

Newsletter



July | September 2022 ■ Volume 2002 ■ Issue 03

ETN Global is a non-profit association bringing together the entire value chain of the gas turbine technology community. Through cooperative efforts and by initiating common activities and projects, ETN encourages and facilitates information exchange and cooperation to accelerate research, development, demonstration, and deployment of safe, secure and affordable carbon-neutral energy solutions by 2030.



Christer Björkqvist
Managing Director

Urgent coordinated actions and contributions proposed by our industry to alleviate the energy supply crisis

Recent events and in particularly the continued Russian/Ukraine war, have led to a seemingly permanent shift in the world context for energy supply, with the potential to become a global energy supply crisis. Security of supply has become the near-term priority for most of the governments, especially in Europe. The main reasons for this are the dependency of many EU states on Russian energy imports, the impact of the geopolitical uncertainty, international sanctions in response to the war in Ukraine and the urgent need to ensure adequate supplies for the upcoming winter.

ETN has taken a pro-active approach and highlighted in a paper to the European Commission (EC) and national member state representatives how European energy systems and industry could become more resilient and efficient and the significant role the gas turbine industry can play to meet urgent short-term power and heat needs, while maintaining progress on the long term 'net-zero' priorities. This paper was written to show our support to the EC's ambitions in the "REPowerEU Plan" and the "Save Gas for Safe Winter Package" and to expand on potential contributions from our industry. Please help us disseminate this important document to national policy makers and on social media.

Our agenda over the last few months has been filled with returning in-person meetings: ETN Working Groups meetings, project meetings, engine-specific user meetings, Board meeting and external conferences like ASME and GPPS. I believe that everyone who has participated in any one of these events has been reminded about what they have missed out on during the last years. However, with the global digitalisation that has taken place during the last years, ETN plans to take networking and communication to a new level with a mix of virtual, hybrid and in-person meetings going forward. It will not be one or the other, all has its role and play. We need face-to-face networking to build long-lasting, meaningful relationships and connections. We also need efficient short virtual meetings to keep the momentum up and ensure active interaction and progress. From the recent "virtual" period we have learned the importance of efficient shorter engaging "to the point" presentations and tighter agendas. For future in-person meetings we should use these learning experiences and implement a similar approach into our future in-person meetings with also room for well-prepared focused discussions and quality networking.

Through this new focused approach, we believe we can provide more cost-efficient meetings with increased benefits. Effective communication, networking and coordinated cooperation are essential to overcome the current crisis and for a successful transition for our industry.

We are also in full preparation for our upcoming High-Level User meeting in September that will provide valuable guidance on short and intermediate goals, milestones and timelines for our upcoming October Workshop in Berlin. The focus of this workshop will be to develop a portfolio of the most promising directions for the different gas turbine sectors; utilities, oil & gas and industrial users. In other words, a meeting that can turn our vision into actions. I look forward to these interactive discussions and hope to see you there!

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ETN's new report "Hydrogen deployment in centralised power generation" published

A new report "Hydrogen deployment in centralised power generation" was released in June 2022. Building on ETN's vision, which is to ensure safe, secure, affordable and dispatchable carbon-neutral energy solutions by 2030, implemented globally by 2050, this study investigates the real possibilities of hydrogen fired gas turbines (GTs), which have an important role to play in 2050 net-zero scenarios.

Background

With EC's release of "Hydrogen Strategy for Climate-Neutral Europe" in July 2020 and the accompanying study "Hydrogen generation in Europe: Overview of key costs and benefits" it has become apparent that hydrogen (H₂) is key in supporting policies outlined by the European Green Deal and that investments in local H₂ production are necessary to ensure this fuel is available to assist decarbonisation of industry, transport, heat, and power generation. EC's study focuses on two types of H₂, building their economic study of end-use applications solely on steelmaking and transport:

- Blue H₂ – made from reformation of natural gas with carbon capture and storage (CCS)
- Green H₂ – made from electrolysis of water powered by renewable energy.

