

Solutions presentation

Supplier: Etneo Italia

Contact: Alessandro Drappo

Project name: HYBRID ON-GRID



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PORTION OF PHOTOVOLTAIC SYSTEM + STORAGE



SOLAR INVERTER

The bidirectional hybrid inverter ensures uninterrupted power and backup whenever you need it. During the day the photovoltaic system generates energy that will be destined for self-consumption, fed into the grid or used to charge the batteries. The stored energy will be released when required by the loads. In addition, with the UPS function, the battery can also be charged from the mains to provide an uninterrupted amount of energy.

GENERAL SPECIFICATIONS

Max photovoltaic power 3900-4600-6500W
Nominal grid input power 3000-3680-5000VA
Max charge/discharge current 50°
Battery type Lithium Ion
Battery voltage 48 V (configurable)
Backup function with 2300VA power output
Battery capacity 50-2000 Ah
MPPT/strings 1/1 - 2/1
Efficiency 97.6%
Dimensions 347x432x175 mm
Weight 16-17kg
Integrated DC disconnecter
Certifications: CEI0-21 - VDE4105-AR-N



Components



Storage single phase inverter

335 Watt

MONO HALF CELL SOLAR MODULE



Features



High power output

Compared to normal module, the power output can increase 5W-10W



High PID resistant

Advanced cell technology and qualified materials lead to high resistance to PID



Excellent weak light performance

More power output in weak light condition, such as haze, cloudy, and morning



Lower hot spots

Reduce the hot spots and minimize panel degradation



Extended load tests

Module certified to withstand front side maximum static test load (5400 Pascal) and rear side maximum static test loads (3800 Pascal) *



Withstanding harsh environment

Reliable quality leads to a better sustainability even in harsh environment like desert, farm and coastline

Certifications and standards:
IEC 61215, IEC 61730, conformity to CE



The manageable photovoltaic panel is of 330W monocrystalline type with half-cell technology to increase energy yield.

Components



Solar Panel

Electrical Characteristics

STC	STP335S-A60/ Wfh	STP330S-A60/ Wfh	STP325S-A60/ Wfh
Maximum Power at STC (Pmax)	335 W	330 W	325 W
Optimum Operating Voltage (Vmp)	34.9 V	34.7 V	34.5 V
Optimum Operating Current (Imp)	9.60 A	9.52 A	9.43 A
Open Circuit Voltage (Voc)	40.9 V	40.7 V	40.5 V
Short Circuit Current (Isc)	10.21 A	10.13 A	10.04 A
Module Efficiency	19.9%	19.6%	19.3%
Operating Module Temperature	-40 °C to +85 °C		
Maximum System Voltage	1000/1500 V DC (IEC)		
Maximum Series Fuse Rating	20 A		
Power Tolerance	0/+5 W		

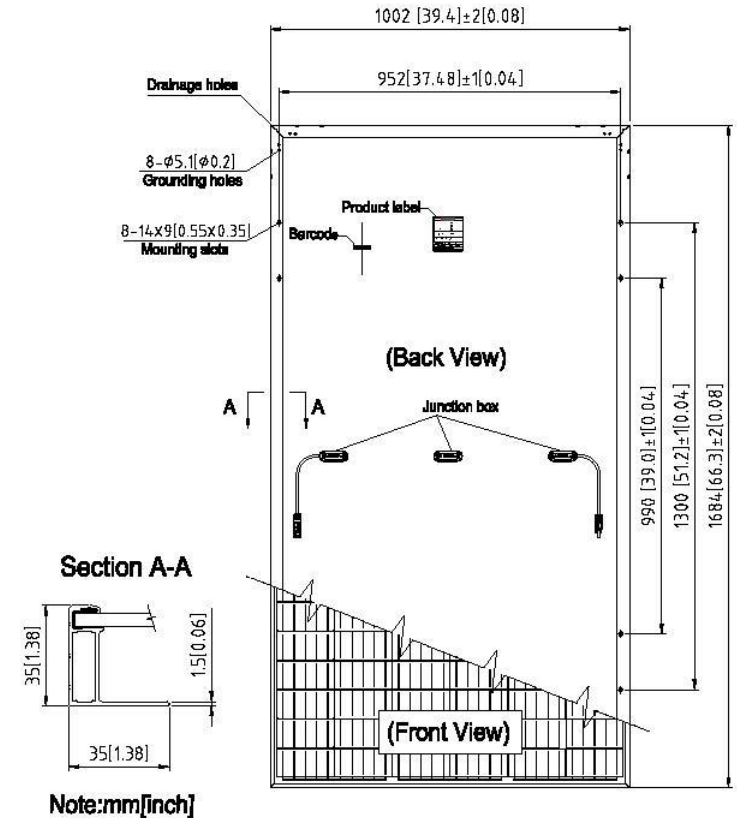
STC: Irradiance 1000 W/m², module temperature 25 °C, AM=1.5;
Tolerance of Pmax is +/- 3% and tolerances of Voc and Isc are all within +/- 5%.

