

AKROS

AN H2APEX COMPANY

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A close-up photograph of a baby's hands playing with sand in a sandbox. The baby is wearing a light blue and white striped long-sleeved shirt. The baby's hands are cupped together, and a small amount of sand is falling from them. The background is softly blurred, showing a wooden sandbox and some toys.

H₂ STORAGE

... efficient and safe

Salt as an Energy Carrier












*Bicarbonate-Formate Cycle
for Hydrogen Storage*

KHCO_3 : Potassium Bicarbonate (SALT-)

KHCO_2 : Potassium Formate (SALT+)



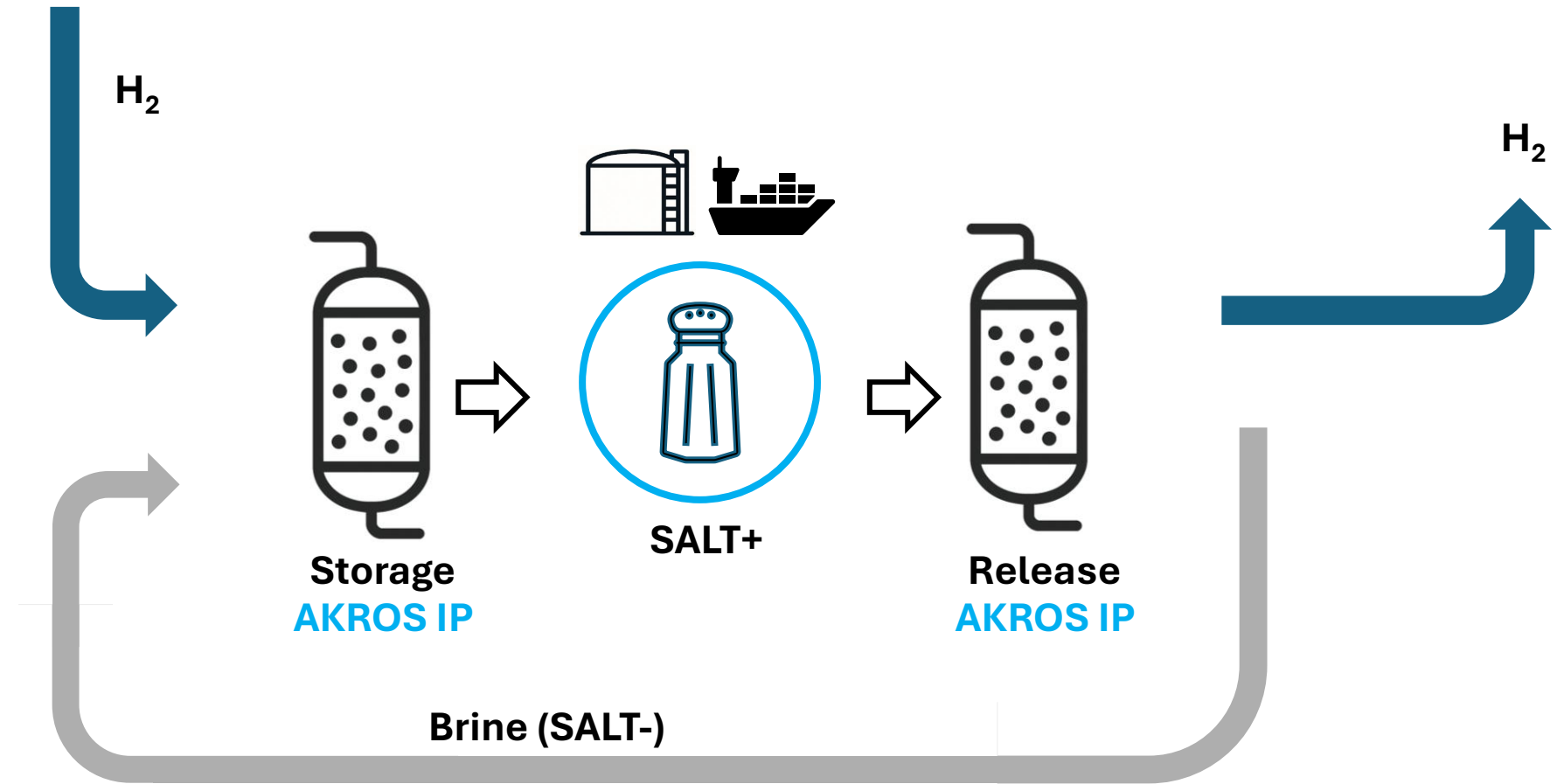
Hydrogen storage materials compared

| | Formate | Liquid H2 | Ammonia | LOHC |
|---|---|---|--|---|
| |  |   |     |   |
| Storage efficiency (round-trip) | 77% | 63% | 30% | 42% |
| Process parameters | 60 °C 0 – 30 bar | - 260 °C | 400 – 500 °C 100 – 300 bar | 300 °C 0 – 50 bar |
| H ₂ Content (wt%) | 2,4% | 100% | 17,6% | 6,5% |
| H ₂ Content (kg/m ³) | 45,5 | 70,8 | 121,0 | 65,7 |

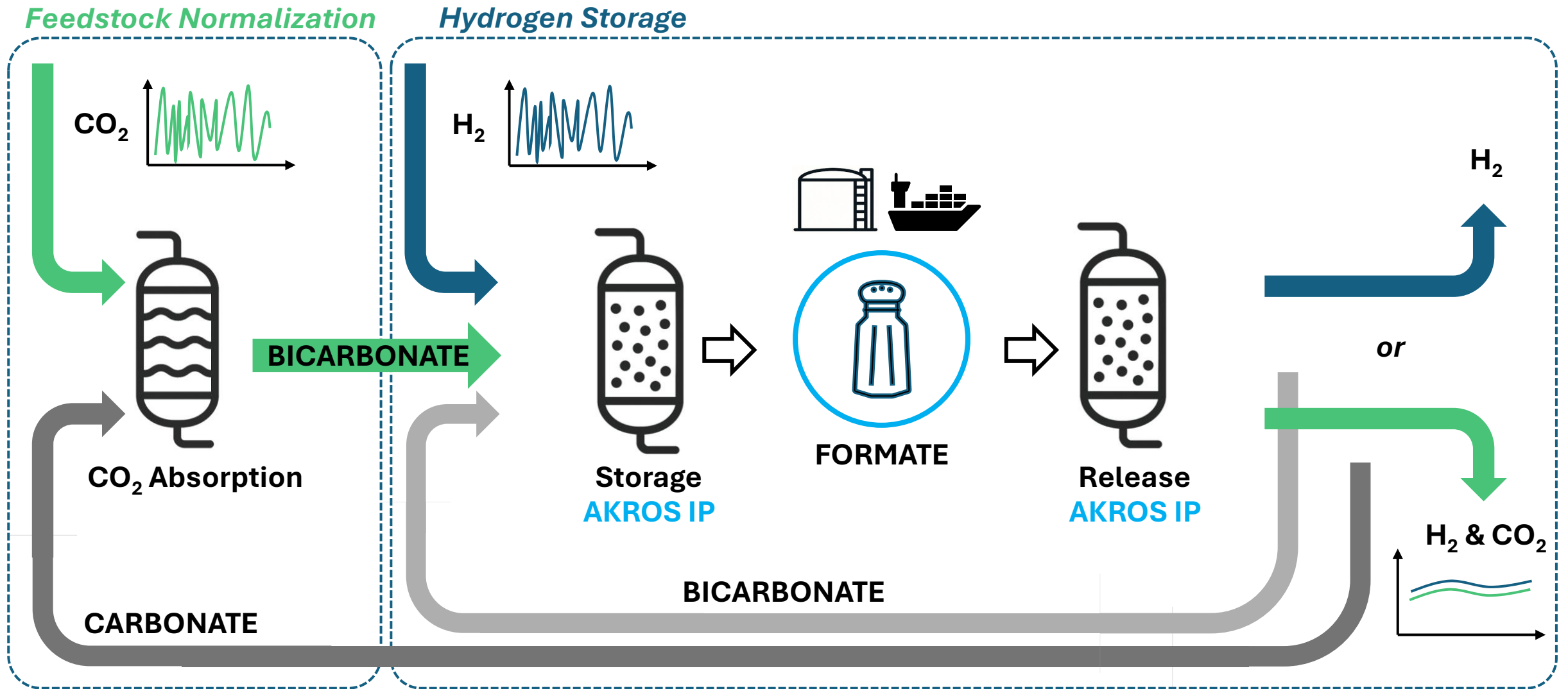
Highest efficiency, lowest handling requirements



