

D400 Wind Generator

The D400 is a direct-drive wind generator, designed for a variety of marine and terrestrial applications. It is exceptionally quiet and vibration-free in operation.

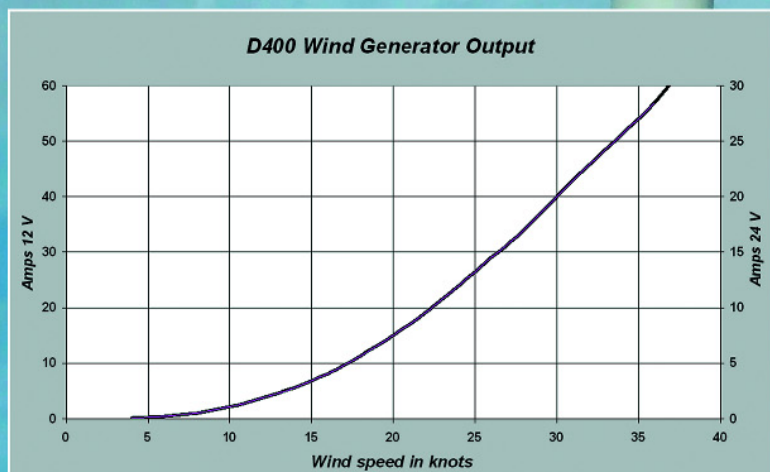
The D400 features a powerful 3-phase alternator, and computer-designed rotor blades optimised for low speed, user-friendly operation.

This innovative machine is extremely efficient in low wind speeds, yet is capable of sustained power outputs of over 500 watts in higher winds. Distinctive and elegant in design, the D400 is superbly engineered for long, trouble-free service.

Features of the D400:

- ★ Ideal for mounting on buildings or boats
- ★ Virtually silent and vibration free in operation
- ★ Highly efficient and productive at all wind speeds
- ★ Low maintenance 'fit and forget' engineering
- ★ Attractive, visually pleasing design
- ★ Robustly constructed for a long service life
- ★ Corrosion-resistant materials used throughout
- ★ Flexible mount tower options
- ★ Available in black or white

- ★ Rated output:
 - 235W at 11 m/s (22 kts.)
 - 420W at 14 m/s (28 kts.)
- ★ 12,24,48 volt available
- ★ Rotor 1.1m. diameter
- ★ Turning circle 700mm
- ★ Weight 17 kg



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www.D400.co.uk

D400 Wind Turbine Specifications

Performance & Power outputs	Rated power	235 W @ 11 m/s (22 knots), 420 W @ 14 m/s (28 knots)
	Maximum power	600 + W
	Rotational speed	1100 rpm @ 14 m/s
	Cut-in speed	2.5 m/s (5 knots)
	Cut-out wind speed	None
Turbine features	Turbine type	Horizontal axis upwind
	Number of blades	5
	Airfoil type	Low Reynolds – variable camber
	Diameter of turbine	1.1 m
	Swept area	0.95 sq. m
	Tip speed ratio	4
	Typical noise level	2 – 6 dbA over background
	Blade material	Glass-filled nylon
Alternator features	Alternator type	Direct drive – axial field
		12 pole permanent magnet generator
	Design	3-phase AC with rectification
		Outputs direct current (DC)
		Annular high energy magnet rotors
		Encapsulated stator windings
	Voltages available	DC: 12 V, 24 V, 48 V, 72 V
		AC: 240 V grid connect via inverter
	Materials	Aluminium alloy housing, hermetically sealed
		Alocrom 1200 corrosion protection and polyester powder coat
		316 stainless steel shafts and A4 stainless fasteners
	EMI (electromagnetic emissions)	C.E. compliant
	MCS Accreditation	Pending
	Control system	Stall regulation
	Brake system	Electromagnetic braking switch
Yaw system	Passive	Low resonance, formed aluminium tail
		Heavy duty slip ring assembly with saddle spring loaded output brushes
	Turning circle	700 mm
Mounting	Typical stub tower	50 mm – 75 mm O/D
Weight	Total	17 kg
Finish	Colours available	White with white blades
		Black with translucent blades



