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 the cooperative 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

The decision of the President of the United States to withdraw from the Paris Agreement has been a big setback for this unprecedented global movement to address climate change. This may not be a complete surprise, it has nonetheless triggered unanimous protest from all over the world. China, India, the EU and Canada have widely condemned this move. Yet, everything has a silver lining: the immediate international protest has turned into an even stronger commitment from all parties to make up for the US reversal, at all level. Even in the USA, states, cities and numerous companies have confirmed their will to stick to the Paris targets. Such focused international dedication and collaboration is

inspiring and in line with what ETN stands for.

A more integrated cooperation across our sector has also been the drive for a new chapter in ETN's history, initiated with the positive vote at our General Meeting to broaden the scope of our network to turbomachinery. The main focus will still be on gas turbine technology but it will allow us to better serve the wider needs of the gas turbine user community.

I am pleased to see the wide involvement and positive developments of our engine specific user groups. The latest outcomes have showcased the value of a coordinated user community that are exchanging experiences and best practises. It has also proven the importance of a focused dialogue between the users, the OEM and the service providers. In one of the user groups we are also launching a common reliability improvement project, coordinated by ETN, between the OEM and a selection of user's following a six sigma approach. At our forthcoming High Level User meeting in October we will discuss future developments requirements and also explore the need for additional user groups.

Addressing operational issues is important for ETN but it is of equal importance that we also aspire at looking ahead of us, anticipating the needs and challenges for our technology. As we are actively trying to shape our future, we are striving to provide research opportunities for our community, by highlighting our community's R&D needs in our recently published R&D recommendation report (which you can download on our website) and by being involved in the European Innovation and Technology Platforms. In order to report on the latest developments, we have created a new section on our website where you will be able to find the latest updates and the outcomes of ETN's contribution.

Talking about the future, I hope that you can join us at our forthcoming Workshop 4-5 October in Genoa, Italy where we will explore opportunities for new initiatives as well as assessing the progress on ongoing activities. Apart from an interesting programme and excellent networking I can assure you a memorable experience as Genoa is a beautiful city and as we will be hosted by Ansaldo Energia.

While a high number of you will take a well-deserved vacation in July, the OMSOP project partners will do the opposite as the final system demonstration of the Optimised Microturbine Solar Power system technology development will be carried out and showcased in Rome. You will hear more about this in the following newsletter.

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THE QUARTERLY FOCUS

Listening to the users, bringing together the value chain: ETN's engine-specific user groups

From its creation invariably, ETN has served a main objective: addressing the users' needs by bringing together the entire value chain, ensuring an always greater cohesion for the community of its stakeholders. In order to achieve this, ETN has taken many relevant initiatives and this also lies at the very heart of the engine-specific user groups that ETN is coordinating.



A well-tried method for open, inclusive and constructive discussions and. ultimately, concrete results. The user groups that ETN has initiated the LM2500 in 2016 and the Industrial RB211 launched this year - were founded to help the community to share experiences and to highlight in a coordinated way the most widespread issues users encounter while operating or maintaining a specific type of gas turbine. The point is to create the opportunity for a direct dialogue between the users, the OEM, the service providers and ultimately the R&D community. This is the fruit of a thoroughly devised method.

Direct dialogue, concrete actions

The first step is to circulate a survey amongst the members of ETN who oper-

ate the concerned engine. The collected issues are listed and classified and the agenda of each group's yearly meeting is structured according to this feedback in close collaboration with the OEM and service providers. "At these events, all parties get the chance to dedicate focused time to the performance and the maintenance of the engines", underlines ETN's President Bernard Quoix "and I know from our members, whether they are users, OEMs, service providers or research institutes how much they value these privileged opportunities". Antoine Lucas (Rotating Equipment Specialist at Total) highlights "the benefit of sharing strong technical experiences on the LM2500 engine."

Forging a cohesive community

The core virtue of those groups is to allow a conciliated and positive dialogue within the GT community. "To increase communication and integration of the value chain and to harness in a coordinated way the outcome from this open, constant dialogue is the backbone of our organisation, explains Christer

Feedback from the community:

"The primary reason I attended the meeting was to share our knowledge, lessons learned and challenges with owning and operating LM2500's with other users in the European theater and the GE team. I thought the expertise and information sharing was very beneficial to all parties involved, users and suppliers. To learn about the OEM's ongoing commitment to all the design projects and to deliver the expected results in all design areas was also a great takeaway form the meeting. To get a comprehensive update of third-party overhaul suppliers was of great value to me as well." Hans Weyermann – Engineering Fellow, ConocoPhillips

"The benefits of ETN's user groups are that all parties can share their experience and that the whole community can offer their support and knowledge to solve operational problems. There was a tremendous wealth of knowledge in the room and all parties were open in their advice to other members and operators. Fantastic event for all concerned."

