

MOWEA Champ 400 – Modular Small Wind Turbine

PRODUCT DESCRIPTION AND USE CASES



Fig. 1: Free-field test of a 10-kilowatt modular turbine system in northern Germany. Official measurement by Germanischer Lloyd

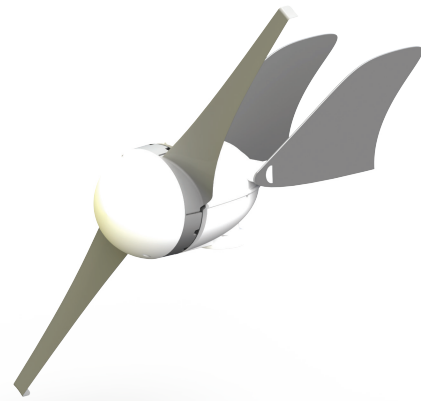


Fig. 2: MOWEA Champ 400 with wind vane. Might be subject to change

The MOWEA Champ 400 is a modular small wind turbine and ideal for independent, decentral and clean energy production in domestic and industrial contexts. Its best in class efficiency results from an optimized aerodynamic concept and an innovative electrical control system. Cut-in wind speed is low with 3 meters per second and nominal output is reached at 10 m/s. The modularity allows to start with one single turbine and to scale up later by connecting more turbines with increasing energy demand. Moreover, the MOWEA Champ 400 can be used to build large scale systems of several kilowatts, e.g. in form of semi-flexible nets that hang between pillars or buildings (compare Fig. 1 above).

Typical use cases are off-grid energy supply, reduction of energy costs and energy backup.

- Charging batteries
- Feeding closed off-grid networks (microgrids)
- Bridging energy outages
- Powering water pumps
- Supplementing solar-PV systems
- Reducing diesel consumption
- Powering electronic devices such as LED-lights, mobile phones, laptops, TVs, radios, fridges
- Industrial zones and office buildings
- Telco towers
- Operation in parallel with a network



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DATA SHEET

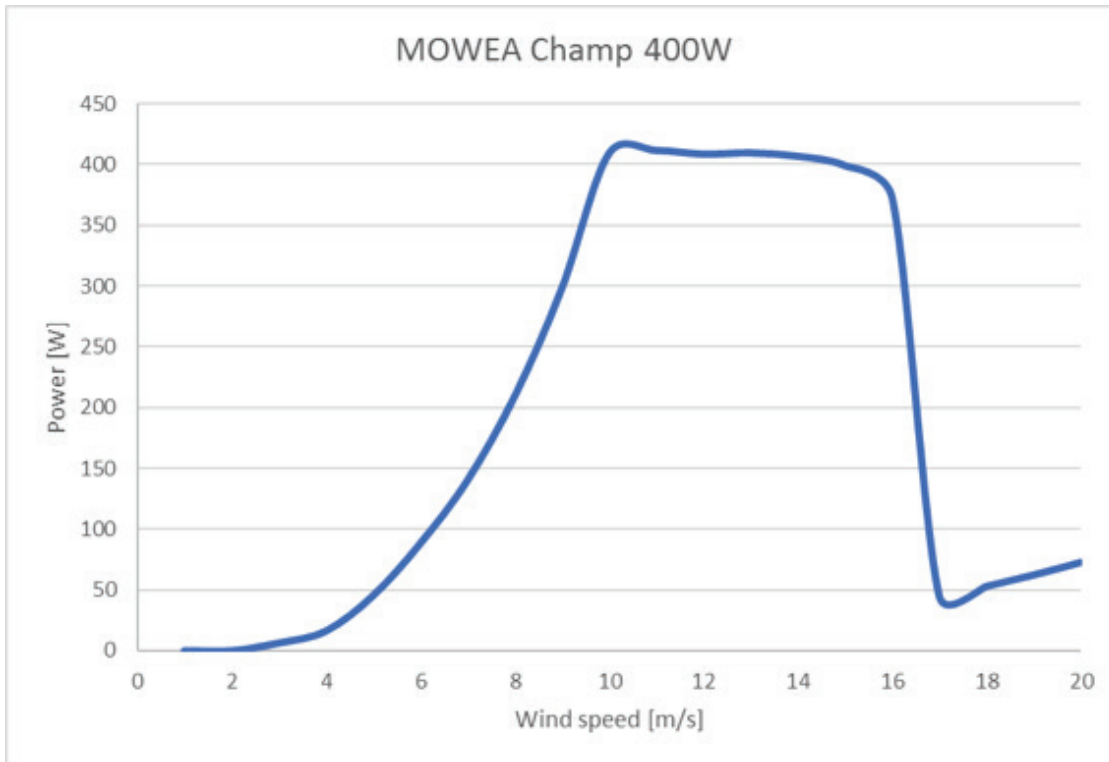
Product Description - MOWEA Champ 400 / Cube 400		
Highly efficient small wind turbine optimized for low and medium wind speeds. Optional in a cubical format for easy installation on rooftops (MOWEA Cube). Can be used stand-alone or in a modular system of turbines (400 watt to several kilowatt). Use cases: Feeding into AC-grid, operation in parallel with a network or as a battery charger. Easy integration into existing solar-PV systems.		
Rotor	Value	Description/Units
rotor diameter	1.5	m (meter)
swept rotor area	1.8	m ²
number of blades	2	blades
orientation		horizontal axis, lee (no wind vane)
material of blades and hub		spray cast, rigid, PP, 30 % glass fiber
tip speed	75	m/s (meter/second)
tip speed ratio	7.5	TSR
Drive Train (as officially measured by Germanischer Lloyd SE)		
rated output power	411	W (watts)
peak output power	450	W (watts)
gear box	-	gearless drive
generator type		3 phase permanent magnet synchronous generator
rotation speed	950	rpm
Performance		
voltage output	220	VDC (DC-voltage)
storage application (MOWEA Hybrid controller needed)	12 / 24 / 48	VDC (DC-voltage)
grid application (standard single phase grid converter needed)	230	VAC (AC-voltage)
cut-in wind speed	3	m/s (meter/second)
rated wind speed	10	m/s (meter/second)
survival wind speed	50	m/s (meter/second)
Control System		
power control		variable speed, MPPT, stall
power limitation		stall
yaw		lee (no wind vane)
Safety Mechanism		
aerodynamic		stall
electric		electrical brake and on-off switch
weight (Champ 400)	8	kg
weight (Cube 400)	13	kg
Comments		
blades have winglets for noise reduction		
Champ 400: tower can be ordered separately		
Cube 400: housing included		



