

Solutions presentation

Supplier: Etneo Italia

Contact: Alessandro Drappo

Project name: HYBRID OFF-GRID



Etneo Italia srl, via Giovanni Bovio n°6, 28100 Novara, phone: +39 0321.697.200,
mail: alexdrappo@etneo.com - <https://www.etneo.com/en/smart-energy/>



PORTION OF PHOTOVOLTAIC SYSTEM + STORAGE





INVERTER 2-8kVA – 48V

The **Xtender kit** provides for the use of 220V-48V inverters with variable power between 2.6-4-6-8kVA, the machine has a 55A on-board transfer relay, a photovoltaic charge controller for 150V strings and up to 600V with MPPT.

The Xtender monitoring kit allows, both via physical display and via LAN connection to an existing internet network, to activate monitoring via the web portal in order to always have the management of active loads and wind production under control.

The temperature sensor combined with the BSP-500 battery device allows you to have a control on the battery for optimized charge management based on temperature variations and a display of the residual percentage.



DISPLAY RCC-02



VS70

Xcom-LAN



BSP-500



Components



Kit inverter Xtender

Alternatively, it is possible to have a pre-wired cabinet containing inverters, a battery control system for direct communication between energy generation and charge / discharge management, a dedicated remote monitoring system.



Components



Single-phase cabinet kit

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



Il pannello fotovoltaico gestibile è di tipo monocristallino di potenza 330W con tecnologia half-cell per aumento resa energetica.

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		

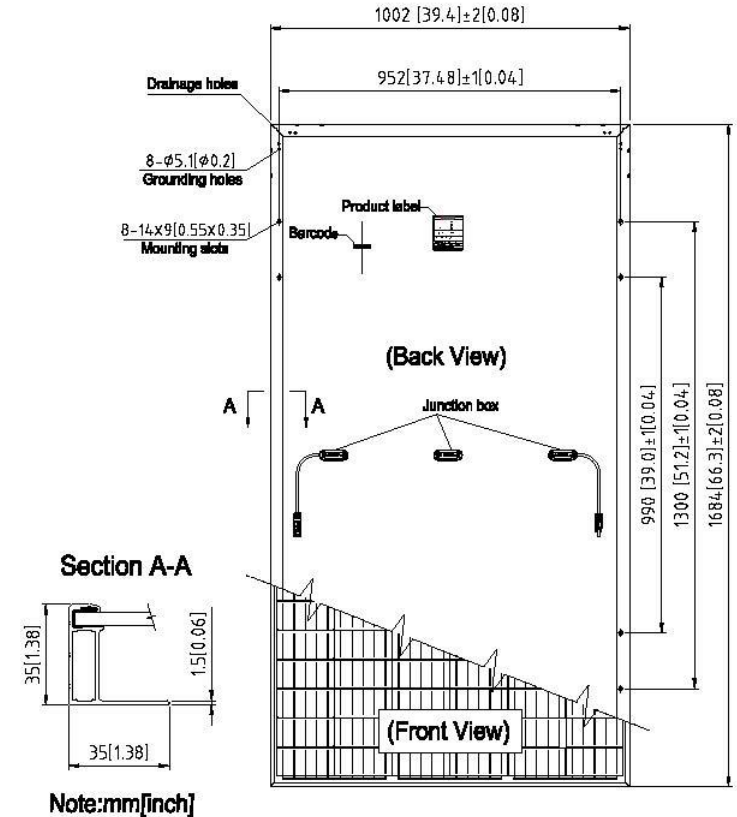
STC: Irradiance 1000 W/m², module temperature 25 °C, AM=1.5;
Tolerance of Pmax is +/- 3% and tolerances of Voc and Isc are all within +/- 5%.

