

# IPER Siemens Energy Direct Air Capture

Overview and  
Early Operating Experience

February 2026



# Presenter's Bio

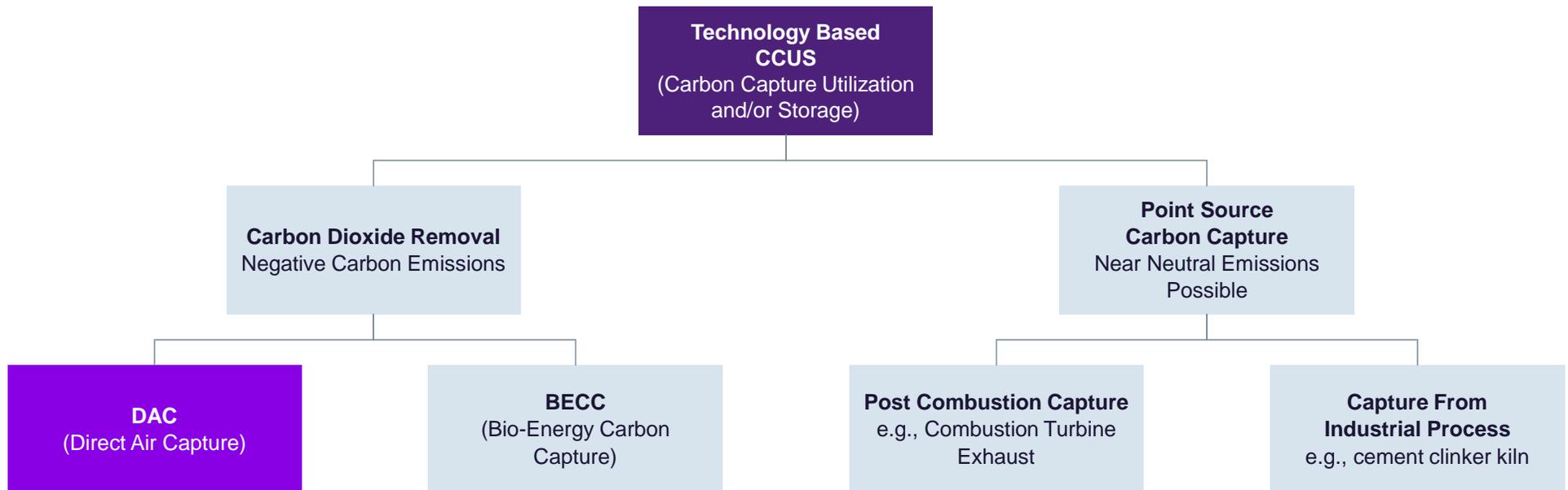
**Brian Ziems** is a Research and Technology Engineer with Siemens Energy's Innovation Center where he is responsible for identifying and evaluating mature and emerging low CO2 emissions energy technologies. His experience in this role includes Li-ion battery systems, solar photovoltaics (PV), direct air capture, rotating grid stabilizers (RGS), hydrogen production, and hydrogen cofiring in combustion turbines. Brian's 18+ year career in the energy sector includes experience in the design and servicing of utility scale steam turbine blading, in particular low-pressure tuned turbine blades.

Siemens Energy is a registered trademark licensed by Siemens AG.