TEST RESULTS

	Wind speed knots	Amps	Volts	Noise level
AEROGEN				
Aero2gen	10		12.3	quiet
	15	1	12.4	
	21	2	12.5	
	27	2	12.6	
	35	4	12.8	
Aero4gen	9	1	12.4	quiet
	12	2	12.7	
	15	3	12.8	
	17	4	13	
	19	5	13	
	20	7	13.2	
Aero6gen	9	2	12.9	quiet
	18	10	13.8	
AIR-X				
Air-X	No output recorded			light noise
AMPAIR				
Pacific 100	9	1	12.7	
	11	3	13	
	16	4	13	
	18	6	13.2	
	20	6	13.3	some noise
	25	7	13.5	above 20 knots
DUOGEN AND D400				
DuoGen	15	2	12.3	slight noise
	20	3	12.4	
	25	7	13	
	30	10	13.1	
D400	7	3	12.4	quiet
	15	7	12.8	
	19	12	13	
	20	16	13.9	
	25	21	14.3	
	30	30	15	
RUTLAND				
503	13	1	12.4	quiet
	20	1.5	12.4	
	25	2	12.5	
	30	5	12.8	
913	12	1	12.3	quiet
	16	3	12.5	
	20	4	12.6	
	25	7	13	
	30	14	13.8	

Charging ability

With an average wind of only nine knots in July on the UK's south coast, output at low wind speed is going to be paramount.

The Aero2gen gives only about 0.3A at nine knots, producing about 7Ah per day. The Rutland 503, gave a little more at 0.4A, equating to about 10Ah per day.

The Aero4gen, Air-X, Ampair Pacific 100 and Rutland 913 all produce about 1A at nine knots, so will produce about 24Ah per day – enough to run a well insulated fridge.

The Aero6gen and the DuoGen both give about 1.5A at nine knots (manufacturers' claimed figures), so provide 38Ah per day for our average day.

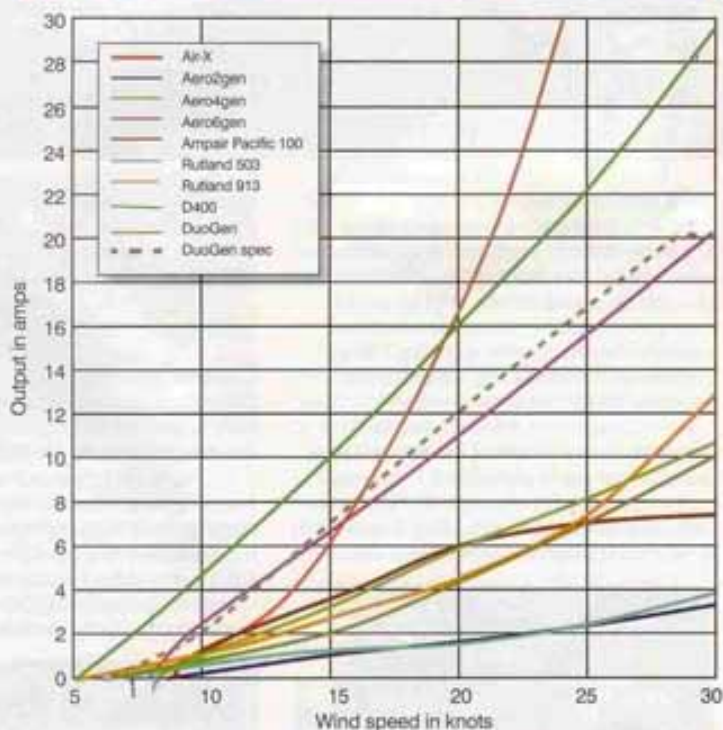
The D400 produces 3.8A at nine knots, so you are looking at a very respectable 91Ah per day.

* Manufacturers' figures

GENERATOR OUTPUT

	Amps at nine knots	Ah per day at nine knots
Aero2gen	0.3	7.2
Aero4gen	0.8	19.2
Aero6gen	1.6	38.4
Air-X	1*	24*
Ampair Pacific 100	1	24
DuoGen	1.5*	36*
D400	3.8	91.2
Rutland 503	0.4	9.6
Rutland 913	1	24

OUTPUT RESULTS



Conclusion

Wind turbines will be turning 24 hours a day, 365 days a year in all weathers and have a very hard life. Although we have indicated best buys, these cannot reflect the turbine's long term reliability or customer satisfaction. For that reason, personal recommendation and the use of the Internet forums (see www.ybw.com), will help the potential buyer to form his own opinion.

It's unlikely that wind energy will supply a cruising yacht's electrical requirements under average conditions. This mirrors what we found last month with solar panels. Using 60W of solar panels and a medium-sized wind turbine could produce around 50Ah per average day along the South Coast in summer – still well short of the average cruising yacht's requirements when not using marinas. However, in combination, they should allow extended time away from shore support if your battery bank is large enough.