



LUVSIDE

LuvSide wind power –
the powerful turn



Rolf Hoffmann

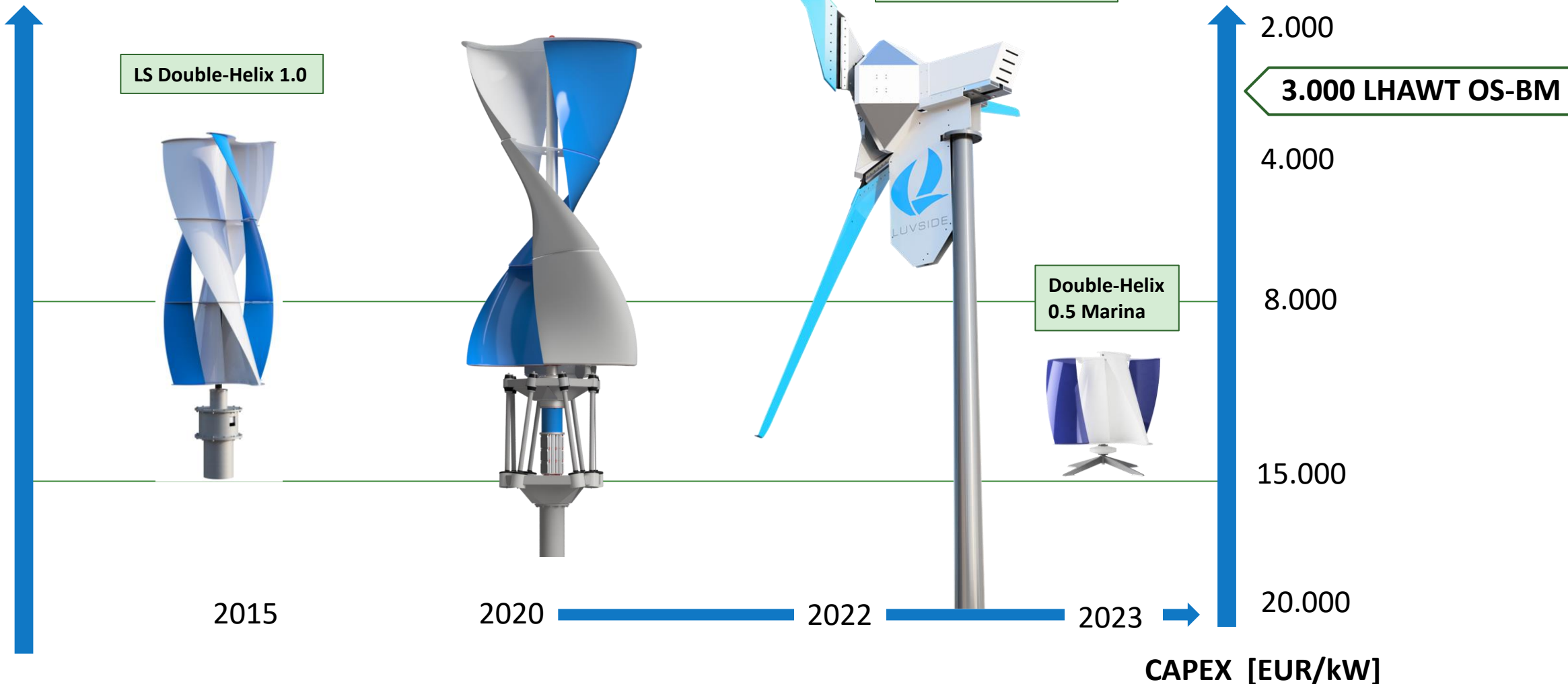


- LuvSide GmbH founded in 2014
- Founder & Managing Director
 - Rolf Hoffmann, Dipl. Wirt.-Ing.
 - Mechanical Engineering / FH Munich
 - Shareholder
- Vision: “the powerful turn” (transission)
- Development, production and sales of vertical and horizontal wind turbines from 1 up to 10 kW
- Production: Ottobrunn/Munich, Germany
- Office: Diessen am Ammersee, Germany
- Office: Brisbane, Australia / Singapore