NMOT	STP335S-A60/ Wfh	STP330S-A60/ Wfh	STP325S-A60/ Wfh
Maximum Power at NMOT (Pmax)	252.1 W	248.6 W	244.9 W
Optimum Operating Voltage (Vmp)	32.1 V	31.9 V	31.7 V
Optimum Operating Current (Imp)	7.85 A	7.79 A	7.72 A
Open Circuit Voltage (Voc)	38.3 V	38.1 V	37.9 V
Short Circuit Current (Isc)	8.24 A	8.18 A	8.11 A

NMOT: Irradiance 800 W/m², ambient temperature 20 °C, AM=1.5, wind speed 1 m/s;

Temperature Characteristics

Nominal Module Operating Temperature (NMOT)	42 ± 2 °C
Temperature Coefficient of Pmax	-0.37%/°C
Temperature Coefficient of Voc	-0.304%/°C
Temperature Coefficient of Isc	0.050%/°C



Components



Solar Panel

Voltage [V]	48
Nominal current [Ah]	50
Nominal power [Wh]	2400
Working voltage [V]	45~54
Charge voltage [V]	52,5~54
Maximum peak discharge current[A]	100 Ax1Min
Maximum peak current in charge [A]	100 Ax1Min
DOD [%]	90
Communication bus	RS232, RS485, CAN
Communication protocol	YD/T 1363.3-2005
Dimensions [mm]	440 x 410 x 89
Weight [kg]	24
Duration at 25°C	10+ years
Life Cycles	>6000 80% DoD
Duration of charge maintenance	6 Months with off battery
Discharge temperature [°C]	-10...50
Charging temperature [°C]	0...50
Storage temperature [°C]	-40...80
Certifications	TÜV, CE, UN38.3, TLC



The lithium battery represents the latest technological frontier for photovoltaic storage applications. Its 2.4 kWh modularity makes it suitable to be managed with a convenient drawer rack for maximum storage capacity up to 24kWh. Comes with storage rack.

