BRUSCHE
PROCESS TECHNOLOGY

Closing the carbon loop

Towards optimally operating carbon capture plants

CO_2 capture, storage & reuse

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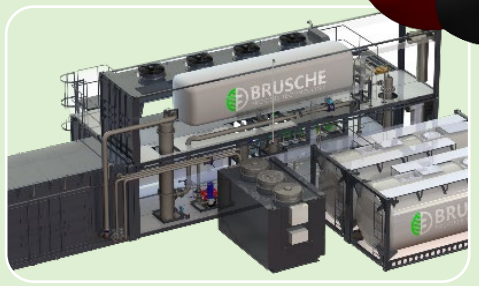
Our cleantech focus areas

Capture

Solvent-based carbon capture experience since 2014



Liquefaction

Highly efficient standardized CO_2 liquefier

Utilisation

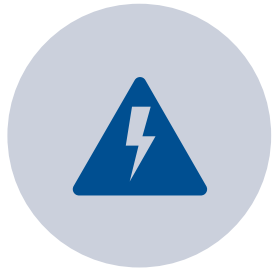
Dyna-Loop CO_2 to e-methanol technology

Technology development

Pilot- and demonstration plant services

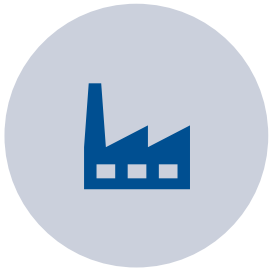
Key carbon capture design parameters

CAPTURE RATE



ENERGY CONSUMPTION

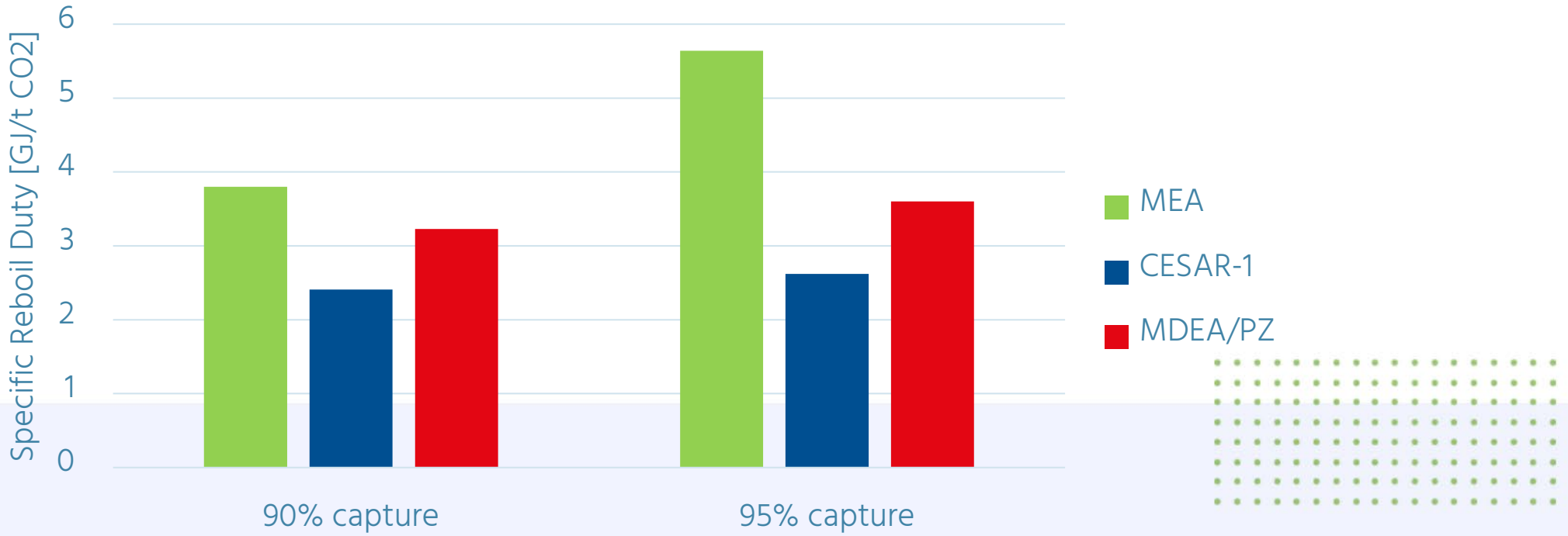
SOLVENT DEGRADATION



EMISSIONS

Capture rate

- With MEA, increasing the capture rate above 90% is costly
  - Much less so with advanced solvents, like CESAR-1



