

FAN TURBINE

30KW,50KW, 100KW, 1MW, 20MW

Technical specification



1900% GREATER SURFACE AREA WIND ENERGY CAPTURE



1MW CONVENTIONAL VERSUS 1 MW FAN TURBINE



1. General

We have developed a revolutionary wind turbine for the clean energy market with the first hyper light, surface area Fan based Turbine.

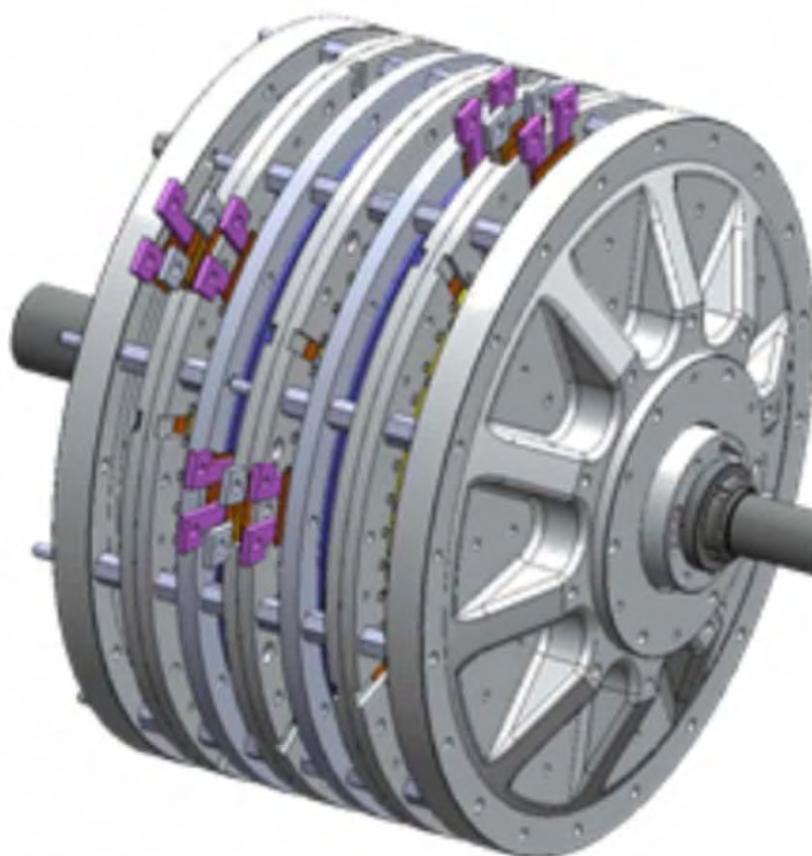
On the basis of thorough technical and economic research the Fan Turbine concept, which allows electricity to be produced with a new revolutionary carbon molding technology captures exponentially more wind energy than all its predecessors.

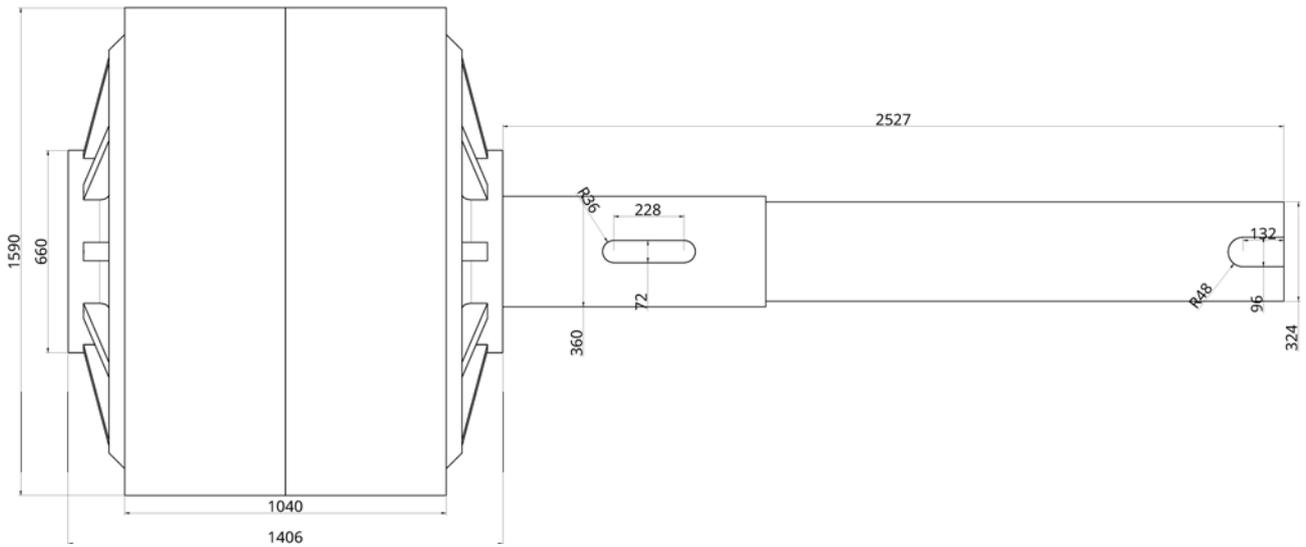
The Fan Turbine wind turbine consists of a direct drive low-torque Axial Flux coreless generator. The generator is highly efficient, delivering exponentially more power per kg than previous generators