In the meantime, the International Energy Agency (IEA) released a more comprehensive report "Net Zero by 2050: A Roadmap for the Global Energy Sector" in May 2021 predicting that about 17% of global H₂ end-use in 2050 will be for electricity generation, which equals to today's total annual global H₂ production. A month later, in June 2021, European Backbone Hydrogen Project, released a report detailing a cost analysis of the use of hydrogen in power end-use applications using GTs, both by retrofitting the current fleet to enable hydrogen operation, and through instalment of new hydrogen-fired GTs.

GTs already play a key role in decarbonising EU's energy transition, both combined cycle and open cycle, by enabling the switch of coal-to-gas. An article by the Centre for Strategic and International Studies in February 2020 showed that in 2019 gas-fired power generation displaced 50% of the decline of coal-fired generation. This leads to immediate reductions in carbon dioxide (CO₂) and ensures security of electricity supply as more renewable energy sources are installed. With the increase of installation of renewable energy sources, GTs can be used to meet peak electricity demands while low amounts of renewable

sources are available. Green hydrogen in this case can be used as long-term renewable energy storage, while hydrogen-fired GTs operate alongside the renewable energy sources to offset the demand gap. Besides electricity generation, decarbonised GTs can produce heat in combined heat and power (CHP) applications, which can be used in industry and district heating sectors.

There is definitely great potential for GTs fired by hydrogen to deliver safe, reliable, and efficient energy and heat solutions while contributing to 2050 net zero goal. However, there is a real gap between the current understanding of the economic conditions and the technological capabilities of the hydrogen-fired GTs.

The purpose of the study

The aim of the techno-economic publication based on case studies is to illustrate a measure of the current and future cost as well as feasibility of using both blends of hydrogen in natural gas and pure hydrogen for the decarbonisation of GT power and heat generation.

Five scenarios were chosen taking into consideration gas turbine sizes, configurations, and operating regime and how each of them will impact current, near-term and future hydrogen GT operation.

Acknowledgment

This publication was authored by ETN Young Engineers Committee (YEC) with valuable contributions from selected Hydrogen Working Group members, each of the experts representing the whole value chain of turbomachinery: manufacturers, users, service providers, research centres and universities. We would like to thank every author and contributor for sharing their knowledge and experience while drafting or reviewing this report.

The full publication can be downloaded [here](#). ■



New member

We warmly welcome TAQA (UK) who joined ETN.



TAQA is a top 10 integrated utilities champion in the EMEA region with power and water and oil and gas operations

in 11 countries around the world. TAQA is proud to be a company that provides energy and water to communities around the world. The vision of TAQA is to provide the clean power and water that governments, businesses, and consumers need for a sustainable and successful life. While the mission is to be a low carbon power and water champion. ■

ETN User Group Meetings

ETN's SGT-A35 User Group Meeting took place on 3-4 May 2022 at Equinor Business Centre in Stavanger, Norway. The two-day event was full of constructive discussions between the users, the OEM and the service providers.



ETN SGT-A35 meeting which took place in Stavanger, Norway

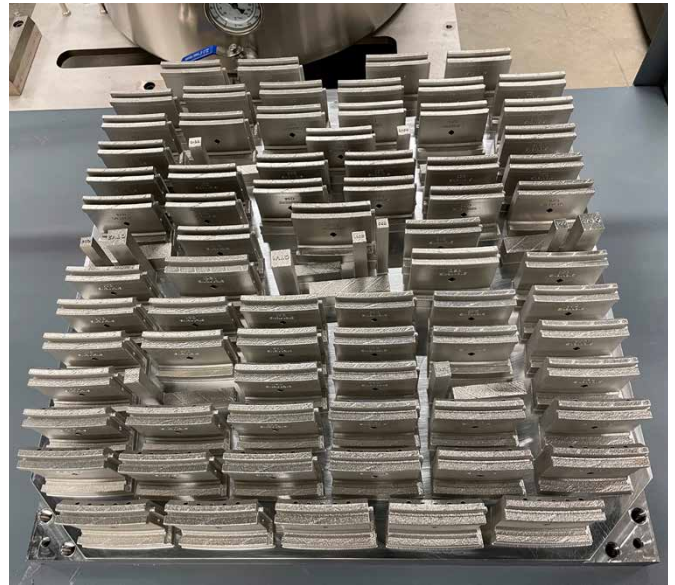
ETN's LM2500 User Group Meeting was held on 7-9 June 2022 at TotalEnergies E&P UK in Aberdeen, Scotland. A successful meeting with a high turnover of participants where users discussed current top-priority technical issues with GE Aviation, GE Aero Alliance and Baker Hughes and received informative presentations on latest developments and upgrades.

