Direct Air Capture Technology for CO_2 Removal

Reference: TD-NL-1013

TECHNOLOGY DESCRIPTION

Skytree's direct air capture (DAC) system is designed to efficiently remove CO_2 directly from ambient air. The technology uses a three-step filtration process for CO_2 removal – capturing, isolating and storing – making it available for permanent sequestration. Initial adsorption occurs through specialised filters capture CO_2 from ambient air using proprietary sorbent materials. The next desorption step sees heat or pressure triggering the release of captured CO_2 from the sorbent. Finally, the purified CO_2 is collected and prepared for permanent geological storage. The system is modular and can be deployed in various configurations, making it suitable for small- and large-scale applications. Leveraging expertise derived from space-grade air filtration systems, Skytree's DAC technology is energy-efficient and highly effective, offering a scalable solution to reduce global carbon emissions.

.

INNOVATIVE ASPECTS

- Energy efficiency: Optimised processes reduce energy consumption compared to conventional air capture methods
- Scalability: Modular design allows for deployment in both small- and large-scale CO_2 removal projects
- Sustainability: Contributes directly to negative emissions goals by sequestering CO_2 in geological formations
- Proven reliability: Derived from air filtration technology developed for the International Space Station, ensuring high-performance standards

TECHNOLOGY READINESS

TRL 9 (2025)

COUNTRY OF ORIGIN

Netherlands

LATEST UPDATE

03/2025

TAGS

#DirectAirCapture #CarbonDioxide Removal #Carbon Sequestration #ClimateCHange Mitigation #NegativeEmissions Technology

APPLICATION AREAS

Energy | Environment | Infrastructure & Smart Cities | Chemical Engineering & Biotechnology | Life Support | Robotics & Automation

esa TECHNOLOGY BROKER

SPACE FOR BUSINESS

BUSINESS FOR SPACE

CONTACT