

# TNO

## Solvent based CO<sub>2</sub> Capture activities

CATO event 2024

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Utrecht, 20 March 2024



# Topics discussed today:



Emission  
control



Ship based  
Carbon  
capture



High capture  
rates (98+%)

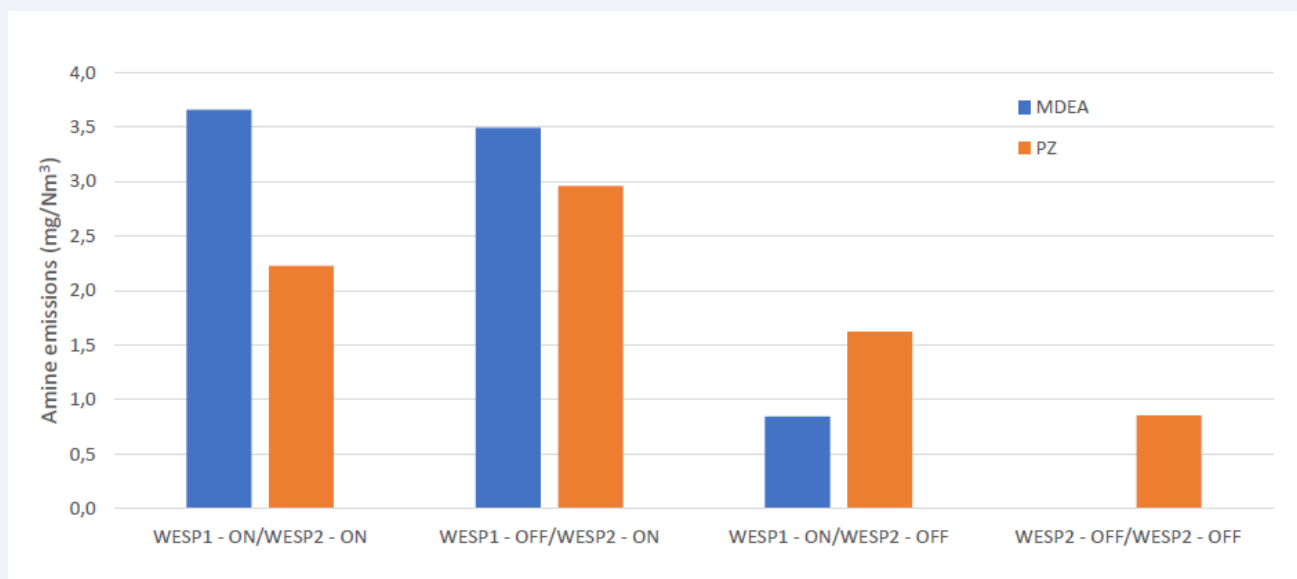


Electrification  
of CO<sub>2</sub> capture

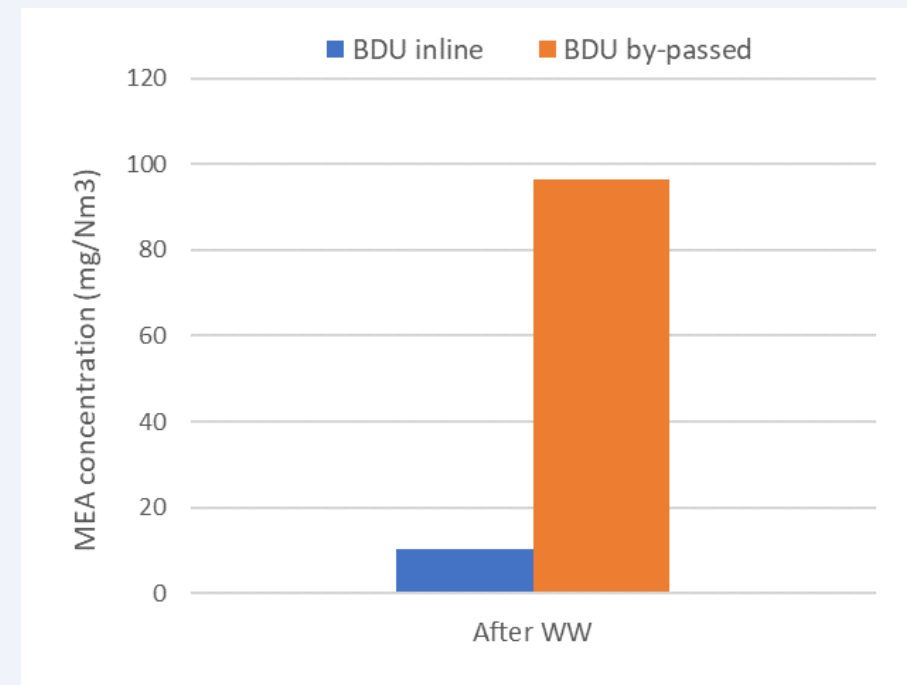


# Emissions monitoring at HVC and Twence

FTIR measurements after the absorber

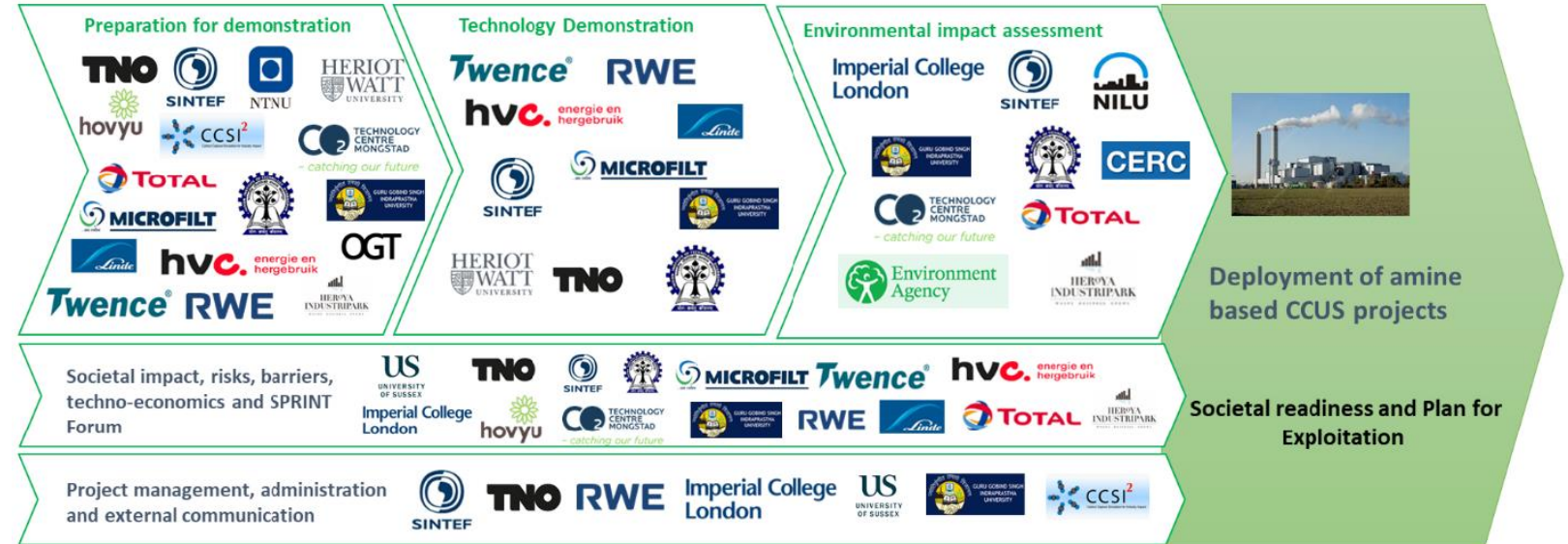


HVC: WESP increases MDEA and PZ amine emissions



Twence: MEA emissions are higher when the Brownian Demister Unit (BDU) is by-passed





## Acknowledgements

This project is funded through the ACT programme (Accelerating CCS Technologies), ACT 3 Project No 327341. Financial contributions made by the Research Council of Norway (RCN), Rijksdienst voor Ondernemend Nederland (RVO), Department for Business, Energy & Industrial Strategy UK (BEIS), Forschungszentrum Jülich GmbH, Projektträger Jülich (FZJ/PtJ) Germany, Department of Energy (DoE) USA and Department of Science and Technology (DST) India are gratefully acknowledged.