Both user groups have decided to hold regular 6 weeks calls with the user community to follow up on the outcomes and the actions of past events but also in preparation for next year's SGT-A35 and LM2500 User Group Meetings.

If you are a user and an operator of either of the two engines and would like to receive information about ETN's User Group activities, please [contact us](#). ■

ETN Additive Manufacturing Machine Evaluation Initiative

ETN's first industry-funded project, the Additive Manufacturing (AM) Machine Evaluation Initiative can proudly share the image of the first built plates.



A sample of plates built during ETN's AM Machine Evaluation Initiative

Up to date all 5 equipment manufacturers have finalised the build ups, which will be tested by a neutral organisation in the coming months.

The AM Machine Evaluation Initiative was developed by the members of the AM Working Group and launched in September 2021 with the aim of reviewing capabilities of Laser-Powder Bed Fusion (L-PBF) equipment currently available on the market. Using Nickel Alloy 718 powder the involved manufacturers have manufactured parts featuring thin walls and cooling channels. Key elements to be tested include performance, quality and productivity.

The outcome of the project will consist of a detailed report, evaluating and comparing technical and commercial characteristics of selected AM machines available on the market and sample parts they produce. The full report will be available only for the project partners.

Please find more details about this project [here](#). ■

ASME Turbo Expo 2022

[ASME Turbo Expo](#) 2022 (Turbomachinery Technical Conference & Exposition) with the title *“Road mapping the future of propulsion & power”* was held in Rotterdam, Netherlands 13-17 June 2022. It was a 5-day conference and a 3-day exhibition event. The event included topics such as gas turbines, steam turbines, wind turbines, fans & blowers as well as supercritical CO₂.



Jitka Spolcova, ETN's Project Officer at our stand at ASME Turbo Expo 2022

ETN Global was present both at the technical sessions and at the exposition with a stand in Hall 3 featuring marketing materials about ETN, Young Engineers Committee (YEC), our EU-funded projects [CO2OLHEAT](#), [Robinson](#) and [FLEXnCONFU](#) as well as our [latest publications](#).

ETN's Managing Director Christer Björkqvist was the Executive Conference Chair and co-moderated the keynote session *“Road-Mapping the Future of Propulsion and Power”* together with Jaroslaw Szwedowicz from Siemens Energy on 13 June 2022. Pedro Lopez Estebarez, ETN President and COO of Uniper, was one of the speakers stressing the importance of a wide cooperation and showcasing Uniper's dedication to empowering the energy evolution by becoming carbon-neutral and by offering sustainable energy solutions. The keynote session was a success attracting over 1800 participants.



Christer Björkqvist, ETN's Managing Director, during ASME Turbo Expo keynote session on 13 June 2022

ETN's Managing Director Christer Björkqvist also co-chaired two additional sessions on 16 June 2022:

- 08:00-10:00 CET: *“The voice of the customer session- Overcoming the energy trilemma through road mapping and international cooperation”* together with Manfred Klein from MA Klein and Associates.
- 13:30-15:30 CET: GT OEM Technical session *“Pathway forward”* together with Richard Dennis from the US Department of Energy.

