas storage</u>, stating that it "must make energy supplies more secure, cut carbon emissions and deliver affordable prices". The plan is for the EU to reduce its dependency on too few suppliers (firstly Russia), especially for Central and Eastern European member-states depending mostly of one single supplier. It also aims to review and increase the use of existing infrastructures and to pursue its effort in trade and diplomacy towards "a rule-based, transparent and well-functioning global gas market". This strategy has however been criticised by some NGOs for allowing more import from fracked gas from the USA.

EU Presidency: after Slovakia, Malta

On 1 January 2017, Malta has taken up the Presidency of the Council of the EU, following Slovakia. Every 6 months, a member state takes the Presidency of the Council, which gathers the representatives of the governments of the 28

MALTA EU2017

member-states. The state in charge defines some priorities, on which it wants



The EU and Paris Agreement

Following its ratification by the EU, the Paris Agreement has come into force on 4 November 2016, a few days ahead of COP22 in Marrakech. The EU is likely to go beyond its 2020 commitments, reaching a 30% reduction of emissions. However, specialists now estimate that the EU will have to enhance its post-2020 efforts to implement its share of the goals set in Paris, while the two largest polluters in the world, namely the USA and China, have undertaken voluntary policy to meet their targets. A study of the International Energy Agency estimates that the EUw could fail at reaching its targets for 2030 in terms of deployment of renewables (at least 27%). This could explain the ambition of the Clean Energy Package. In addition, the IAE estimates that after a 62% growth between 2009 and 2015, the renewable capacity of the EU should only grow by 23% over the 5 next years. Within the EU, leaders will be Germany, France, UK and Poland. Finally, the UK has unveiled a plan to close all coal-fired plants by 2025 and to increase clean investments, for renewables and gas.

Maltese Priorities

- 1. Migration
- 2. Single Market
- 3. Security
- 4. Social inclusion
- 5. Europe's Neighbourhood
- 6. Maritime

The Single Market priority encloses one aspect for energy: "Reviewing the Energy Efficiency package aimed at reducing energy consumption in residential buildings and industry through improved energy efficiency".

They are on Twitter: @EU2017MT

THE LIFE OF THE GT COMMUNITY

Upcoming meetings and events

ETN Meetings/Supported Events	Date	Location
Global Power and Propulsion Society's Inaugural Forum	16-18 January 2017	Zürich, Switzerland
12 th European Turbomachinery Conference	3-7 April 2017	Stockholm, Sweden
Turbine Forum 2017: Manufacturing, Repair & Life Extension of Turbine Components	26-28 April 2017	Nice, France
Industrial RB211 User Meeting	3-4 May 2017	Milan, Italy
ETN's Annual General Meeting*	10-11 May 2017	Oberhausen, Germany
4 th European HRSG Forum	16-18 May 2017	Amsterdam, the Netherlands
NexTurbine 2017 **	17-18 May 2017	Wuxi (Jiangsu), China
LM 2500 User Meeting	14-15 June 2017	Amsterdam, the Netherlands

* Event open exclusively to ETN members

**ETN members are entitled to a 10% reduction in registration fee and exhibitor's booth fee.

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ETN at a Glance!

Download the new ETN Brochure, featuring:

- ETN Mission & Objectives
- ETN Technical Committees
- ETN Projects
- ETN Events & Activities
- ETN Membership Benefits
- And more!



Are you a gas turbine user located outside the EU? Download the Brochure showcasing the benefits of being part of ETN's global gas turbine user community.



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Keep in contact and updated with ETN's most recent news. Follow ETN on Twitter: @etngasturbine and on LinkedIn!



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