

# Demonstrating capture technologies

CO2CRC has developed a range of world leading demonstration facilities for applied capture, economics, engineering and process integration research. From small bench scale rigs to capture plants based at power stations, the facilities enable researchers to identify engineering issues and ways to resolve them, verify simulation results and, in many cases, trial new technologies in industrial settings using real flue gas.

CO2CRC demonstration projects undertake research into solvent, membrane and adsorbent capture technologies for both post- and pre-combustion capture.

## UNO MK 3

The CO2CRC solvent capture team at the University of Melbourne have been developing UNO MK 3, a new potassium carbonate precipitating solvent process, since 2004.

UNO MK 3 has many advantages over conventional amine capture processes:

- » Low energy usage
- » Low overall cost
- » Low environmental impact
- » Impurity capture and production of valuable by-products
- » Application to post- and pre-combustion for all fuels including Natural Gas Combined Cycle
- » Fits in with the global potassium market life-cycle

Two demonstration projects are studying this new process.

### The UNO MK 3 Capture Plant at Hazelwood power station

- » Capturing one tonne of CO<sub>2</sub> per day from flue gas
- » Validating the significant capture cost reduction of UNO MK 3
- » Trialling both conventional and innovative absorber design
- » Larger scale plants to follow if successful
- » Funded by Brown Coal Innovation Australia (BCIA) and CO2CRC partners, with the support of GDF SUEZ Australian Energy

## COMPLETED CO2CRC CAPTURE DEMONSTRATION PROJECTS

### The CO2CRC H3 Capture Project – post-combustion capture

Built at Hazelwood power station, this project evaluated the performance of solvent, membrane and adsorbent technologies with brown coal flue gases and assessed them for larger scale capture.

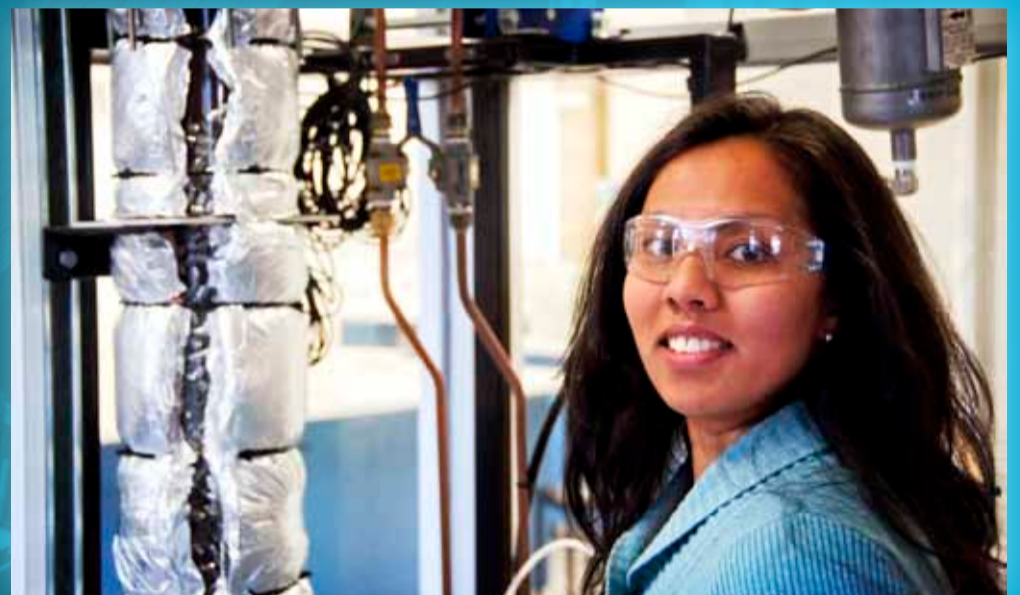
H3 solvent research made use of the 28 metre high GDF Suez solvent capture plant, the largest in Australia. Adsorbent and membrane research was undertaken through purpose-built capture rigs which are still used for research.

The project has been supported by the Victorian Government, through their Energy Technology Innovation Strategy (ETIS) Brown Coal R&D funding.



### UNO MK 3 at the University of Melbourne

- » 200 kg/day CO<sub>2</sub> capture rig
- » Highly flexible - process can be studied, varied and optimised
- » Data helps design further trials at Hazelwood power station
- » Funded by ANLEC R&D and CO2CRC partners



### The CO2CRC Mulgrave Capture Project – pre-combustion capture

At the CO2CRC/HRL Mulgrave Capture Project researchers used feed gas from a research gasifier to evaluate solvent, membrane and adsorbent capture technologies, with the aim of identifying the most cost-effective for pre-combustion capture from coal gasification. Coal gasification at high temperature and pressure is one of the best routes to more efficient use of coal resources.

The project has been supported by the Victorian Government, through their Energy Technology Innovation Strategy (ETIS) Brown Coal R&D funding.