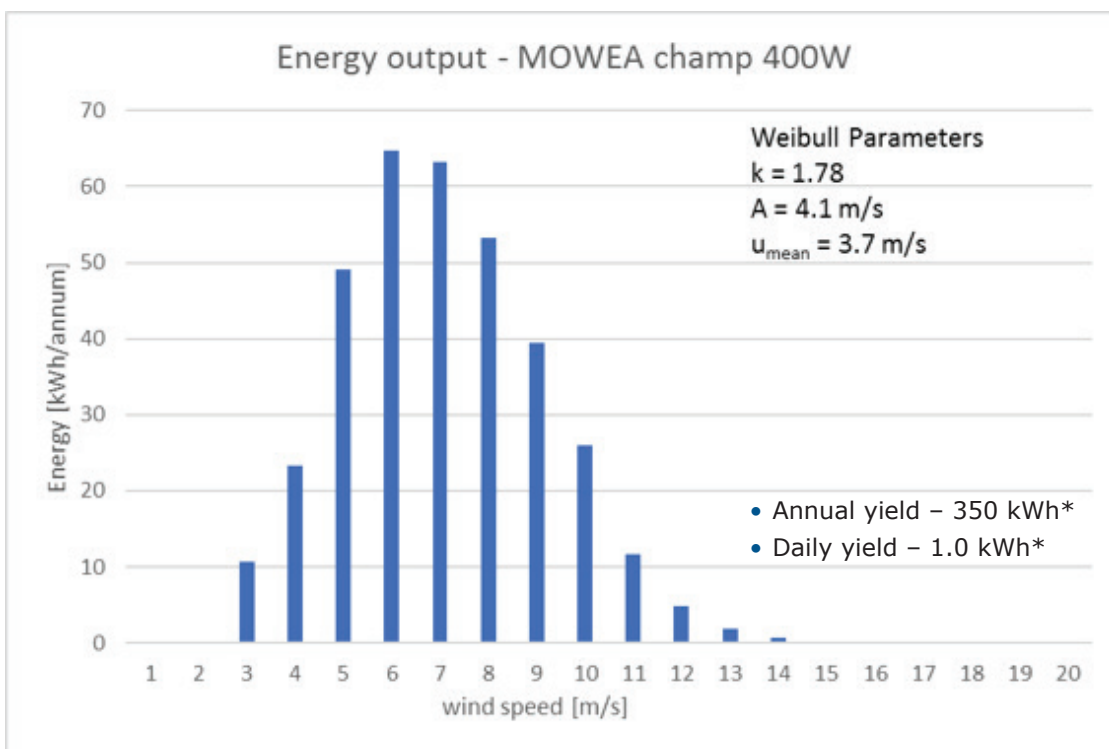
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POWER CURVE



SIMULATED YIELD CASE – HANNOVER AT 10 METERS HEIGHT



*Actual output will vary based on site conditions & tower heights