



# CARBON CAPTURE WITH POLARIS™ MEMBRANES

EPRI – DOE Workshop

**Reducing Data Center Carbon  
Footprint with Carbon Capture and  
Storage**

July 9, 2025



# Development Timeline

17+  
Years

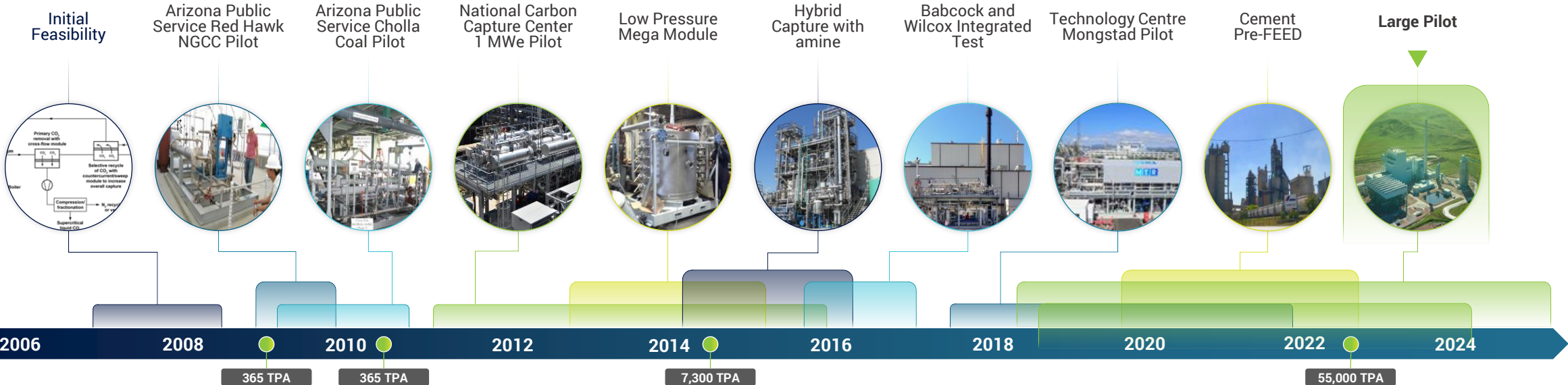
22+  
DOE Awards

>\$150mm  
Invested



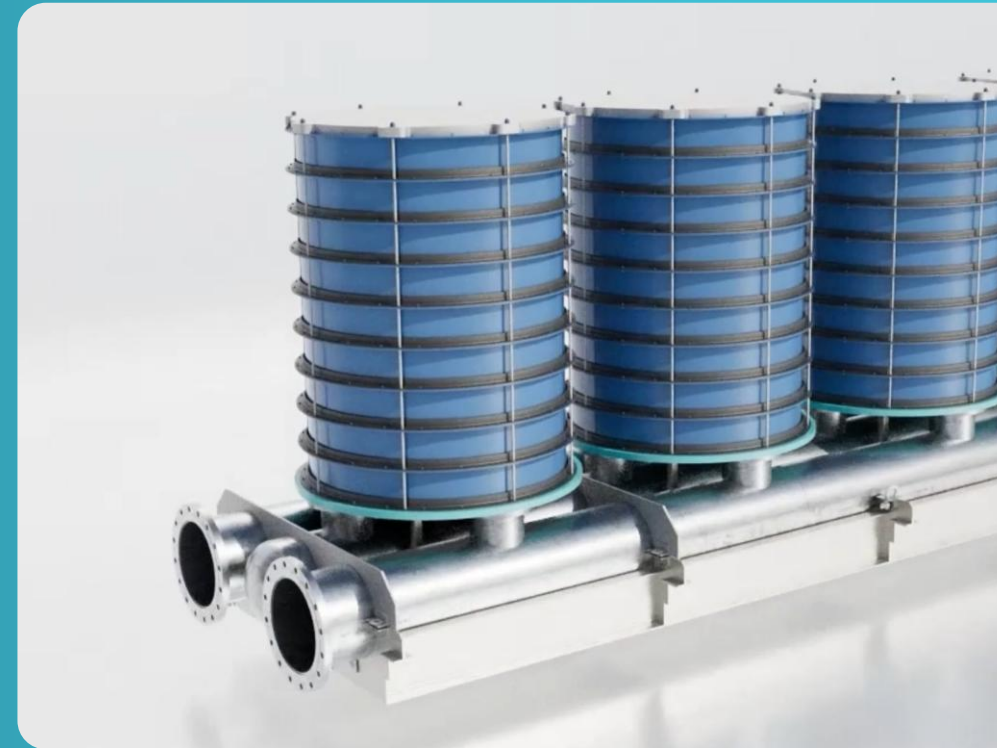
Wyoming Integrated Test Center

DE-FE00031547

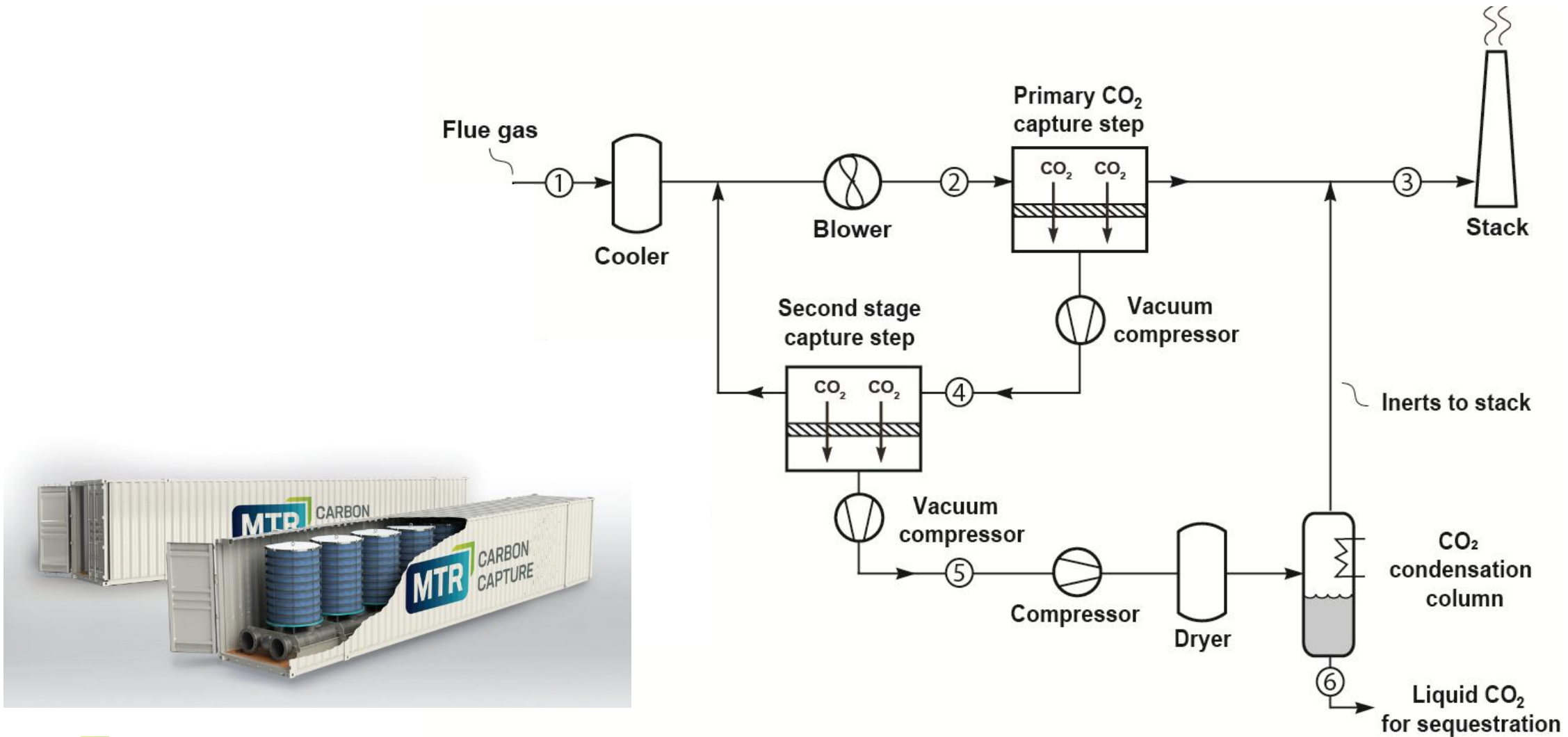


# Attributes of Membrane-Based Capture Systems

- Electrically driven process, no thermal input
- Co-capture of water offers low to no water use
- A filtration process; no new emissions
- Operational simplicity and modular construction
- Capable of operating under varying flue gas load
- For low CO<sub>2</sub> content sources (e.g. NGCC), exhaust gas recycle improves capture economics