Techn. roadmap

Roadmap

Effizienz



1.) LuvSide Double-Helix 1.0

- 1 Savonius Double-Helix**
- robust rotor
 - quiet operation
 - powerful torque



- 2 Bearing housing**
- Robust twin roller bearing design

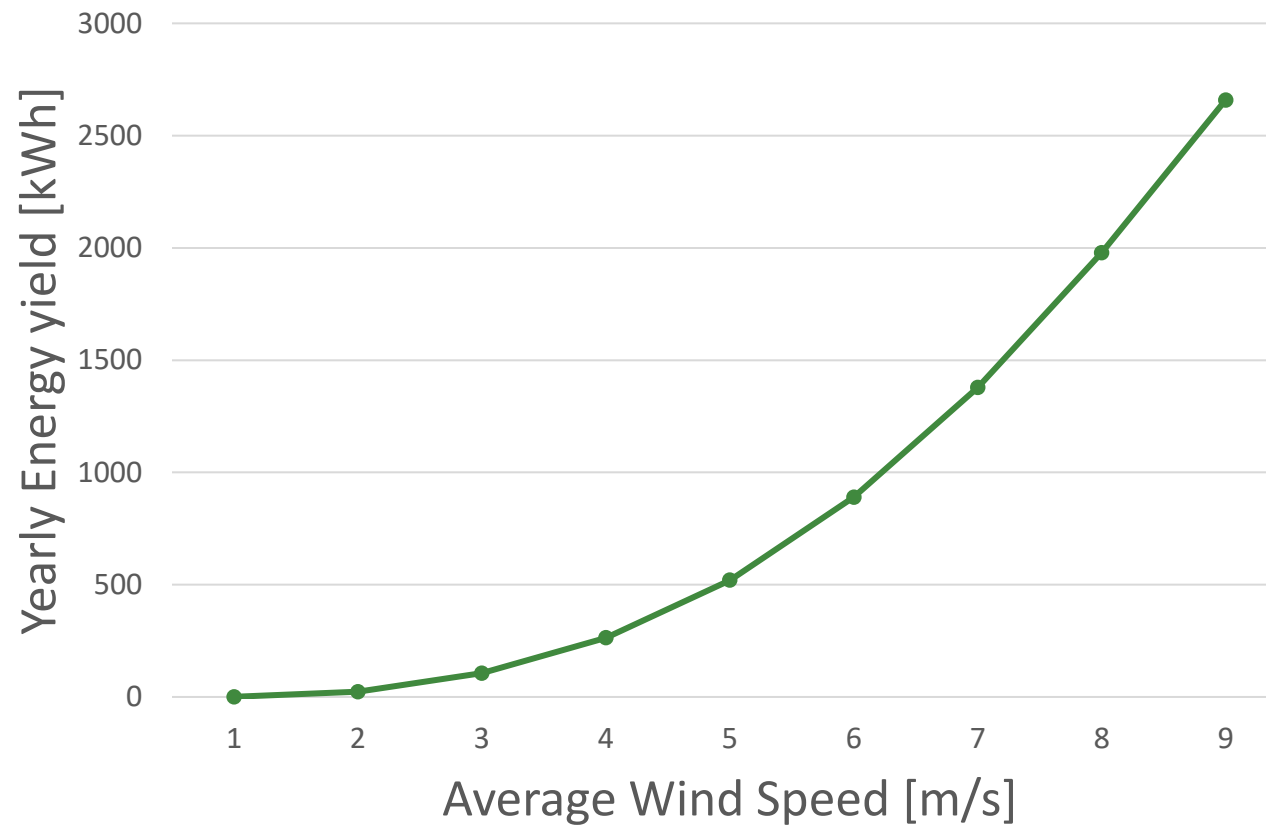


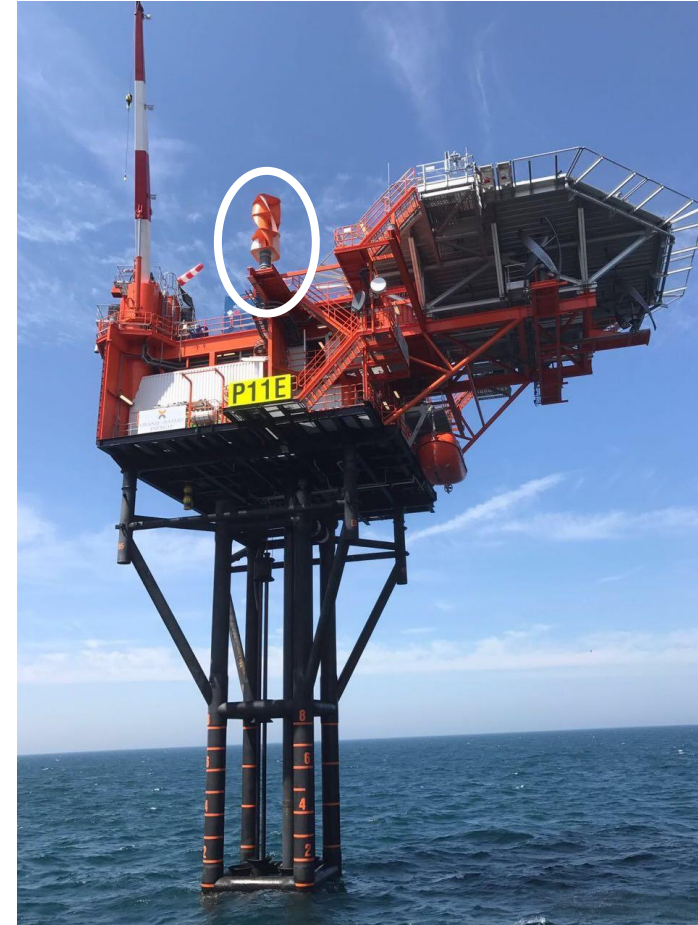
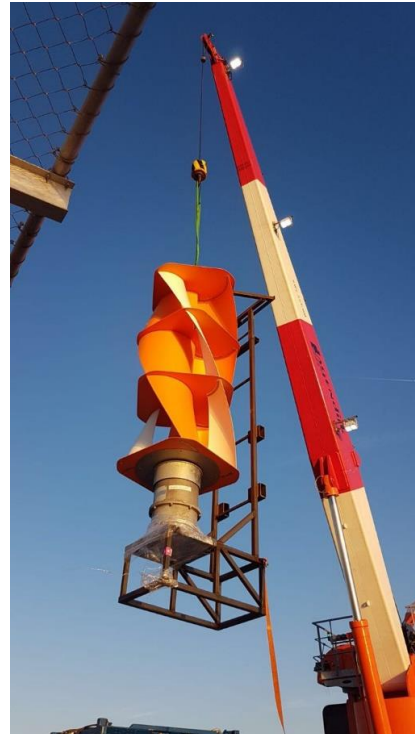
- 3 Generator PMSG**
- direct drive
 - IP68