Low height and installation costs are also benefits of the Fan Turbine-concept. The maintenance is designed so that the production stops are virtually eliminated.

General	
Type	4-10 blades, 10 degree tilt, up-wind
Power	variable speed
Rated power	30KW/50KW/100kw/1MW/20MW
Rotor diameter	6M/8M/10M/25M/120M
Cut-in wind speed	1,0 m/s
Rated wind speed	12,5 m/s
Cut-out wind speed	20,0 m/s
Design maximum	59,5 m/s (at hub height)
Generator speed	1000/1000/800/500/200rpm
Generator weight	150/200/300/2000/10,000kg

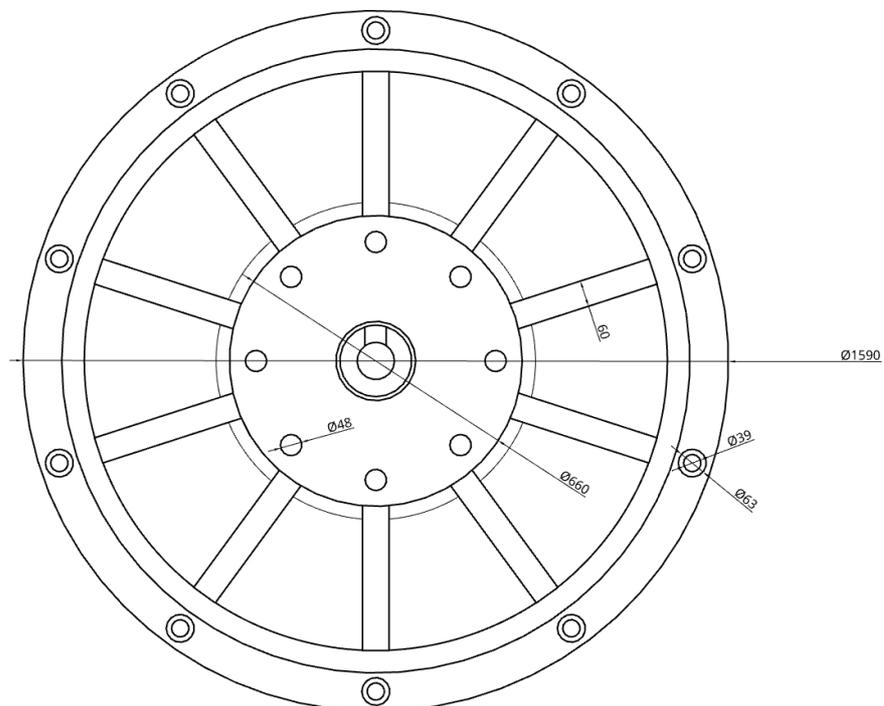
Generator diameter	62cm/77cm/90cm/180cm/250cm
Colour of tower and nacelle	RAL 7035 grey
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Classification	IEC III, -7,5 m/s, 20 years
Operating temperature	-10...+ 35 °C
Certification	CE





