**Carbon Capture: evoluzioni e tecnologie per la decarbonizzazione.**

# Ecospray: attività di decarbonizzazione

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Sales Manager – Marine

Rome, 27 November 2023

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# Ecospray

market leader in **EGCS for Marine engines**

a global company that is part of **Carnival Corporation**

**5% R&D** investment to turnover

**2 labs** for in-house validation of test protocols, a **3rd lab** for fuel cell tests

**800+** systems installed worldwide

**Ecospray** started in 2005 as an engineering company.

For almost 20 years we have made marine and industrial processes more sustainable with the cleaning and treatment of polluting emissions.

Today we offer a wide range of **technological solutions**, driven by the target of creating **clean energy for a zero-emission Planet** for every industry.



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# What **we do**

- Research & Development
- Design & Engineering
- Production
- Installation supervision & commissioning
- After sales support
- User training & management


Starting from **R&D** and thanks to our 360° approach, we follow our clients along the **entire value chain**.



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# our **sectors**

Our solutions enable **treatment of pollutants** in a wide range of applications: from the exhaust gases of marine engines, to the fumes of power plants, cement plants and steel plants, to those of chemical plants and waste incineration.

## marine

**Advanced air quality** systems for **SOx, NOx** and **PM** removal to meet and exceed global requirements for **air** emissions and **water**

## renewables

High performance solutions for in situ **production** & **supply** of **green fuel** and sustainable **energy**

## industry

Innovative systems for **treating emissions**, air & gas cooling and solutions for **environmental footprint reduction**



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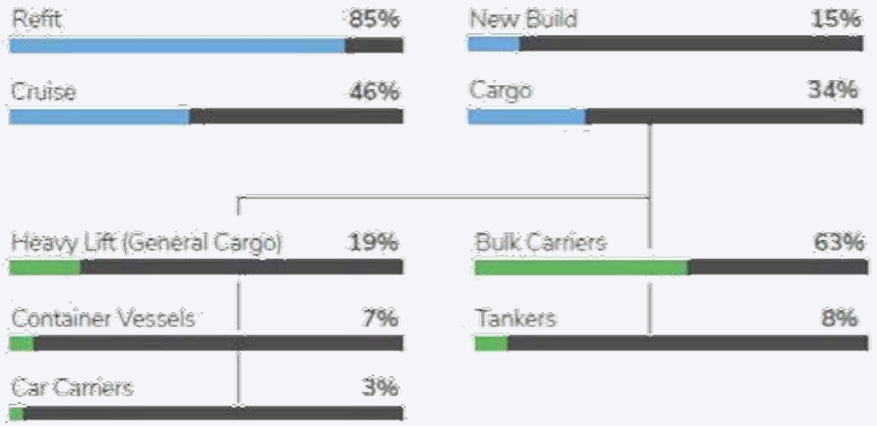
# **marine** facts and figures

Since 2005, Ecospray has developed one of the largest installed base of **EGCS** in the industry, with hundreds of thousands of hours of operation.

**market leader** in ECGS for Marine engines

**700+** systems installed worldwide




**Our portfolio per sector:** Ro-Ro e Ro-Pax, Bulk carriers, Tankers, Containerships, Multipurpose vessels, Heavy Lift.



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# our **clients**


























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# Ecospray

CapLab
ELECTROCHEMICAL CELLS

Decarbonization
and carbon capture

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Carbon capture, green power,
clean fuel and air pollution control