Antonio Escamilla Perejon, PhD student seconded for 3 months to ETN Global from University of Seville was awarded a prestigious ASME 2022 Student Advisory Committee Travel Award for his active involvement in the Conference. Antonio contributed with the following at ASME Turbo Expo 2022:

- submitted and presented a Student Poster *“Footprint Analysis of a Power-to-Power Energy Storage System with Micro Gas Turbines”*
- was one of the presenters at the following three sessions:
 - tutorial session *“Overview of Long-Duration Energy Storage Systems and Technologies”* held on 14 June
 - tutorial session *“Micro-Gas Turbine: Technological Advancements and Market Research”*, where he was both an organiser and one of the presenters held on 14 June 2022
 - technical session *“Exergy Analysis of Green Power-to-Hydrogen Chemical Energy Storage”* on 15 June



Antonio Escamilla Perejon, PhD student seconded to ETN, with his ASME 2022 Student Advisory Committee Travel Award

GPSS Industry Forum 2022

Global Power & Propulsion Society (GPSS) Industry Forum 2022 took place on 22-23 June in Zurich, Switzerland. This year's theme was "Challenges and Opportunities in a Changing World". ETN's Managing Director Christer Björkqvist was invited as a Keynote speaker. He delivered a speech "Pathways to net-zero: cooperation for a successful energy transition" on 23 June emphasizing the need of switching gear towards a rapid energy transition due to recent extreme weather events, and the current geopolitical situation which is providing both challenges but also opportunities for the gas turbine community.

GPSS Innovation Award was handed over to Vladimir Navrotsky, Vice President of Technology & Innovation for Industrial Application from Siemens Energy, who is also an active ETN Global member, currently involved in the Additive Manufacturing Working Group as well as Hydrogen Working Group. ■



Vladimir Navrotsky, Vice President of Technology & Innovation for Industrial Application from Siemens Energy receiving an Innovation Award at GPSS Industry Forum 2022

ETN webinar series "R&D activities on sCO₂ in Europe"

ETN is organising free webinar series "R&D Activities on sCO₂ in Europe". Eight projects gather for this unique event to present their concepts: six are EU-funded projects and two national projects.

Please find the whole project list (in alphabetical order) below:

- [CARBOSOLA](#) (sCO₂ as an alternative working fluid for downstream process and solar-thermal applications – German national project)
- [COMPASsCO₂](#) (Integration of CSP particle system into highly efficient sCO₂ Brayton power cycles)
- [CO2OLHEAT](#) (Industrial waste heat recovery and its transformation in electricity via sCO₂ power cycles) (ETN-coordinated project)

- [DESOLINATION](#) (Desalination of sea water from CSP)
- [SCARABEUS](#) (Demonstration of sCO₂ blends to CSP plants)
- [sCO₂-Efekt](#) (sCO₂ experimental facility for supercritical Brayton cycle research – Czech national project)
- [sCO₂-4-NPP](#) (Heat removal for nuclear power plants)
- [SOLARSCO2OL](#) (Development of sCO₂ power block to increase the flexibility of concentrated solar power plants)

The first session will be held virtually on 22 September 2022 and will present all eight projects. It will be split into two blocks, each followed by an interactive Q&A. During these sessions, webinar participants will be actively involved in the definition of topics for the next webinar episodes.

The following experts will be the speakers representing their respective project consortia:

- CARBOSOLA - Uwe Hampel (HZDR Dresden) / Andreas Jäger (TU Dresden);
- COMPASsCO₂ - Daniel Benitez (DLR);
- CO2OLHEAT - Rene Vijgen (ETN Global);
- DESOLINATION - Giampaolo Manzolini (Politecnico di Milano);
- sCO₂-Efekt - Otakar Frybort (CVŘ);
- SOLARSCO2OL - Rafael Guedez (KTH).

Other speakers will be announced shortly.

This event is free and open to all ETN Members and Non-Members, please learn more and register using our [event webpage](#). ■

ETN High-Level User Meeting 2022



Register now!

High-level user meeting (HLUM)

28 & 29 September 2022, Brussels, Belgium

ETN's High-Level User Meeting (HLUM) 2022 will take place on 28-29 September (lunch to lunch meeting), in Brussels, Belgium. It is an annual event for users-only upon receipt of an invitation.

The HLUM provides an opportunity for users to influence ETN's future strategy and activities and offers an excellent occasion to exchange views and experiences with senior-level users from the oil & gas, utility and industry sectors, and to bring forward short- and long-term turbomachinery development needs.