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

Nominal Voltage	51,2V
Nominal Capacity	72Ah / 3,69kWh
Internal Resistance	≤ 50mΩ
Cycles	>3000
Self Discharge	<3% al mese
Energy Efficiency	>96%
Charge Voltage	56 ± 0,2V
Charge Mode	CC/CV: Constant current/ Constant voltage
Contiunuous Charge Current /Maximum Charge Current	35A (MAX 70)
BMS Charge Cut-off Voltage	57 ± 0,8V
Contunuous Discharge Current	90A (4,61kW)
Maximum Discharge Current (<30s)	130A (6,57kW)
BMS Discharge Cut-off Voltage	40V
Charge Temperature Range	0°~50C° a 60±25% relative humidity
Discharge Temperature Range	-20~60C° at 60±25% relative humidity
Storage Temperature	0°~50C° at 60±25% relative humidity
IP Protection Level / Casing Material	IP66/ABS
Dimensions	L 500* P 280* H 217mm
Weight	31,2Kg
Terminal	M8
Certification	CE, RoHS, UN 38.3, UL e CB



The use of **LiFePO4** batteries offers significant advantages over lead technology: small size, higher energy density, possibility of deep discharge up to 100%, higher resistance to high temperatures, longer life. Integrated BMS with automatic cells balancing.

Components

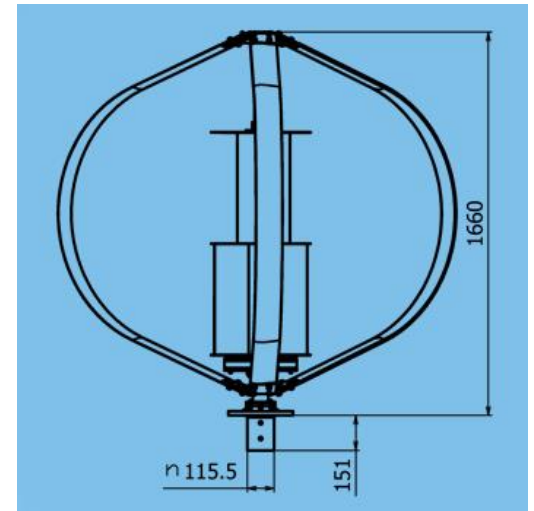
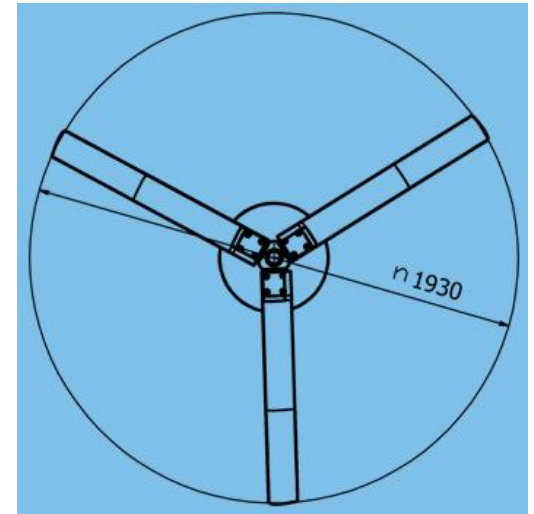
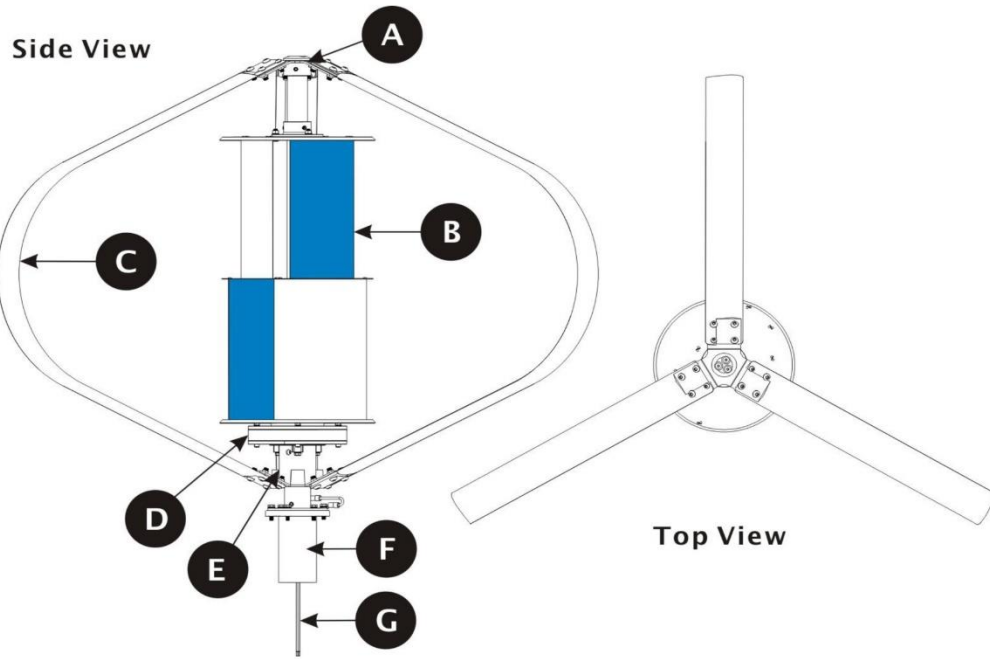


