

Hollow fibre membrane modules show promise for carbon capture

4 March 2014, by Tony Steeper

CO₂CRC researchers at the University of New South Wales have installed a custom built rig at Delta Electricity's Carbon Capture Research Facility at Vales Point Power Station to trial new hollow fibre membranes for capturing carbon dioxide from power stations.

Hollow fibre membrane modules contain hundreds of tiny spaghetti-like tubes which maximise contact between the gas and the membrane surfaces. Flue gas passes across the outside of the tubes but only carbon dioxide passes through to the inside. A similar approach is used to purify water in some desalination plants.

"The trials are an important step in developing effective membranes for industrial scale use," says Professor Dianne Wiley, CO₂CRC Capture Program Manager.

"The new membranes are highly selective for carbon dioxide in the lab but until we trial them with real flue gas we won't see how well they stand up to industrial conditions".

The Vales Point rig is able to test three hollow fibre modules at a time, providing the flexibility to test a

range of new [membrane](#) formulations.

Currently carbon dioxide is separated from flue gas using volatile liquid solvents, which are bulky and have a significant energy cost.

Hollow fibre membranes have the potential to substantially reduce the energy required to capture [carbon dioxide](#), while having a smaller environmental and physical footprint than existing solvent systems.

The Cooperative Research Centre for Greenhouse Gas Technologies (CO₂CRC) has been developing innovative carbon capture systems since 2003.

The Vales Point trials are the latest in a long line of capture technology trials using real power station [flue gas](#), including environmentally friendly solvents, several types of new membranes and adsorbent systems.

Carbon capture and storage, or CCS, is currently the only technology that can deal with the very large quantity of CO₂ emissions from fossil fuel combustion and is a vital part of the lowest cost pathway to meeting global 2050 emission reduction targets.

Provided by Cooperative Research Centre for Greenhouse Gas Technologies

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