If you are a user and have received an invitation, please find more information and register through our [event page](#). ■

Educational courses

ETN is collecting information about technical gas turbine courses given by our members, to promote and share the knowledge and experience of our community. You can find a list of scheduled courses [here](#). If your organisation would like to list some courses on our website, please [contact us](#) for more details. ■

ETN October Workshop 2022

ETN's October Workshop 2022 will be held on 12-13 October at Park Inn by Radisson Alexanderplatz hotel in Berlin, Germany. This event is kindly sponsored by our member Siemens Energy.

We would like to invite ALL our members to join us for this 2-day event, which will consist of interesting presentations and discussions as well as networking opportunities.

The October Workshop will start with a report from the High-level User Meeting, highlighting the current (short & mid-term) challenges and needs as well as future (long-term) expectations from the user community, followed by 2 parallel sessions:

- Carbon abatement: energy efficiency & carbon-capture
- Flexibility: decentralised energy solutions & fuel flexibility

All our ETN members are invited to save the date and check our [event page](#), which will be updated regularly. ■

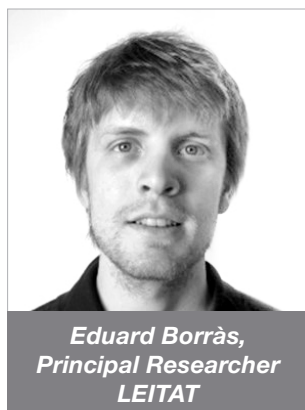
**SIEMENS
ENERGY**



Berlin @image by Adam Vradenburg

Interview with Robinson project partner LEITAT

Daniele Molognoni, Eduard Borràs,
Adam Dicken and Sara Vinklatova



The ROBINSON project aims at delivering an integrated energy system for the island of Eigerøy in Norway. By the end of the project lifetime, prototypes of innovative technologies will be installed and demonstrated in a pilot plant. One of those is the Anaerobic Digester assisted by Bio-Electrochemical System (AD-BES) developed by our partner LEITAT, based in Terrassa, near Barcelona (Spain). LEITAT is a private technological center with more than 110 years of experience in industrial innovation processes. We catch up with Daniele Molognoni, Eduard Borràs, Adam Dicken and Sara Vinklatova to know more about this technology and its role in the ROBINSON concept.

What is an Anaerobic Digestion Assisted by Bio-Electrochemical System (AD-BES)?

As the acronym suggests, AD-BES is composed by two technologies, AD and BES working in synergy. AD (Anaerobic digestion) is where bacteria breaks down organic matter, in this case, organic waste, transforming it into biogas (a low-carbon gas fuel roughly composed of 50-60% methane and 40-50% carbon dioxide (CO₂)). BES (bio-electrochemical system) is a novel technology that combines biology and electrochemistry. In a BES, special microbes called “electro-actives” can catalyse organic matter oxidation and CO₂ reduction to methane, interacting with the solid electrodes of the electrochemical cell (the anode and cathode, respectively), while a minor amount of electricity is injected into the system, to boost the biological process. Combining BES with AD, results in a faster conversion rate from waste to biogas, a higher biogas quality (i.e., higher methane content, resulting in higher calorific value) and a more resilient biological process (while AD is a quite delicate one). AD-BES allows applying a higher organic load, increasing the treatment capacity per volume of digester, and therefore leading to more compact digesters.

What is the role of the AD-BES in the ROBINSON project?

In the ROBINSON project on the demonstration island of Eigerøy in Norway, AD-BES aims at valorising the wastewater effluent of a local fish-processing company (PRIMA Protein). The process recovers the chemical energy contained in the wastewater in the form of biomethane that can be used as a fuel for combined heat and power (CHP) production present in the industrial facility, while using electricity from renewable sources to run the AD-BES unit. We are also thinking of broadening the application spectrum of AD-BES, co-digesting other organic feedstocks which are available on the island, like domestic and agricultural organic residues, this way contributing to a circular economy approach.

