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EFFICIENCY MEETS SCALE

Skytree Stratus

The cost-competitive and resilient supply of atmospheric CO_2, at any scale

Redefining the economics and resilience of CO_2 supply

Historically, Direct Air Capture (DAC) has been held back by high energy demand, operational complexity, and unstable performance across climates. Yet for a growing number of industries, an independent, fossil-free CO_2 supply is now a fundamental requirement to ensure operational continuity, meet decarbonization targets, and secure a lasting cost advantage as fossil-based CO_2 sources grow more volatile, scarce, and expensive.

Skytree has engineered a Direct Air Capture system, Skytree Stratus, that delivers superior performance on the metrics that matter most to CO_2 supply. Validated by over two years of operational data, Stratus is our first fully serialized, commercial DAC system: an industrial reality, not a future promise.

The Skytree Stratus standard

Skytree Stratus delivers market-leading energy efficiency for the DAC industry, producing high-purity CO_2 for industrial use and permanent storage. The system is engineered for scalable capture capacity, starting at 900 tonnes of CO_2 per year and scaling without limit. Using proprietary moving bed architecture, thermal energy integration, and climate adaptation, the system enables a consistent, stable, and reliable flow of CO_2 in any environment, delivering true supply security.

Backed by standardized, mass-manufactured components, Skytree Stratus' modular and scalable architecture de-risks investment through phased deployment and future-proof upgradability.

The cost-competitive and resilient supply of atmospheric CO_2, at any scale

Unrivaled energy efficiency

Skytree Stratus' patented moving-bed TVSA architecture heats only the sorbent, not the surrounding structure, and can integrate with on-site low-grade heat.

Together, these can lower electricity consumption to as little as 1.0 MWh per tonne of CO_2 captured.

- Utilizes heat as low as 80°C for ~80% of the total heating load, and integrates on-site cold-water sources of ≤8°C to further reduce electricity consumption.
- Full thermal integration reduces electrical energy demand by 60%.

Guaranteed operational resilience and durability

Reliable in any climate: Skytree Stratus Climatic Configurations and proprietary AI-driven dynamic process control deliver a stable CO_2 flow in any environment, from deserts to polar regions, with output stabilizing to within ±5% on a seasonal basis.

- A stable-temperature chamber and 50-mbar vacuum extend sorbent life to 4–5 years, reducing replacement costs to under €50 per tonne of CO_2.
- Field-upgradable sorbent swaps complete in a single day, protecting your investment as the technology evolves.

Maximized system durability: Skytree Stratus' TVSA architecture and proprietary AI-driven dynamic process control extend sorbent life by eliminating thermal stress and mitigating degradation, reducing long-term operational cost

- Dynamic process control increases productivity in cold climates by up to 27% compared to static systems.
- Effective capture across relative humidity ranging from 10% to 90%.

De-risked investment and scalability

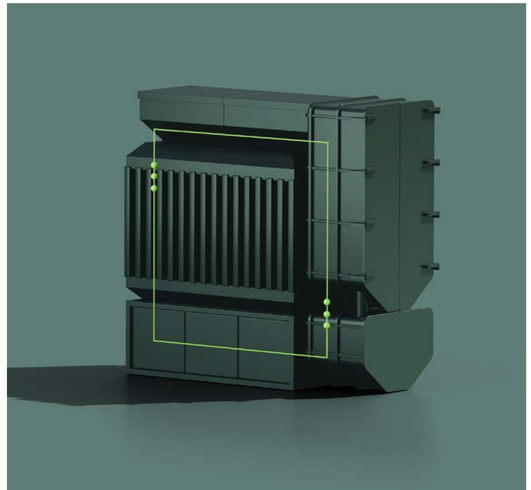
Modular architecture: Skytree Stratus is built with standardized, mass-manufactured modules and components designed for serial production, lowering capital expenditure and simplifying on-site assembly.

Scales over time: Skytree Stratus de-risks projects with a "start small, scale big" approach that aligns capital with revenue and protects investment through future technology upgradability.

- Scales from a single system (2.5 tonnes per day) to multi-kilotonne parks, using standardized, factory-proven modules.
- An integrated liquefaction add-on upgrades captured CO_2 from >98% to ≥99.9% pure liquid CO_2

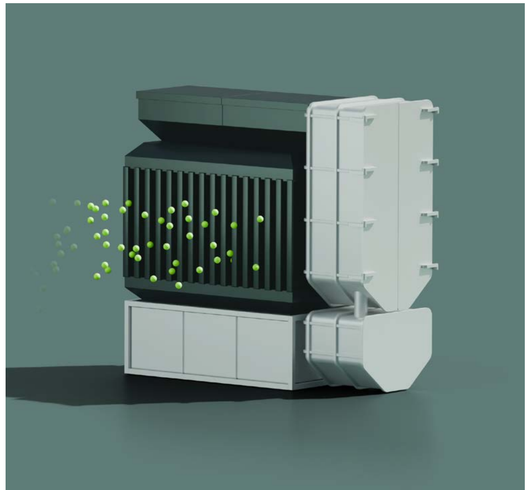
Note: Performance figures are based on Skytree models and third-party validation studies.

