



*European Carbon Dioxide
Capture and Storage Laboratory Infrastructure*

ECCSEL

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Vision and Objectives

ECCSEL vision:

Enabling low to zero CO₂ emissions from industry and power generation

Main objectives

- Establish and operate a world class distributed CCS research infrastructure in Europe
- Integrate and upgrade existing research facilities and supplement with new ones
- Enhance European science, technology development, innovation and education in the field of CCS
- Enable spin-off activities and generation of new business

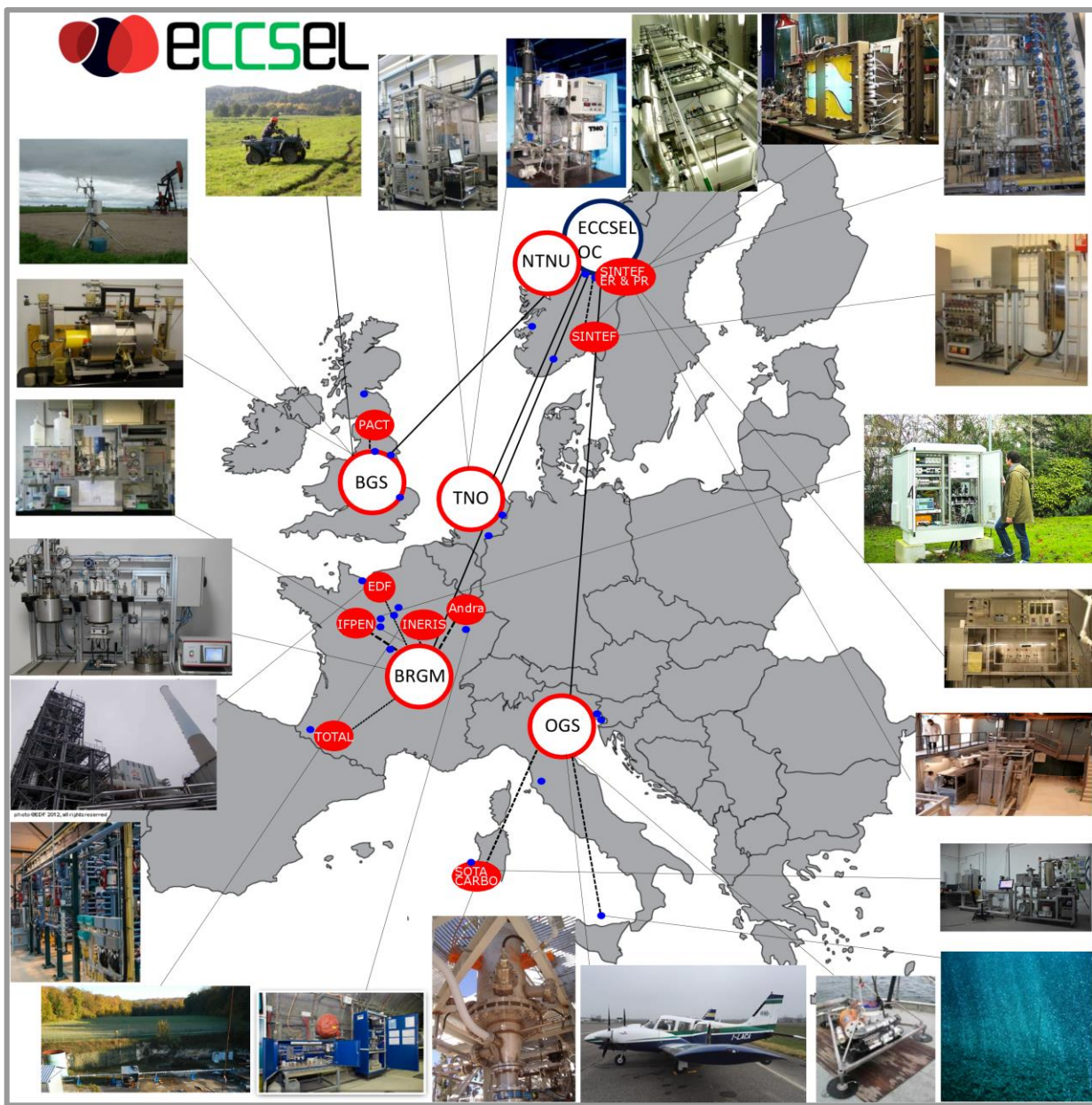
ECCSEL ERIC Inauguration, Trondheim June 12th 2017