cem
catemission

Catalytic solutions and advanced
equipment manufacturing



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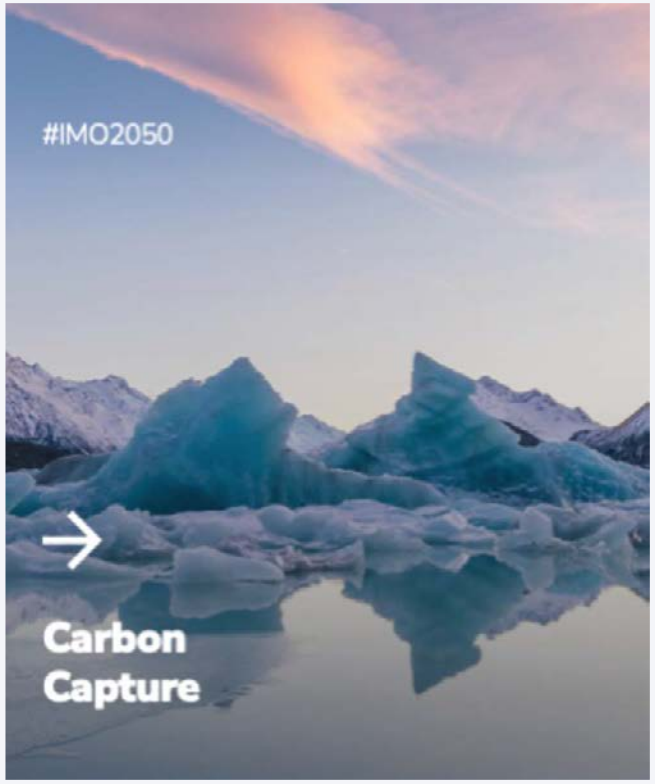
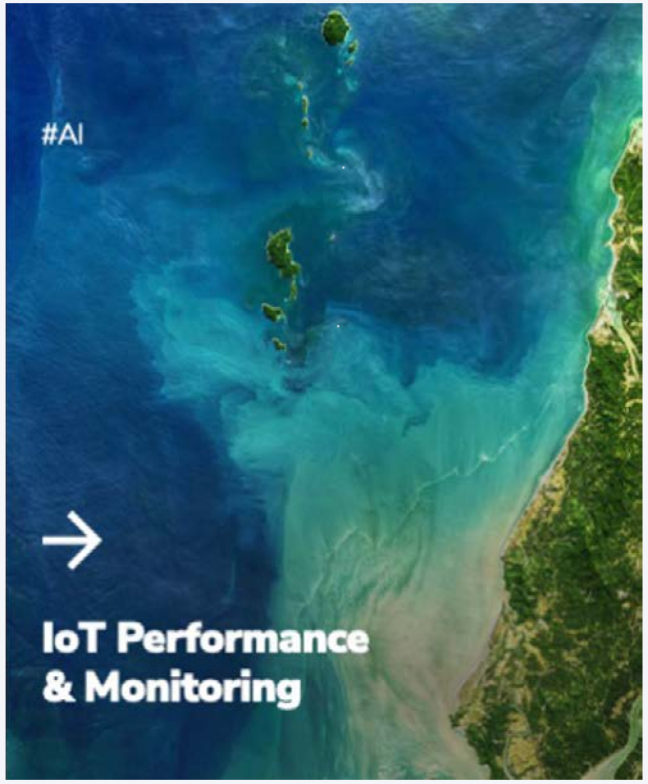
# **with you** for a Zero Emission 2050








… get ready for **decarbonization**



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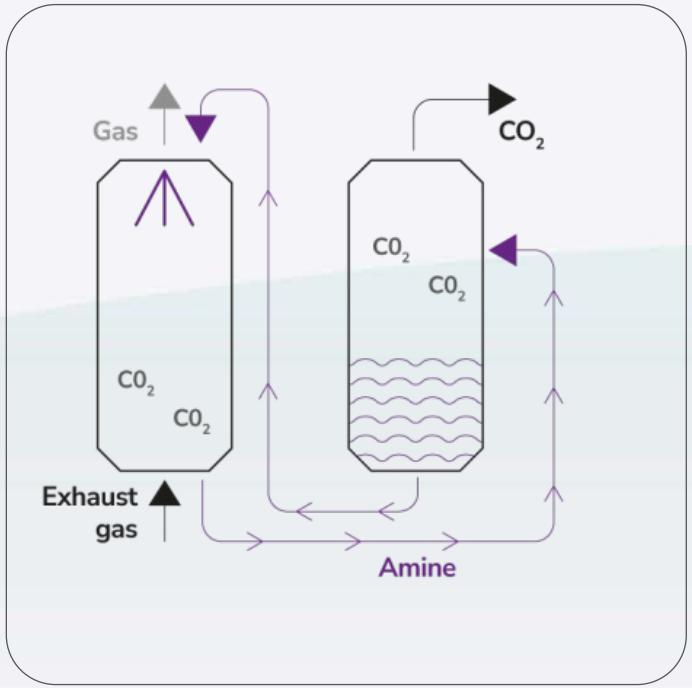
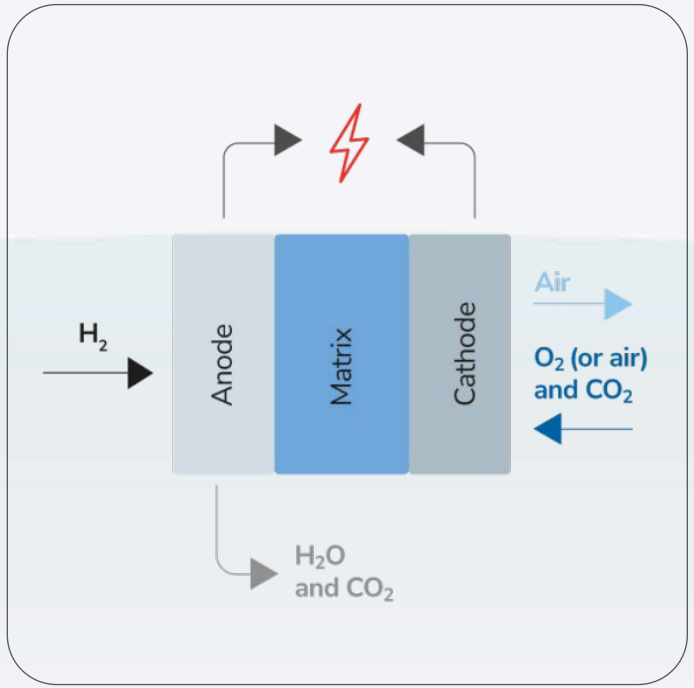
# our **Carbon Capture** technologies