Mark George - Sales & Business Development Director, Cullum Detuners Ltd

Björkqvist, Managing Director of ETN, this closer interaction and relationship between the user community, OEM's, service providers and research community will be beneficial for everyone and allow our community to thrive by becoming more competitive". A coordinated user voice will provide valuable feedback also, helping the OEM and service providers to focus their developments and improve their service in line with the users' needs.

2 groups... and more to come?

The first meeting of the Industrial RB211 user group took place in Milan on 4-5 May and the LM2500 formation met in Brussels on 14 and 15 June. The outcomes were positive and the follow up will now be closely monitored by ETN. "This is an all-year long process, not a single, one-shot event", stresses Bernard Quoix, "we want to make sure that the users' requests are fulfilled and that we maintain a permanent contact with OEMs and service providers". Based on the positive outcome there is also a reflection whether to launch new engine groups. The decision will be based on a further discussion with the ETN user community and with the support of GTUsers. com who already runs other user meetings. This is how ETN wants to bring the community together, offering a precious added-value to its membership and providing a unique platform to exchange best-practices, experiences, to drive developments and set new standards.



Tweet with us #User #UserExperience #UserGroup #GasTurbine #Turbomachinery

INSIDE THE NETWORK

ETN opens up to turbomachinery

On 10 May 2017, ETN held its Annual General Meeting in Oberhausen, hosted by MAN Diesel and Turbo. This AGM was especially important in the life of our network as the members voted and broadly adopted the proposition of the Board of Directors to widen the organisation to turbomachinery. This amendment to our Articles of Association also allows manufacturers and service providers from outside Europe to join ETN.

This historic move in the life of ETN has been proposed in order to embrace the global integration of the GT markets, with promising dynamics outside Europe, the international commitment to low-carbon economy altogether demanding further and wider cooperation for the GT community. Widening the scope of ETN to turbomachinery will help us to adopt a more integrated approach in line with the reality of the technology and the markets. Steam turbines, compressors and generators are already part of rotating equipment of



CCGT systems or O&G and LNG facilities. This will also provide the possibility to launch more system-related research projects, increase the portfolio of opportunities while ultimately reinforcing the legitimacy and relevance of ETN and enhance the added-value of ETN membership!

IGTC 2018: dates and venue are confirmed!



You can already pencil in the next edition of the International Gas Turbine Conference on 10 and 11 October 2018 in Brussels. A webpage has already been created with all you need to know and

regular updates on the agenda, accommodation, transports, etc.: <u>www.etn-gasturbine.eu/igtc18</u>. This biennial event has become a global reference in the gas turbine community, thanks to the participation of topnotch experts, influential decision-makers and representatives of numerous stakeholders of the industry. If you are interested in being a sponsor or an exhibitor, you can contact Noora Kilpinen: <u>nk@etn-turbine.eu</u> (see page 4!)

Also, ETN is looking for additional technical paper reviewers to help the Conference Advisory Board A call



for papers will shortly be published shortly; authors of selected abstracts will be invited to write and present technical papers during the conference. Tweet with

#Energy #CleanEnergy4All #GasTurbine #Turbomachinery #IGTC2018

INSIDE THE NETWORK

ETN welcomes 4 new members!

ETN continues its global expansion with 4 new members completing their application since April! BP, ConocoPhillips, Capstone Turbine and TransCanadaTurbines have become members of our network, growing internationally beyond the European continent!





October Workshop: top-level discussion ahoy!

Every second year in October, ETN organises a workshop for its members. The next edition will take place in Genoa (Italy) on 4-5 October 2017, hosted by Ansaldo Energia in their prestigious Fondazione Ansaldo.