Components

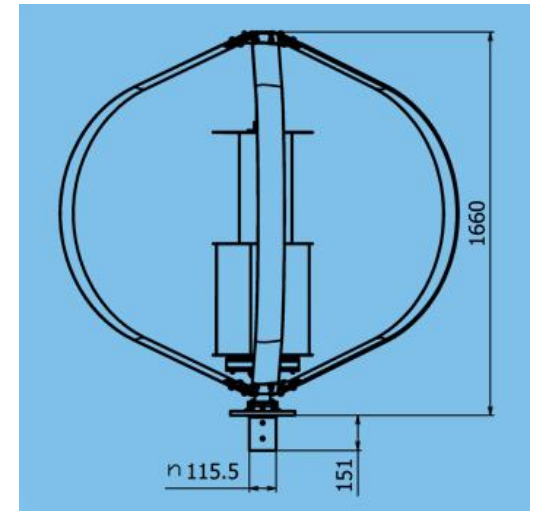
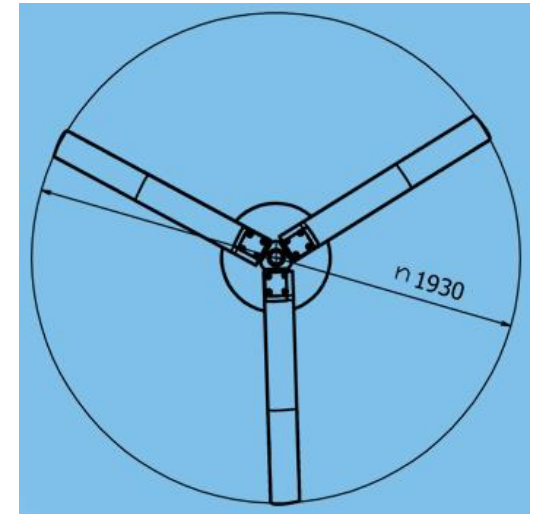
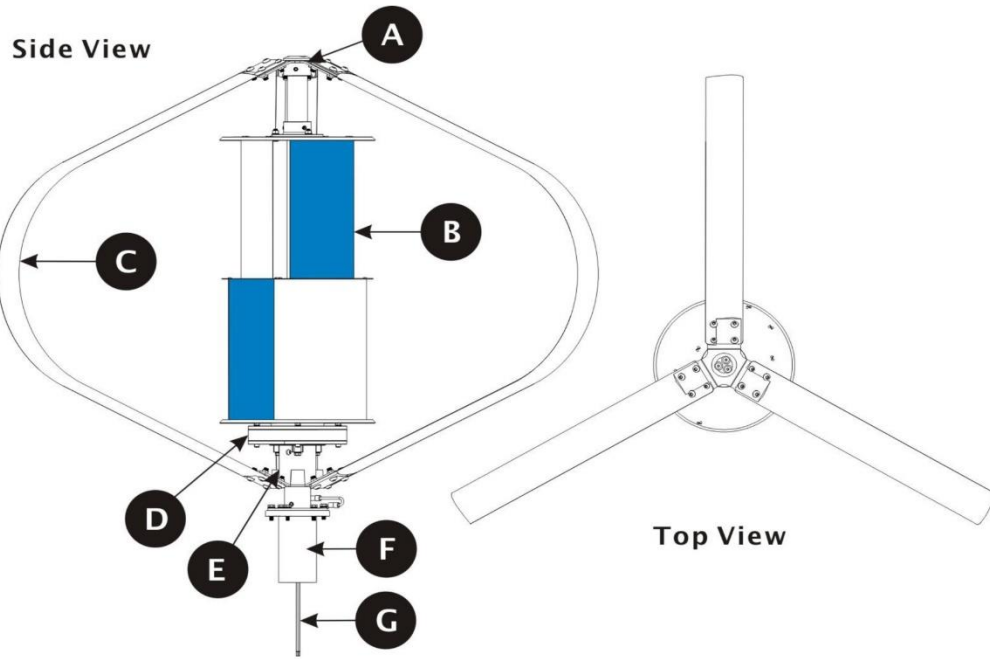


LiFePo4 48V



PORTION OF WIND PLANT

700W/1kW Vertical wind turbine



Parts	Description
A	Upper Darrieus Blades Connector.
B	S-Type Savonius.
C	3 Darrieus blades with built-in airfoil.
D	3-Phase, Direct Drive, Weather Sealed, Mechanically Integrated Permanent Magnet Generator.
E	Lower Darrieus Blades Connector.
F	Damper.
G	3-Phase R-S-T Generator Wires.