The Process



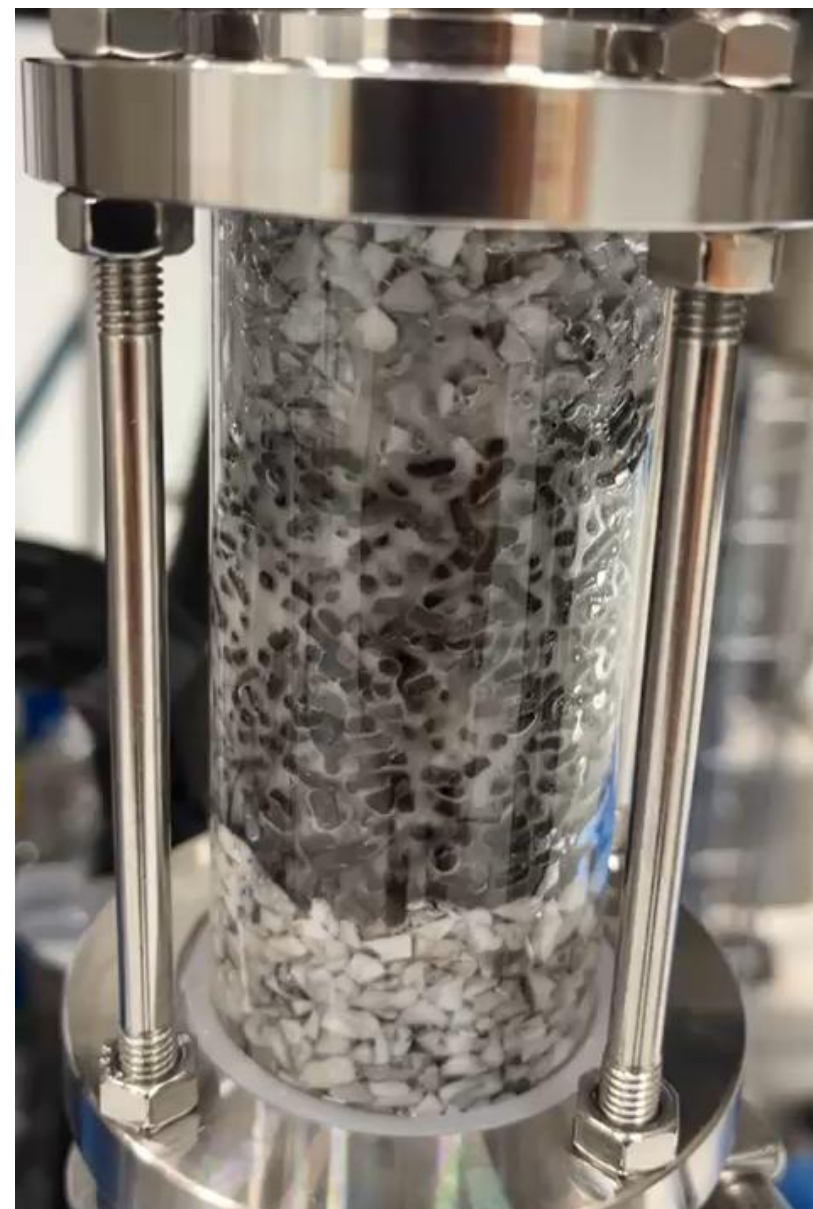
The Process Extension



How it works



Charcoal-based catalyst – key IP