Generator

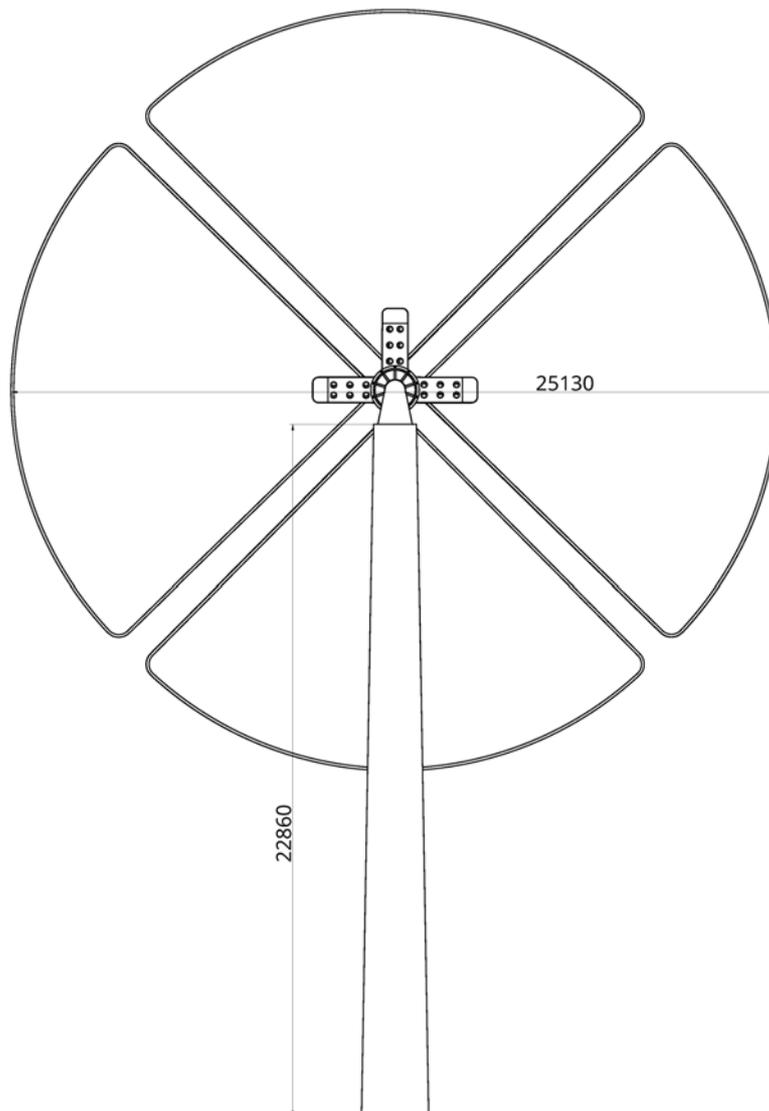
Generator	
Manufacturer	Fanturbine
Type	Coreless Axial Flux
Shell	Aluminum/Xenecore
Rated power	30KW/50KW/100KW/1MW/ 20 MW
Rated voltage	660 V (internal voltage)
Insulation category	F
Protection category	Inside IP23, IP56 in general



Rotor

The rotor consists of 4-10 blades, hub and electrical wiring.
The blades are made of Xenecore carbonfibre.

Rotor main data	
Rotor diameter	6m/ 8m / 10m / 25 m / 120 m
Swept area	36m ² /48m ² / 75m ² /675 m ² / 7500m ²
Rated tip speed	2m/s, 3m/s, 4m/s, 12 m/s,75.6 m/s
Specific power	406 W/m ²
Rotor speed	1000/1000/800rpm/500rpm/200 rpm
Pitch	10 degrees
Rotor cone angle	0
Tip's distance from the tower	3m/ 4m / 5m / 12m / 60m
Hub	
Manufacturer	Fan Turbine
Type	aluminum
Material	GJS-400-18 ULT





Blades	
Manufacturer	Xene corporation
Material	Xenecore Carbonfibre
Weight	15kg/20kg/25kg/200 kg / 1000 kg