What are the challenges related to the integration of AD-BES into the ROBINSON energy system, especially with the Combined Heat and Power (CHP) unit?

It must be noted that biomethane coming from AD-BES is only one of the fuels that is mixed and sent to the CHP unit. In addition to that, liquid propane gas (LPG), hydrogen (H₂) from

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an electrolyser and syngas from a wood biomass gasification unit are also potential contributors to the fuel mix.

Moreover, when dealing with biomethane it is important to highlight, that it is generated at a low-pressure, and must be compressed to get mixed with the other gas fuels, and its water content must be reduced. Finally, one must consider the effect of the trace gas components that may be present (e.g. H₂S, a corrosive gas) on the operation of the CHP unit.

Do you think that the integration of a gas turbine with an AD-BES could be replicated in other cases?

One of the main objectives of the ROBINSON project is to ensure the replicability of the technologies on other islands. For this very reason we have two follower islands as partners of the project: Crete (Greece) and the Western Isles (Scotland). There is no doubt that AD-BES can be used as a stand-alone unit, or in combination with other gas fuel production technologies, for powering a CHP turbine. The main limitation comes from the amounts of organic matter that can be used as feedstock for the AD-BES, limiting the resulting biomethane to be supplied to the CHP unit. This factor is crucial for further joint implementation of both technologies.



What are the next steps in the coming months and in 2023?

By the end of this year, we will finish the work related to AD-BES that is currently ongoing at LEITAT, while our partner HYSYTECH will finalise the design and manufacture the pilot unit. During the first half of 2023, we will install the pilot AD-BES at Eigerøy (1 m³ volume). We will have more than a year of testing time in a real environment, in combination with the other renewable technologies that will be installed at the same demo site. It will be very exciting for us, as we invested several years in the development of this technology (since 2014), and it is our first attempt at such a scale. This will be a breakthrough allowing us to evaluate the balance between the costs and the competitiveness of the technology. ■



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 957752

Subscribe to our newsletter and follow the updates on: www.robinson-h2020.eu

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Eigerøy island

EU Taxonomy

The European Parliament cleared the [Complementary Delegated Act \(CDA\)](#) on climate change mitigation and adaptation covering certain gas and nuclear activities on 6 July 2022. “Gas and nuclear will now be included in the Taxonomy as transitional activities in a limited number of circumstances and under strict conditions”, [EC states](#).

As of 1 January 2023, the role of natural gas will be officially recognised as supporting the energy transition and promoting sustainable investments. The CDA will (1) facilitate financing of gas-related projects, (2) accelerate transitional towards advanced technologies, and (3) increase energy security and affordability.

ETN welcomes this outcome showing realistic and pragmatic approach of the EU towards the decarbonisation and energy transition.

Read the full press release from 06 July 2022 [here](#). ■



Save Gas for a Safe Winter (or Winter Preparedness Package)

[Save Gas for a Safe Winter package](#), with a self-explanatory name, was released by the European Commission on 20 July 2022. As the EU will not be fully independent from Russian gas before 2027 at its best, the EU needs to prepare for the risk of disruption of Russian supplies. The proposed package includes a new legislative tool and a European Gas Demand Reduction Plan.

The introduced [Regulation](#) sets a voluntary target for all Member States to reduce natural gas demand by 15% between August 2022 and March 2023 (reference point is the average consumption in the last five years). The Council Regulation follows the already existing documents, such as [REPowerEU Plan](#) (published on 18 May 2022) and [Hydrogen and Gas Market Decarbonisation Regulation Proposal](#) (published on 15 December 2021). It is believed that the 15% reduction would allow EU to pass the winter without Russian gas, if need be. However, if the EU declares a “Union Alert”, based on the [Article 122 of the Treaty](#), it will make the 15% target mandatory.

To help Member States achieve the 15% target, the EC has drafted a European Gas Demand Reduction Plan, specifying measures, principles and criteria needed to achieve the reduction goals. The EC’s [Communication document](#) provides guidelines to identify industrial sectors most suitable for gas savings and envisages to protect households, essential users (i.e. hospitals) and industries from a gas shortage and help them to reduce their consumption. The main recommendations include the switch towards other kind of fuels (renewables and/or nuclear where possible, but also oil and coal, where absolutely necessary), and reduction of heating and cooling in public buildings.

