

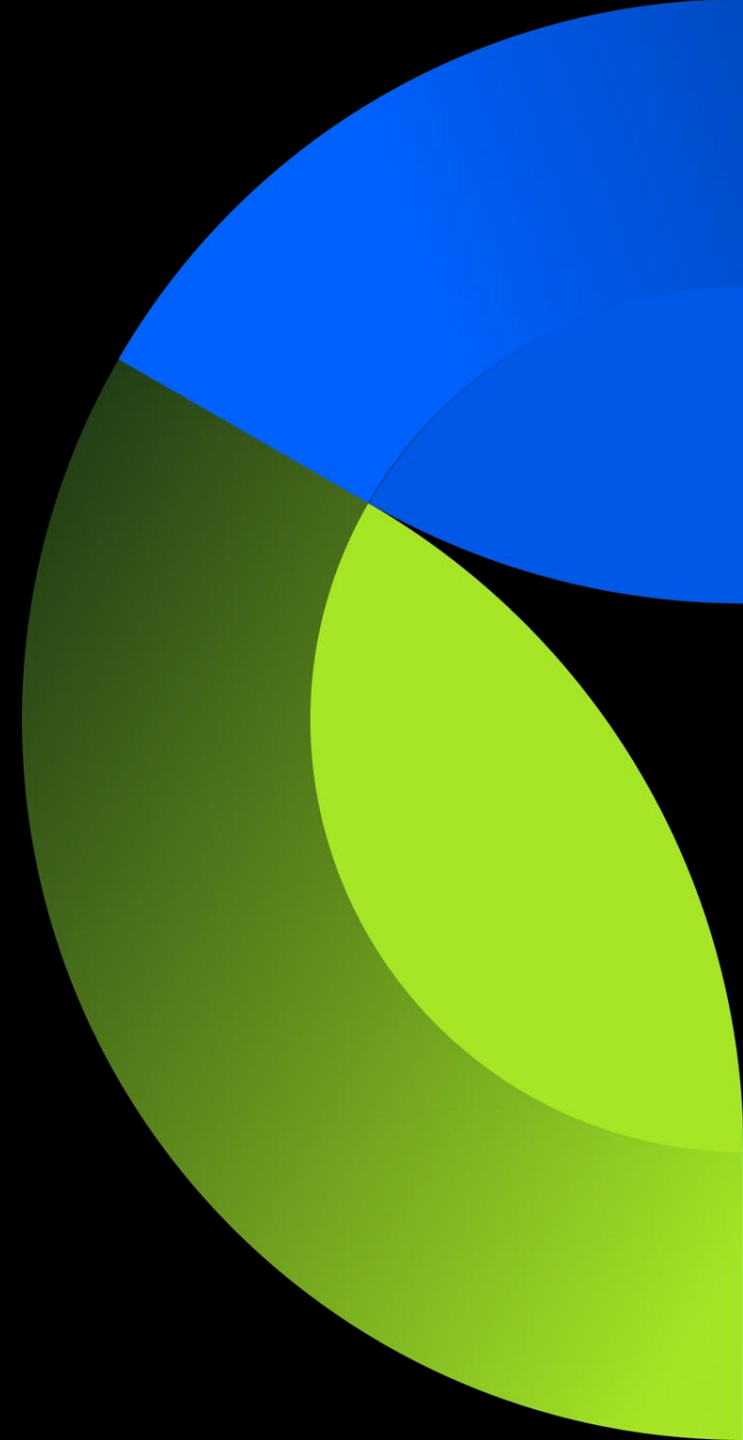


Intensified Process for CO₂ Capture from Ship Engine Flue Gas

281301 (SBIR)

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Susteon Inc.

