Data sheet Kyo

System set-up

Flying system

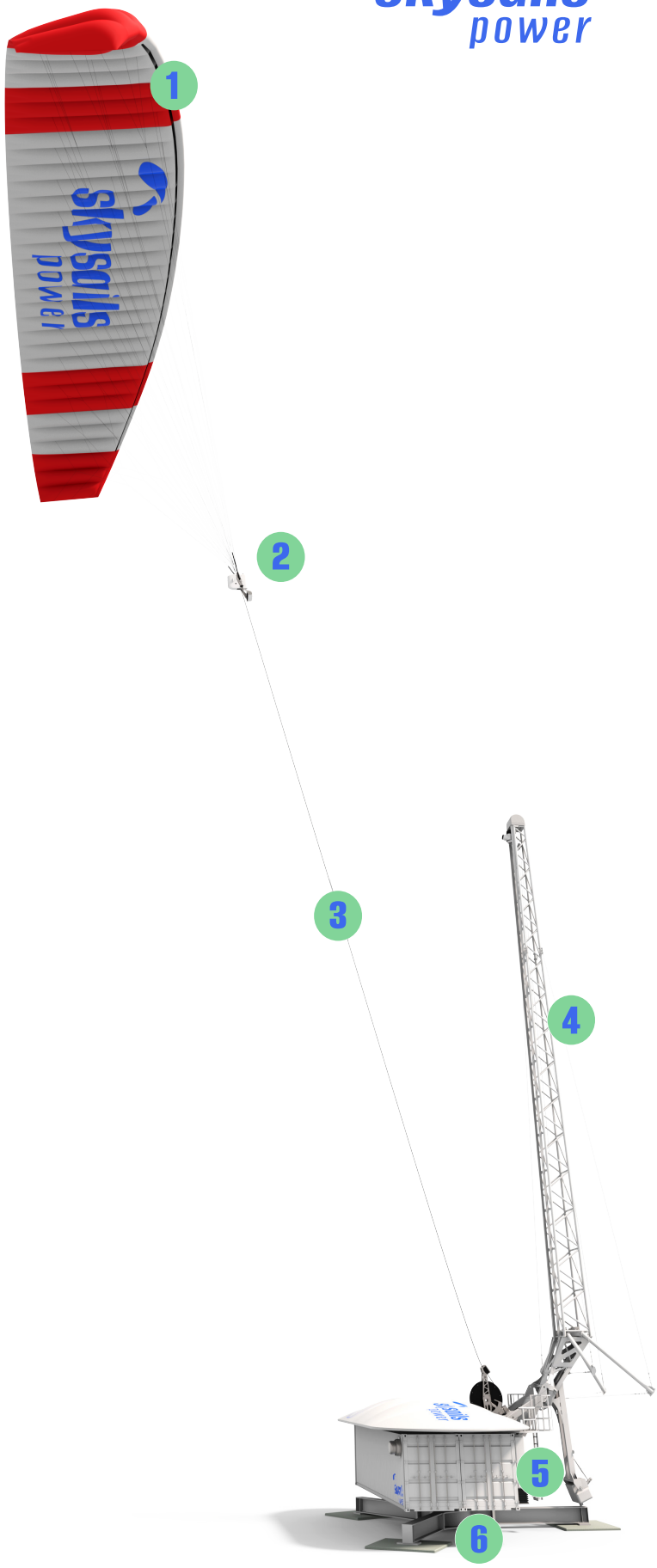
Kite*	Canopy, bridle system, reefing system, kite adapter
Control pod	Frame and fairing, drive, power & telemetry electronics, sensors, control & redundant communication system, safety systems, ram air turbine, flash lights, battery
Tether	Fibre ropes with wire lay construction

Ground station

Drive train	Towing winch, profiled drum, gearbox, generator, brakes, power electronics and converter system
Launch & landing system	Mast, mast adapter, mast support and kinematics, reefing winch incl. wire guiding
Auxiliary systems	Ventilation & cooling system, wind sensors, power electronics auxiliary system, yaw system (bearing, drive, gear)
Control system	Control electronics, sensors, processing and communication systems, control software, licensed for auto pilot, flash lights
Structural elements	Containers for Ground station and Grid connection module, shade roof, tripod
Operation panel	Operator monitoring system and remote control for system operations on site

Grid connection module

Inverter	Grid & consumer (auxiliary devices)
Energy storage system	Buffer battery



1. Kite
2. Control pod
3. Tether
4. Launch & landing system
5. Ground station and grid connection module
   - Winch with generator & gearbox
   - Control cabinets
   - Inverter and energy storage system
6. Tripod with ring mount on concrete foundation plate

*Standard kite without logo

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Data sheet Kyo

skysails power

Design data[1]

Rated cycle power[1]	up to 450 kW
Launch wind speed (ground altitude)	> 6 m/s
Rated wind speed (flight altitude 200 m)	13 m/s
Cut-out wind speed [1] (flight altitude 200 m)	25 m/s
Operating temperature[2]	-10 - 40 °C

Flying system[1]

Flexible kite size	300 - 450 m²
Kite type	Ram air kite
Kite material	High performance textiles
Kite weight	130 - 200 kg (depending on kite size)
Control pod weight	~ 145 kg
Tether diameter	26 mm
Tether length[3]	750 - 950 m
Total operation radius	950 - 1150 m
Tether weight	640 g/m

Launch & landing system

Mast type	Aluminium lattice mast
Mast height	29 m
Mast height above ground	37 m

Generator/installed power	950 kW
Generator type	Asynchronous
Power generation	Automated pumping cycle
Yaw angle	+/- 180°
Rotational speed	120°/min

Grid connection module[1]

Max rated power output	450 kW
Grid inverter output	400 V AC
Frequency	50 Hz / 60 Hz
Energy storage	Capacity ~ 525 kWh
Features	- Constant power output - Smart energy management - Fault ride through
Internal DC circuit	1200 V DC

Operations[2]

Duration work phase of power cycle	60 - 300 s
Duration rewind phase of power cycle	30 - 60 s
Flight mode	Automated
Launch & landing	Automated

Logistic

Transport	Standard shipping format
Ground station and Grid connection module	2x 40ft High cube container
Weight	1x 20t, 1x 30t

Ground station

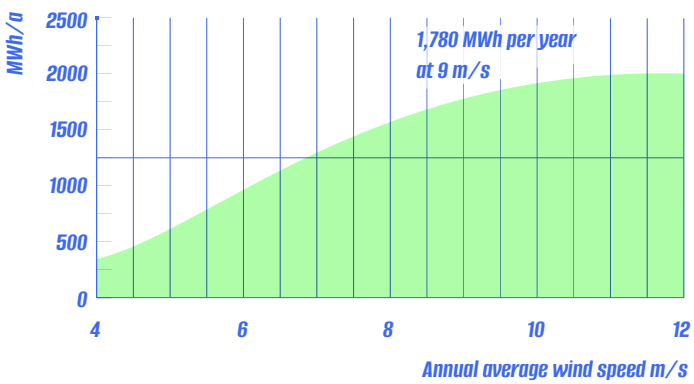
[1]Depending on site specific system configuration, [2]From 35°C, the system goes into derating, [3] Shorter tether results in less AEP

Annual energy production (aep) for Kyo

Rated cycle power up to 450 kW

Kite Size (max.) 450 m²

Annual energy yield 1,780 MWh/a



Single system, Standard Rayleigh wind distribution (k=2), Wind speed at flight altitude (300 m), Kite size: 450 m², Tether length: 950 m, Air density = 1.2 kg/m³, 100 % Availability, 0 % Losses.

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