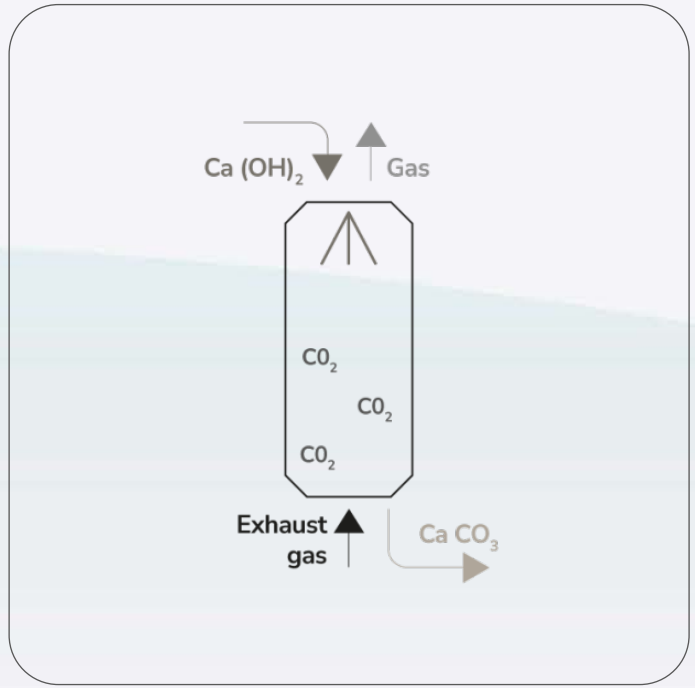
## Amines




## MCFC




## $Ca(OH)_2$

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# CapLab

CapLab
ELECTROCHEMICAL CELLS

- Shared between **Ecospray** and the Department of Civil, Chemical and Environmental Engineering of the **University of Genoa**
- Aimed to the development of Electrochemical Cells for **Carbon Capture & Energy Transition** (Molten Carbonate Fuel Cells - MCFCs)
- **Research areas**: Capture of $CO_2$, production of clean energy, production and use of hydrogen, applications in maritime and land-based sectors, integration with renewable sources.

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# **First technological results** published internationally

- R. Risso, L. Cardona, M. Archetti, F. Lossani, B. Bosio, D. Bove
  A review of on-board carbon capture and storage techniques: solutions to the 2030 IMO regulations
  (2023) Green Technologies for Energy Transition - Energies
- L. Cardona, D. Bove, R. Risso, J. F. Basbus, M. Archetti, B. Bosio
  Development of matrices for Molten Carbonate Fuel Cells
  (2023) European Fuel Cell and Hydrogen Conference, Capri, Italy
- M. Archetti, F. Bianchi, B. Bosio, D. Bovea, I. Capestro, L. Cardona, R. Risso
  CapLab: Electrochemical Cells
  (2023) European Fuel Cell and Hydrogen Conference, Capri, Italy
- B. Bosio, M. Archetti, E. Audasso, D. Bove
  Process analysis of a molten carbonate fuel cell on-board application to reduce vessel $CO_2$ emissions
  (2023) Chemical Engineering and Processing - Process Intensification
- M. Archetti, B. Bosio
  Road to Maritime Sector Decarbonization
  (2022) Progress in Marine Science and Technology
- M. Archetti, E. Audasso, B. Bosio, D. Bove
  High temperature fuel cells to reduce $CO_2$ emission in the maritime sector
  (2022) E3S Web of Conferences, 334, art. no. 04013