LiFePO4 48V72Ah (*x)



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

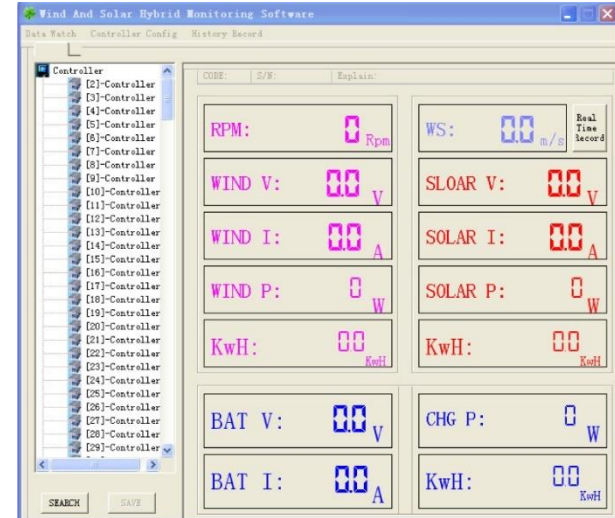
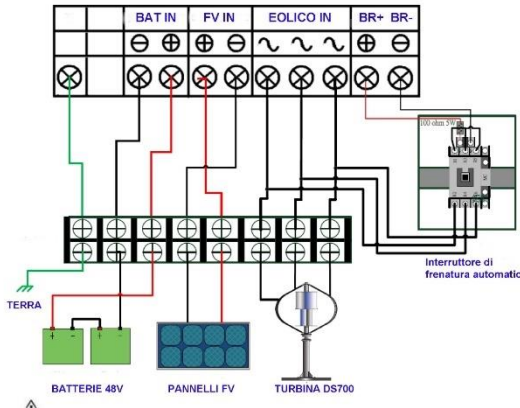


Wind turbine 1kW

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



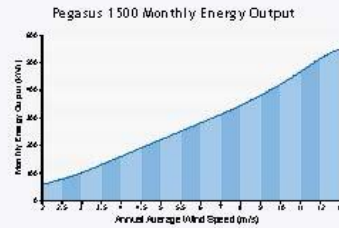
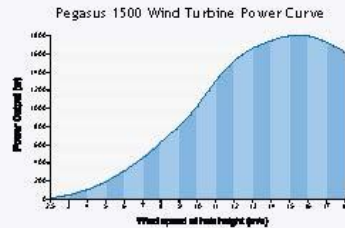
The pole of the vertical axis wind generator must respect the design of the connection flange of the generator itself, it is possible to make poles for ground installation or design poles after evaluation.

Components



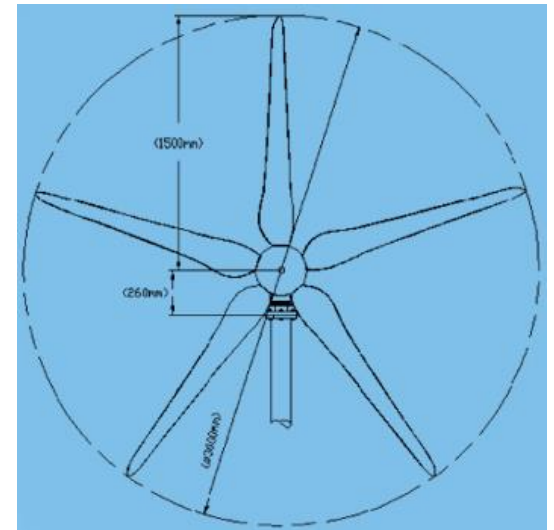
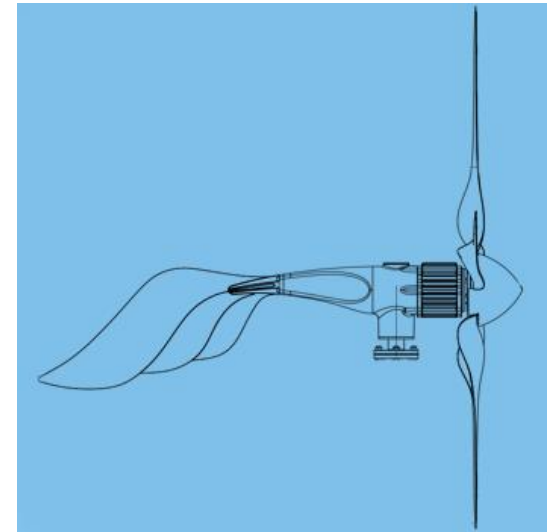
POLE 6m (sample)