Solvent selection

Solvent	Owner	SRD [GJ/t CO_2]
MEA	Open	3.5 – 4.0*
MDEA/PZ	Open	3.2 – 3.7*
CESAR-1		
TS-1		
H3-1		
S21	Aker	2.8†
DC	Shell	2.6†

The performance of CESAR-1 is similar to that of proprietary solvents

*Own experience
†Source: Bertone et al., *Sustainability* (2024), 16, 4117.

Example project – Pilot plant OMV

Capacity

- Nominal 100 kg/h CO_2
- Wide range of flue gas flows

Flexibility

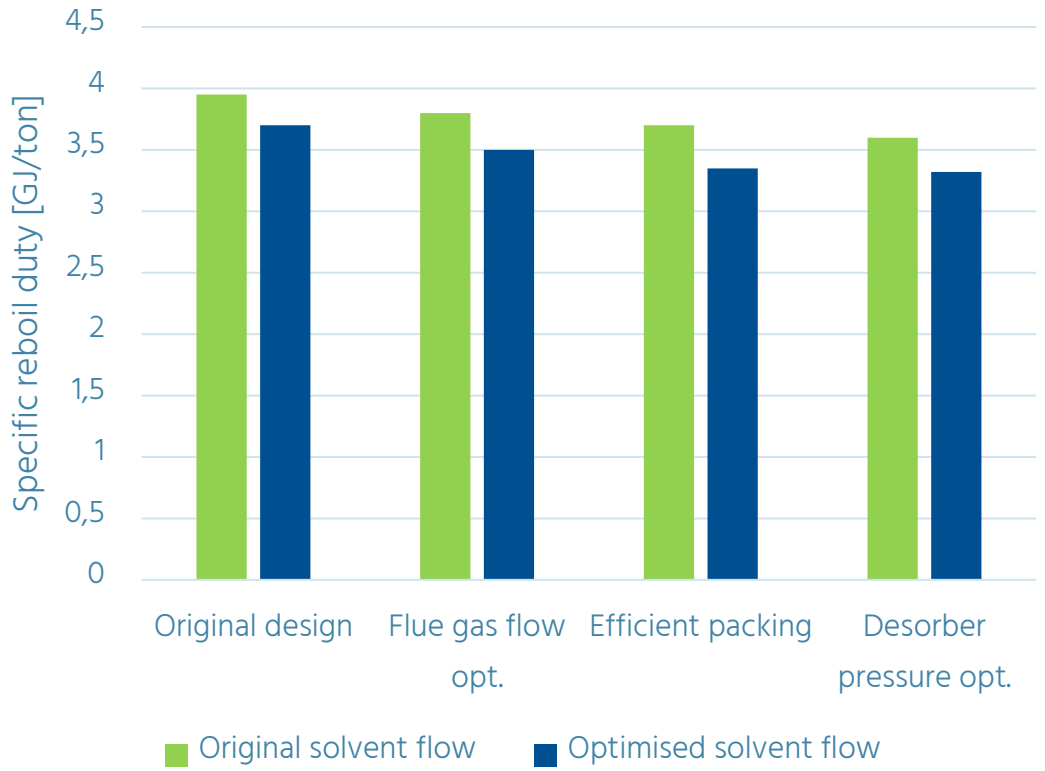
- MEA and CESAR-1 in one design
- 2.5 to 25 % CO_2 in flue gas

Quality

- Built to the highest standards
- Modular/containerized design

Example project – Carbon capture optimisation

- Simulation model describes plant performance within 20% accuracy
  - Without fitting data
- Optimisations carried out
  - Flue gas flow
  - Packing type
  - Solvent flow
  - Desorber pressure
- Results
  - Specific energy consumption decreased by 10%
  - Production increased by over 25%



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