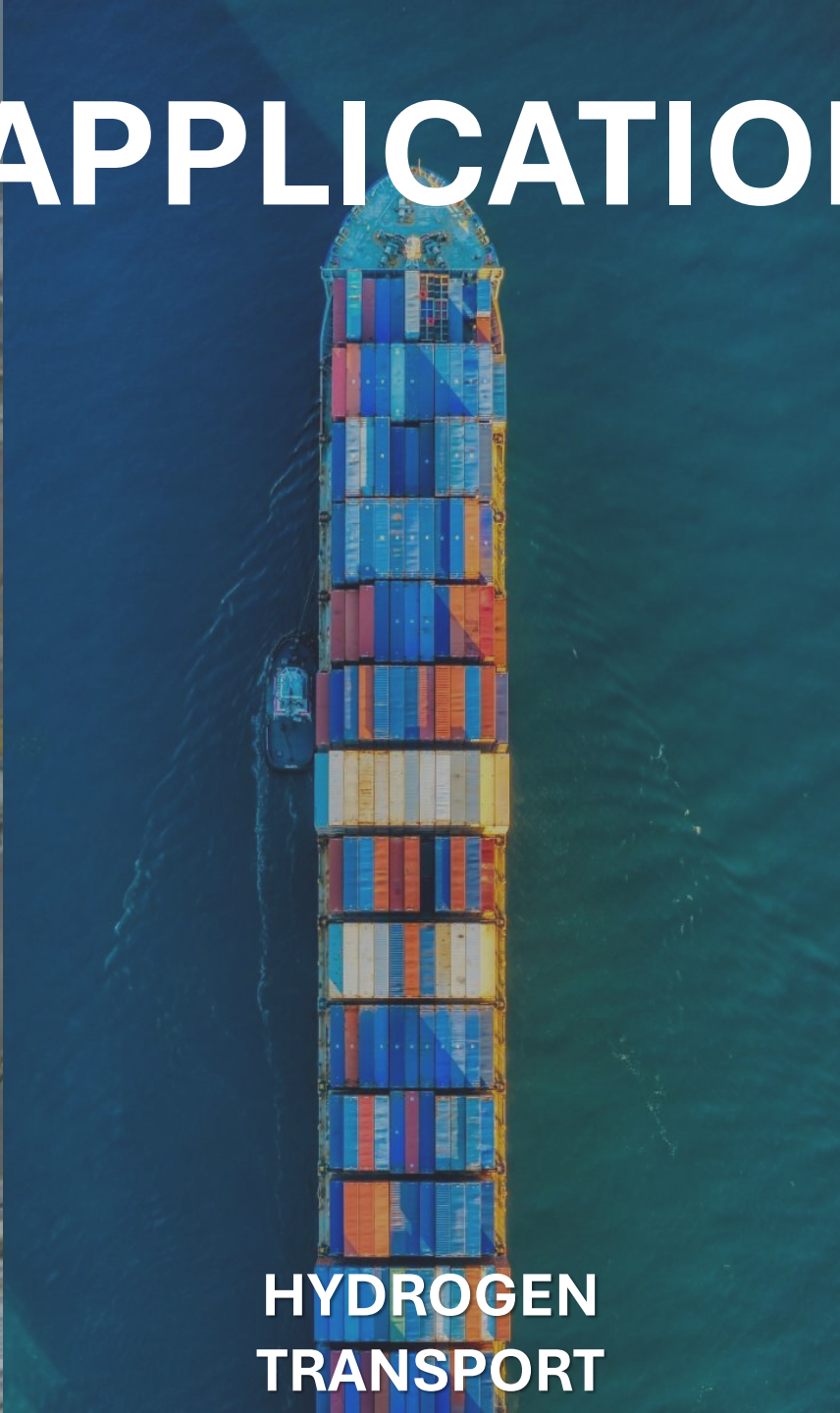


Continuous reactor – lab scale

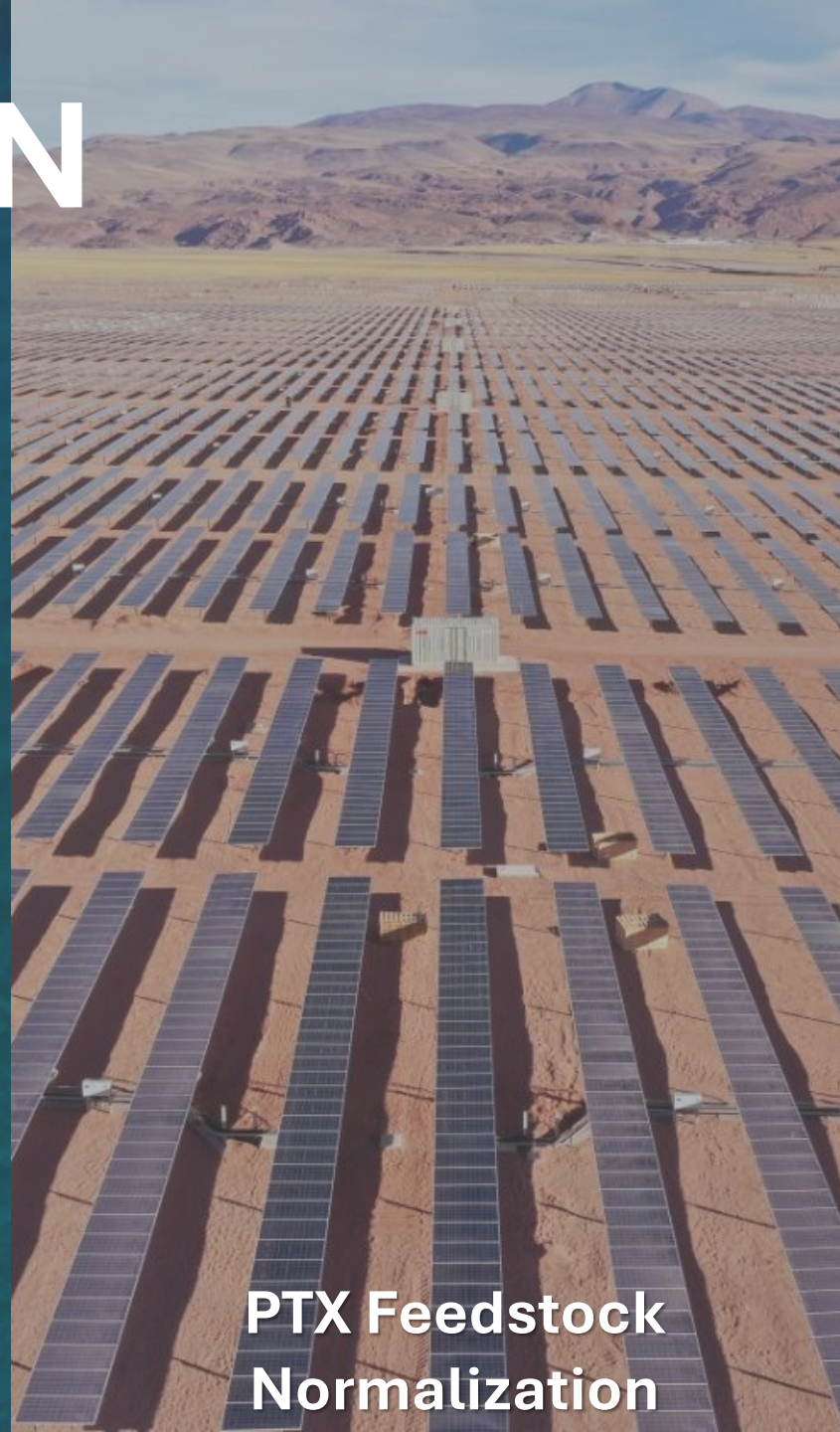
AREAS OF APPLICATION



