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Translational Energy Research Centre.

Department for Business, Energy & Industrial Strategy

European Union
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Sustainable Aviation Fuels Innovation Centre.

Translational Energy Research Centre (PACT-2)

M. Pourkashanian
Managing Director
Translational Energy Research Centre
Energy Innovation District,
Sheffield, S10 2TN, UK

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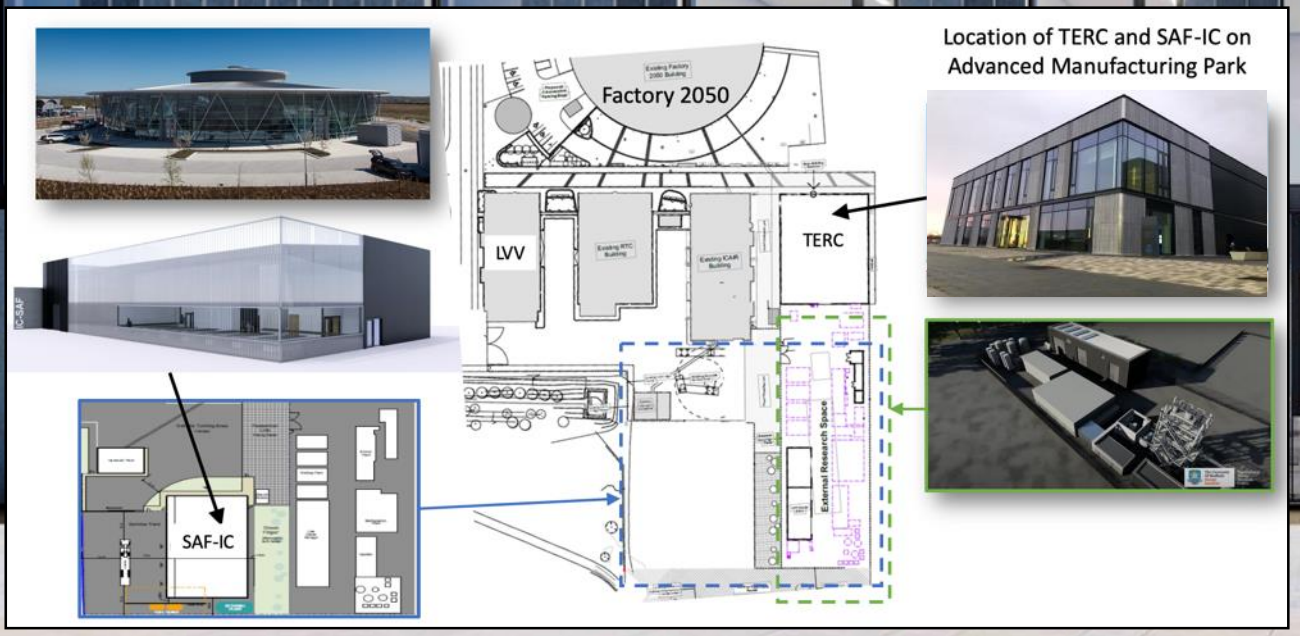
State-of-art facilities, including

- Fuel stability testing, combustion and emission performance in real conditions
- Fuel production plant including captured CO2 from combustion, direct air capture and green H2

£21M + £7M Investment by BEIS,EU and the University

TERC operational 04/2021
SAF-IC early 2022



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Cost-efficient test site with infrastructure for numerous technology developers

- Real-world conditions with real flue gas and future expansion for zero-carbon fuel testing
- Flexibility for testing at multiple scales and on-site scale-ups
- Technical staff for design, installation and testing support
- High-quality data acquisition and gas/liquid/solid sampling and analysis

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Next Generation Low Carbon Technologies