2024 FECM/NETL Carbon Management Research Project Review Meeting
August 5 – 9, 2024



Project Overview

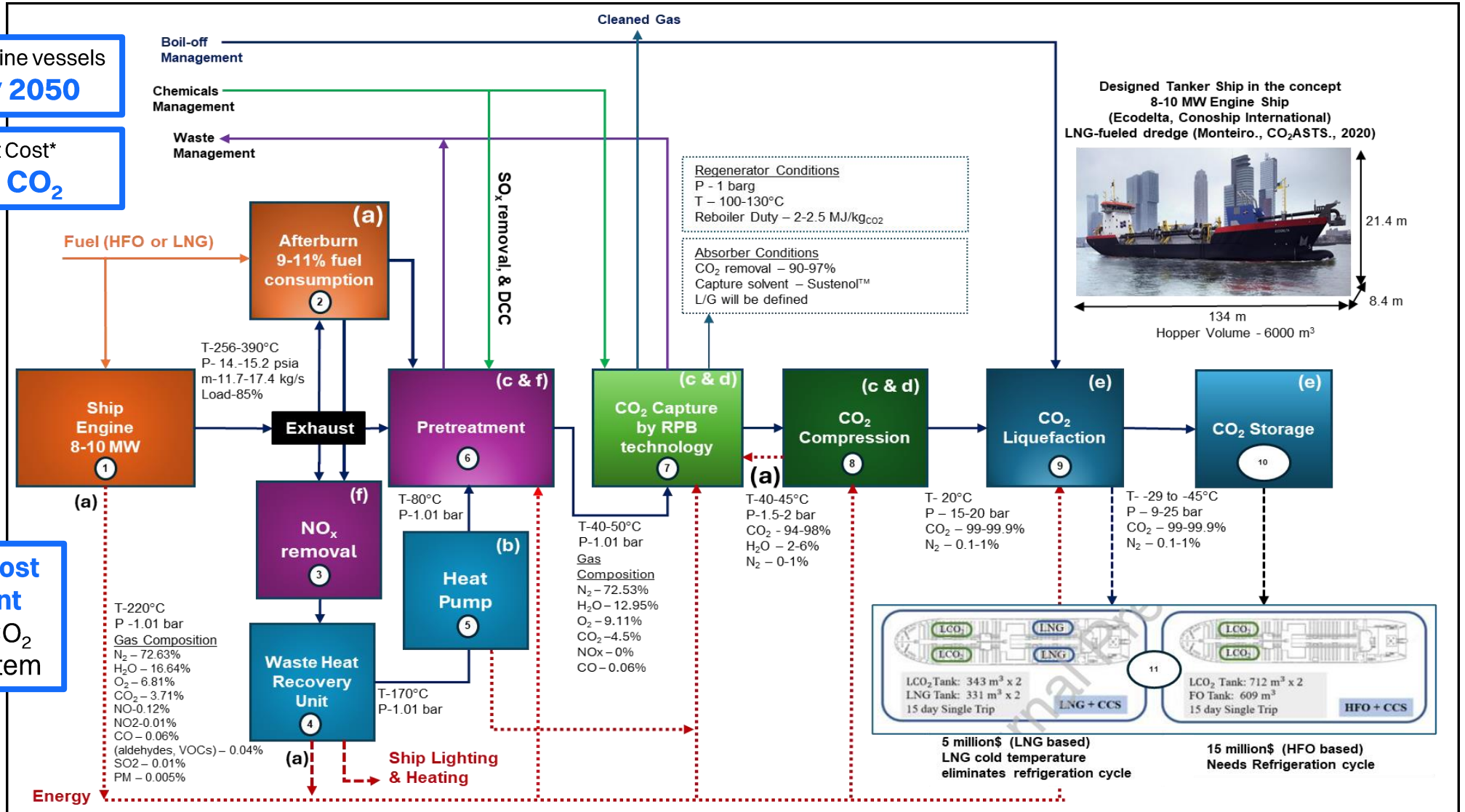
Title	Intensified Process for CO₂ Capture from Ship Engine Flue Gas
Award No.	281301
Period of Performance	07/22/2024 - 04/21/2025
Project Funding	DOE: \$256,500
Overall Project Goal	Simulate an onboard CO ₂ capture (OCC) process using a rotating packed bed (RPB) with Susteon's high-performance Sustenol™ solvent
Project Participants	Susteon Inc.
DOE/NETL Project Manager	Mr. Dylan Leary (SBIR Topic Manager) Ms. Mariah Young (Project Manager)

Technology Background

CO₂ emissions from marine vessels
1.6 Gt./year by 2050

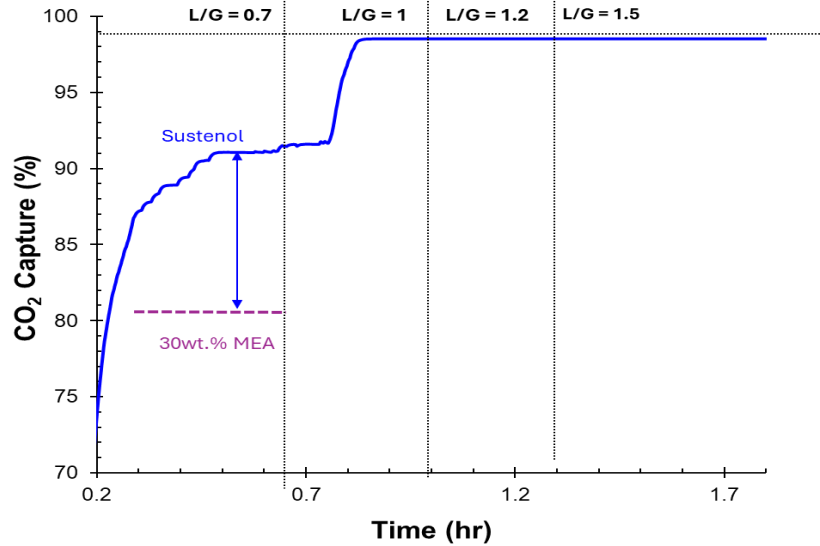
Current Abatement Cost*
\$100-290 \$/t. CO₂

Need for **a lower cost** and **more efficient** marine onboard CO₂ capture (OCC) system