**STATIONARY HYDROGEN
STORAGE**



**HYDROGEN
TRANSPORT**

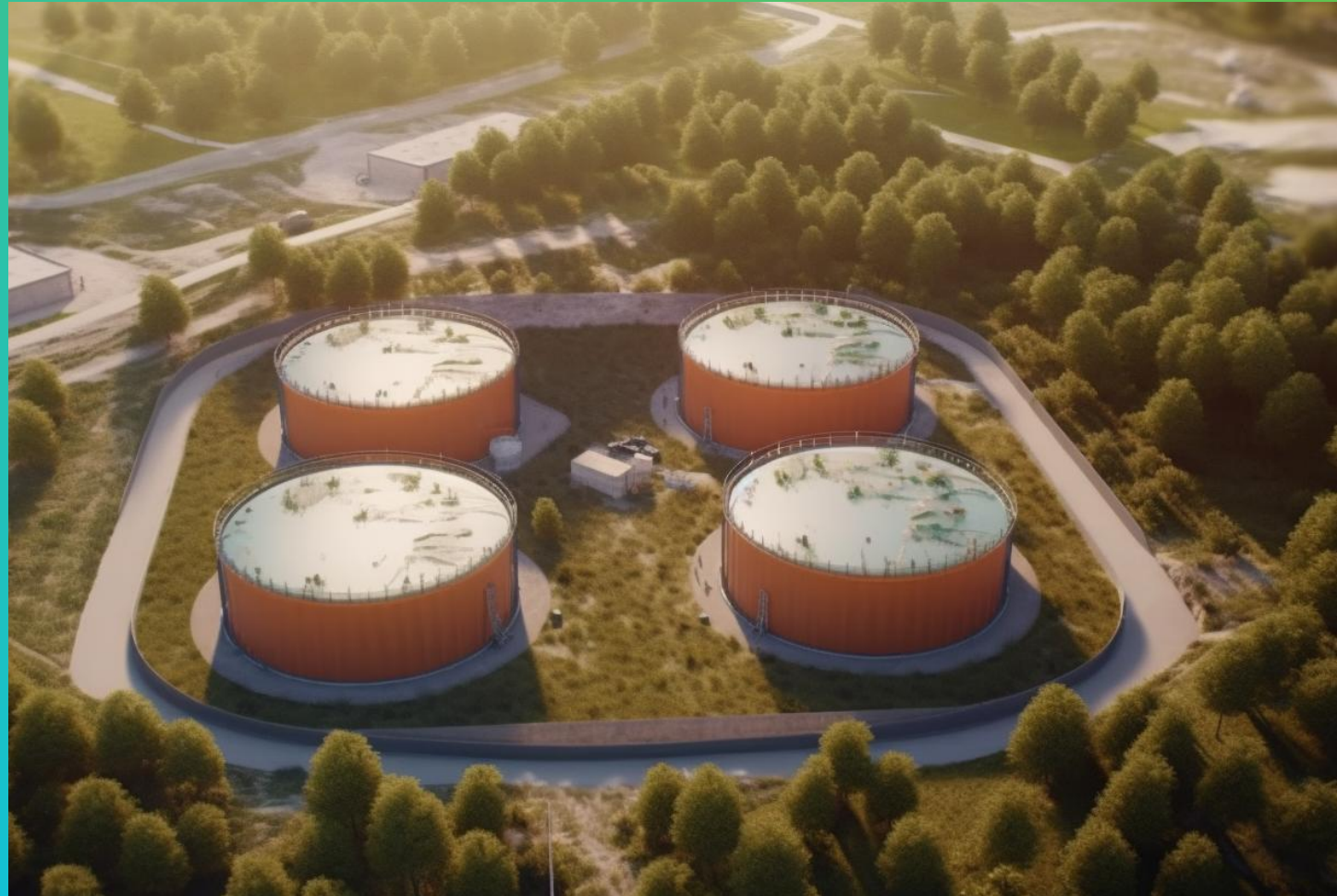


**PTX Feedstock
Normalization**