- **CCUS**
  - CCUS + MCFC (Molten carbonate Fuel Cell)
  - CCUS + MCFC + H_2 (With Hydrogen co-product)
  - RPB for CO_2 Capture (Rotating Packed Bed)
  - sCO_2 technology (Supercritical CO_2 Chemical Kinetics + Heat Exchanger (AMRC))
  - DAC (Direct Air Capture Technology)
- **Hydrogen**
  - Hydrogen Combustion in GT
  - Hydrogen Burner Design for MGT, GT and Process Industry (Joint with AMRC)
- **Sustainable Fuel Production and utilisation**
  - Sustainable Aviation Fuel (SAF) from CO_2+H_2
  - SAF Clearing House (Fuel Certification)
  - APU 131-9B Honeywell for Performance and Emission
- **Zero Carbon Fuels**
  - NH_3 combustion (Fundamental Research)
  - NH_3 and SAF Chemical Kinetics at High Pressure (up to 150bars & 700C) Using HP-HT Shock Tube

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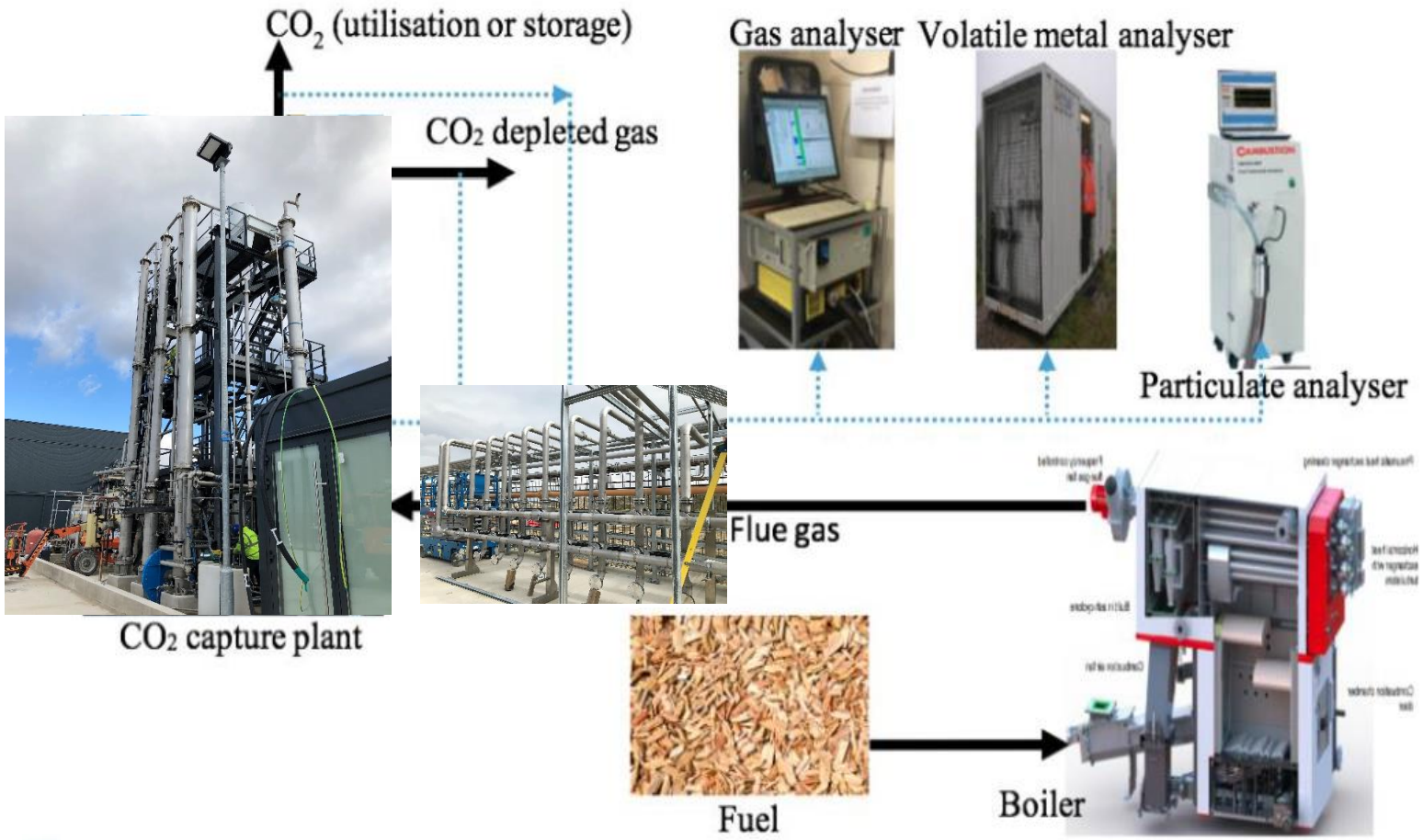
- To assess the types and levels of trace metals in the initial fuels and determine their release profiles as entrained aerosols, as contained in the combustion flue gases
- To measure emissions of particulate matter, specifically sub-micron particles (PM1), from each fuel
- To determine and quantify the impacts of the fuel and therefore the flue gas composition on the operational performance of a pilot-scale post-combustion CO_2 capture plant, using: (i) a generic amine solvent, and (ii) a proprietary solvent