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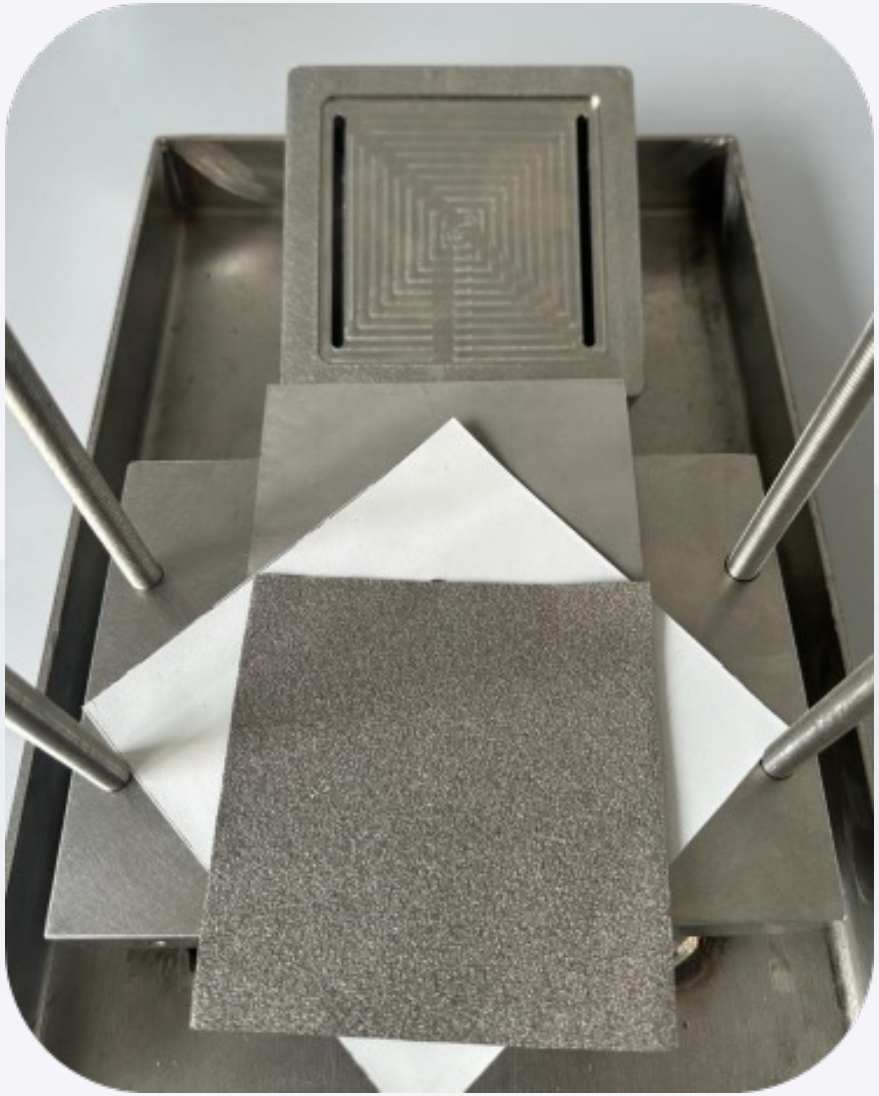
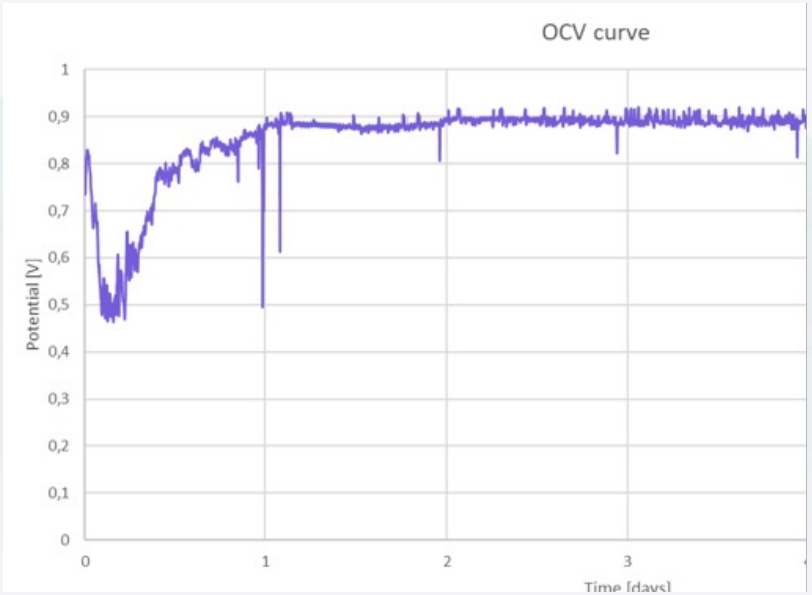
# **First technological results:** cell testing