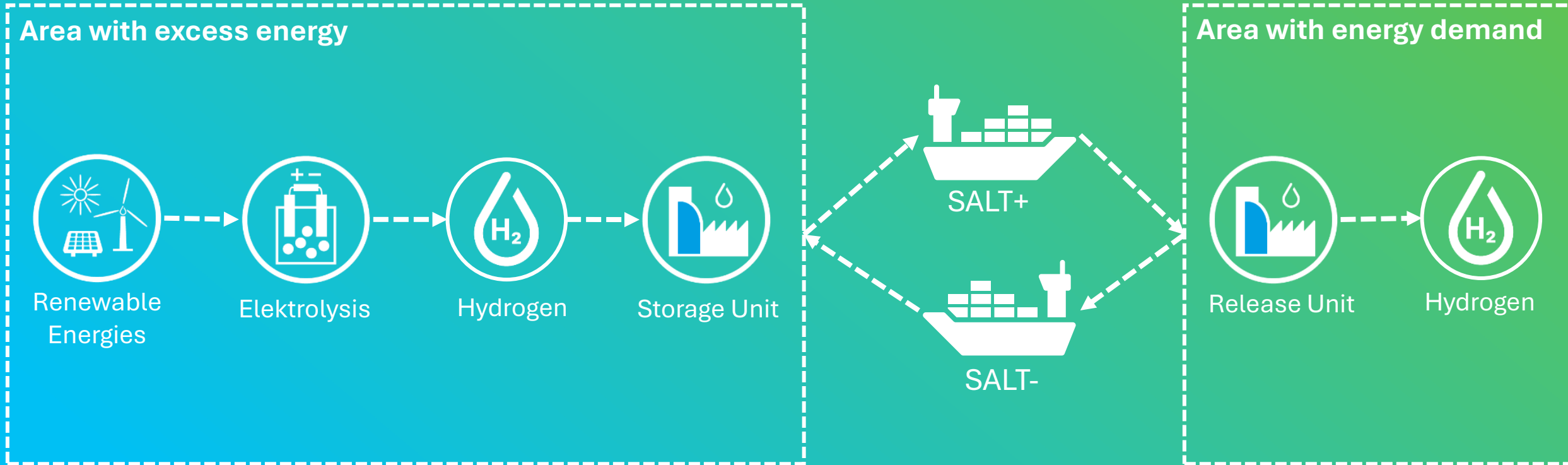
USE CASE 1: STATIONARY STORAGE



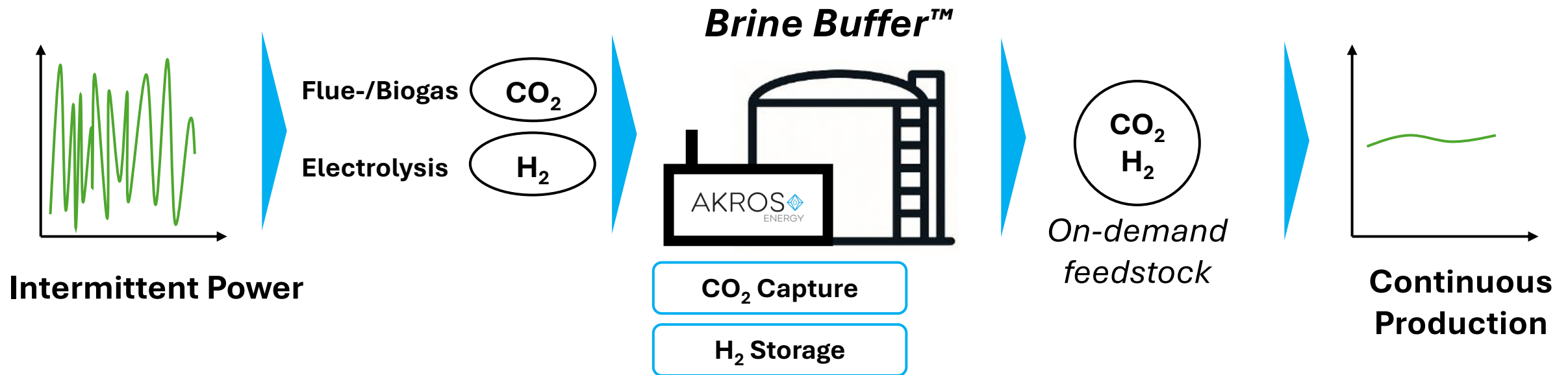
- Long-term energy storage (> 1 week)
- Highly efficient for maximum energy conservation
- High acceptance due to totally safe technology



