

HIPROX: a flexible pressurized facility for the development of novel combustion concepts

In modern gas turbine thermal energy is released in extreme conditions of pressure and temperature and must comply to severe emission limits

Novel power technologies as oxy-fuel or pre-combustion CO₂ capture for reducing greenhouse gas emissions have introduced combustion concepts that are not commercially available

Development of cleaner and more efficient combustion systems requires tailoring of flame features at microscopic level to extend stability and emission performances.

HIPROX is a registered Research Infrastructure in the EU ECCSEL Infrastructure funded by the Research Council of Norway.

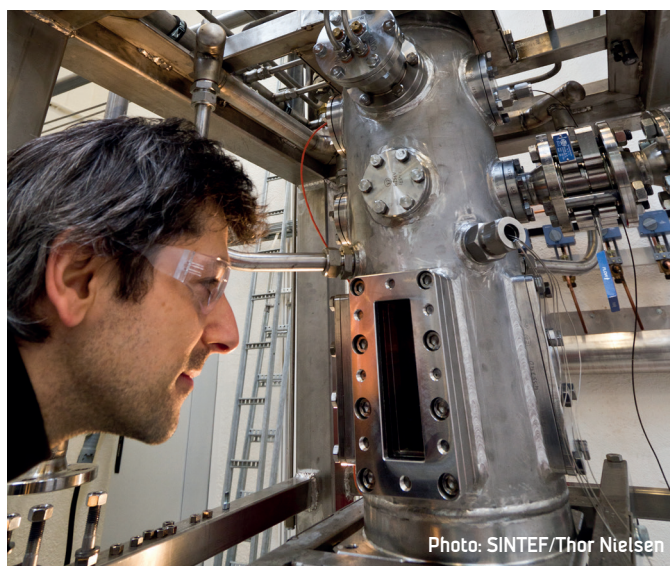
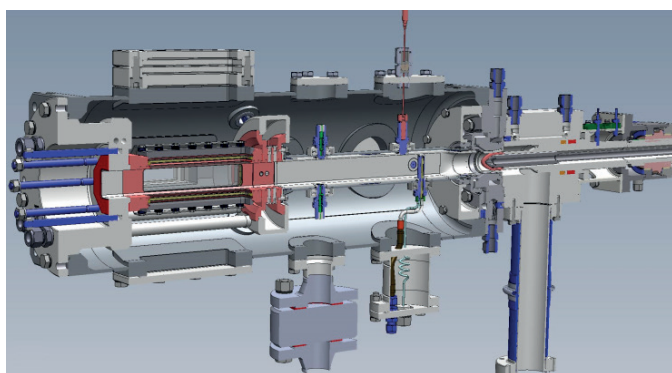


Photo: SINTEF/Thor Nielsen

Specifications

Pressure vessel

- 15 bar
- 4 optical accesses

Combustor section

- 10 bar
- Double wall quartz flame section
- TBC coated dilution section
- Modular setup, 3 flame sections existing: 40X40 mm²; Ø 50 mm ; Ø 90 mm

Fuel

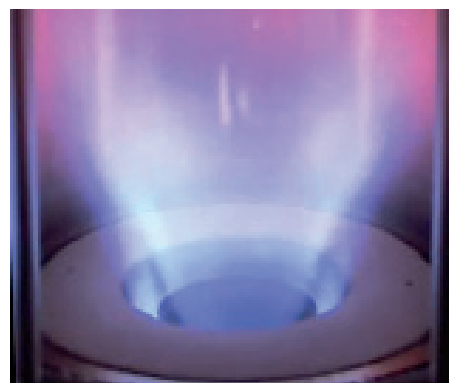
- Max power 150 kWth
- Two feed lines 3 g/s (main) and 1.4 g/s (pilot) methane
- Storage: cylinder battery

Oxidizer

- Two independent heated feed lines PN 40
- Air 30 bar - 520 kg/hr - 300°C - Boosted network
- CO₂ 15 bar - 300 kg/hr - 300°C - 6 m³ liquid tank
- O₂ 20 bar - 72 kg/hr - 20°C - Cylinder battery

Measurement capabilities

- Flame visualization (chemiluminescence, high speed)
- Multi-species emission (>15 species, FTIR)
- Temperature, heat flux
- Pressure (static and dynamic)



Oxy-fuel flame at 7 bar (source: OXYGT project)

Infrastructure financed by:



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