Components

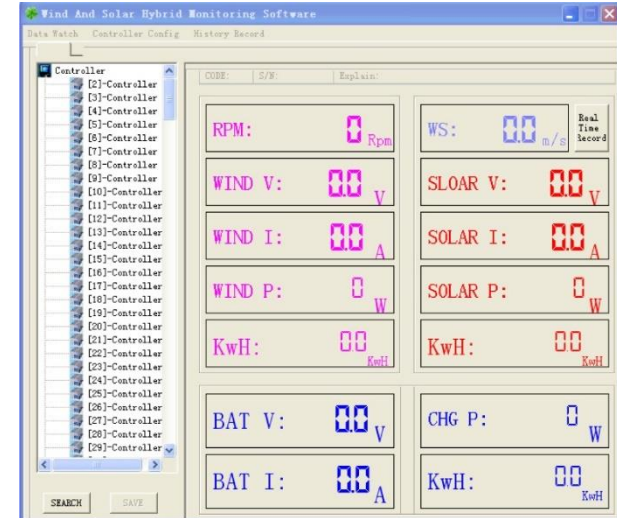
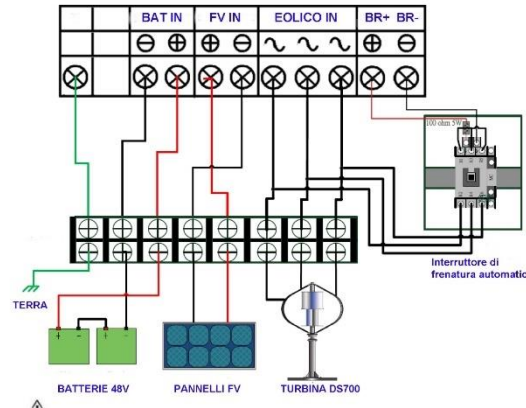


Wind turbine 1kW

700W/1kW Vertical wind turbine



MAX1500 WIND CONTROLLER



The hybrid controller can manage the wind source in complete autonomy through the MPPT curve management function of the turbine.

Advanced technology allows precise control over all generated values, turbine speed, output power, stored energy capacity.

The product is also equipped with all short-circuit, over-current or voltage protections, which can be managed by proprietary software on a computer via RS485-USB.

Components



CONTROLLER MAX1500

700W/1kW Vertical wind turbine



The pole of the vertical axis wind generator must respect the design of the connection flange of the generator itself, it is possible to make poles for ground installation or design poles after evaluation.

Components



POLE 2m (sample)

700W/1kW Vertical wind turbine



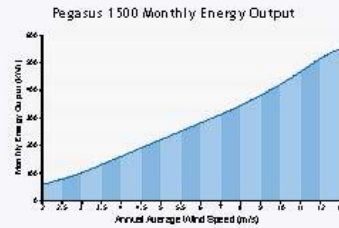
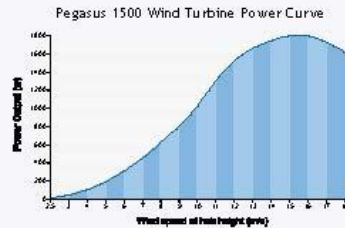
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Components



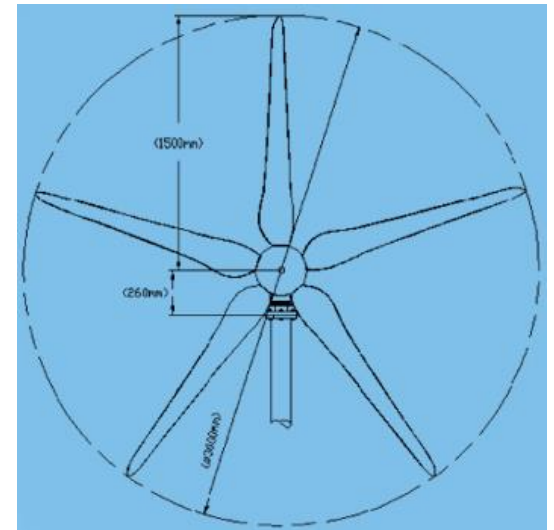
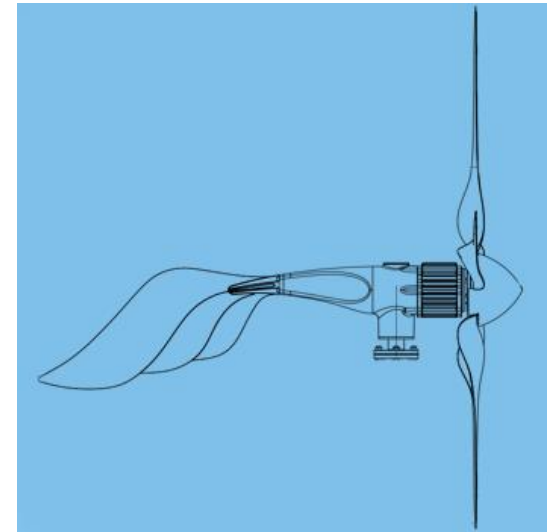
POLE 6m (sample)