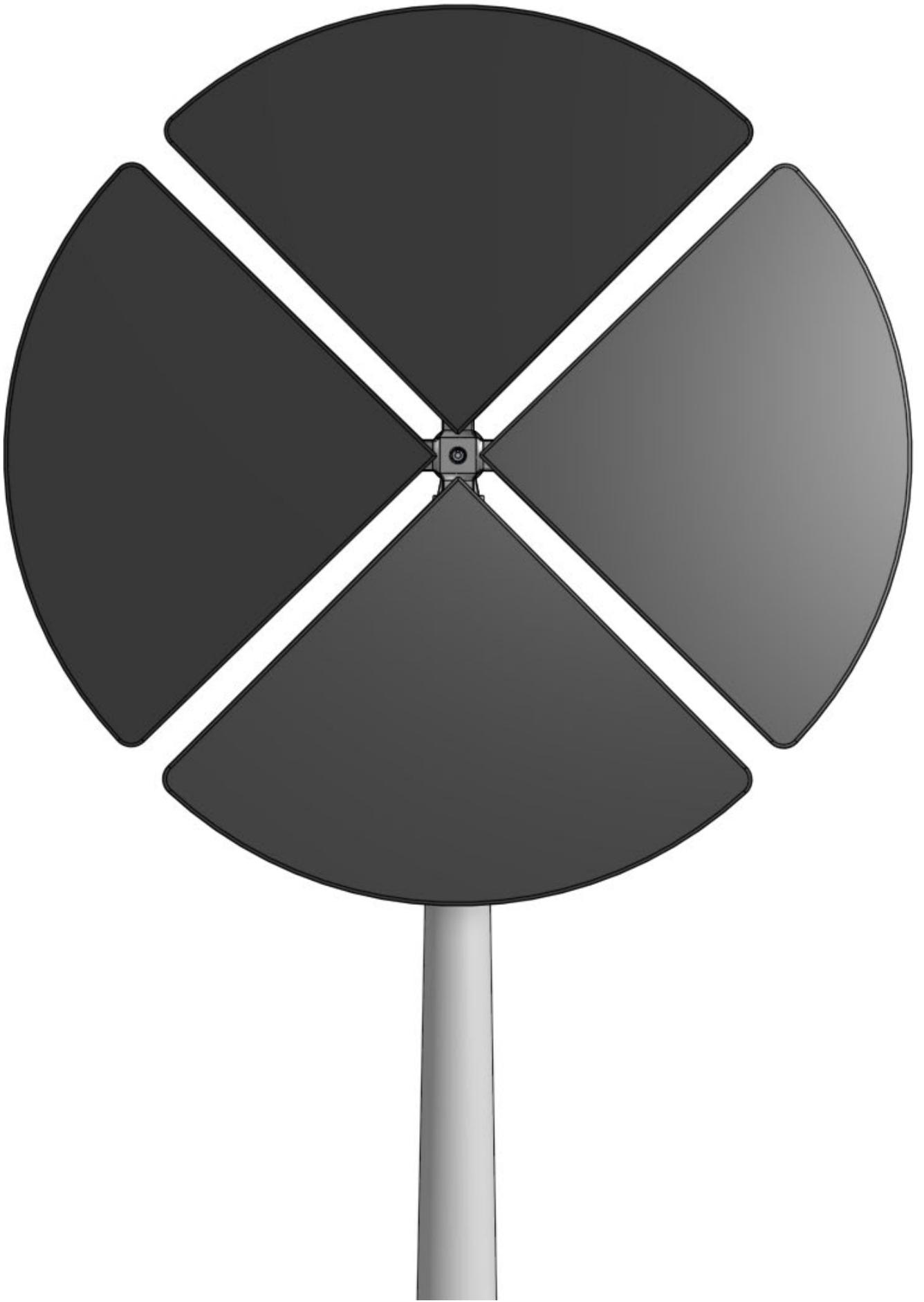
Profile	DRAG / FAN
Total length	2.5m/ 3m / 5m / 12m / 56m
Surface area	36m ² /48 m ² / 75m ² / 675 m ² / 7500m ²
Cross sections	2.40 / 1.48 m
Colour	RAL 7035 grey
Lightning protection	Integrated lightning conductors

