

# CAPTURE, UTILISATION AND STORAGE OF CARBON DIOXIDE (CCUS)

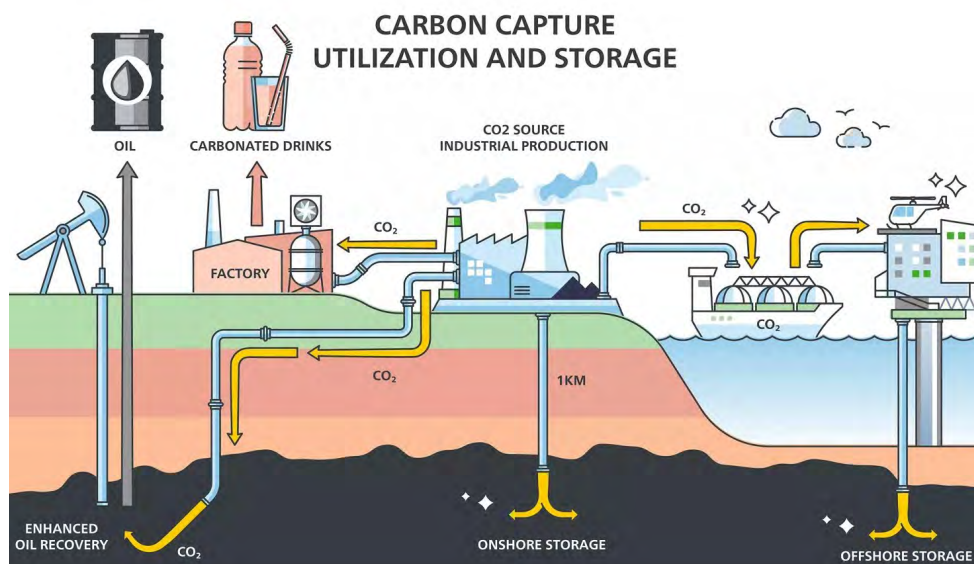
edwardsvacuum.com

## Energy-efficient, scalable and customised vacuum solutions for carbon capture technologies

Our vacuum solutions have been successfully installed in various carbon capture plants around the world. Flexible scalability, from pilot plants to complete production sites, plays a particularly important role in successful installations.

### Why choose Edwards?

- Robust and reliable operation with a broad vacuum product portfolio
- Technologies with different construction materials
- Energy efficiency and lower operating costs
- Global sales and service presence
- Application expertise



Edwards Vacuum provides solutions for the two main types of carbon capture:

- Industrial carbon capture, where CO<sub>2</sub> is captured at the point of origin, e.g. from the exhaust gases of fossil power plants, and
- Direct air carbon capture (DACC), where carbon dioxide is removed directly from the surrounding atmosphere.



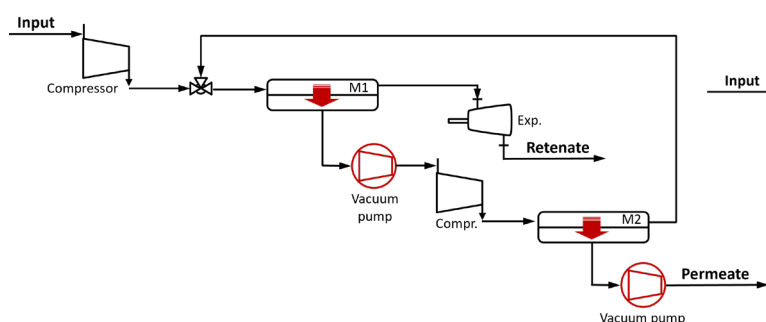
Images: Edwards liquid ring vacuum pump system (left) and GXS dry screw vacuum pump (right)

The most common carbon capture processes can be characterized in absorption-, adsorption- and membran-separation.

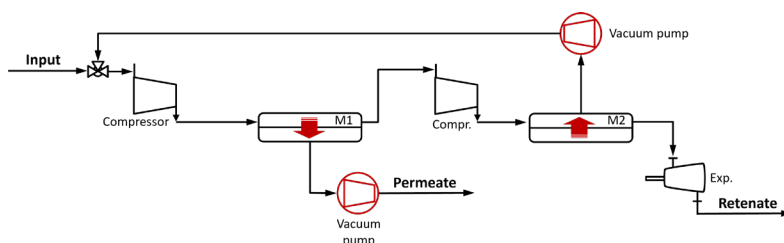
Carbon Capture Processes	Characterisation and application area for vacuum pumps
<b>Pressure swing adsorption</b>	CO <sub>2</sub> adsorption is done with a solid sorbent under normal pressure and is desorbed under vacuum.
<b>Amine scrubbing</b>	CO <sub>2</sub> from processes is adsorbed in an amine based solvent and desorbed using heat and/or vacuum.
<b>Moving bed process</b>	CO <sub>2</sub> is adsorbed in solid sorbent and will be desorbed by heat and/or vacuum.
<b>Direct air Carbon capture (DACC)</b>	Atmospheric air is circulated over an amine-based sorbent to adsorb the CO <sub>2</sub> and is desorbed by vacuum to regenerate the saturated sorbent.
<b>Membrane capture</b>	CO <sub>2</sub> is separated via a semipermeable membrane that is selective for CO <sub>2</sub> supported by differential pressure over the membrane by vacuum on permeate side or overpressure on the feed side.

## Application example: Configuration of a two stage membrane based CO<sub>2</sub> capture

Configuration example 1



Configuration example 2



### DIRECT CONTACT

Edwards GmbH Germany

Frank Achenbach - Market Sector Manager Industrial Vacuum

Phone: +49 160 7423 780

Email: frank.achenbach@edwardsvacuum.com

Website: edwardsvacuum.com/de-de



© Edwards Limited 2024. All rights reserved. Edwards and the Edwards logo are trademarks of Edwards Limited. Edwards Ltd, registered in England and Wales No. 6124750. Registered office: Innovation Drive, Burgess Hill, West Sussex, RH15 9TW, UK.