During this two-day event, the different Technical Committees (TCs) meet to explore opportunities to initiate new activities and projects as well as to assess the recent developments of the current projects. Plenary sessions will also offer an opportunity to review technical developments, needs and challenges for our community in terms of policy, research, operation, and maintenance. This event will offer opportunities to both influence future ETN activities and to actively participate in future projects. More information on our TCs and projects on <u>www.etn-gasturbine.eu</u>

If you are interested in joining ETN and attend our October Workshop, please contact us at info@etn-gasturbine.eu



Sponsors of ETN 2017 October Workshop





Changes in the ETN Office

Ignacio Lescano, Technical Project Officer since August 2015 has been appointed Aerothermal Engineer for Safran Aero Booster. Thibault Boutherin, Policy & Communications Manager, is joining the Energy team of FleishmanHillard in Brussels. Noora Kilpinen will replace Thibault as the new Communications officer. You can contact her at the following address: nk@etn-gasturbine.eu. The new Global technical coordinator, taking over from Ignacio, should be announced shortly.

ETN AT WORK

NEXIOWER

PROJECT REF 721045 START/END:

START/END: Jan 2017 - Dec 2020 TOTAL COST: EUR 6 307 851,25 EU CONTRIBUTION: EUR 4 999 777,88 PROGRAMME ACRON

EUN -PROGRAMME ACNUM NEXTOWER CALL IDENTIFIER: H2020 NMBP-2016 - two-stage TOPIC NMBP-17-2016 - Advanced m architectures for high efficien FUNDING SCHEME:

A - Innovation act ROJECT WEBSITE

CONTACTS

PROJECT DETAILS

Project Coordinator Antonio Rinaldi AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE --tonio rinaldigienea.it

Proving long term operations

Non-destructive testing and multi-scale modeling are inter-twinned synergically to optimize resources and provide predictive approach, while contributing to the EMMC (European Materials Modelling Council) initiative.

Exploitation and Standardization

NEXTOWER will establish and maintain an exploitation culture throughout the project, trr IPR in a way that maximizes impact, and addrr the integration of NEXTOWER with the standardization system.

Air filtration working group: new developments

ETN's working group on Air filtration was created to allow the users to have a single point of reference for stateof-the-art filtration technology and to address air filtration issues through projects of common interest. Currently the working group members are contributing to the development of an ISO standard for air filtration. ETN has become a liaison member of the ISO Technical Committee 142 Cleaning equipment for air and other gases and it is actively involved in the drafting of the ISO₂9461 (Air intake filter systems for rotary machinery - Test methods). In this context, air filtration OEMs are performing tests on filters in an environment closer to real operational GT conditions. A meeting was organised on 12 May 2017, during which Camfil and W.L. Gore presented the results of the tests they undertook in their labs to simulate the filters in a harsh marine and costal environment. Together with the research on the air composition in a marine and costal environment, the outcomes of the tests will constitute the base for the draft of the ISO 29461 - Part 5: Marine and Offshore environment filter systems.

GENERATION HIGH EFFICIENCY CONCENTRATED SOLAR POWER (CSP) TOWER SYSTEMS THE PROJECT NEXTOWER aims at demonstrating high-performance durable materials for the next generation of concentrated solar power (CSP) air-based tower systems, making them commercially competitive in the energy market beyond 2020. NEXTOWER takes a comprehensive conceptual and manufacturing approach that starts by optimizing for durability the ceranic materials to achieve 20-25 years of maintenance-free service receiver components, while increasing their operating temperature for thermodynamic efficiency. The actual exploitation of the hoster air (up to 800°C) is then excitably tied to the development of a high-temperature thermal storage, here inspired by nuclear fission CEN-1V technology and based on liquid lead by means of new corrosion resistant teels. OBJECTIVES

ADVANCED MATERIALS SOLUTIONS FOR NEXT

 Durable solar receivers ew mechanically tough and highly thermally conductive ceramic receivers, vorking under extreme thermal cycling without failure at maximum materials temperature of at least 800°C and delivering over 20 years of continued operation

High temperature steels for thermal

rage by liquid lead Develop coextruded-tubes and liner technologies from proprietary FeCrA1 corrosion-resistant alumin forming steels to build high-capacity, high-efficiency lead-based heat storage that can work with high temperature receivers to supply gas turbines or industrial processes, thus expanding the boundaries of CSP technology.