Technology Approach

1 Highly Efficient Solvent System

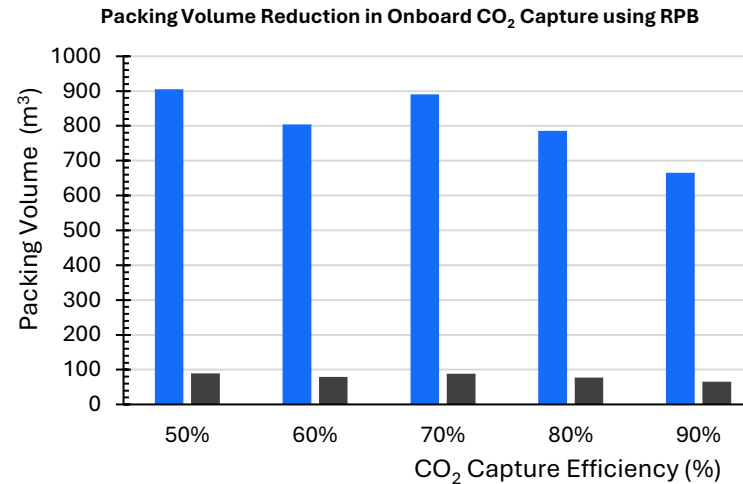
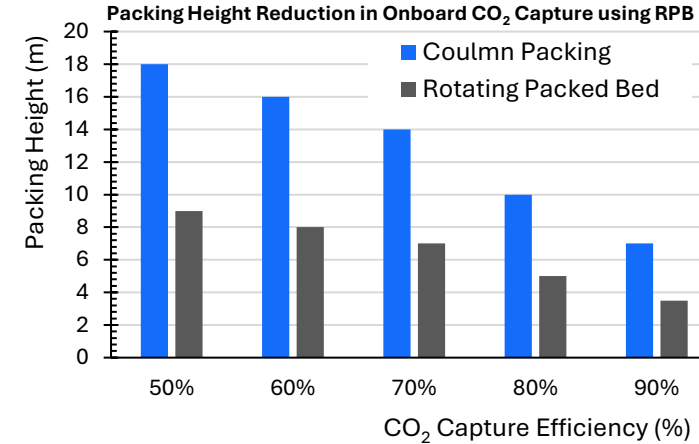


Optimized Sustenol™ Performance			
L/G ratio	0.7	1.0	1.2
CO ₂ capture (%)	92.5	98.5	98.5
CO ₂ loading (mol _{CO2} /mol _{alk})	0.443	0.408	0.335
30 wt.% MEA Performance			
L/G ratio	0.7		
CO ₂ capture (%)	83		
CO ₂ loading (mol _{CO2} /mol _{alk})	0.25		

50-60%
reduction in energy

30-40%
in CAPEX and OPEX

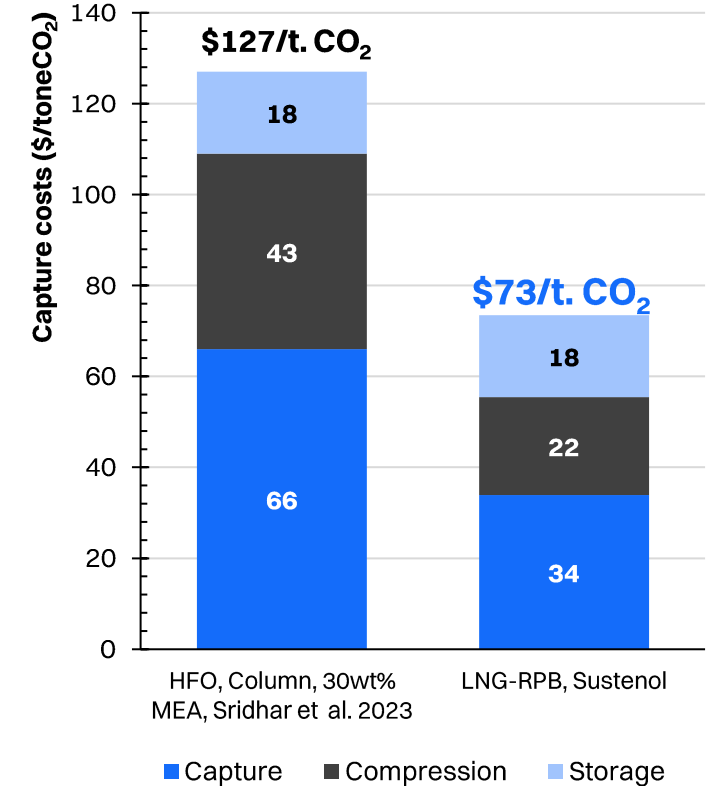
2 Intensification of Capture



21% reduction in cargo capacity loss compared to conventional packed columns

3 Lower Cost of Capture

TEA of Proposed Susteon's Concept of Marine CO₂ Capture



42% projected reduction in overall cost of CO₂ capture