**SIEMENS**  
ENERGY



# All types of Carbon Capture will be required to meet decarbonization targets.

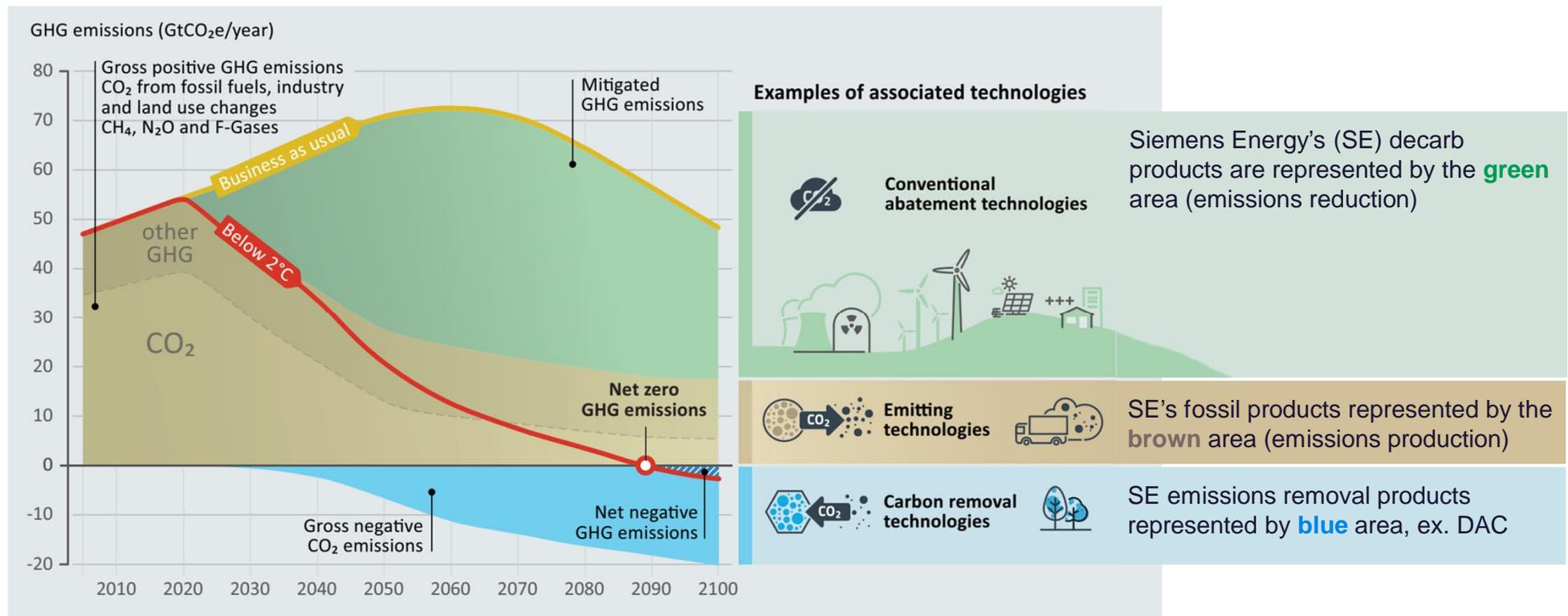


Capturing carbon dioxide directly from the ambient air (atmosphere) at ~450ppm, generating a concentrated stream of CO<sub>2</sub> for sequestration or utilization.



# Negative Carbon Emissions are mandatory to reach Net Zero

## Global Greenhouse Gas Emission Scenario (2000-2100)



Source: Jérôme Hilaire (Mercator Research Institute on Global Commons and Climate)

Siemens Energy is a registered trademark licensed by Siemens AG.

## Benefits of Direct Air Capture



Provides negative emissions with potentially high carbon dioxide removal efficiencies (CRE) when renewables or nuclear is used for energy demand.



Location agnostic; atmospheric concentration of CO<sub>2</sub> is approximately the same everywhere:

- Can be located at point of use, point of storage, or where renewables are available



Significantly lower land requirements compared to nature-based negative emissions options

- DAC allows rewilding of lands with increased bio-diversity vs. energy mono-crops



Offers more robust CO<sub>2</sub> emissions accounting compared to nature-based options



Less prone to climate change driven emissions release/reversal (e.g., forest fire)

# What can be done with the CO2 from Direct Air Capture (DAC)



**Feedstock** for plastics and petrochemicals manufacturing.



Methanol as fuel for deep-water **shipping**.



Sustainable **aviation** Fuel (SAF).



Methanol for **seasonal energy storage**.



