

## Vertical axle wind power station

The Vertical axle wind power station is comprised of vertical axle wind turbines (VAWT). Each VAWT is made as a separate module.

### Technical description of VAWT module

Geometrical shape	Cylindrical
Construction materials	Steel
Diameter, mm	900
Height, mm	3000
Weight, kg	250
Working wind speed range, m/s	3-50
Mechanical braking system	Not required. Braking is performed by electric load.
Starting wind speed m/s	1,8
Maximum allowable wind speed (to stop rotor)	Unconditioned
Wind speed and yaw control system	Not required.
Wind exposure effective area, m <sup>2</sup>	5,4
Blades configuration	Vertical, profiled
Blades work surface area, m <sup>2</sup>	3,6
Connection with generator	Direct, without gear box
Rated rotation speed, rev/min	300
Temperature range	-40 до +50
Yaw control system	Not required
Noise	0 dB, at 10 m distance
Safety	The device is completely save, prohibited area not required
Working life, years	25



## Generators.

Technical description.

All generators are made on two rotor basis to enable adding of two moments of rotation in opposite directions.

Vertical axle power generator, 1 kW

Generator type-magneto electric	On constant magnets
Rated power output, VA	1000
Maximum power output, VA	1500
Rotation frequency under rated load, rev/min	400

Vertical axle power generator, 3 kW

Generator type-magneto electric	On constant magnets
Rated power output, VA	3000
Maximum power output, VA	4000
Rotation frequency under rated load, rev/min	400

Vertical axle power generator, 5 kW

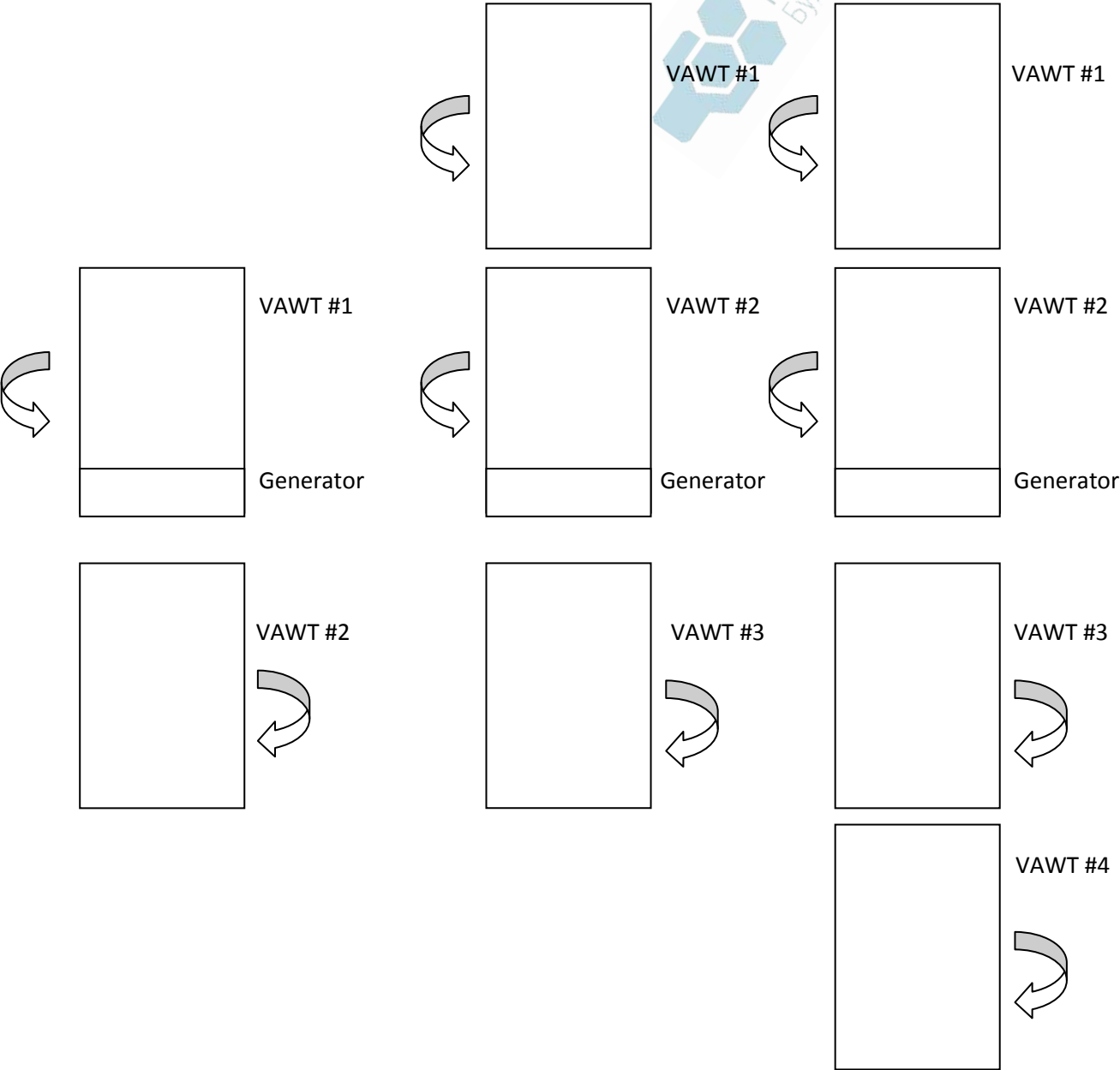
Generator type-magneto electric	Synchronous
Rated power output, VA	5000
Maximum power output, VA	5500
Rotation frequency under rated load, rev/min	300

Vertical axle power generator, 5 kW

Generator type-magneto electric	Synchronous
Rated power output, VA	20000
Maximum power output, VA	20500
Rotation frequency under rated load, rev/min	300

**Configurations.**

Depending on the required power consumption and average annual wind characteristics, the use of VAWT modules makes it possible to create different configurations of vertical axial wind power installations.



Those configuration changes are carried out promptly with the minimum time and resource expenditures, since all modules are standard and have standardized bracing units.

The use of the configurations given above: generators of four types, inverters, solar cells, diesel generators, on the basis of the technical specifications of customer, makes it possible to arrange

the power systems with output power of 1 kW, 2 kW, 5 kW, 7 kW, 20 kW with different degree of warranty and for the regions with different average annual wind characteristics.


The use of VAWT, allows to integrate the wind element of the power system, compact as it is, into the body of the greenfield base station tower and to raise it to the necessary height, for its accessibility to high-altitude wind currents. The solar battery cells also can be fixed on the elements of the tower. This solution make it possible to substantially decrease the expenditures, since is no necessity to build a separate support for positioning on it the wind element of the power system.









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