Wolfgang Burtscher, Deputy Director General, DG Research & Innovation

Ingvil Tybring-Gjedde, State Secretary, Ministry of Petroleum and Energy

Sverre Quale, ECCSEL Director



ECCSEL ERIC:
5 countries with
 • 15 owners of
 • 54 research facilities

Open access to 54 ECCSEL research facilities (Fact sheets on web)

- Organisation name
- Installation name
- Location
- Category, Science area
- Short description
- Pictures
- Calendar (coming)

Description of the infrastructure	
RI number	C2
Name of the infrastructure*	TNO
Location (town, country):	Rotterdam
Web site address:	www.tno.nl
Legal name of organisation operating the infrastructure	TNO
Location of organisation (town, country):	Rotterdam
Contact person: name, Tel., e mail:	

*Infrastructure (s): means a facility, a resource (or a coherent set of them) together with the services that are used by the scientific community to conduct research.

**Installation: means a part of an infrastructure that could be used independently.

Name of installation**

TNO Masseyville Pilot Plant

Description

Access is offered to state of the art, of carbon capture processes and technologies.

The TNO Masseyville Pilot Plant is a 0.5 MWth oxy-fuel pilot plant and has obtained highly successful results in running for more than 1000 hours.

The pilot plant activities are supported by the TNO Laboratory of Energy Conversion.

TNO lab at Delft with the following facilities:

- Mini Plant for solvent preparation
- High throughput solvent scrubbing
- High pressure absorption and desorption
- Chemical looping fixed bed

The TNO Masseyville Pilot Plant is developed in the laboratory of Energy Conversion. The Rotterdam types of solvents. The location offers an opportunity to obtain full scale performance of CO₂ removal methods and new solvents. The pilot plant is directly linked to the CO₂ capture process where CO₂ is removed from the stack. It is possible to monitor all process conditions.

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Pilot scale 0.5 MWth

Description

The scheme shows KSTVA in oxy-fuel facility essentially on the side of a power plant. The scheme shows a cleaning path catalyst, an (ESP) and a bag filter. The air or recirculated air is forced through a forced draught induced draught transport of flue-gas system.

The combustion chamber is cylindrical 7,000 mm diameter and 1,400 mm high. The plate heat exchanger is 1,400 mm diameter and 1,400 mm high.

Flame cooling

Refract

4,000 mm

meas

In se

Description of the infrastructure	
RI number	S11
Name of the infrastructure*	BGS Transport Properties Research Laboratory
Location (town, country):	Keyworth, Nottingham, UK
Web site address:	www.bgs.ac.uk
Legal name of organisation operating the infrastructure	Natural Environment Research Council represented by the British Geological Survey
Location of organisation (town, country):	Keyworth, Nottingham, UK
Contact person: name, Tel., e mail:	Caroline Graham, +44 115 936 3391, c.graham@bgs.ac.uk

