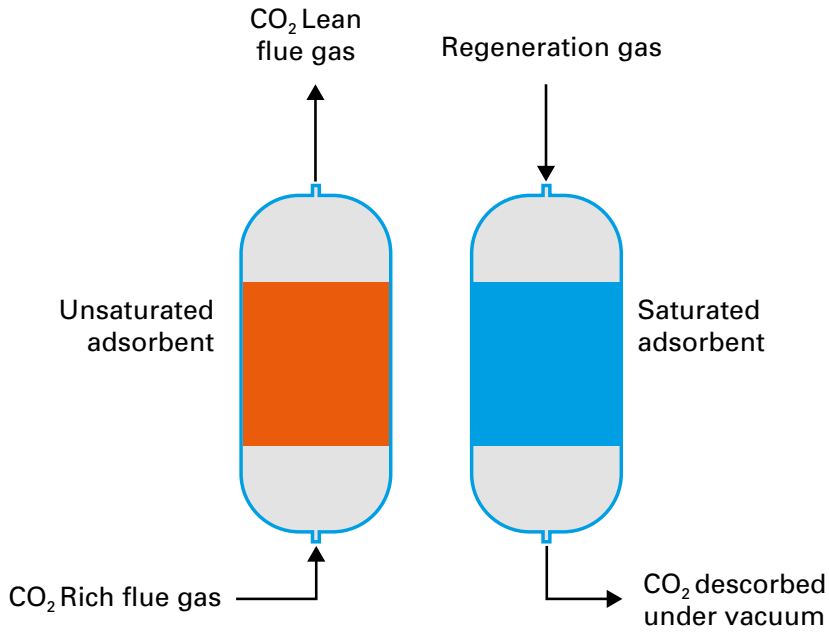
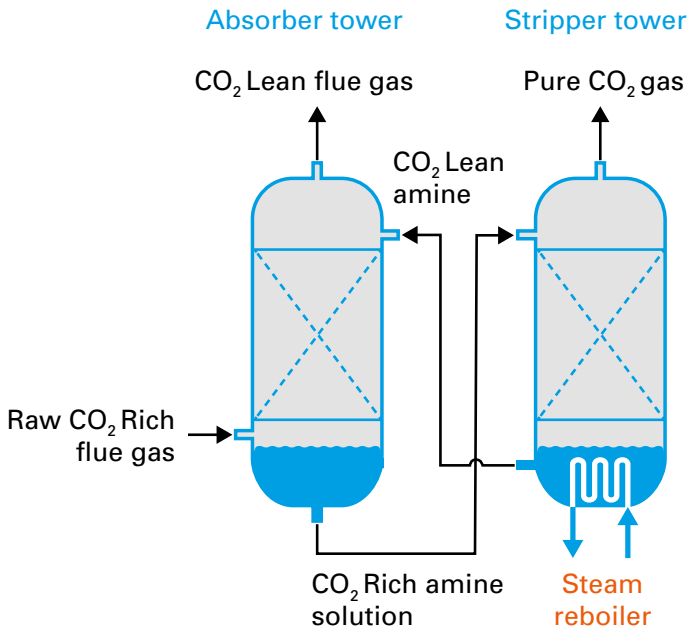
Established Carbon Capture Technology – VSA and Amine Solvent

sbh4 consulting



Change-over valves alternate the regeneration gas & the flue gas flow from one bed to the other.



	VSA – vacuum swing adsorption	Amine Solvent with tower contactors
Separation principle	Adsorption	Absorption
Specific energy demand	1.7 GJ/t_{CO2} (mostly power)	3 GJ/t_{CO2} (mostly heat from steam)
Typical temperature	40°C	40 - 60°C in absorber, 120°C in stripper
Typical pressure	Cycling between moderate pressure and vacuum	Ambient to 30 bar
Typical CO_2 removal	< 90 %	> 90 %
Typical CO_2 purity	< 95 %	> 99 %
Typical plant size (tonnes per year CO_2 removal)	> 1,000 - 500,000	40,000 - 4,000,000
Technology maturity level	Commercial with some demonstrations, eg Air Products Port Arthur SMRs, USA	Commercial from many suppliers