Field testing that will run for 12

months with lead at average 700°C for full proof at TRL 6 of all materials and for input data for levelized cost of energy (LCOE) and Life Cycle Assessment (LCA)

New SOLEAD demo of CSP with lead

loop Set up a full scale CSP demonstrator (SOLEAD) for

unprecedented field testing of materials for CSP lead-towers, encompassing a large solar receiver interfaced to a single-chamber lead storage pool, in

ted to a secondary "heat sink"

Implementing the Industrial Emissions **Directive: ETN's position**

The Industrial Emissions Directive (IED) was recently reviewed, which ETN closely monitored. In the wake of this process, the best available technique reference documents (called BREFs, a guideline to implement the provision of this EU legislation) had to be scrutinized and updated, including the BREF for large combustion plants. Our IED Committee has produced a White paper addressing the issues still pending after the review of this document. If the legislative process is completed, ETN's intention is to raise awareness of the European Commission, the whole industry and the 28 EU member states' authorities in charge of implementing the text, on the potential consequences that this could have for the gas turbines fleet, power and oil and gas production and ultimately the European energy mix.

Feel free to download and circulate the document: www.etn-gasturbine.eu/iedcommittee

- some a non-profit membership association, which brings segment re-technology community in Europe and globals. Eth acts as a unique pather that is the utility of E.gas and industrial actors as well as Original Equi with growts, suppliers, service previders and consultancies. Our memb inter draw Non-service.

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IMPLEMENTATION OF THE LARGE COMBUSTION PLANT BREF A PERSPECTIVE FROM THE EUROPEAN TURBINE NETWORK -

at these appects are interpreted correctly, these Best Available Techniques (BAT) conclusions are der the locativitäl Emissions Directive and this decument seeks to lite and advess some of the interpretention that ment has encodered when interpretention the removement of the LOP MARP will

to will be required in many systems to fill the gap in generation left by retiring peaking they are ideally suited for as it will be some time before reliable base foad renewal as Europe (Hough Star) dealer. es that the following law concerns should be carefully considered when interpreting the LCP

European Turbine Network a1.sh.1 Osussele de Osarlemi 146-148, 1060, Brussels, Belgium Telephone : +32 (812-646-15.77) infollven-gesturbine.ev

The African market of Gas Turbines, today and tomorrow

Africa is probably one of the least known, though most promising continent in terms of energy markets and gas turbines opportunities, but the range of cases and trend is various. This issue of ETN's Quarterly newsletter takes a look at it with Lionel Lafage, member of ETN's Emeritus Club and Vice-President of the Agency for the Development of Energy in Africa (ADEA).

What opportunities do you see in the African energy market and can we expect it to take off in the near future?

Africa has huge potential but even more consistent challenges to face for the coming decades in terms of energy. It is for sure one of the most important areas in terms of energy development opportunities. However, when considering the African market, one has to take into account the specificities of the continent, its disparity of infrastructures and energy resources and ultimately, its sheer scale (around the size of the United States, China, India and Europe combined). While it has largely sufficient energy resources to meet domestic needs, more than two-thirds of its population does not have access to modern energy. In addition, Sub-Saharan countries greatly differ from North Africa, where the GDP is around 2.5 times that of sub-Saharan Africa and less than 1% of the population lives without electricity. And even within the sub-regions South of Sahara (West Africa, Central Africa, East Africa and Southern Africa), there is a wide diversity between countries, from those that are rich in energy-resource to the many that are among the world's poorest in energy. In sub-Saharan Africa as a whole, only 290 million out of 915 million people have access to electricity and the total number without access is rising. Efforts to promote electrification are gaining momentum but are outpaced by the demographic growth. Although investments in new energy supply increase, two out of three dollars put into the sub-Saharan energy sector since 2000 have been spent for the development of resources destined for export.

Yet, while the lack of infrastructure and financial constraints has been a hurdle against market growth in the past, the current expansion rate (over 8% a year) is expected to accelerate once the gas-infrastructure backbone in key gas-producing countries is developed.

Could you describe the trends of the African markets regarding gas turbine technology?

Analysis on the gas turbine market in Africa¹ finds that the revenues earned on the market should reach US\$ 1,144 million Lionel Lafage

at the end of 2018. The growth in demand for turbine technology will be driven by the combination of infrastructure investments and access to natural resources – Africa has some of the globe's most substantial gas reserves. Today, the installed power capacity in Africa represents 105 GW (see chart).

Installed power capacity in Africa



In term of natural gas development, the studies in Sub-Saharan countries² show that the proven reserves of natural gas gives more than 100 years of remaining consumption and more than 600 years based on the total remaining recoverable resources. And simultaneously the Floating Storage Regasification Unit (FSRU) solutions propose additional axis of supply.

