

MOWEA Cube 400 – Modular Rooftop Wind Turbine

PRODUCT DESCRIPTION AND USE CASES

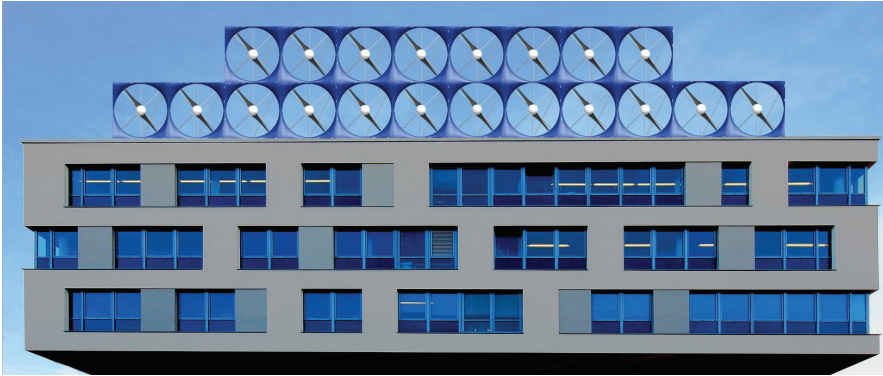


Fig. 1: Conceptual design of a rooftop installation of MOWEA Cube 400 modules with a maximum power generation of 10 kilowatts.

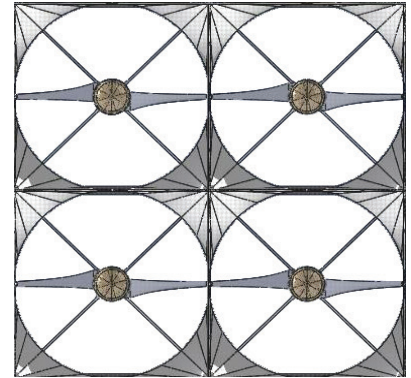


Fig. 2: Conceptual design of the MOWEA Cube 400.

The MOWEA Cube 400 is specifically designed for easy installation on rooftops. It can be used as a stand-alone product and scaled up later by adding additional cubes in a horizontal or vertical manner to form systems of several kilowatts. The cubical construction is of low weight and high stability. It minimizes vibrations and noise emission and acts as a protection for birds and bats. Moreover, the aerodynamic concept funnels the wind and increases the energy yield. If required due to unstable wind conditions, the cubes can be mounted on a flexible base with a yawing mechanism for ideal wind orientation.

The turbine used in the MOWEA Cube 400 is derived from the MOWEA Champ 400. The optimized rotor blades and the innovative electrical control system guarantee a maximum energy yield. Cut-in wind speed is low with 3 meters per second and nominal output is reached at 10 m/s.

The MOWEA Cube 400 is ideal for independent, decentral and clean energy production in domestic and industrial contexts. Typical use cases are:

- Integration in new housing facilities or industrial sites
- Compliance with regulations for increasing renewable energy supplies
- Reduction of energy costs
- Marketing purposes of corporates
- Off-grid energy supply
- Bridging energy outages
- Charging batteries
- Powering water pumps
- Supplementing solar-PV systems
- Replacing diesel generators
- Powering industry and household devices, such as lights, fridges, heaters, washing machines, electrical work machines, and office devices



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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		