FLEX4H2

Decarbonised power

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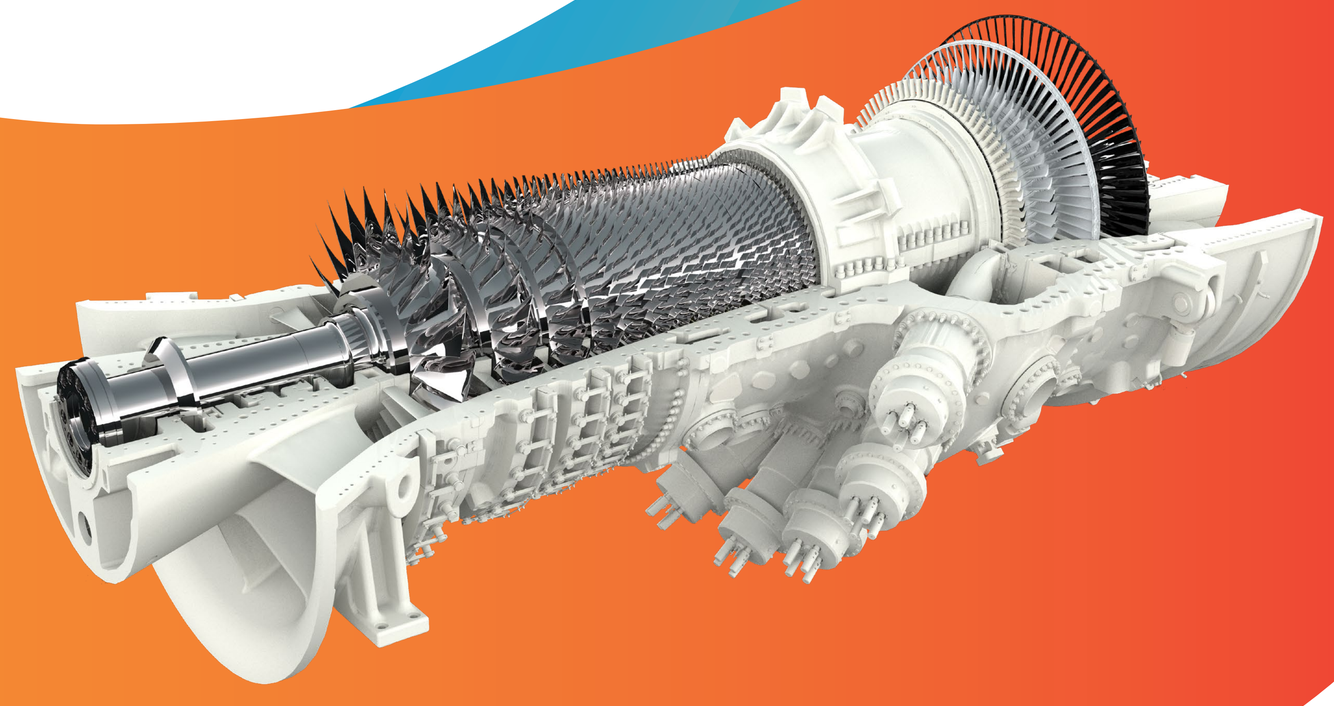
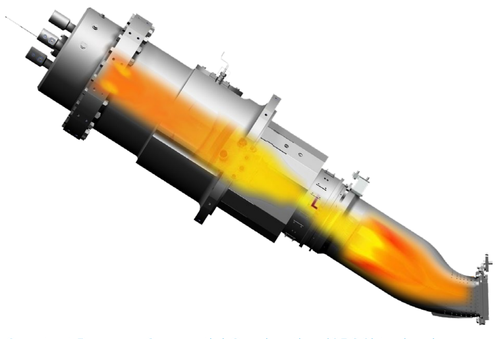


Concept

Flexibility for Hydrogen (FLEX4H2) aims to develop a fuel-flexible combustion system capable of operation with any hydrogen concentration in natural gas, up to 100% H_2. It will be fully retrofittable to existing gas turbines.

4 years (Jan 23 - Dec 26) | Budget €8.7M

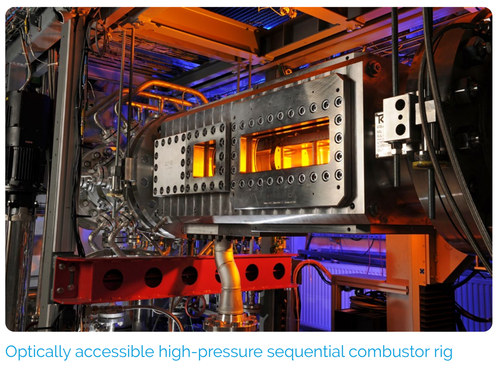
Technology



Constant Pressure Sequential Combustion (CPSC) technology

Hydrogen combustion

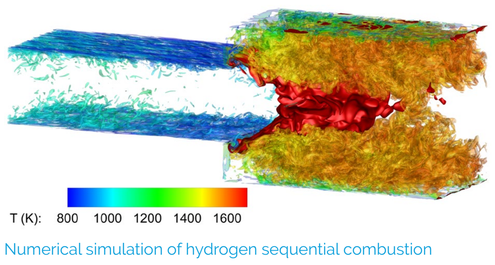
The intrinsic flexibility of sequential combustion has already been shown to enable clean and efficient operation on a wide variety of fuels with very high hydrogen contents.



Optically accessible high-pressure sequential combustor rig

Test rigs & validation

Dedicated high-pressure tests of a simplified sequential combustor geometry in an optically accessible rig as well as full-scale tests on single-can prototypes will complement the numerical simulations to ultimately validate the combustor operation with up to 100% H_2.



Numerical simulation of hydrogen sequential combustion

Numerical modelling

The development of the sequential combustion system to achieve 100% hydrogen operation at H-class conditions will be supported by advanced numerical modelling and simulations.

Main impacts

New combustor technology

able to handle blends of natural gas with up to 100% of H_2

Re-utilisation of existing infrastructure

enabling investment cost reduction

Contribution to Net Zero pathway

by decarbonisation of the electric power sector

ansaldo energia · SINTEF · EDISON · ETN Global · CERFACS (Centre Européen de Recherche et de Formation Avancée en Calcul Scientifique) · ARTTIC · zhaw School of Engineering · DLR

Clean Hydrogen Partnership

Co-funded by the European Union

Project funded by

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI

This project is supported by the Clean Hydrogen Partnership and its members Hydrogen Europe and Hydrogen Europe Research (GA 101101427), and the Swiss Federal Department of Economic Affairs, Education and Research, State Secretariat for Education, Research and Innovation (SERI)