If these market shares are maintained, gas turbine technology should play a major role in the development of future projects. However, the development of those markets will require an expansion of the electricity grids, interconnection, gas network, and gas production with the support of the FSRU solutions. This has already started with the development of the large grid loop in Senegal and the Gambia (1700 km loop) with the objective to deliver electricity to isolated areas. To face the challenge of such developments and to ensure the reliability of electricity supply, flexible and multi-size plants have to be

continued on page 7





¹ www.esi-africa.com/news/promise-for-gas-turbine-market-in-africa/

² IEA International Energy Agency – Africa Energy Outlook – "A FOCUS ON ENERGY PROSPECTS IN SUB-SAHARAN AFRICA", IEA, Paris, 2016. See page 47 "Overview of energy resources and supply"

continued from page 6

installed to compensate for the grid frequency/voltage variations, insertion of interruptible renewables plants and to ensure available back-up energy and low-cost production. Gas turbine technology offer such advantages but require an efficient local O&M support with the associated logistics, in order to be able to compete with the other gas engines solution well established in Africa. Some successful example of gas turbines and combined cycles projects and O&M Management are already in place in the Ivory Coast since 1994 and represents with more than 900 MW, the most important production type in association with the hydro production.

What is the current state of the fleet of gas turbines in Africa? Is there room for an increase of its potential? And if so, what investment and development would be required?

The technology is here. Growth of population and demand, discovery of gas and development of FSRU solutions are all important elements for a further successful market implementation of GT in Africa. But to enable and to guarantee such an expansion, the OEMs and the local governments have to define a common development strategy. In addition, the O&M support and local content³, including commitment regarding the development of local skills, have to be a priority to guarantee the continuity and the performance of the projects. Simultaneously, the strategy of local authorities should be based on the development of infrastructures ensuring the fuel gas supply, in line with the needs of the projects, on a long term basis. FSRU, LNG transportation and terminals should be part of the global energy plan of the governments to promote a clean and flexible energy mix.

The performance of the combined cycle and the low level of emissions compared with other gas and fuel oil technologies will be decisive for funding of future projects by the World Bank and international private banks.

What are the main lines and levers of the public action in Africa (governments and African Union) in terms of power generation, air quality and climate change?

Today, Africa consumes ten times less petroleum products

than the industrialised countries. Based on this fact and on the necessity to increase the electricity production, the global strategy is to develop simultaneously renewables

Africa needs to build new flexible plants and to increase the availability of gas in the different sub-regions of Africa to support the demand when RES cannot generate."

technologies and to push the increase of infrastructures and thermal plants to compensate the intermittent constraints. In the meantime, it is important to impose environmental limits in the new "Requests for Proposal" of the World Bank, in line with its requirements.

Solar and wind projects are the leaders of the renewable development for the African continent today, but the hydro remains among the most important potential sources of green production that could be exploited. This strategy of power generation type and grid development depends on the priority and environment of each sub-region, all of them having their own organization allowing the alignment of their objectives (see map).

African Power Pools



What is the target when it comes to the growth of renewable energy in Africa, and what is done to tackle the issue of intermittency?

Sub-Saharan Africa has untapped renewable resources, which could deliver levels of supply in excess of domestic consumption to 2040 and far beyond.

The Policies Scenario⁴ foresees a rapid growth of renewables-

based capacity from around 20 GW to nearly 170 GW by 2040, with RES accounting for more than 50% of the increase of the total capacity. Their share in the power mix

would climb from 21% to 44%, (higher than in both China and the United States).

continued on page 8

³ When a company wants to build and to operate a project in a country (power station for instance), they have to commit on the fact that a certain % of supplies, good, equipment, etc. have to be manufactured locally, and a share of people hired for the construction and operation have to be born in this country. This % is called the local content. This can go up to 60%, as in Nigeria.

⁴ New Policies Scenario of the World Energy Outlook, International Energy Agency, Paris, 2016. Available on <u>www.iea.org</u>

THE GT INDUSTRY



continued from page 7

To support this increase and the intermittent RES-generation on a global scale, the scenario of energy development in Africa will have to focus on two pillars of production and distribution:

- Development of the grid and interconnections to give to the dispatch centres a portfolio of solutions that can ensure a permanent and reliable electricity supply.
- Construction of new flexible plants to support the grid demand when the renewables cannot generate.

This second aspect is intimately linked to the necessity to increase the availability of gas in the different sub-regions of Africa, which would open up for gas turbine technology, representing the cleanest solution for the environment with the required flexibility and lowest life time cost.