1,5kW Horizontal wind turbine



Technical Specifications:

Model	HAWT-Pegasus 1500
Rated Output	1500W
Peak Output	1800W
Rated Voltage(V)	Off-grid: DC48; On-grid: DC48/12
Start-up Speed	2m/s or 4.5mph
Cut-in Speed	2.5m/s or 5.6mph
Rated Rotor Speed (RPM)	700
Rated Wind speed(m/s)	12m/s or 26.8mph
System average Cp.	≥0.38
Rated Charging Current (A)	Off-grid: 31.2/13.6
Noise Level	<20dB (5m behind turbine @ 5m/s gusting)
Working Temp. range °C	from -40°C to 60°C
Survival Max. Wind	60m/s or 133mph
Over-speed Control	Electromagnetic, magnetic damping & blade aerodynamic braking
Number of Blades	5
Rotor Diameter(m)	2.05
Swept Area (m ²)	3.3
Blade Material	reinforced nylon glass-fiber
Generator Type	Brushless 3-phase with permanent Neodymium Magnet
Generator Material	Aluminum alloy body & precision stainless steel rotor
Net Weight	35KG
Tower Connection	flange connection or bolt-on clamp
Controller Type	PWM or with low voltage charging function
Applications	stand alone, solar & wind hybrid system or grid-tie system etc.
Product Life (years)	20
Warranty (years)	5
Certificate	ISO9001:2008, CE, RoHS, ETL

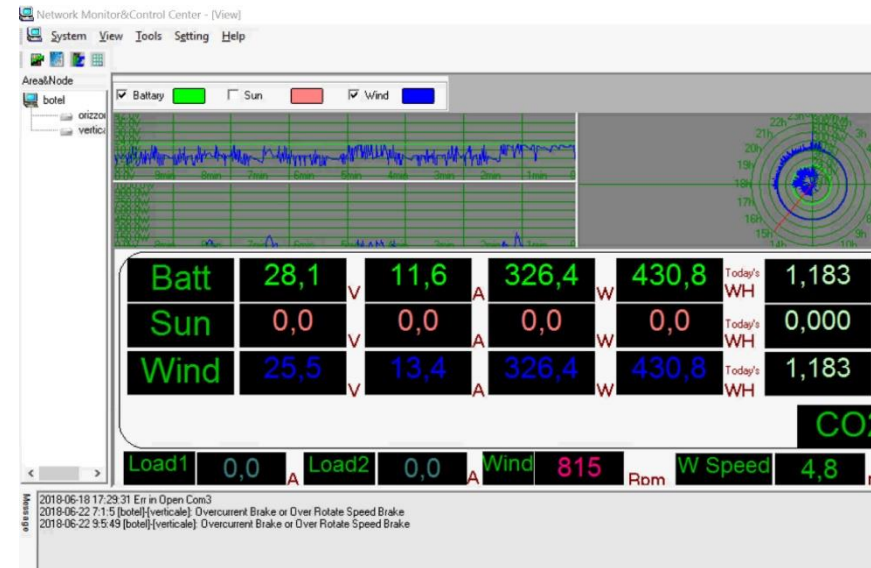
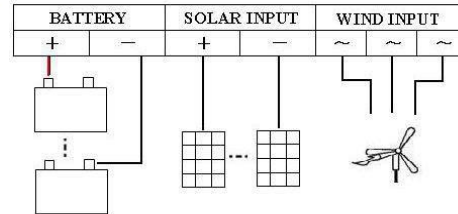


