



Spotlight on: Interview - #PowerTheEU commitments & the role of gas turbines in the future

Date 05.06.2020

Thomas Thiemann is EUTurbines President since 2019. He is Senior Vice President for Energy Transition Technologies at Siemens Gas & Power.

- **Mr Thiemann, could you elaborate on the general advantages of gases as energy carriers?**

Gases as energy carrier have specific advantages. Apart from enabling flexible and dispatchable power and heat generation, gases help to ensure security of supply: they are the perfect media to transport and store large amounts of energy at low cost. Hydrogen, for example, can be produced when wind and solar deliver more electricity than we need. This hydrogen can then be used in times of little wind and sun to generate power, keeping the grid stable. This is called Power-to-Gas-to-Power. In this sense, gas complements energy systems dominated by weather-dependent renewable energy, balancing demand and supply.

Additionally, the use of gas allows a cost-effective energy transition. Indeed, existing gas infrastructure can accommodate a large blend of hydrogen in the gas mix – consequently, there is no need for cost intensive additional new infrastructure investments to start the transition.

Renewable gases, such as hydrogen, synthetic gas or biomethane, can be produced from various feedstocks, like excess renewable power, agricultural residues or municipal waste or sewage. Renewable gases can therefore be produced from vast reserves.

- **How do you see the role of gas turbines in the future energy system?**

Their key role will be to ensure a stable power and heat supply, complementing the intermittent renewables. Gas turbines are the perfect solution to provide flexible and dispatchable power and heat when there is not enough wind and sun. This, of course, is only one of many arguments in favour of gas turbines. They are at the centre of sector coupling, the smart combination of the electricity, gas and heat systems, which is a safe bet for delivering the decarbonisation of the energy system.

In addition to this stabiliser role, gas turbines are often used in cogeneration plants, meaning plants that simultaneously produce power and heat – for example for district heating networks. In this combined heat and power application they achieve an overall energy effectiveness of up to 90%. These cogeneration plants are a key solution for decarbonising the heat demand.

- **Last year the turbine industry presented a [series of commitments](#) related to the use of renewable gases, including a promise that already this year, the industry will offer solutions that can handle 20% of hydrogen in the gas mix. Did the industry achieve this?**

Yes indeed, early 2019 the European turbine industry committed to provide gas turbines that are able to run on renewable gases, with the ultimate goal of delivering turbines that can operate with 100%

EUTurbines

Transparency Register
ID number: 75093131694-63

www.euturbines.eu

European Association of Gas and Steam Turbine Manufacturers
President
Thomas Thiemann
Secretary General
Ralf Wezel

Lyoner Str. 18
60528 Frankfurt/Main
Germany
Phone+49 69 66 03-19 36
Fax+49 69 66 03-29 36
Patricia.seizer@vdma.org

Boulevard A. Reyers 80
1030 Brussels,
Belgium
Phone+32 2 706-82 12
Fax+32 2 706-82 10
Magdalena.kurz@euturbines.eu

hydrogen by 2030. The #PowerTheEU commitments are a strong signal for decision-makers that we are getting ready for the future.

I am happy to tell you that the industry has achieved the 2020 objective! Today, OEMs offer new gas turbines for hydrogen levels above 20%, as promised. For specific applications even today gas turbines are already available to operate with shares of hydrogen of up to 50% or even higher – depending on the product category and combustion system.

Another important part of the #PowerTheEU commitments is that OEMs develop and offer retrofit solutions for existing power plants to make them fit for renewable gases. Concepts to do so are in principle available and need to be considered on a case-by-case basis. In this way, a cost-effective energy transition becomes possible.

Finally, EUTurbines members are developing new dry low emission combustion systems to be able to handle hydrogen shares of up to 100%. This will be the most sustainable, efficient and reliable option to provide power and heat supply while ensuring safety and full compliance with emission limits.