A common understanding and efforts have to be conducted by all stakeholders (authorities, industrial and operators) in order to develop a strategy to define and schedule all the steps of the upgrade of the energy mix. This will guarantee a reliable provision of electricity in line with the population growth and demand.

The authorities should settle a strategic schedule to prioritise the development of gas infrastructures together with power plants projects for production and back-up. As for the industrial suppliers, they should aim to guarantee low emissions performance for all the proposed products, impulse the development of hybrid systems as solar/wind-thermal plants for small assets and establish local manufacturing entities and O&M support to respect the technical commitment of performances, availability, and transfer of skills to local operators.

Facts and figures

2/3

Since 2000, two out of three dollars invested into the sub-Saharan energy sector have gone into the development of resources for export!

44%

The share of RES in the total power mix in Africa in 2040, more than China, the USA or India

105 GW

This is the installed power capacity installed in Africa

100 years

That is the estimated reserve of natural gas for remaining consumption - more than 600 years based on the total remaining recoverable resources



Lionel Lafage has created Lafage Energie in 2016 after a career dedicated to power generation and aerospace (Contour Global,

Total, EDG, GDF-Suez or Bombardier where he held a Vice-President position) and he is fully conversant with the specificities and challenges of the African markets.

ETN Media Partner



ENERGY POLICIES

EU SET-Plan developments:

ETN has pursued its proactive commitment in Actions 4, 5, 6 and 9 of the SET-Plan and as this has become an essential aspect of our network activity in terms of Energy Policy, we have decided to create a new section on our website: www.etn-gasturbine.eu/setplan.



Here, you will be able to learn about the different actions, download inputs and read about ETN inputs.

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

The meeting of the European Technology and Innovation Platform Smart Networks for Energy Transition (ETIP-SNET) governing board took place on 30 May 2017 in Brussels.

Action 5 – New materials and technologies for buildings

The SET-Plan Action 5 – Temporary Working Group (TWG) meeting was held in Brussels on 26 June 2017.

Action 6 – Energy efficiency for industry

In the past months ETN has contributed to the development of the Implementation Plan defining research activities to increase the energy efficiency in the industry.

Action 9 – Carbon Capture Utilisation and Storage

On 1 June 2017, the SET-Plan Action 9 - Temporary Working Group (TWG) meeting took place in The Hague, Netherlands.

Tweet with us #SETPlan #Energy #EnergyEfficiency #CleanEnergy4All #EnergyUnion They are on Twitter Dominique Ristori, DG Energy, Andreea Strachinescu, SETPlan official account

The USA withdraw from the Paris Agreement

The President of the United Stated Donald Trump announced on 1 June 2017 his decision that the USA will withdraw from the Paris Agreement. This decision is not entirely a surprise; it was foreseen during the 2016 campaign by the then-Republican candidate who has now nominated Rick Perry in charge of the Department of Energy and Scott Pruitt, head of the Environment Protection Agency. Both expressed their doubts that the carbon dioxide emissions emitted by human activity are the main reason of climate change. Still, this decision is a pitfall nonetheless. There were consistent hopes that Trump

would hear his peers during the G7 Summit the week before the announcement, calling him to stick to the US signature on the Agreement. Even in the



Trump's entourage, resolved advocates were actively supporting the international Agreement, the widest ever signed, in vain. Trump argued that the Agreement was a hindrance for his plan to boost the American growth and stated that his predecessor Obama signed it at the expense of US interests. He also expressed the vague wish to renegotiate the terms of US involvement in the global fight against climate change, which was immediately deemed a non-starter across the world. The reaction to this decision was immediate and overwhelmingly negative indeed, not only internationally but also in the USA. Big names of the US economy denounced this (ExxonMobil, DuPont, Intel, Microsoft, Google, Disney, etc.) in unison with a vast number of states and cities who confirmed their will not only to stick to their own plans for energy transition but also to take over and make up for this federal decision. French President Macron launched a call to "make our Planet great again" that went viral, India decided to step up its implication while the EU and China jointly confirmed their will to pursue their collaboration. All signatories confirmed their engagement to cut greenhouse gases emissions.