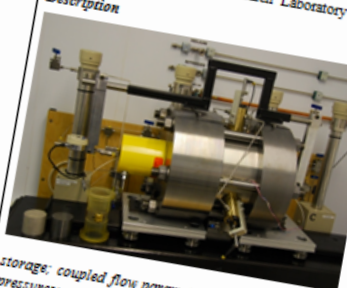
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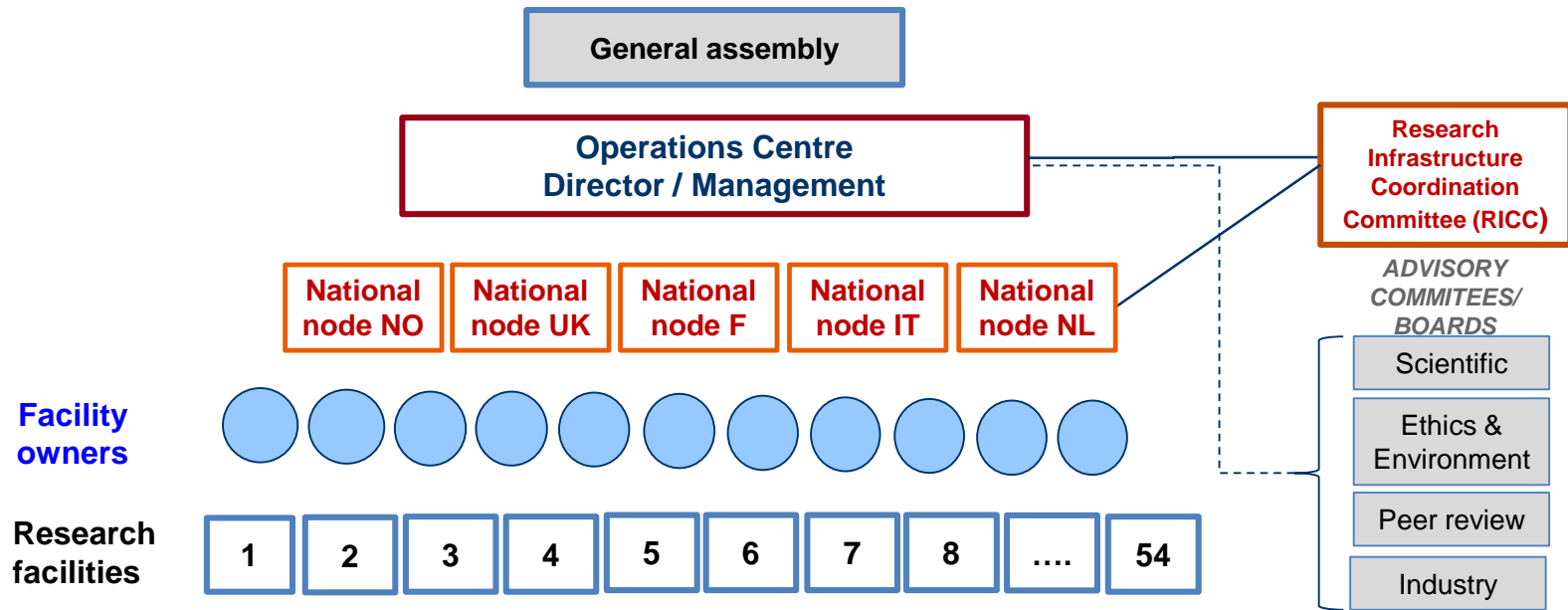
BGS Transport Properties Research Laboratory (TPRL)

