

**Carbon Sequestration Leadership Forum**

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# **Highlights from CSLF Technical Group Meeting**

**Trygve Riis**

Technical Group Chairman



# Reviewed and Endorsed Norcem CO<sub>2</sub> Capture Project

presentation to Technical Group made by:  
Liv Bjerger | Norcem CO<sub>2</sub> Capture Project Manager

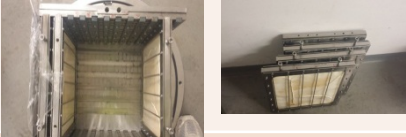
# Highlights from Technical Group Meeting



## Reviewed and Endorsed Norcem CO<sub>2</sub> Capture Project

- Nominated by Norway and Germany
- Pilot-scale project located in southern Norway
- Establishes a test centre for post-combustion CO<sub>2</sub> capture technologies on cement flue gas
- Funded by Norway's CLIMIT program
- Project will help to determine feasibility of implementing CCS with modern cement kiln systems

# The four post-combustion capture technologies

Technology	Provider/ Developer	Comments
<p>Amine Technology 1st gen. Mobile test unit (MTU) - Capacity: 2000 t CO<sub>2</sub>/year</p>	<p>Aker Solutions</p> 	<ul style="list-style-type: none"> <li>• 6 months test program (May – Oct 2014)</li> <li>• 90% capture, RBD: ~3,0-3,2 MJ/kg CO<sub>2</sub></li> <li>• Low degradation, low emissions</li> <li>• <u>Next step:</u> Commercialization?</li> </ul>
<p>Membrane Technology 3<sup>rd</sup> gen 20'' test pilot, Membranes from NTNU</p>	<p>DNV KEMA, NTNU &amp; Yodfat Engineers</p> 	<ul style="list-style-type: none"> <li>• 6 months test program (May-Oct)</li> <li>• Capture Performance: 60-70 % CO<sub>2</sub></li> <li>• <u>Next step:</u> On hold!</li> </ul>
<p>Solid Sorbent Technology 3<sup>rd</sup> gen Bench scale Fluidized bed unit Poly-imide based sorbent</p>	<p>RTI</p> 	<ul style="list-style-type: none"> <li>• 3-months test program (Apr-Jun 2014)</li> <li>• Sorbent loading: 5-7 wt%</li> <li>• <u>Next step:</u></li> <li>• 3-floor pilot (2016)</li> <li>• Long term performance testing</li> <li>• New sorbents (sorbent loading: 9-11 wt%)</li> </ul>
<p>Calcium Looping 2<sup>nd</sup> gen Test campaigns with 200 kWth pilot (University Stuttgart)</p>	<p>Alstom Power</p> 	<ul style="list-style-type: none"> <li>• 1 year program</li> <li>• Limestone from Norway</li> <li>• Limestone reactivity/ degradation over time</li> <li>• <u>Next Step:</u></li> <li>• Not decided but logical next step - larger demonstration pilot to be tested on real conditions</li> </ul>

# Other Highlights from Technical Group Meeting



- Developed plan for creating Technology Roadmap progress report in time for 2015 CSLF Ministerial Meeting
- Propose that Norway and Canada co-lead joint task force on Supporting Development of 2nd and 3rd Generation Carbon Capture Technologies
  - Other TF members are USA, Japan, EU, UK, Korea, and IEAGHG

# Other Highlights from Technical Group Meeting



- Task Force on Sub-Seabed CO<sub>2</sub> Storage will have final report by next CSLF Meeting (June 2015)
- Technical Group will not form new task forces in the following areas:
  - CCS with Industrial Emissions Sources
  - Energy Penalty Reduction
- Task Force on CO<sub>2</sub> Storage Efficiency in Deep Saline Aquifers will author paper for the *Journal of Greenhouse Gas Technologies*

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Comments welcome!