ACHIEVE project launches in Rome to propel sustainable gas turbine technology

ACHIEVE is aimed to develop validated solutions for combustion with a focus on reducing pollutant gases such as CO2 and NOx has been funded by the Horizon Europe

ROME, 16/02/2024 – The ACHIEVE project, funded by the Horizon Europe Program of the European Commission under Grant Agreement 101137955, and supported by the Clean Hydrogen Partnership, has commenced its work in Rome. Led by Universita Degli Studi Di Roma La Sapienza (UNIROMA, Italy), the consortium comprises partners such as Universita Degli Studi Di Firenze (UNIFI, Italy), Technische Universitat Berlin (TUB, Germany), Technische Universiteit Delft (TU Delft, Netherlands), Centre National De La Recherche Scientifique (CNRS, France), CentraleSupelec (France), Phoenix BioPower (Sweden and Switzerland), State Enterprise Mashproekt Gas Turbine Research and Production Complex (Zorya, Ukraine), ZABALA Innovation (ZABALA, Spain), and King Abdullah University of Science and Technology (KAUST, Saudi Arabia).

The ACHIEVE project spearheads the integration of hydrogen (H2) and ammonia (NH3) as viable energy carriers within the European Union, particularly in gas turbine (GT) applications. Its primary objective is to deepen our understanding of the combustion characteristics of unconventional H2 fuel blends such as those of hydrogen and ammonia, with a focus on developing validated solutions to mitigate greenhouse and pollutant emissions such as CO2 and NOx, while maintaining stable operation. This effort is pivotal in advancing gas turbine technology for power generation and aligns with the urgent need to transition away from fossil fuels while accommodating the intermittent nature of renewable energy sources.

**Key objectives of ACHIEVE project:**

1. Evaluate the performance of unconventional H2 blends in various combustion systems.
2. Validate conventional swirl stabilized DLE combustion systems with unconventional H2 blends.
3. Validate a stable, low-emission MILD combustion system for unconventional H2 blends.
4. Develop a practical real-time monitoring system for flames of unconventional H2 blends.
5. Improve understanding of thermoacoustic instabilities of unconventional H2 blends.
6. Develop chemical kinetics tools and evaluate emissions for unconventional H2 blends.
7. Develop novel computational tools to enhance the predictive capability of high-fidelity CFD.
8. Mitigate barriers to the large-scale deployment of ACHIEVE’s results.

Beyond achieving these milestones, ACHIEVE aims to foster synergies, raising awareness among key stakeholders to encourage further research and facilitate the widespread adoption of its outcomes.

The ACHIEVE project represents a significant leap towards a sustainable and efficient future for gas turbine technology, contributing to the global initiative to reduce carbon emissions and transition to cleaner energy sources.

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