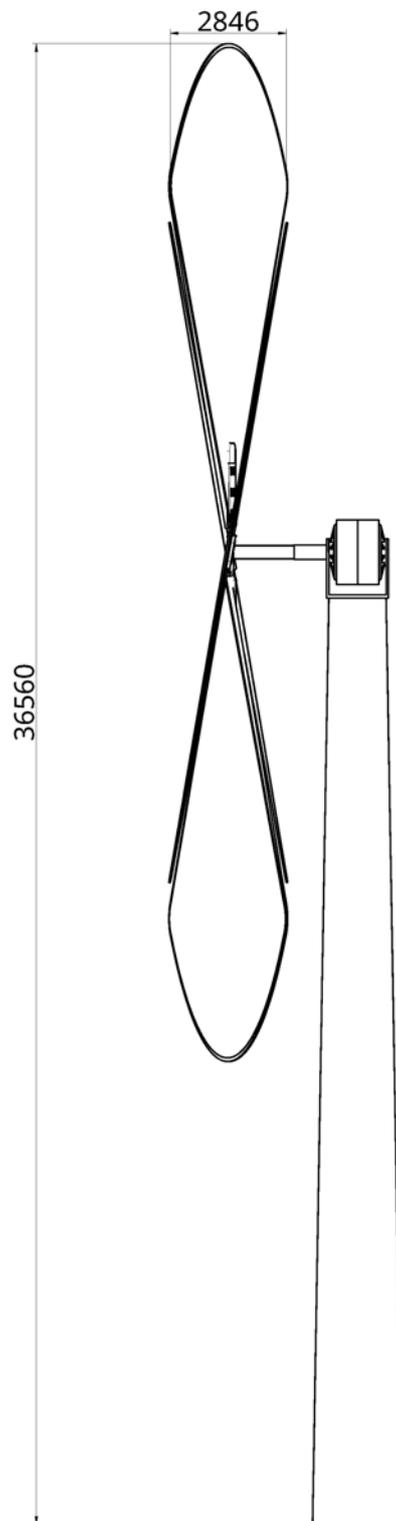
Protection system

Overvoltage protection relays independently protects the downstream system.

The stop procedures are:

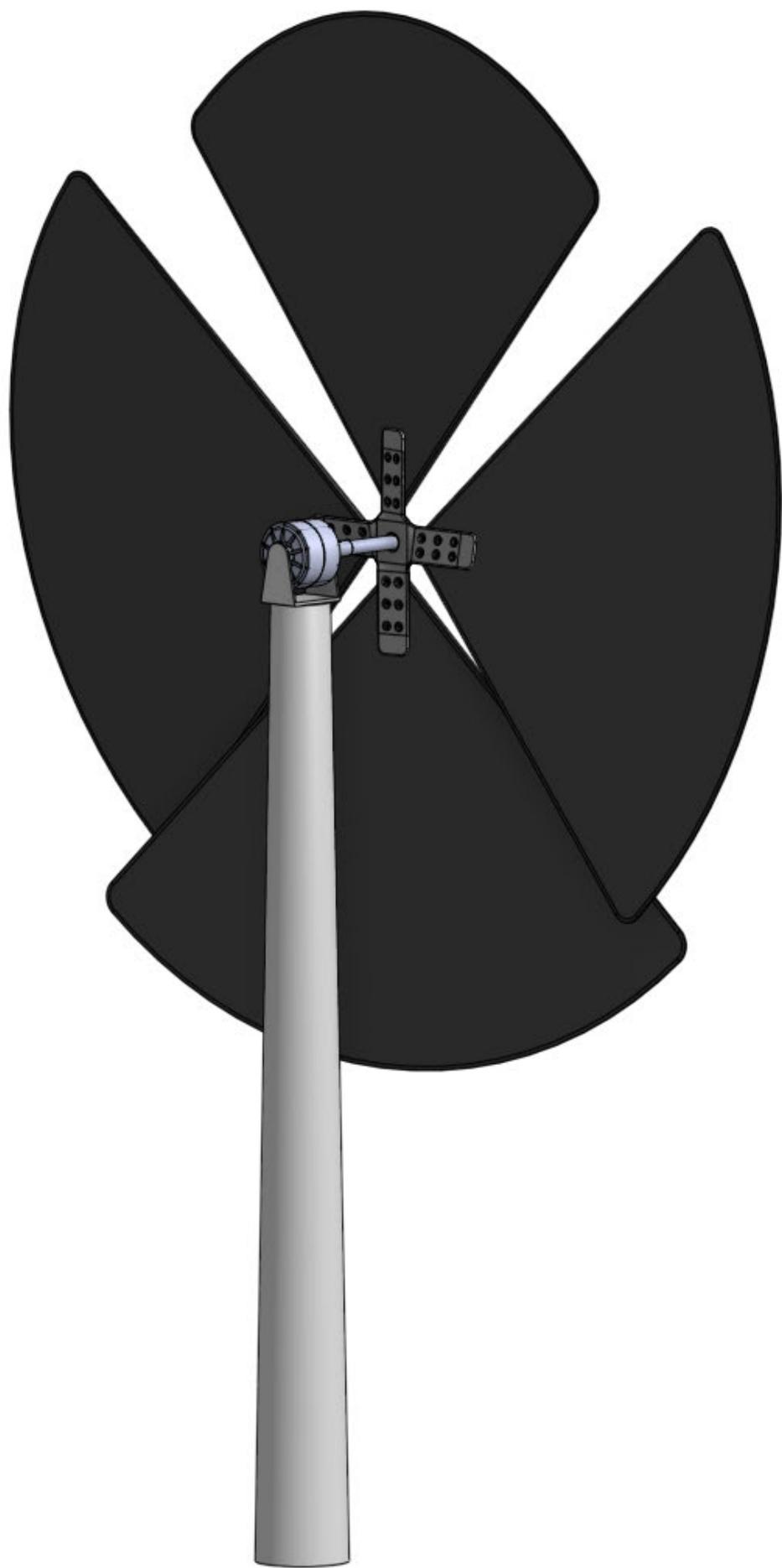
The relays stop: the generator is disconnected by voltage protection relays





