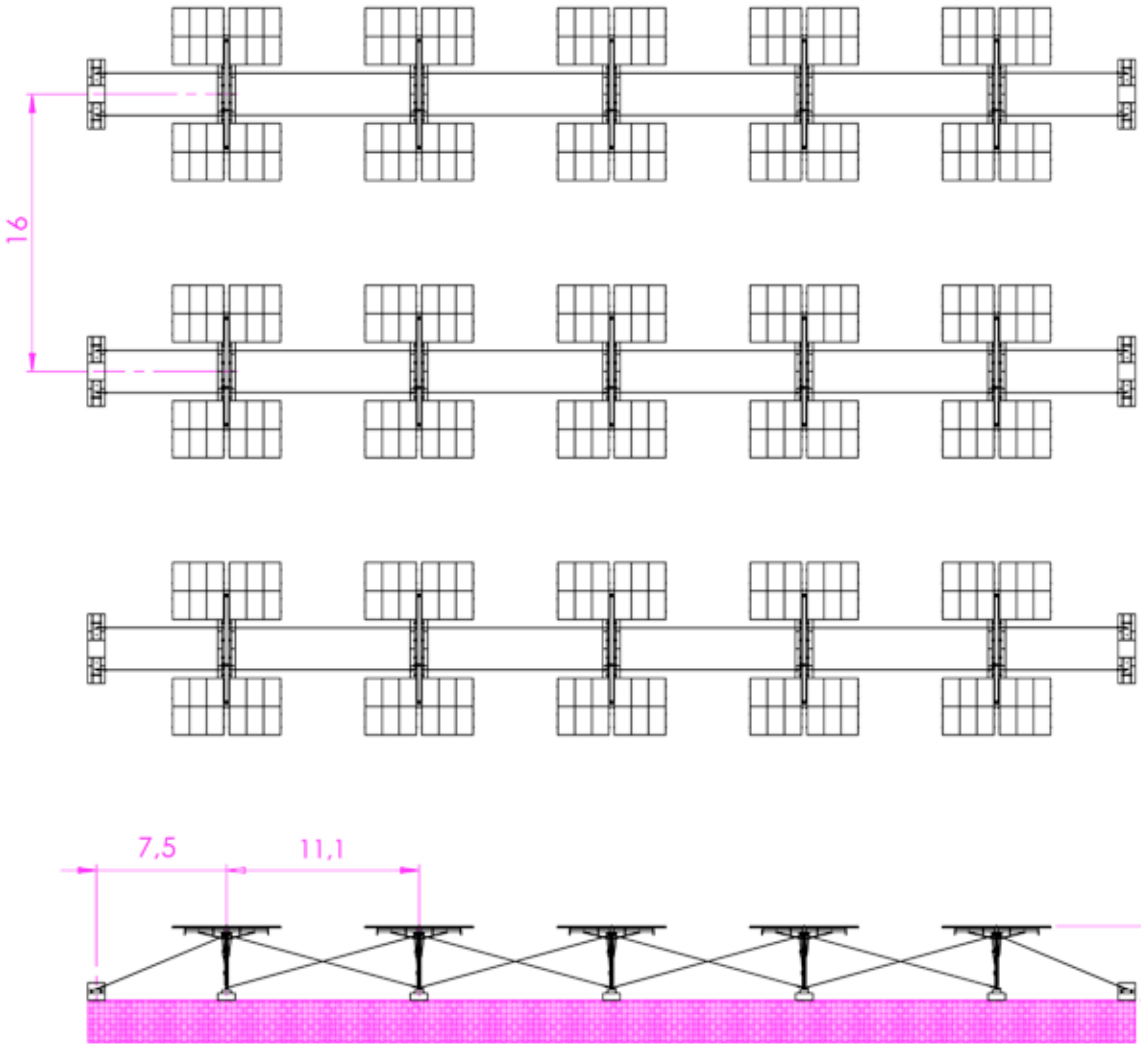
HELIOSLITE

THE NEXT GENERATION OF **(C)PV TRACKERS**

HL39 PV TRACKER
TECHNICAL DATASHEET

HL39 PV TRACKER
MECHANICAL DRAWINGS & SPECIFICATIONS



SYSTEM DESCRIPTION

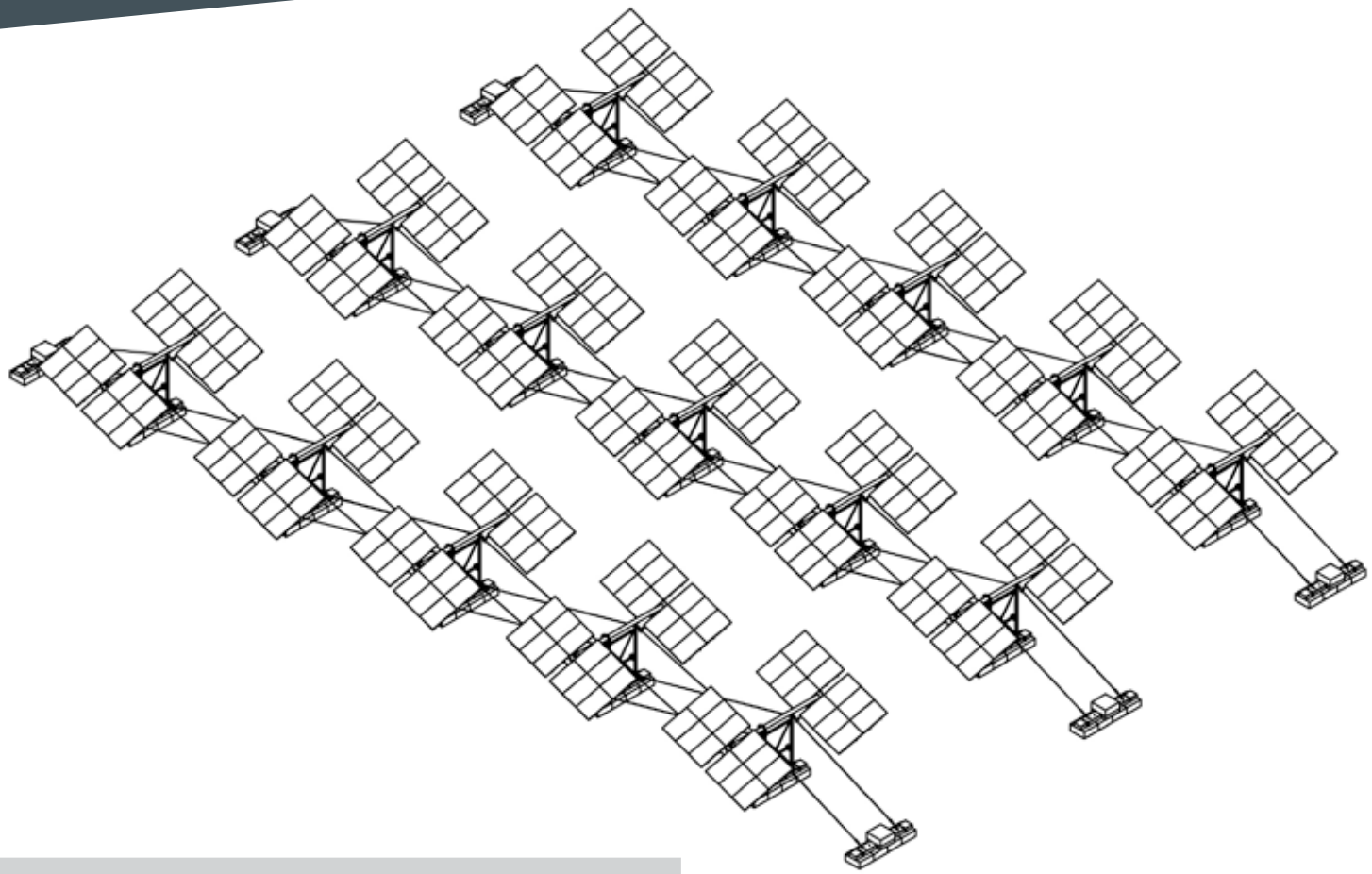
Tracker model number	HL39_Rev2
Type of tracker	PV Tracker, Dual Axis
Payload surface area	40m² nominal area
Nominal payload mass	500 kg
Number of PV modules	24x60 cells or 20x72 cells
PV module dimensions	~ 1.65 x 1 m or 2 x 1 m
Module array configuration	1 or 2 strings /tracker
Installed power / tracker	5.6 to 7.9 kWp

MECHANICAL SPECIFICATIONS

Configuration of axis	Tilt and Roll
Roll axis angular range	+/- 85°
Tilt axis angular range	+70° South, -30° North
Minimum ground distance	0.5 m

ELECTRICAL SPECIFICATIONS

Average daily energy consumption	< 200 Wh per tracker
Stow energy consumption (with wind load)	<10 Wh per tracker
Motor ratings on nameplate	Rated power: 180W Certifications: UL pending
Input power requirements	100-240 VAC, 50-60 Hz, 10 A max inrush current
Idle mode power consumption	< 10 W
Average power consumption	< 15 W / tracker
Peak power consumption	300 W peak for 16 trackers units
Backup system	Li-ion battery backup in «Master» controller



DRIVE SYSTEM

Drive type	Electric Linear Actuators
Motor type	24V DC motor
Backlash	0.05 degrees maximum
Limit switches	Built-in actuators

