

CARBON CAPTURE TECHNOLOGIES PROGRESS TO LARGE-SCALE TESTING AT TECHNOLOGY CENTRE MONGSTAD IN NORWAY

Long-term realistic testing at engineering scale is crucial for advancing technologies toward meeting DOE carbon capture performance goals.

THREE NEXT-GENERATION, POST-COMBUSTION CARBON DIOXIDE CAPTURE PROJECTS HEADING FOR LARGE-SCALE TESTING

Three next-generation, post-combustion carbon dioxide (CO₂) capture technologies, matured and de-risked by DOE, are slated for extended engineering-scale testing with actual flue gas at the Technology Centre Mongstad (TCM) in Norway via international collaboration.



Transformational Non-Aqueous Solvent-Based CO₂ Capture Process Testing at 10 MWe

TCM's existing 10 MWe amine-based CO₂ absorption facility will be modified by Research Triangle Institute (RTI) International to test their amine-based, non-aqueous solvent process. RTI, with support from Pressura AS, completed a Front-End Engineering Design study and developed cost estimates for installation of a CO₂ absorber intercooler and associated tie-ins to the seawater cooling system, addition of a forced recirculation pump to the thermosyphon reboiler, and tightening of the water wash section to reduce process emissions.



PARTNERS



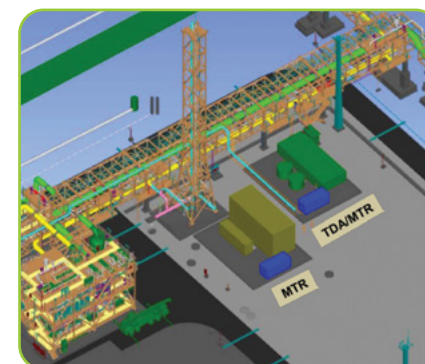
TDA RESEARCH, INC. AND MEMBRANE TECHNOLOGY AND RESEARCH, INC. (MTR) TEST 1 MWE MODULAR SYSTEMS

TDA and MTR will engineer and integrate 1 MWe modular systems at TCM's dedicated test bay to test their membrane-sorbent hybrid and advanced Polaris™ membrane processes. Data generated by modular systems is directly applicable to the design of full-scale systems.



Hybrid Membrane-Sorbent System for Post-Combustion CO₂ Capture

The hybrid process integrates MTR's polymeric membrane and TDA's low-temperature physical adsorbent. The polymer membrane removes the bulk of the CO₂ across a relatively low-pressure gradient, reducing the power consumption and cost of capture. The membrane residue gas is further treated by the sorbent, ensuring greater than 90 percent CO₂ capture overall.



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Advanced Polaris Membrane CO₂ Capture Technology



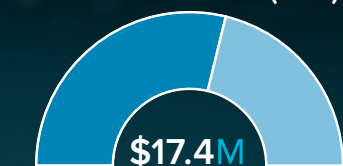
MTR's membrane-based capture system uses advanced membranes and compact, low-pressure-drop plate-and-frame modules contained in a modular unit that can be repeated in future commercial systems at low cost.

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PROJECT BUDGETS

AWARD NUMBER
DE-FE0031590 (RTI)



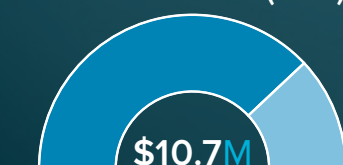
● DOE \$10,013,513
● PERFORMER \$7,371,000

AWARD NUMBER
DE-FE0031603 (TDA)



● DOE \$9,198,799
● PERFORMER \$2,299,725

AWARD NUMBER
DE-FE0031591 (MTR)



● DOE \$8,166,304
● PERFORMER \$2,579,429

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