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

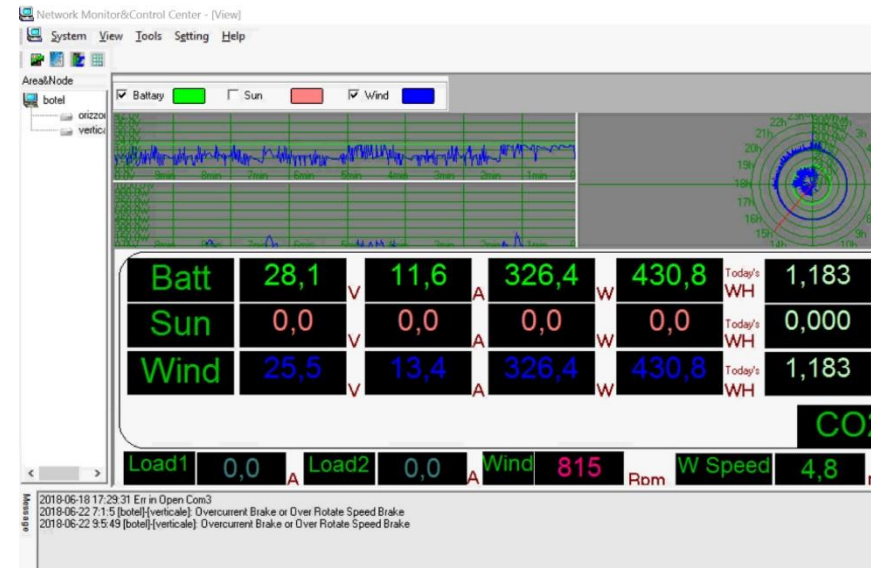
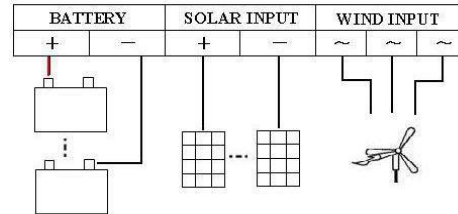


