Engineering the CO_2 transition

skytree

Skytree Stratus Technical Datasheet

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Skytree Stratus Product Specifications

CO_2 Capture[1]

CO_2 capture per day	Up to 1000 kg (2200 lbs)
CO_2 output quality	>95% gaseous
Airflow	110,000 m^3 per hour
Operational temperature	5 to 30°C (41 to 86°F)
Storage temperature	-10 to 40°C (14 to 104°F)
Optimum humidity	10-80%
Daily water output	Up to 1200 L (317 gal)
Sorbent lifetime	60 months

Size and Weight

Height	9.50 m (31 ft)
Depth	5.0 m (16.5 ft)
Width	9.50 m (31 ft)
Footprint	47.5 m^2 (511 sq ft)
Min. clearance	10 x 5 m (237 sq ft)
Operational weight	45,500 kg (100,310 lbs)
Dry weight	43,500 kg (95,901 lbs)
Sorbent capacity	2,900 kg (6,400 lbs)

Operating Requirements

Grid connection	3-phase, 400V/208V, 50/60Hz
Noise rating	80 dB
Uptime	98.6%
Data connection	Ethernet
Certifications	CE-CB/UL/CSA
Max operational altitude	2000 m (6500 ft)

Energy Source

	Full electric	**Hybrid (high heat)**	**Hybrid (medium heat)**
Heat exchanger	Liquid-to-solid	Liquid-to-solid	Liquid-to-solid
Heat pump	Dual in cascade	Single, low temperature	Single, high temperature
Electrical energy	3.0 kWh per kg CO_2	2.1 kWh per kg CO_2	2.5 kWh per kg CO_2
Thermal energy	n/a	2.2 kWh_{th} per kg CO_2	1.7 kWh_{th} per kg CO_2
Peak power	180 kW	125 kW	150 kW
Nominal power	135 kW	90 kW	105 kW
Backup power	10 kW (30 minutes)	10 kW (30 minutes)	10 kW (30 minutes)
Thermal energy cons.	n/a	92 kW_{th}	71 kW_{th}
Required water temp.	n/a	Direct input 105°C (221°F)	55°C (131°F)
Required water flow	n/a	125 L (33 gal) per min	125 L (33 gal) per min

1. CO_2 capture efficiency varies with temperature, humidity, and altitude due to changes in atmospheric conditions. Results are based on tests conducted at 20°C (68°F), 420 ppm CO_2, at sea level.

Skytree Stratus Installation Site Specifications

General requirements

Space allocation	Allocate a space of 5 x 10 meters (17 x 33 feet) for placement
Foundation load capacity	Ensure the foundation can support loads up to 15 kN/m^2
System orientation	Align with the direction of the prevailing wind
Airflow requirements	Provide an unobstructed airflow of 110,000 m^3 per hour
Backup power	
Backup power requirement	10 kW for 30 minutes
Backup power connection	Independent 3 phase power required at rated voltage
Max black out time	2 minutes (System shutdown starts after 2 minutes)
Drain access for wastewater	Access point for wastewater disposal as per local regulations
Required flow rate (Optional)	125L (33 gal) per min
Required temperature (Optional)	High heat: 105°C (221°F)
	Medium heat: 55°C (131°F)

Connections required

CO_2 output connection	CO_2 piping DN50 with PN10 flange at center of unit
Waste water output connection	Wastewater piping DN100 with PN10 flange at center of unit
Data connectivity	Ethernet

Lifting equipment

Single container weight max	10 tonne
Required crane	
1 x Crane	Rated for 20 tonnes with a minimum boom reach of 12m
1 x Crane	Rated for 10 tonnes to raise desorption section vertical
Heavy duty forklift	Rated for 2 tonnes with adjustable tie ins/ forks

Services equipment

Cherry picker	Height of 10m minimum (33 ft)
Required crane	For sorbent, air filters, fans exchanges
1 x Crane	Rated for 20 tonnes with a minimum boom reach of 12m (40 ft)
Heavy duty forklift	Rated for 2 tonnes with adjustable tie ins/ forks
Other	Pressure washer, general slings/ shackles/ lifting equipment

Installations

Airflow requirements	Provide an unobstructed fresh airflow of 110,000 m^3 per hour
Electrical installations	Equipment and cables for local installation are not included
Piping for daily water output	Up to 1200 L (317 gal) of water per day