# Simplified Process Flow Diagram

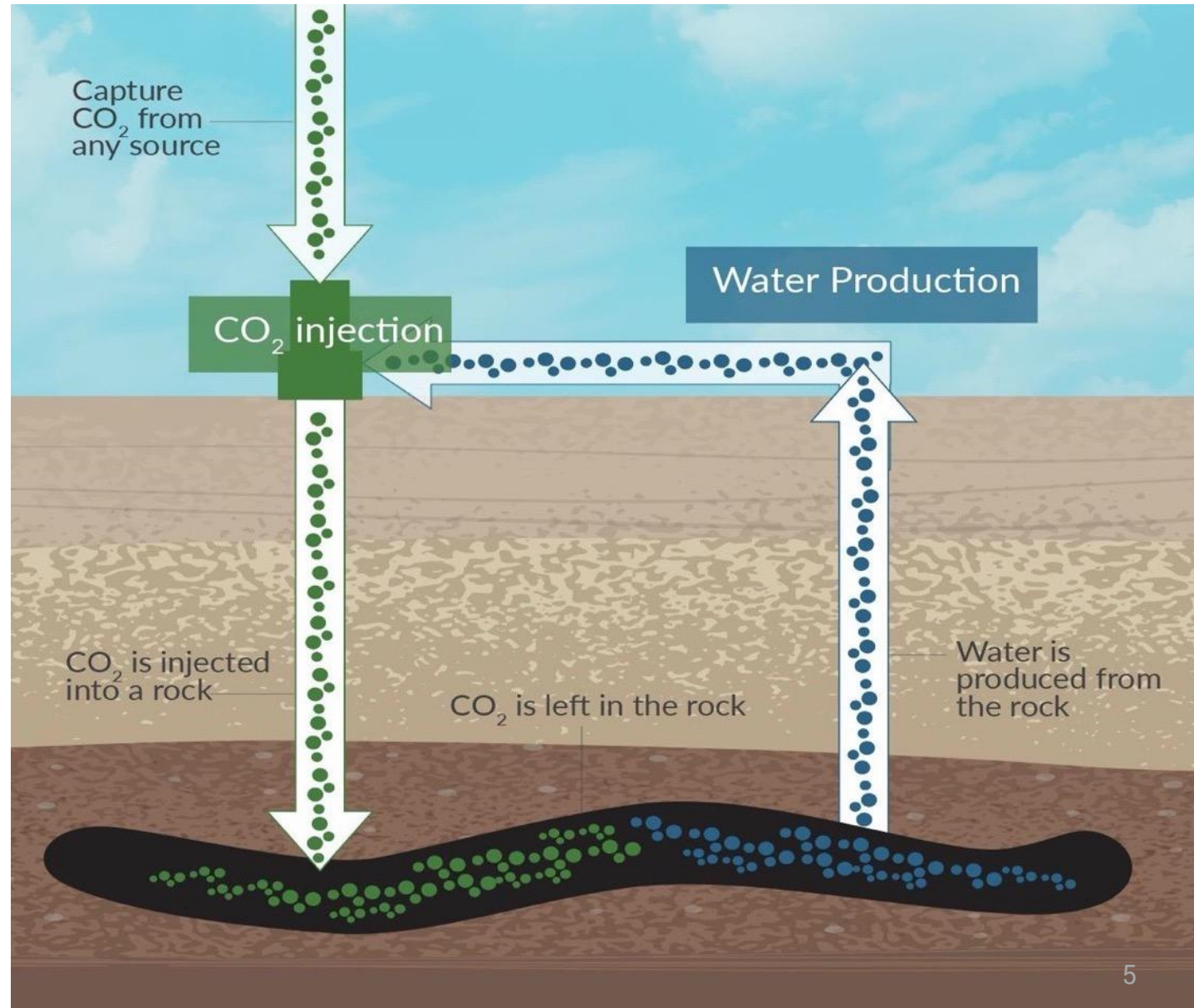






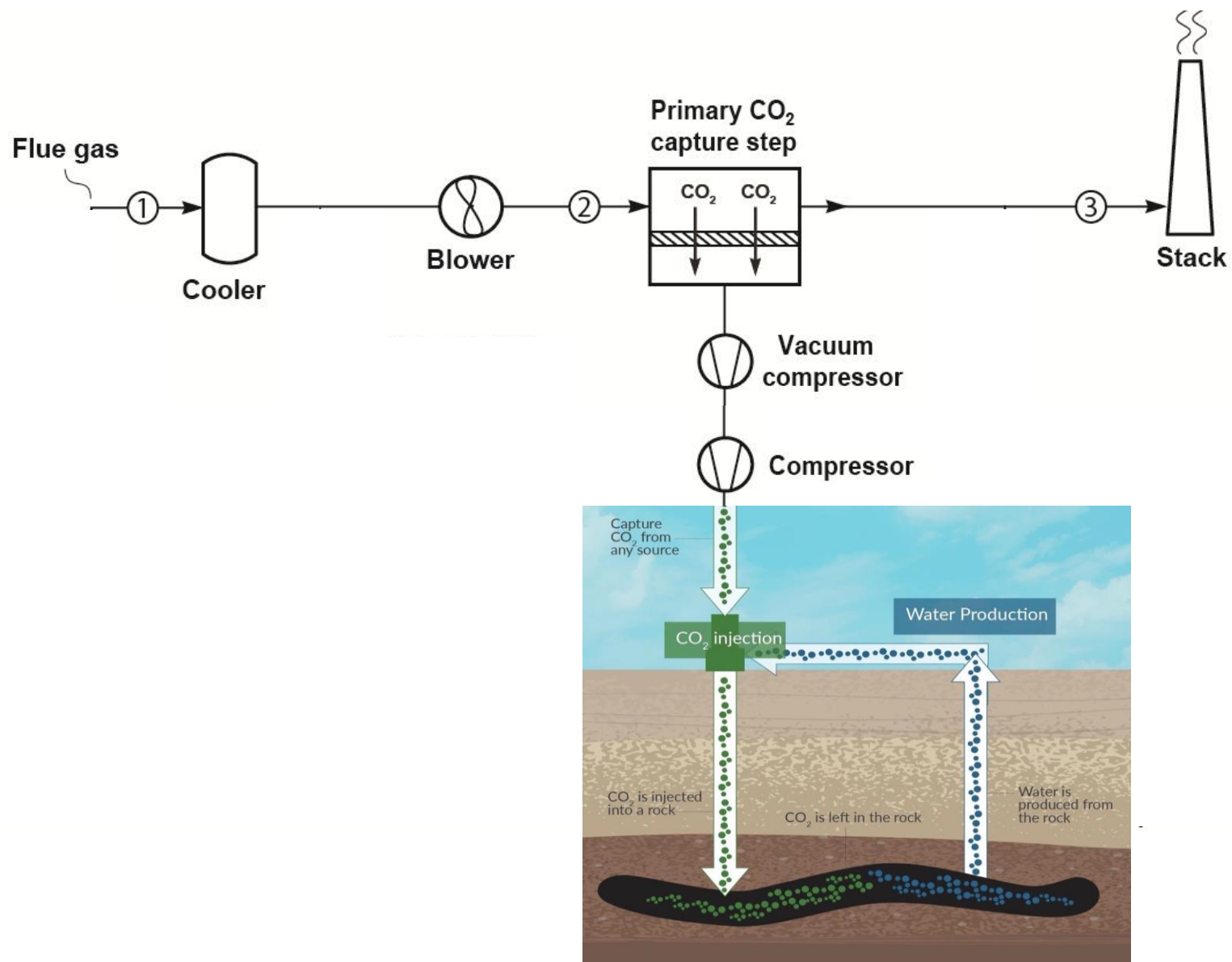
# COAL ASSISTED CCS

- Coal naturally filters CO<sub>2</sub> out of raw flue gas and holds it permanently
- Basic method established 20 years ago
- Abandoned before carbon management emerged
- Carbon GeoCapture (CGC) modernized and commercialized
- Process is mature (TRL 8/9 per leading engineering FEL study completed 2024)





# COAL ASSISTED CCS





# Wyoming 150 TPD Capture Plant Update



- Construction started in August 2023
- System mechanical completion achieved in November 2024

- Test stack operation began in Dec 2024
- Full membrane system started operation on Jan 24, 2025; CPU on-line mid-February 2025
- Parametric test campaign (CCSI2) scheduled for Aug 2025





**THANK YOU**

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