The use of coal and oil could jeopardize the overall long-term EU climate goals and decarbonisation objectives. Thus, the EC emphasised that these measures are temporary and should not result in a long-term fossil lock-in. However, no specific measures have been put in place to ensure this.

Along with the above package, the EC adopted also an [Amendment](#) to the State aid Temporary Crisis Framework (initially adopted in March 2022), to support the economy in the context of Russia’s invasion of Ukraine. It allows Member States to set up schemes for investments in renewable energy, decarbonise industrial processes and increase energy efficiency.

The EC proposal was met with resistance from EU Member States. As a result, the text was re-drafted by Czech Presidency of the EU Council prior to an informal Energy Council meeting which took place on 26 July 2022. The latter was met with support from a great majority, resulting in [26 countries voting for and one \(Hungary\) against the deal](#). The political agreement entails a voluntary reduction of natural gas demand by 15% with measures of their own choice. In the approved text the EC would still propose Union Alert, but EU Member States would have to vote to get it approved. Exemptions from the mandatory target have been made to countries not connected to the EU gas grid (island countries, such as Ireland and Malta) and countries whose grids are synchronised with countries outside the EU. Several derogations have also been made available to countries such as “if they have overshot their gas storage filling targets, if they are heavily

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dependent on gas as a feedstock for critical industries or if their gas consumption has increased by at least 8% in the past year compared to the average of the past five years”.

For more information, see also two Factsheets published by the EC on 20 July 2022: [A European Gas Demand Reduction](#) and [Save gas for a safe winter](#).

On 05 August 2022, following the political agreement between Member States reached on 26 July 2022, the [Council adopted a regulation on a voluntary reduction of natural gas demand by 15%](#) this winter based on Member States measures of their own choice to achieve the targets as well as a set of exemptions and possibility for partial or full derogations. Please find more information in the article [here](#).

ETN welcomes and supports EC’s plans for the energy sector which are aimed at meeting the urgent short-term power and heat needs, as per REPowerEU Plan and Save Gas for Safe Winter Package, while maintaining long-term net-zero goals to make European energy systems and industry more resilient and efficient.

In our statement, which was sent to the President von der Leyen, Executive Vice-President Timmermans, and Commissioner Simson on 02 August 2022, we underline the significant role that our industry can play in supporting EC’s strategic objectives by providing a set of additional measures, not part of the current package, that can contribute to the increase in the energy savings, especially for the coming winter, but also in the mid-term.

Please find our full statement to the EC on behalf of ETN members [here](#). ■



THE LIFE OF THE GT COMMUNITY

Upcoming meetings and events

Meeting/Event*	Date	Location
ETN Board Meeting	06 September 2022	Virtual
FLEXnCONFU Project General Assembly	07-08 September 2022	Rozzano, Italy
ROBINSON Project General Assembly	19-21 September 2022	Chania, Greece
ETN Webinar Series “R&D activities on sCO ₂ in Europe” – first session	26 September 2022	Virtual
ETN High-Level User Meeting	28-29 September 2022	Brussels, Belgium
ETN October Workshop	12-13 October 2022	Berlin, Germany

* NOTE that full list of upcoming ETN meetings and events can be found on our [website](#).

ETN Team



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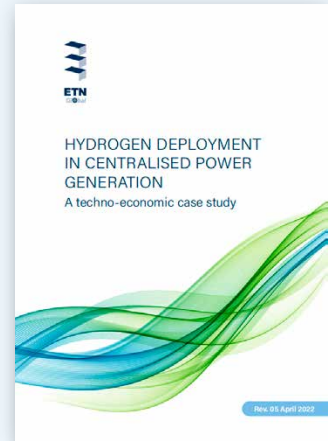
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ETN at a glance

Download our latest publication [Hydrogen deployment in centralised power generation](#).



Download the [three pager](#) and learn more about ETN's vision.



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