From air to resource: The Skytree Stratus DAC process



Adsorption

Ambient air is pulled through mesh panels, where continuously moving sorbent captures CO_2 and water from the air.

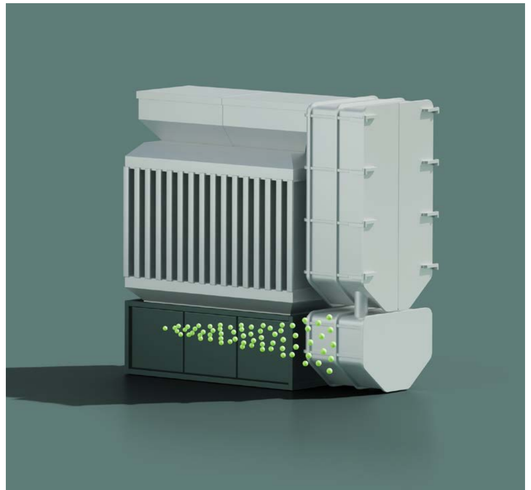


Sorbent transport

Fully loaded sorbent drops into a conveyor system that moves it to the top of the desorber.

Desorption

Sorbent is heated to release CO_2 and water vapor under controlled vacuum conditions.



Condensation

The gas is cooled to condense water and produce a pure CO_2 product, ready for storage or downstream use.

The architecture of CO_2 resilience

Skytree Stratus combines proprietary moving-bed Temperature Vacuum Swing Adsorption (TVSA) architecture, thermal energy integration, climatic configurations, and AI-driven process control to deliver flexible, high-efficiency CO_2 capture across diverse climates and energy sources.

TVSA process with moving-bed

The TVSA process physically decouples the adsorption and desorption of CO_2. Sorbent moves via a conveyor system from ambient-temperature adsorption chambers to a vacuum-sealed desorption chamber held at a constant temperature, so only the sorbent is heated and cooled, not the machine structure.

Thermal energy integrations

External low-grade (waste) heat of ≥80°C can drive ~80% of the heating load, and on-site cold-water sources of ≤8°C can be used for cooling, enabling integration with geothermal wells, industrial waste streams, or district heating.
The system can run fully electric or integrate external low-grade waste heat to maximize efficiency.

Climatic configurations

Four distinct configurations (Temperate, Arid, Tropical, and Polar) use hardware adaptations to optimize each system for temperatures ranging from -35°C (-31°F) to 50°C (122°F and humidity up to 100%.
This includes insulated paneling, thermal reflective coatings, dust/sand air intakes, and heat-tracing to prevent freezing and enable cold

AI-driven dynamic process control

Proprietary control software analyzes real-time climate data, weather forecasts, and electricity prices to adjust sorbent flow rates and residence times.
The result: ±5% seasonal output stability and CAPEXreductions of 15–25% for a given capacity.

Secure an end-to-end solution for CO_2 utilization or permanent storage

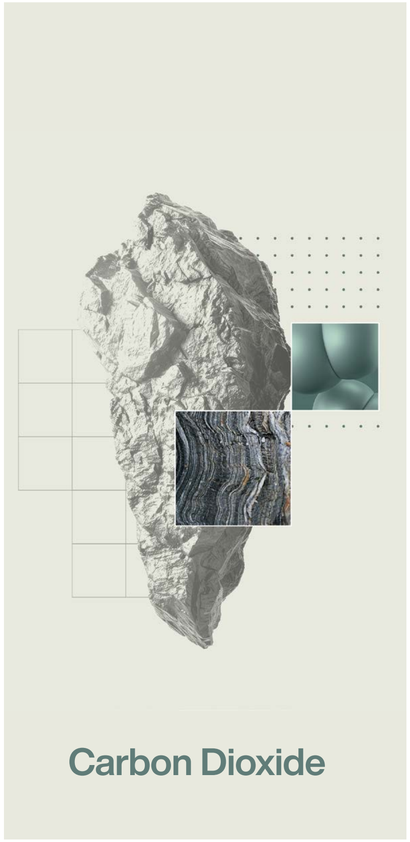
Skytree Stratus provides a fossil-free, on-site source of CO_2 captured directly from ambient air.

For companies that use CO_2 in their daily operations, this replaces fossil-based CO_2 and volatile liquid CO_2 supply chains with a reliable on-site source.

