

Pre-combustion adsorption technologies

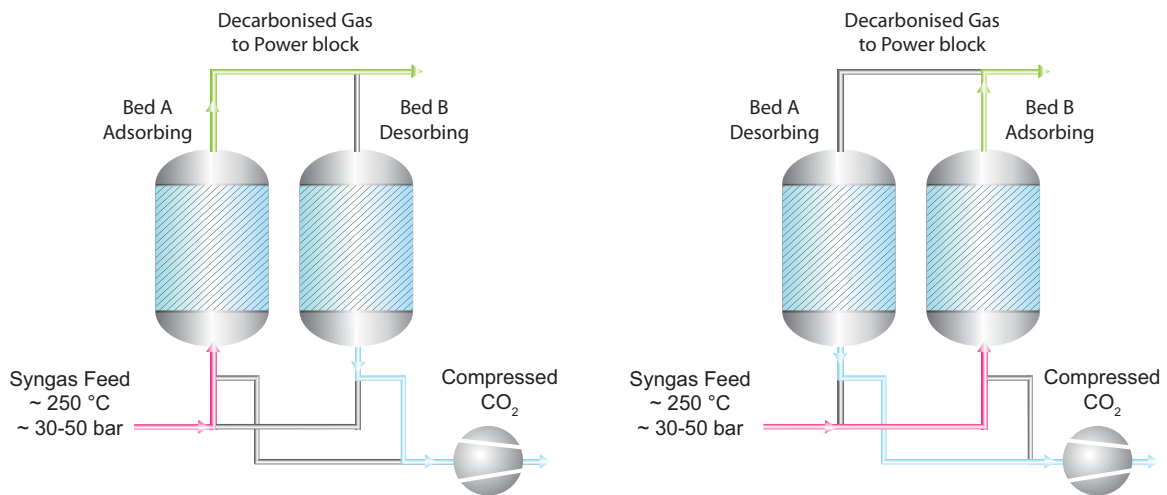
Adsorbent capture technologies for separating carbon dioxide (CO₂) from industrial gas streams have the potential to be highly cost-effective, as they require less energy and could have less impact on the environment.

Adsorbents are solids, typically minerals called zeolites, that can capture CO₂ on their surface, release the CO₂ following a change in temperature or pressure and be reused in a cyclical process.

In current CO2CRC trials, the CO₂ is released from the adsorption material by reducing the pressure. This is known as Pressure Swing Adsorption (PSA). The adsorbents are being tested at about 250°C, a much higher feed gas temperature than is possible for other gas separation technologies. This ability may lower the capture cost by reducing the need to cool the gas for capture and then reheat it for entry into the gas turbine in a power plant.

Current CO2CRC trials aim to:

- » identify and test suitable adsorbents and process conditions over a range of temperature and pressure conditions; and
- » investigate the performance of adsorbents at higher temperatures.



Two-bed adsorption cycle