

# Separation First Technology - Development and Demonstration of Porous Materials for the Reduction of Carbon Dioxide in Offshore Oil Production

## Summary

Target Emission Source: **Power Generation**

Emission Reduction Strategy: **Carbon Capture**

Project Type: **Research & Development** Entry

TRL: **3**

Target TRL: **5**

Field Trial Required: **Yes**

Projected Ready By: **Phase I completed 2022;**  
**Phase II expected to be complete by 2026**

## The Project

This proof-of-concept project is exploring using metal-organic frameworks (MOFs) to separate carbon dioxide (CO<sub>2</sub>) from offshore oil and gas exhaust streams. MOFs are porous materials that can be designed at the atomic level for different applications. Having developed and pilot tested a potential MOF porous material, this project focused on developing a small-scale filtration system to separate CO<sub>2</sub> from a simulated exhaust stream.



## Benefits



Nature of MOFs allows for efficient CO<sub>2</sub> separation. Pores can be designed to interact with different gases to help remove harmful gases, and to purify gases for energy production



Filtration system can be scaled up to real-world offshore applications



Inexpensive and easy to manufacture

## Opportunities & Next Steps

Seeking funding to demonstrate field trials and direct air capture of CO<sub>2</sub> to reduce the already high CO<sub>2</sub> levels in the atmosphere

Coupling separation and storage/upconversion technologies for CO<sub>2</sub> storage and utilization

Expand on CO<sub>2</sub> separation for methane/purification of methane