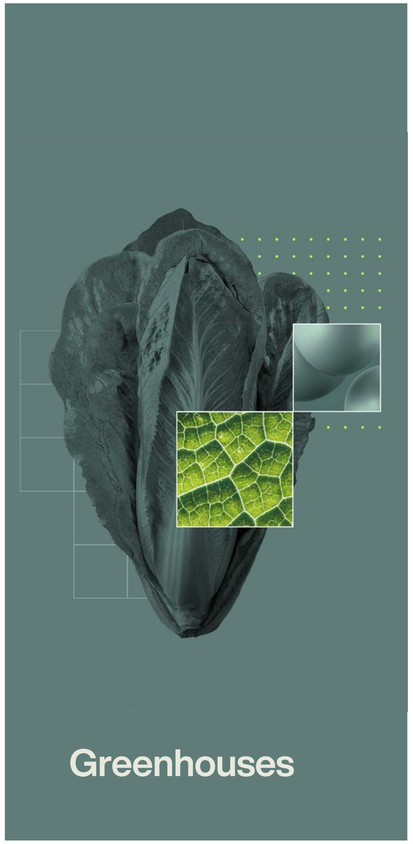
Our technology also supports permanent storage, helping take CO_2 out of the atmosphere and store it for the long term.

We work with a growing range of applications to replace fossil-based carbon in all its uses.

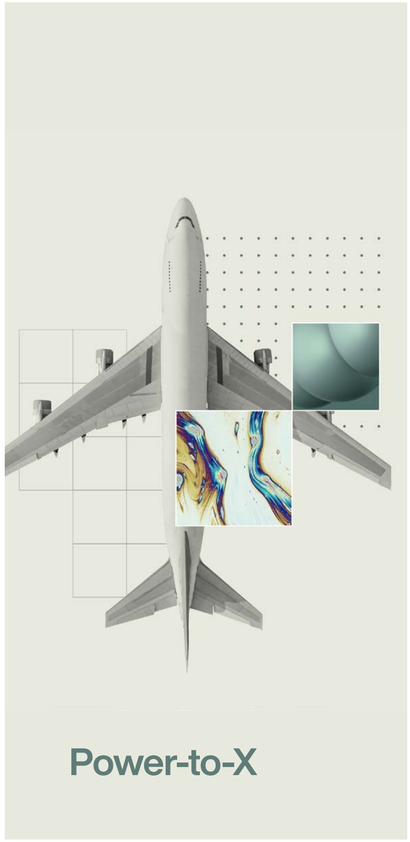
Serving multiple industry applications



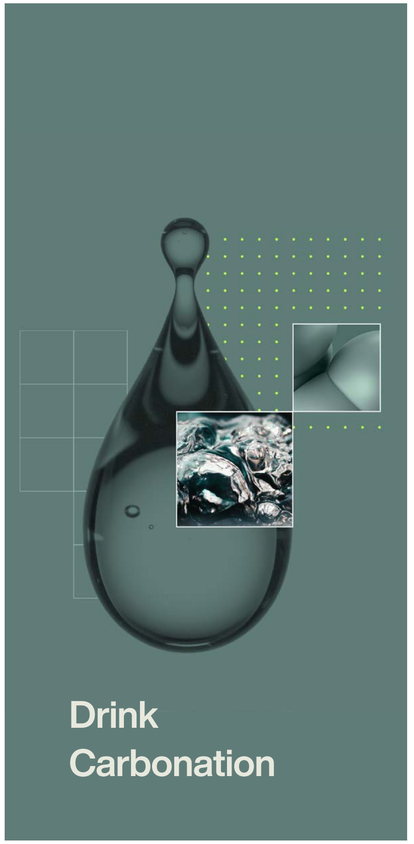
Carbon Dioxide



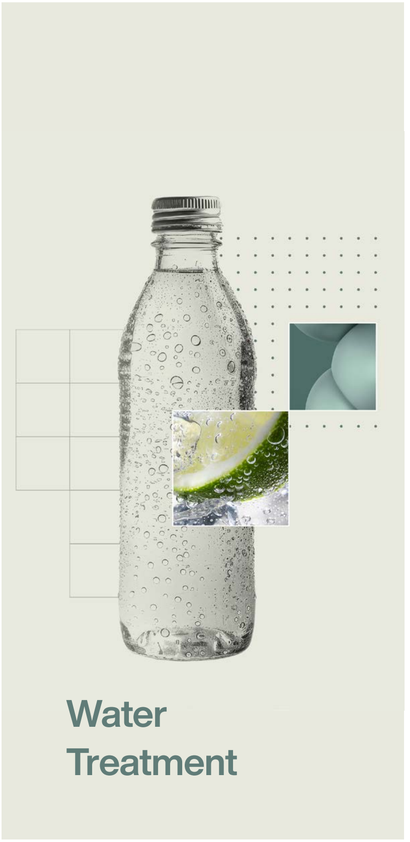
Greenhouses



Power-to-X



Drink
Carbonation



Water
Treatment

From removal to reuse: bankable DAC starts here.

Start your transition to resilient, on-site CO_2 capture directly from the air with Skytree Stratus. Our team of DAC experts is ready to lead a detailed feasibility study for your site.
We will deliver a solution that integrates our technology with your operational requirements, providing the foundation for a bankable, end-to-end DAC project tailored precisely to your goals.

Contact us today to secure the most cost-competitive and resilient CO_2 supply for your operations.

www.skytree.tech/contact-us