Components



Wind turbine

1,5kW Horizontal wind turbine



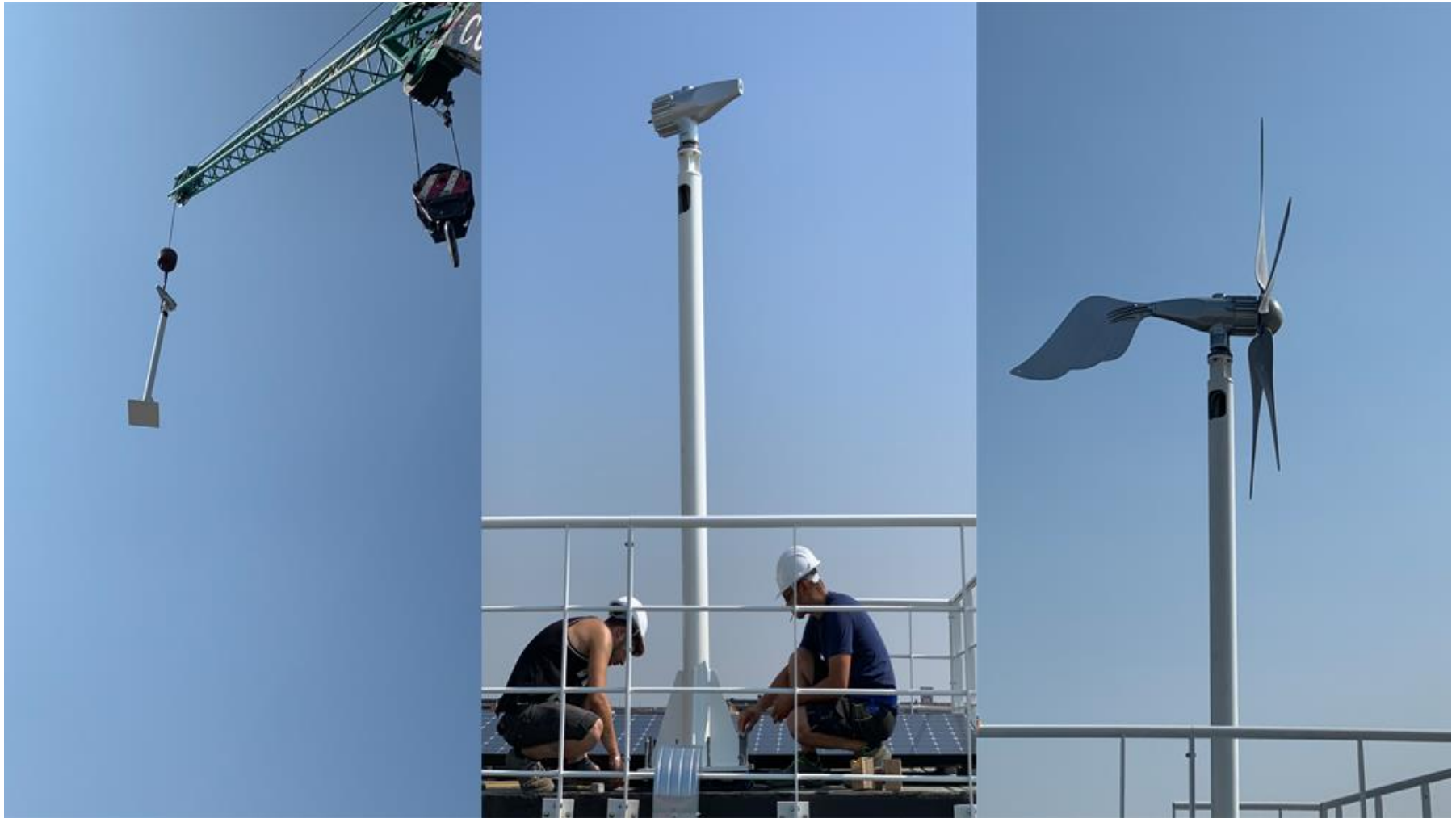
The hybrid controller can manage the wind source in complete autonomy through the turbine production management function and its protection with dumpload resistance inside the controller. Advanced technology allows precise control over all generated values, turbine speed, output power, stored energy capacity. The product is also equipped with all short-circuit, over-current or voltage protections, which can be managed by proprietary software on a computer via RS485-USB.

Components



CONTROLLER HAWT1500

1,5kW Horizontal wind turbine



The pole of the wind generator with horizontal axis must respect the design of the connection flange of the generator itself, it is possible to make poles for flat roofs or poles to design after evaluation.

Components



POLE 2,8m (sample)

THANKS FOR THE ATTENTION



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