- set-up of test facility
- around 10 single-cells tested
- use of commercial and home-made components
- new cell frame design




Courtesy of UniGe – Dicca

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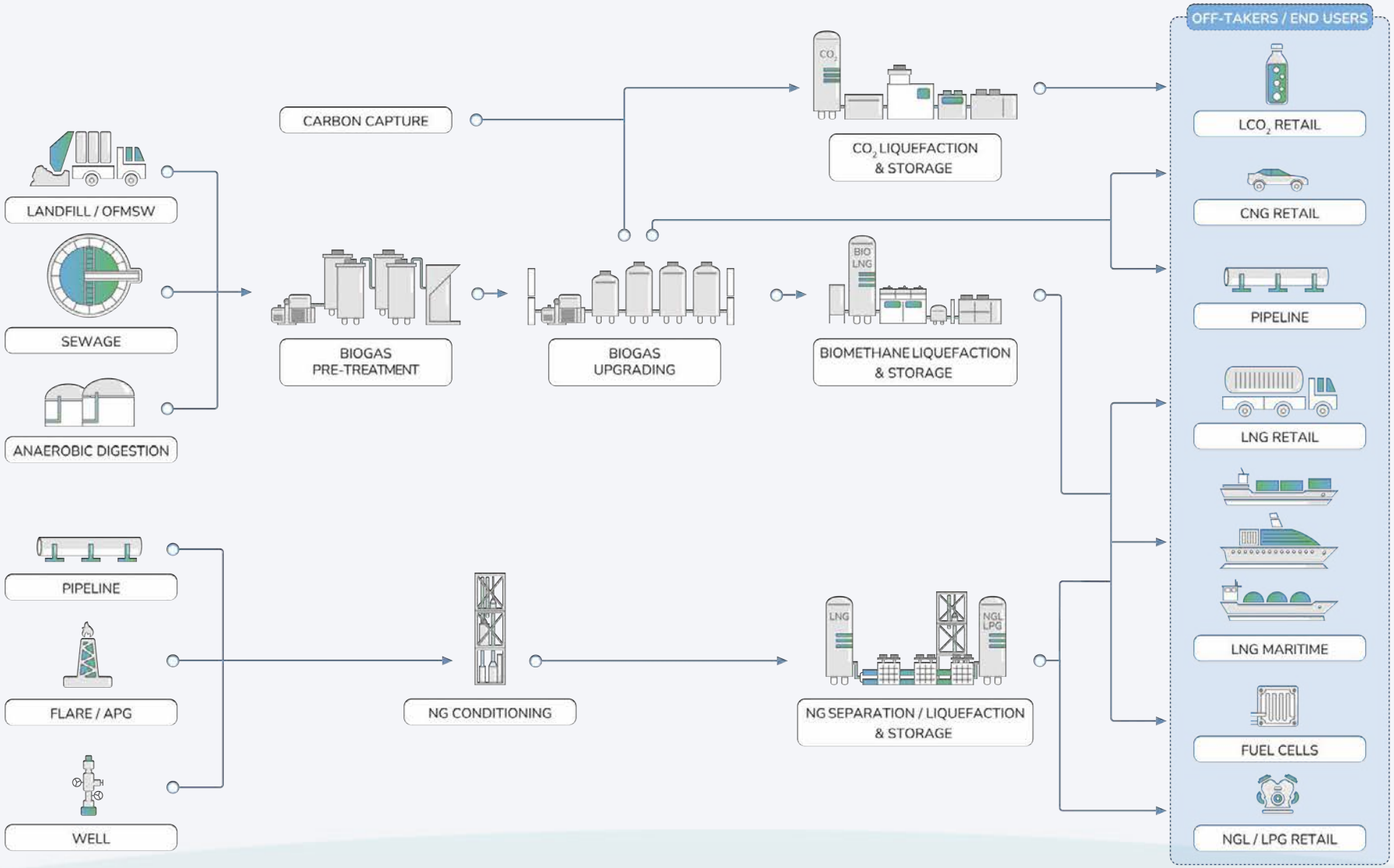
# **Ecospray** Renewable Solutions