Most optimistic observers underlined that numerous stakeholders accross the energy sector maintained their commitments to the energy transition, making sure the agreement is implemented. The more pessimistic recalled that the Paris Agreement is non-binding and that its provisions are barely enough to mitigate the devastating consequences of the climate change. As for what is coming next, as Politico reported, "the international community is deeply uncertain about what the administration plans to do next on international climate change" and no decision should be made before the next G20 meeting planned in Hamburg in July.

Energy efficiency: what are we aiming at?

The first item of the Clean Energy package (see QNL 2-17 p.6) to be discussed is the energy efficiency and the related target for 2030, which are now debated within the European Parliament and the Council. Both institutions have to adopt their own position before negotiating between each other. This debate will have tremendous consequences on the European energy outlook for the decades to come. The current target is non-binding and

Estonia's taking over



Every six months, a member state of the EU takes the Presidency of the Council of the EU. It is now Estonia's turn, taking over from Malta. The Estonian presidency has listed its priorities, enclosing energy with the aim to "establish a stable and well-functioning electricity market and empowering consumers". 2017 has been called the "year of implementation for the Energy Union" by the Commission and there is a lot on the plate for the 6 months ahead, not only focusing on the new market design but also on energy efficiency, share of renewables, or the EU-ETS reform. More on www.eu2017.ee

They are on Twitter: @EU2017EE aims at a reduction 27% by 2030 compared with "the business-as-usual scenario".

A majority of members of the European Parliament wish to make it binding and go as far as 40%, but they could agree with a 30% binding target. The member states are more divided, some pushing to leave the target as it is now (Poland, Slovakia, Hungary), some willing to be more ambitious with a 30% binding target (Netherlands, France, Sweden, Ireland, etc.). Ambitious energy efficiency targets could make a good business and research case for gas turbines-related technology and innovation. The latest meeting of the Council of the EU on energy took place on 26 June, agreeing on a compromise, with a 30%, non-binding target: this aspect defines and withholds progression on all the other energy policy questions.

Brexit negotiated



The negotiations for the withdrawal of the United Kingdom from the EU have started on Monday 19 June, almost a year after the referendum where 52% of British voters decided to leave the EU. During the opening session, the UK and the EU have agreed to open the discussions with the citizens' rights and the financial terms of Brexit. A one-week round of negotiations will take place every month from now on. The two parties have less than two years to find an agreement on the conditions of this divorce, before eventually starting to discuss the terms of their new relation. Whether those two negotiations should be simultaneous or not is an actual debate but what is (almost?) certain is that from 29 March 2019, the UK will no longer be a member of the European Union.

Facts and figures UK – Not UK

This semester was actually the UK's turn to take over the Presidency of the Council of the EU! They had to pull out following the result of the referendum on Brexit last year. Estonia then consented to bring its turn forward. Next in line will be in Bulgaria, taking over on 1 January 2018.

1st January 1973 – 29 March 2019

The duration of UK's membership to the (then-)European Economic Community and European Union.

+49%

The EU has increased by 49% the number of full-time jobs in the environmental sector between 2000 and 2014, according to Politico, to a total of 1.4 million!

2 August

The date of Earth Overshoot day for 2017, according to Global Footprint Network and WWF. This means that after that day, the world will have consumed its yearly share of natural resources and will be living on credit, using more than the planet can regenerate in a year.

THE LIFE OF THE GT COMMUNITY

Upcoming meetings and events

Meeting/Event	Date	Location
High-level User Meeting*	3 October 2017	Genoa, Italy
ETN Workshop*	4-5 October 2017	Genoa, Italy
SGT5-4000F User meeting (GTUsers.com)	17 October 2017	Madrid, Spain
IAGT Symposium**	23-25 October 2017	Banff (Alberta), Canada
NexTurbine	May 2018	China (location tbc)
Industrial RB211 User group	May 2018	(tbc)
LM2500 User group	June 2018	(tbc)
International Gas Turbine Conference 2018	10-11 October 2018	Brussels, Belgium

* Only for ETN members

** 10% discount granted to ETN members

ETN Team



Christer Björkqvist Managing Director

ETN at a Glance!

Download the ETN Brochure,

ETN Mission & Objectives

ETN Technical Committees

ETN Events & Activities

ETN Membership Benefits

Ugo

Technical Project Policy and Communications



Ignacio Lescano Carroll Technical Project Officer

llona Kolb Financial and Administrative Officer



Mom

External

Consultant



David Bosak Researcher (Cranfield University/ ETN exchange programme)

Manager



Simeoni

Manager

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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ETN Projects

And more!

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



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