



PRESS RELEASE

Genoa, October 24th, 2019

Ansaldo Energia and Equinor collaborate on validation of 100% hydrogen gas turbine combustor

Climate change is one of today's most important environmental and social concerns. In order to achieve the Paris Agreement's goals, decarbonization of the power generation sector is essential. Hydrogen-fired gas turbines allow for CO₂-free dispatchable power generation. CO₂-free hydrogen can be either produced via electrolysis using renewable power (green hydrogen) or from natural gas applying dedicated CCS technology (blue hydrogen). The capability to store energy in hydrogen for medium to long-term, can also be used to alleviate variations in renewable power generation.

Compared to natural gas the main challenge of hydrogen combustion is its increased reactivity resulting in a decrease of engine performance for conventional premix combustion systems. Equipped with unique sequential combustion technology, Ansaldo Energia's GT36 and GT26 gas turbines overcome this drawback allowing the utilization of the full range of hydrogen in a low NO_x premix system.¹

Already today the GT36 H-class gas turbine combustor can be operated with a volumetric hydrogen content in natural gas of 0 to 50%. Recent full-scale high-pressure tests showed the feasibility of operating up to 70% hydrogen without power or efficiency derating and the possibility to burn up to 100%.² To further develop this fuel flexibility capability, Ansaldo Energia and Equinor joined forces and signed a collaboration agreement. The purpose of this collaboration is to advance the hydrogen combustion technology with full-scale, full pressure combustor validation tests. To this regard the main goals are the optimization for ultra-low NO_x emissions, operational flexibility and minimization of engine derating at very high hydrogen contents.

Equinor is co-funding these combustor testing activities for hydrogen.

Equinor is an energy company that energize the lives of 170 million people. Every day. Equinor is committed to long term value creation in a low carbon future, in which clean hydrogen-utilization as fuel for power production is considered one of the main pillars. Equinor is a world leader in carbon capture and storage (CCS). CCS is about removing carbon from gases and storing it safely to prevent it from contributing to climate change, which is a precursor to producing CO₂-free hydrogen from natural gas.³

¹ <https://www.ansaldoenergia.com/business-lines/hydrogen-technology>

² Bothien, M., Ciani, A., Wood, J., Früchtel, G., Sequential Combustion in Gas Turbines – the Key Technology for Burning High Hydrogen Contents with Low Emissions, Proceedings of ASME Turbo Expo 2019, GT2019-90798

³ <https://www.equinor.com/en/what-we-do/new-energy-solutions.html>



Ansaldo Energia Group is a leading international player in the power generation industry, to which it brings an integrated model embracing turnkey plants, components (gas turbines, steam turbines, generators and microturbines), servicing and work in the nuclear energy sector. Ansaldo Energia is 59,9% owned by CDP Equity in the Cassa Depositi e Prestiti Group, an Italian state-owned entity which has been promoting the country's economy since 1850, and 40% by Shanghai Electric, the world-leading producer of power generation machinery and mechanical equipment.