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# Ship Based Carbon Capture



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## EverLoNG wraps up first carbon capture demo onboard LNG carrier

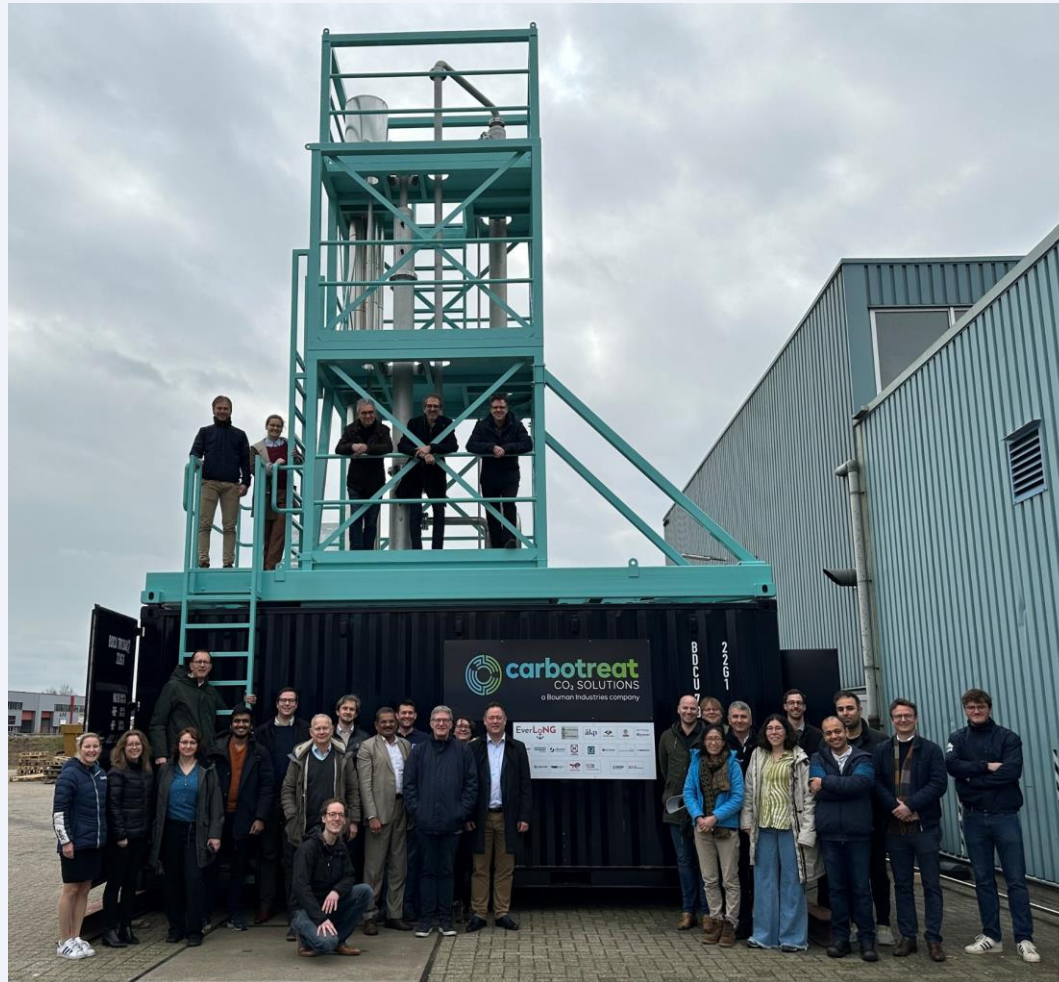
BUSINESS DEVELOPMENTS & PROJECTS

February 21, 2024, by Ajsa Habibic





# Ship Based Carbon Capture



Capture rate  
Energy demand (fuel penalty)  
Effect of ship motion on capture rate  
Effect of exhaust gas impurities on solvent lifetime  
→ Results to be published in GHGT-17 (Oct24)



# Ship Based Carbon Capture

Second demonstration campaign to start in April 2024





# Partners





# Acknowledgement

- ACT funding partners



Supported by:



Federal Ministry  
for Economic Affairs  
and Climate Action

on the basis of a decision  
by the German Bundestag



The Research Council  
of Norway



Ministerie van Economische Zaken  
en Klimaat



Department for  
Business, Energy  
& Industrial Strategy



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# DRIVE

Deep Removal of CO<sub>2</sub> &  
InnoVative Electrification concepts

**TNO**

**RWE**

**SSE**

**idmec**  
IST engenharia mecânica

**CEMEX**

**iED**

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WATT  
UNIVERSITY**

**hovyu**

**TU/e**



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**TNO** innovation  
for life

# Deep removal of CO<sub>2</sub>



## Capture rates:

- Benchmark: 95%
- Proposed benchmark: 98%
- Carbon-neutral (ca. 400 ppmv CO<sub>2</sub> outlet)
- Carbon-negative (ca. 100 ppmv CO<sub>2</sub> outlet)

## Impacts on:

- Costs (energy demand, equipment sizing)
- Solvent lifetime
- Emissions



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**Thank you for your attention!**