Description

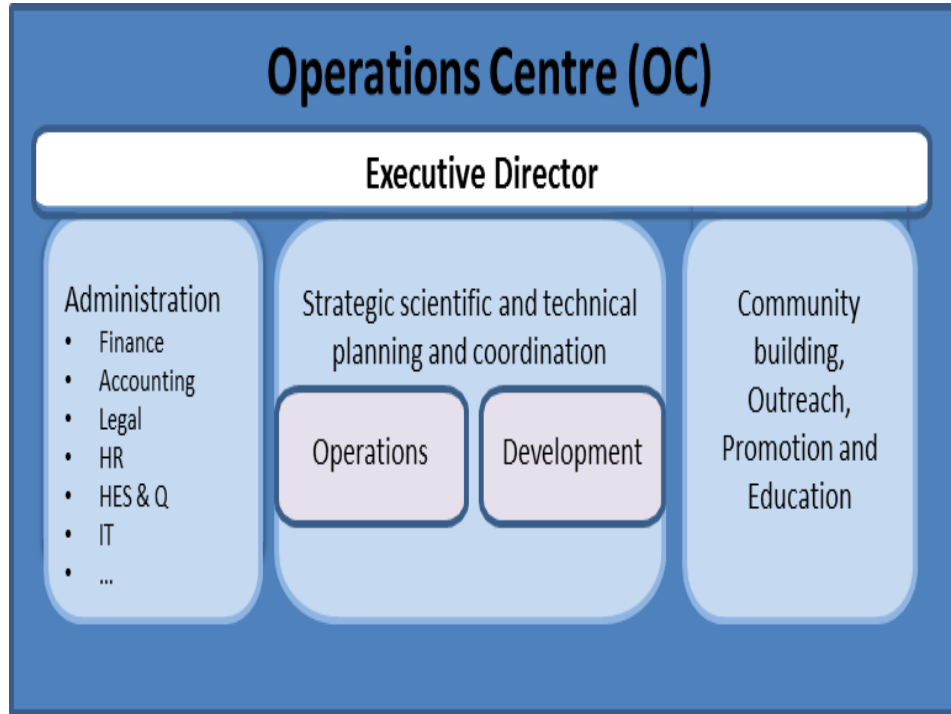


The TPRL is one of the leading centres for the study of fluid movement in ultra-low permeability rocks. The facility is well known within the research and industrial sectors for long-term high pressure experimental work and process-based in situ measurements. Focus is on multi-phase flow in natural gas reservoirs, cements and engineered clays, and their deformation behaviour. Measurements include permeability and consolidation properties; imbibition; coupled flow parameters (e.g. osmotic permeability); capillary entry, breakthrough and hysteresis; gas permeability function; drained and undrained compressibilities; and rheological (creep) and thermochemical properties. Three key areas explored are: (i) baseline characterisation of fractures, faults and discontinuities (e.g. wellbore interfaces); (ii) quantitative data for mathematical modelling of ultra-low permeability materials. Tests are designed to understand key transport mechanisms. Key equipment includes: high pressure isotropic permeameter (70 MPa); constant volume permeameter (70 MPa); high precision shear-rigs; high temperature, high pressure geochemical flow reactor (130 MPa at 140°C); novel tracer systems (nano particle injection or radiological tagging of gas) to characterise and identify potential migration pathways.

ECCSEL ERIC Functional Organisation Structure



The ECCSEL ERIC Operations Centre



Lean organization:

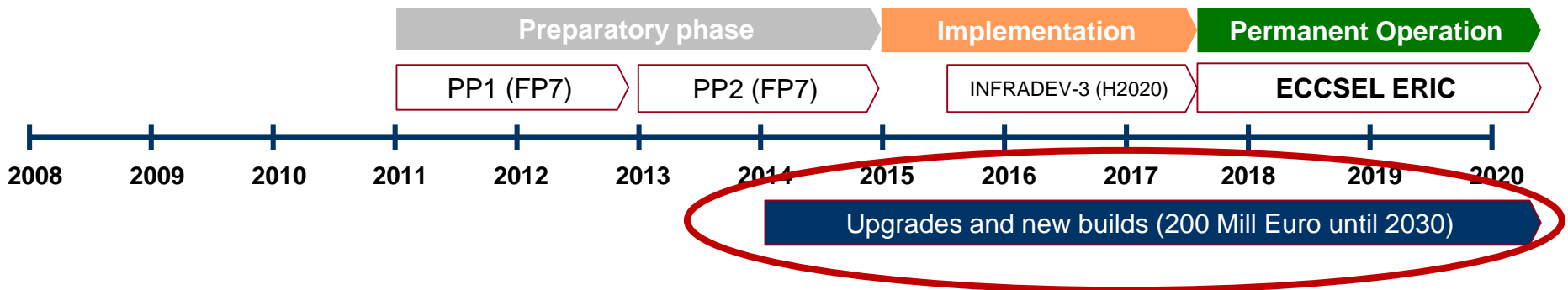
- 4-6 employees
- Annual budget \approx 850.000 EUR

Including in-kind contributions

Location:

NTNU/SINTEF Campus
Trondheim, Norway

ECCSEL ERIC Infrastructure Investments



- Already completed investments 50 – 60 mill EURO
- Another 50 – 60 mill EURO investments are in progress or committed

Upcoming H2020 RI funding opportunities for ECCSEL ERIC

1. ***INFRA SUPP-01-2018-2019: Policy and international cooperation measures for research infrastructures.***

As member of the ERIC Forum, we are currently involved in planning of a joint proposal for the first call in December.

2. ***INFRA DEV-03-2018-2019: Individual support to ESFRI and other world-class research infrastructures.***

As ECCSEL ERIC we are considering to prepare a proposal, either for the first call in December and/or next year.

Why getting involved in ECCSEL?

Easy access to ECCSEL facilities

ECCSEL provides an overview of these facilities, where they are and what their capabilities are.

Make your CCS facility an ECCSEL facility

Share your facility and get paid for it

Share your facility and learn from other users

Share your facilities and get funded for upgrades or new facilities

Join the ECCSEL network

Support to define which CCS R&D infrastructure is needed

Learn from the ECCSEL network

How to get involved in ECCSEL?

Contact the ECCSEL National Node for the Netherlands:

jan.hopman@tno.nl





Thank you for your attention!