To sum up, we can clearly state that the turbine industry delivers its commitments – I am sure that our event in September this year will be a perfect occasion to showcase what we have achieved so far and explain, how we proceed.



- **Can you explain the main advantages of turbines running on renewable gases?**

Making our gas turbines ready for renewable gases allows a smart upgrade and utilisation of existing assets like pipeline infrastructure or caverns for storage without need for investing in major new energy infrastructure.

It is a cost-effective conversion to full green operation, avoiding a carbon lock-in of investments in gas turbine technology while maintaining all the advantages of gas power generation. The turbine industry places high priority on these retrofit solutions, offering upgrades without replacing the entire turbine. Costs of these retrofit solutions are expected to be only a relatively small portion of a new turbine. This is what I meant with a cost-effective transition that provides a future-proof technology.

- **What do you answer to people questioning this approach by referring to a low overall efficiency and high societal costs?**

A high share of variable renewable power generation in any system will need high capacities of very flexible back-up power generation – not only to cover minutes but also longer periods. Today, this is provided by conventional power plants. If we really want the full decarbonisation of the power sector, we will need a decarbonised back-up solution that can bring us through a few dark and cold winter weeks without shortages in supply. Upgrading gas power plants to operate with renewable gases is economically a very attractive solution for this, even if the efficiency due to a double conversion may be low.

Most of these power plants will not run continuously, which creates a profitability challenge for the operators. But in an energy system dominated by power from wind and sun, suppliers and politics in any case will have to take precautionary measures to ensure a reliable power supply for our economies – and the more we phase-out fossil power generation, the bigger the challenge. We will have to find solutions to remunerate the provision of flexible dispatchable back-up energy.

EUTurbines

Transparency Register
ID number: 75093131694-63

www.euturbines.eu

**European Association of Gas and
Steam Turbine Manufacturers**

President
Thomas Thiemann
Secretary General
Ralf Wezel

Lyoner Str. 18
60528 Frankfurt/Main
Germany
Phone+49 69 66 03-19 36
Fax+49 69 66 03-29 36
Patricia.seizer@vdma.org

Boulevard A. Reyers 80
1030 Brussels,
Belgium
Phone+32 2 706-82 12
Fax+32 2 706-82 10
Magdalena.kurz@euturbines.eu

- **To conclude, if you were advisor to the EU energy commissioner, what would you recommend?**

Undoubtedly, we need a further massive build-up of renewable energy and the basis will be renewable electricity generated from wind and sun. And it is equally clear that we need to phase-out fossil power generation if we want to reach the target of a carbon-neutral Europe by 2050.

How to avoid that this path will compromise the two other targets of the EU's energy policy: reliability and affordability? My recommendations:

- Recognise that a successful decarbonisation of the energy sector needs the contribution of all energy carriers
- Develop a predictable strategy to upgrade the existing gas infrastructure to renewable gases by setting targets and providing a policy framework
- Support a substantial ramp-up of renewable gas production – hydrogen, but also biomethane
- Complement variable renewables with flexible gas power generation – but ensure their transition to renewable gases
- And finally: Help us to get the technology ready in time by supporting demonstration projects for gas power plants operating on 100% renewable gases. This includes also a plan and financial incentives that enable the retrofitting of existing gas power plants.

I know this seems like a lot, but if we want to get the energy transition right, in a most cost-effective manner, this seems to be the way to go!

EUTurbines

Transparency Register
ID number: 75093131694-63

www.euturbines.eu

**European Association of Gas and
Steam Turbine Manufacturers**

President
Thomas Thiemann
Secretary General
Ralf Wezel

Lyoner Str. 18
60528 Frankfurt/Main
Germany
Phone+49 69 66 03-19 36
Fax+49 69 66 03-29 36
Patricia.seizer@vdma.org

Boulevard A. Reyers 80
1030 Brussels,
Belgium
Phone+32 2 706-82 12
Fax+32 2 706-82 10
Magdalena.kurz@euturbines.eu