USE CASE 2: GLOBAL HYDROGEN TRANSPORT



USE CASE 3: PTX FEEDSTOCK NORMALIZATION

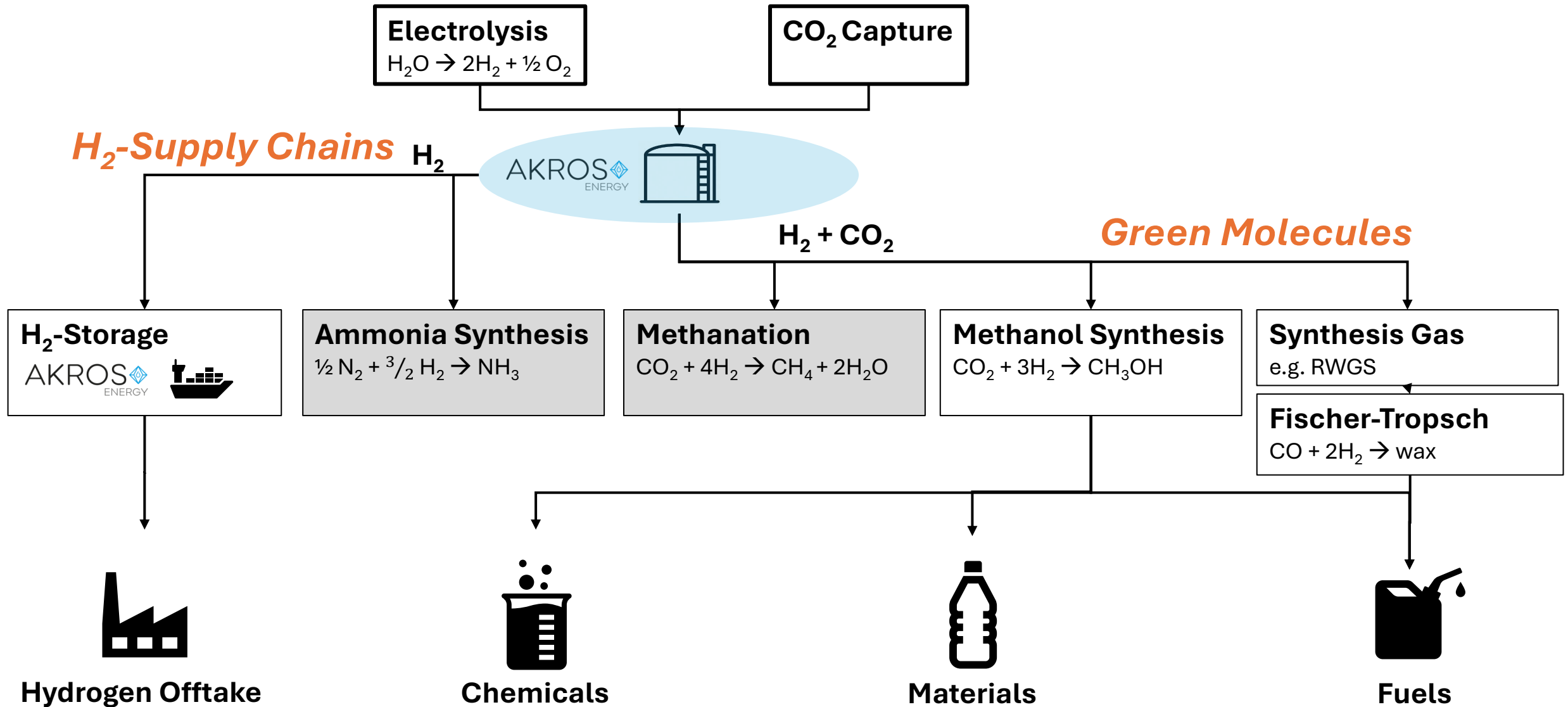


Cut renewable feedstock costs by

- (A) Turning intermittency into continuous feedstock flows
- (B) Integrating CO_2 capturing and H_2 buffering into one process



Markets



Out-of-scope