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# **Ecospray** projects

## Bio-LNG

- #1 demo
- #1 fully operational
- #16 in construction
- #3 $LCO_2$

## Oil & gas

- #6 in construction

## Carbon Capture

- #1 demo




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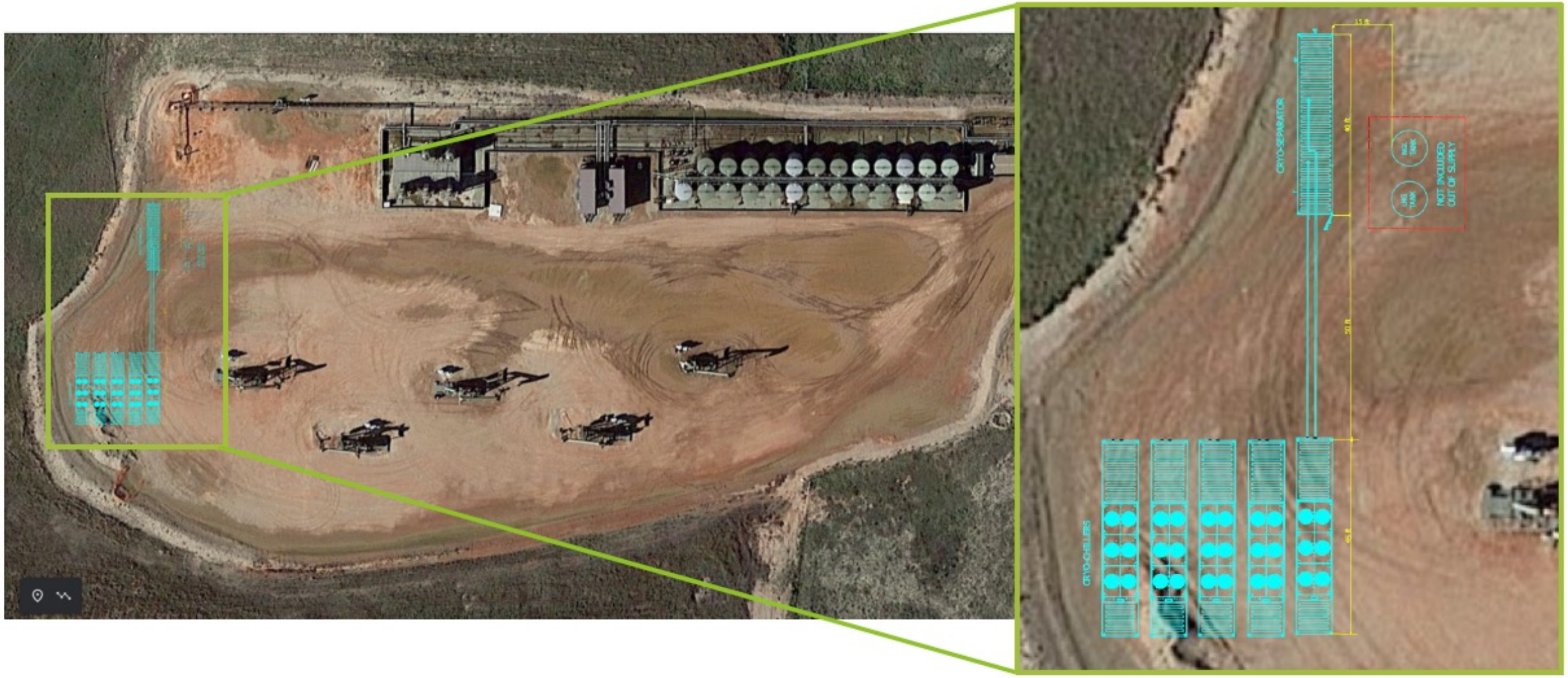
# **Biomethane** and **$CO_2$ liquefaction** & **carbon capture**



# **First application**: North Dakota (USA)

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Thank you

**Join the (R)evolution**

**ecospray.eu**

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