

ARC Wind — Vertical Axis Turbine

Deployable 400-500W Vertical Wind Turbine | Spiral Rotor | Low Wind Start | HSR Compatible

OVERVIEW

The ARC Wind Vertical is a compact, low-wind-start vertical-axis wind turbine optimised for all-day and night energy harvesting. Featuring a spiral aerofoil rotor, the system starts generating at just 1.8 m/s and is suited to turbulent, variable, or low wind conditions where horizontal turbines are less effective.

The turbine is pre-mounted directly to the ARC case lid — there is no field assembly required. Open the case, place it on level ground, and it is operational in under three minutes with no tools.

The integrated MPPT wind charge controller includes auto cut-in, cut-out, overvoltage, and overcurrent protection. Output connects directly to the 24V wind input on any Powapacs HSR unit. Multiple units can be merged using MPPT outputs.

Rated to 35 m/s survival wind speed. Altitude operation up to 3,500m. CE and UKCA self-certified. UKCA, CE, EMC, LVD, and RoHS compliant.

Patent Pending: GB2509422.0.



400-500 W Rated Power	24V DC Output Voltage	<3 min Deploy Time	<=18 kg System Weight
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TECHNICAL SPECIFICATIONS

SPECIFICATION	VALUE	SPECIFICATION	VALUE
System Type	Vertical axis wind turbine (spiral rotor)	Overall Height	~960 mm (case + turbine)
Rated Power	400 - 500W (low wind optimised)	Generator Housing	Sealed aluminium or composite base module
Nominal Voltage	24V DC	Case Type	Rugged Pelican-style hard case, custom foam
Power Conversion	Internal MPPT with integrated 3-phase rectifier	Case Dimensions	952 x 689 x 365 mm
Deploy Time	Under 3 minutes — no tools required	Internal Layout	Turbine pre-mounted to lid — no assembly
System Weight	<=18 kg (turbine, case, cables)	Cable Management	Internal routed tail to waterproof DC output
Generator Type	3-phase AC permanent magnet (low RPM)	Anchoring	Optional corner strap points + ground screws
Controller Type	Internal MPPT wind charge controller	DC Output Connector	SP21 or XT60 (IP-rated 2-pin)
Voltage Regulation	MPPT with auto cut-in, cut-out, OV/OC protection	HSR Compatibility	Direct plug-in to 24V wind input on HSR
Internal Wiring	3-core silicone 1.5mm ² pre-installed through case	Parallel Operation	Multiple units merged using MPPT outputs
Connector System	Direct tail cable to HSR with SP21 or XT60	Operating Temperature	-20°C to +55°C
Startup Wind Speed	1.8 - 2.2 m/s	Storage Temperature	-30°C to +70°C
Rated Wind Speed	~8 m/s	IP Rating	IP65 minimum (turbine, connectors, MPPT)
Cut-Out Speed	~13-14 m/s (controller limited)	Altitude	Up to 3,500m above sea level
Max Survival Speed	35+ m/s	Noise Level	<35 dB at 10m
Typical Night Output	0.15 - 0.5 kWh (location dependent)	Expected Service Life	10+ years with standard maintenance
Blade Type	Spiral aerofoil (black)	MTBF (Electronics)	>50,000 hours (MPPT + rectifier)
Blade Material	Glass-fibre reinforced composite	Shock Resistance	10g, IEC 60068-2-27
Turbine Height	~600 mm	Vibration Tolerance	IEC 60068-2-6, 10-500 Hz
Turbine Diameter	~400 mm	Certifications	CE, UKCA, EMC, LVD, RoHS, REACH
Mounting System	Fixed-mount directly on ARC case lid	Patent	Pending: GB2509422.0
Overall Footprint	952 x 689 mm (same as ARC case)		

PRIMARY USE CASES

<p>Military & Defence</p> <p>All-day and night wind harvesting at welfare units, OP positions, and field comms nodes.</p>	<p>Construction & Civil Engineering</p> <p>Low-wind overnight recharging for HSR units on sheltered or urban construction sites.</p>	<p>Humanitarian & Emergency Response</p> <p>Compact, quiet wind power for camps, clinics, and logistics hubs in varied terrain.</p>
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