Components



Wind turbine

1,5kW Horizontal wind turbine



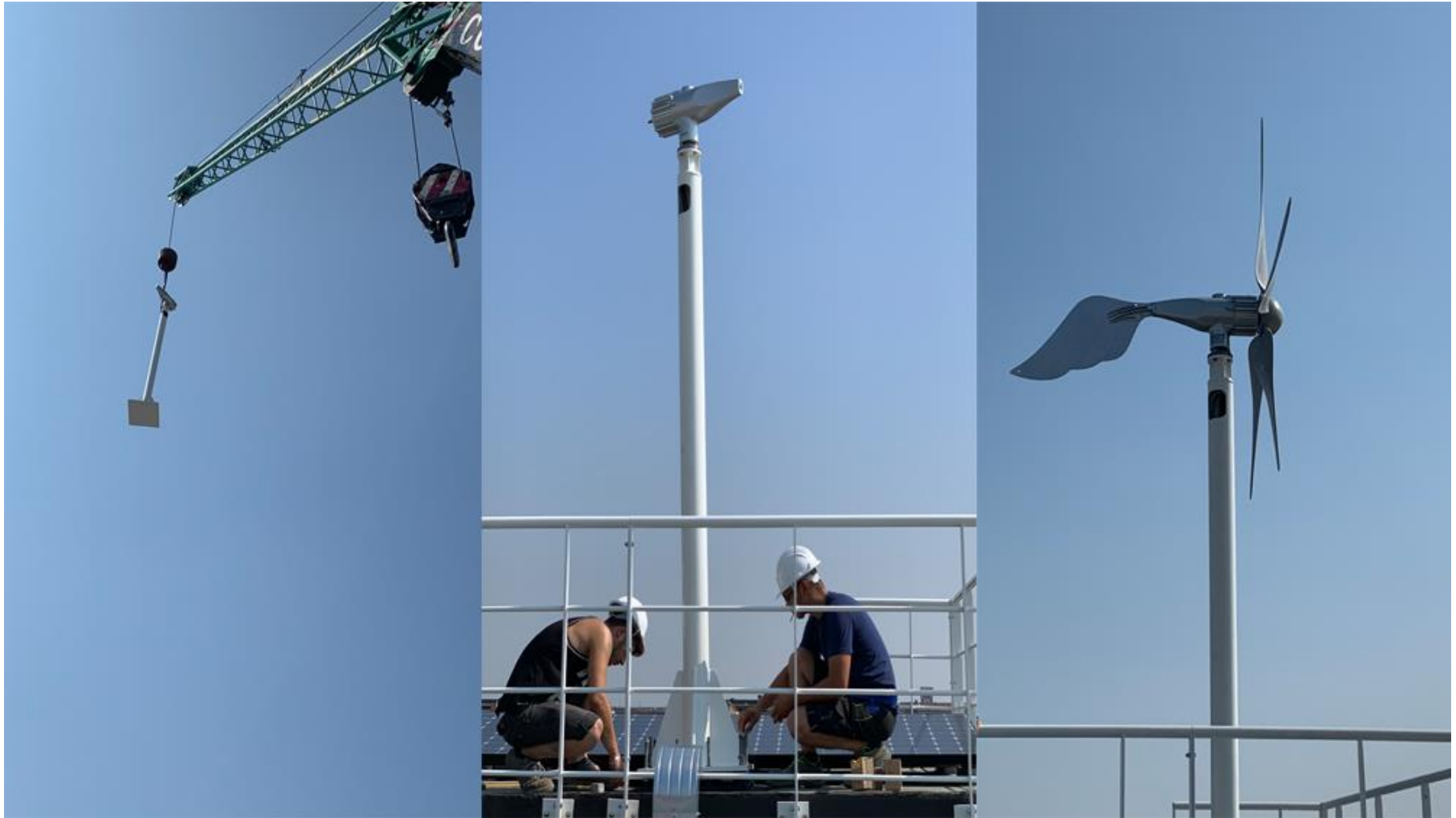
The hybrid controller can manage the wind source in complete autonomy through the turbine production management function and its protection with dumpload resistance inside the controller. Advanced technology allows precise control over all generated values, turbine speed, output power, stored energy 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)

The screenshot displays two main sections of the web portal. The left section, titled "Quick overview - Daily energy", provides a summary of energy production and consumption. It includes data for Today and Yesterday for both Production and Consumption in kWh, and Today and Yesterday for Charge and Discharge in Ah. The right section, titled "Aedificare", shows a map of the location "Piazza Giuseppe Garibaldi" with various landmarks and a red location pin.

Quick overview - Daily energy

Icon	Today Production :-- kWh	Yesterday Production :-- kWh	Today Consumption :-- kWh	Yesterday Consumption :-- kWh
	Today Consumption :-- kWh	Yesterday Consumption :-- kWh	Today Charge :-- Ah	Yesterday Charge :-- Ah
			Today Discharge :-- Ah	Yesterday Discharge :-- Ah

Aedificare

Location

Map showing Piazza Giuseppe Garibaldi, Via San ..., Corso ..., Via Nicc..., and other landmarks. Includes a red location pin and a blue circular icon.

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Need help ? Manual of the Studer Portal. Contact Us

Real-time (and historical) monitoring of the installed components via web portal. Ability to view production data, consumption, battery charge / discharge, remote interventions for assistance or maintenance.

Components



Remote monitoring via web

THANKS FOR THE ATTENTION



Etneo Italia srl, street Giovanni Bovio n°6, 28100 Novara, phone:+39 0321.697.200
Mail: energia@etneo.com - <https://www.etneo.com/en/smart-energy/>