ELECTRONIC CONTROL SYSTEM

Control system architecture	Distributed control system with 1 "Master" controller per 16 tracker units
Control algorithm	Hybrid algorithm with maximum power optimizer
Tracking modes	Self correcting open loop with maximum power output optimizer
Tracking accuracy, typical[1] Wind speed 0-4 / 4-8 m/s	0.1 / 0.2 degrees (90 th percentile)
Control interfaces	Local wireless and remote web-based GUI
External communication interface	Ethernet/TCP-IP RS485/Modbus to inverters
Stow time with wind load (worst case)	6 minutes for 16 tracker units (1.5 minutes for a single unit)
Cable inputs to control unit and cable size	1 x Power bus cable harness between each tracker unit with molded IP68 connectors

OPERATING CONDITIONS

Maximum allowable wind speed during tracking[2]	V_{10} = 14 m/s
Maximum allowable wind speed in stow[2]	V_{10} = 40 m/s
Temperature operational range	-30 °C to +50 °C
Temperature survival range	-40 °C to +60 °C

MAINTENANCE

Pivot points	Maintenance free spherical bearings
Maintenance schedule	System visual inspection every year

CODES AND STANDARDS

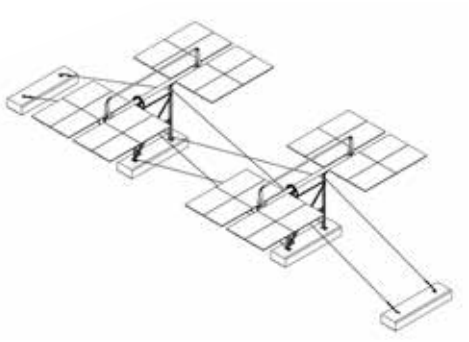
IEC 62817 draft standard for Solar Trackers
Eurocodes
EMC directives 204/108/CE (pending)
Machinery directive 2006/42/CE (pending)
System performance verified by third party (CEA-Ines)

(1) verified by CEA-INES laboratory.

(2) verified with wind tunnel tests by Aerodynamique Eiffel laboratory

HELIOSLITE TRACKERS UNIQUE **TECHNICAL ADVANTAGES**

DISTRIBUTED MECHANICAL ARCHITECTURE



HeliosLite tracker units rely on a patented distributed mechanical architecture which cuts down metal usage by 30 to 50% compared to traditional "pedestal" tracker designs.

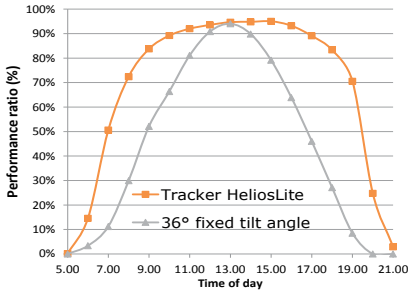
LOW COST FOUNDATIONS

HeliosLite tracker units can be installed on any ground using lightweight surface footings. No excavation is necessary and locally available rocks may be used for the footings. As individual tracker units are mechanically interconnected in rows using tensioned cable stays, the mass of the footing under each tracker unit is reduced by a factor of 6.

DISTRIBUTED CONTROL SYSTEM WITH BUILT-IN POWER BACKUP

HeliosLite trackers are controlled by a patented electronic control system using a distributed control architecture. The system comprises a "Master" controller, "Slave" controllers on each tracker unit and smart motor drivers embedded in each linear actuator which are communicating on an industrial databus. This proprietary control architecture greatly simplifies cabling in the field and reduces the system overall cost as the battery back-up system, DC power supply, local wireless and remote SCADA interface functions are centralized.

OPTIMUM POWER TRACKING ON EACH TRACKER UNIT



Each tracker unit is equipped with an independent electronic controller which monitors the DC output of the (C)PV modules on both wings of each tracker unit. The control system automatically maximize the power output of the modules with a smart dual axis back-tracking algorythm to avoid direct shadings between trackers. Depending on site and configuration of the field, HeliosLite dual axis trackers increase the energy yield of a solar plant by 30% to 50%.

ADVANCED MONITORING AND DIAGNOSTIC FUNCTIONS

HeliosLite control system has a built-in SCADA interface with built-in advanced monitoring and diagnostic functions. The system provides a web interface for monitoring the performance of an entire plant. No data loggers are required as HeliosLite "Master" controller provides built-in functions for synchronizing and logging the DC current output of the (C)PV modules, tracking data from each tracker unit, and DC/AC power metrics from each inverter. General purpose analog inputs and digital outputs of the HeliosLite "Master" controller can be used to control external devices such as lights or motors.

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