**Carbon capture and storage** for CO<sub>2</sub> offsets for hard-to-decarbonize industries.

CO<sub>2</sub> – Carbon Circularity

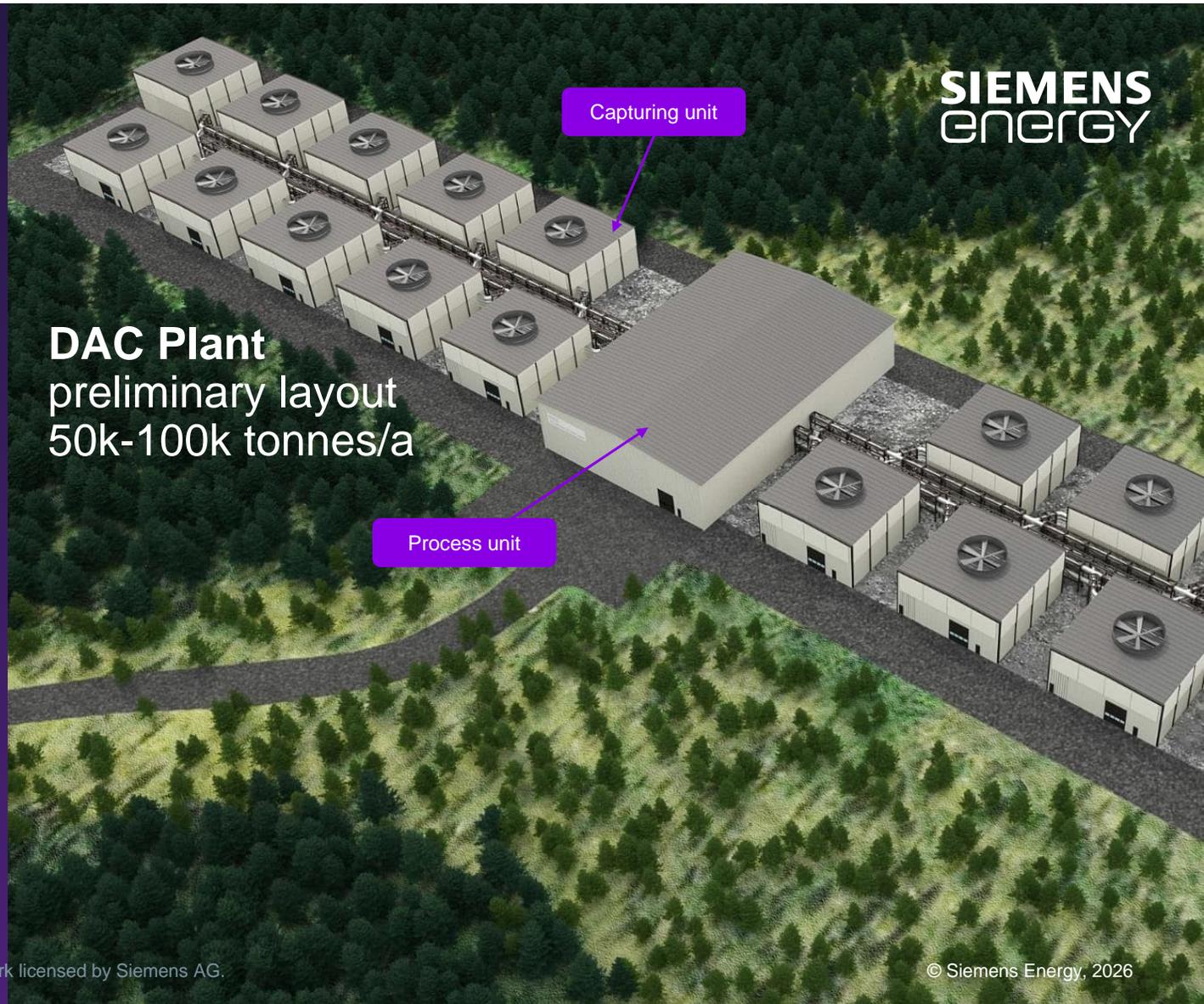
Negative CO<sub>2</sub> emissions

## Siemens Energy DAC Strategic Highlights

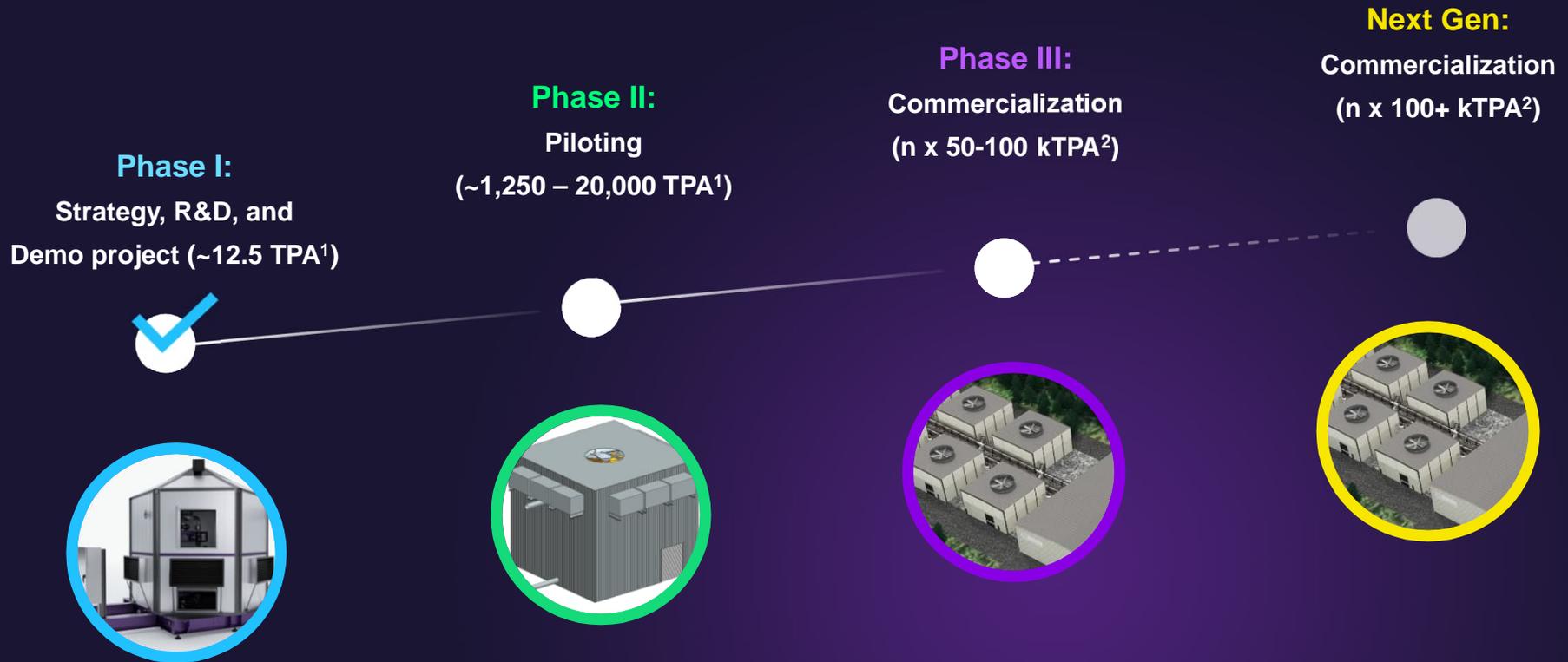
**SE Focus** – Mechanical design, sorbent / contactor testing, process definition, control, and optimization.

**Sorbent flexibility** – Initially based on a low temperature solid amine.

**End use agnostic** – with a focus on high CO<sub>2</sub> purity applications such as sequestration and e-fuels.



# Direct Air Capture Development Roadmap for Siemens Energy



All numbers shown are indicative. Not to be used for any further works.

Siemens Energy is a registered trademark licensed by Siemens AG.

- 1) TPA – tonnes per annum of CO<sub>2</sub>
- 2) kTPA – kilo tonnes per annum CO<sub>2</sub>

**Thank you!**  
**Questions?**



**SIEMENS**  
energy