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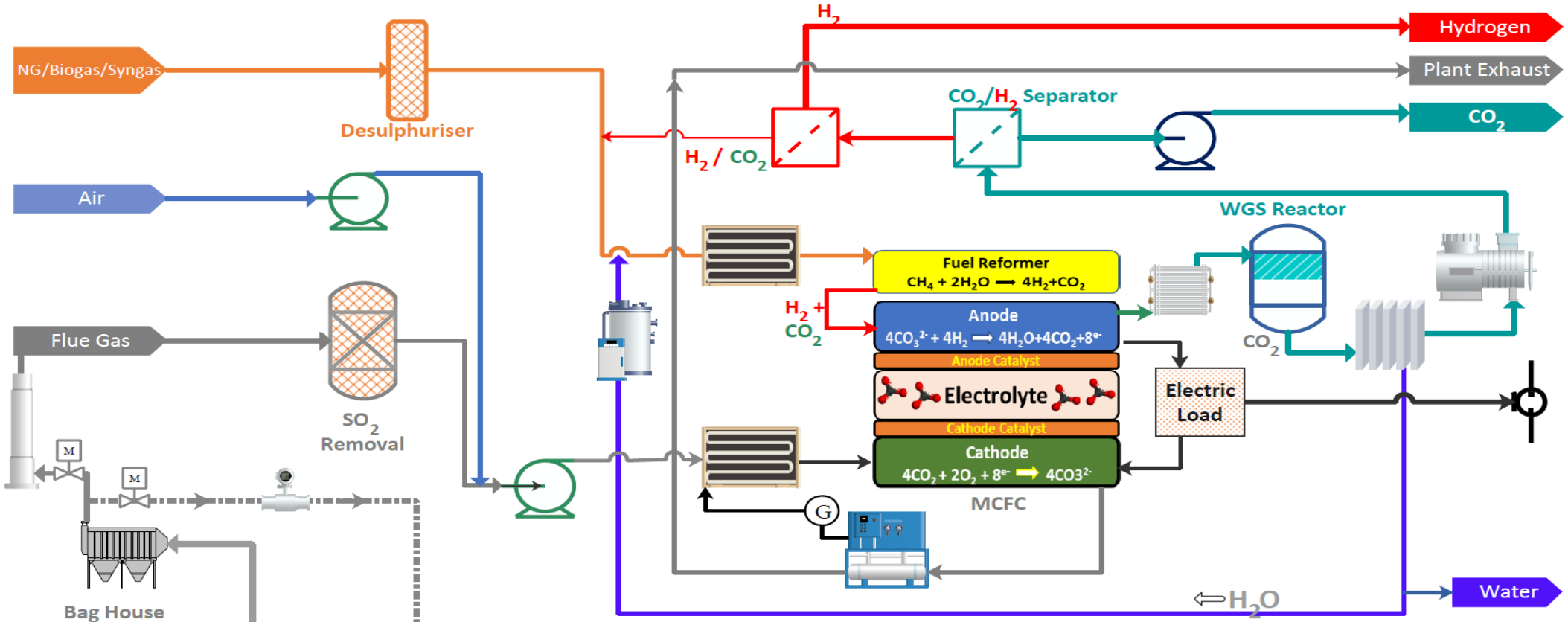
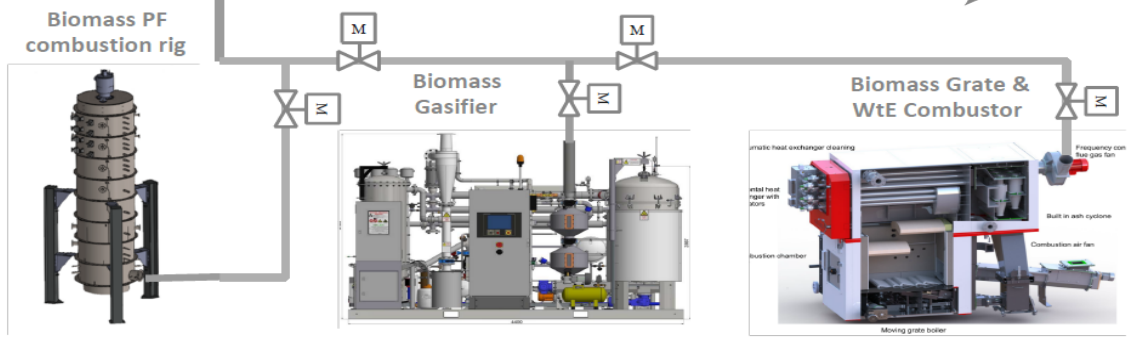
Next generation CCUS Technology: BCCS-MCFC