Tower

Hub	6m/7 m	8 m	20 m	66 m
Tower	6m/7 m	8 m	20 m	63,5 m
Sections	1	1	1	3
Weight	75kg/100 kg	200 kg	20 000 kg	90 000 kg
Colour	RAL 7035	RAL 7035	RAL 7035	RAL 7035



Power curve 30KW

Below is presented the calculated power curve with rotor diameter of 6 m. (Air density 1.225 kg/m³)

m/s	Watts
1	152
2	303
3	455
4	667
5	2000
6	3909
7	6455
8	9848
9	13970
10	19030
11	24515
12	30030
13	30879
14	30879

Power curve

Below is presented the calculated power curve with rotor diameter of 8 m. (Air density 1.225 kg/m³)

m/s	50kw
1	0.25
2	0.5
3	0.75
4	1.1
5	3.3
6	6.45
7	10.65
8	16.25
9	23.05
10	31.4
11	40.45
12	49.55
13	50.95
14	50.95

Power curve

Below is presented the calculated power curve with rotor diameter of 10m. (Air density 1.225 kg/m³)

m/s	100kw
1	0.5
2	1
3	1.5
4	2.2
5	6.6
6	12.9
7	21.3
8	32.5
9	46.1
10	62.8
11	80.9
12	99.1
13	101.9
14	101.9

Power curve

Below is presented the calculated power curve with rotor diameter of 25 m and 120 m. (Air density 1.225 kg/m³)

	onshore
m/s	1mw
1	5
2	10
3	15
4	22
5	66
6	129
7	213
8	325
9	461
10	628
11	809
12	991
13	1019
14	1019

WORLD'S FIRST 20MEGAWATT WINDTURBINE

20MW FAN

3.8 MW GE

1MW FAN



m/s	onshore 20mw
1	100
2	200
3	300
4	440
5	1320
6	2580
7	4260
8	6500
9	9220
10	12560
11	16180
12	19820
13	20380
14	20380
15	20380

100 MEGAWATT OFFSHORE FAN TURBINE



m/s	Offshore 100mw
1	200
2	400
3	600
4	880
5	2640
6	5160
7	8520
8	13000
9	18440
10	25120
11	32360
12	39640
13	45982
14	53338
15	61338
16	69926
17	79018
18	88500
19	98234
20	107283