Translational Energy Research Centre Facilities

- Biomass PF combustion test rig
- Biomass Gasifier including Engine
- Grate and Waste to Energy combustion rigs
- Amine Capture Plant

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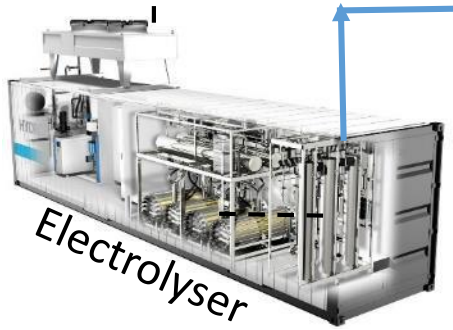
Carbon Dioxide Utilisation Plant

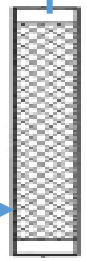
Sustainable Aviation Fuel Production

Compressor

Fischer Tropsch Reactor

Gas Cleaning





Reverse WGS Reactor

Oil/gas Separator

Fractionator

SAF: Sustainable Aviation Fuel

GTF: Green Transport Fuels

Gas Cleaning

TERC Biomass Gasifier

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ITCN: International Partnership and collaboration

- ITCN shares knowledge on operating test facilities
- Broad benefits of ITCN – :
  - CCS support is inconsistent, ITCN attenuates swings
  - Share knowledge and partnerships for scale-up
  - Technologies more robust with broad requirements
  - Encourage passionate participants to stay in the field

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ECCSEL (ERIC): ECCSELERATE H2020 proposal approved (10 partners, 5 countries)

- **Increased utilization**
- **Long term sustainability**
- **New service models for industry & SME**

Part of a European approved RI legal entity

- International visibility and common marketing
- Cost sharing, saving and prioritization
- Influence on international CC(U)S policies and development
- Partnership with other EU initiatives

Increased funding

- EC; Horizon 2020 ++
- Release national grants (Coordination national funds)
- Joint industry investments
- Joint/coordinated funding applications

Increased facility utilization

- Attract new users and projects
- Standardized and supervised access
- More operational activity
- Increased turnover
- High quality facilities, operation and services

New investments, activities and business

- Research facilities implementation/
- New research projects
- Capacity building, education/training and jobs
- Spin-off businesses and products

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Thank you

For further information, please contact:

terc@sheffield.ac.uk

m.pourkashanian@sheffield.ac.uk