The smallest model in the serial LuvSide family

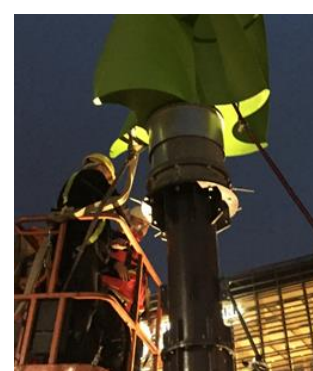
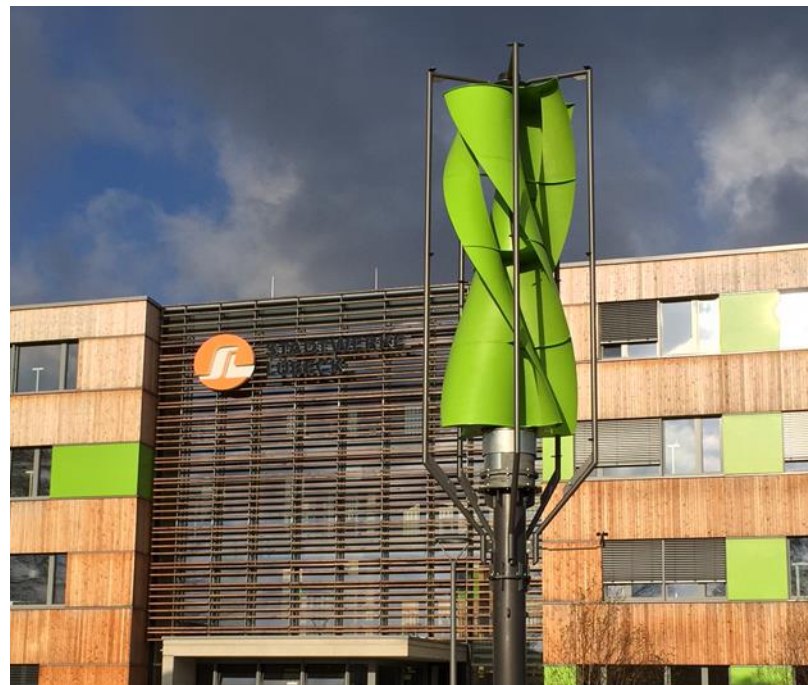
Maximum performance	1.0 kW
Start-up speed	2 m/s
Rotor height	3 m
Rotor diameter	1,45 m
Number of rotor blades	4
weight	305 kg
Rated speed	140 rpm

Possible annual yield per turbine with increasing average wind speed





The Powerful Turn





Double-Helix 1.0 at Medienhafen Düsseldorf soon

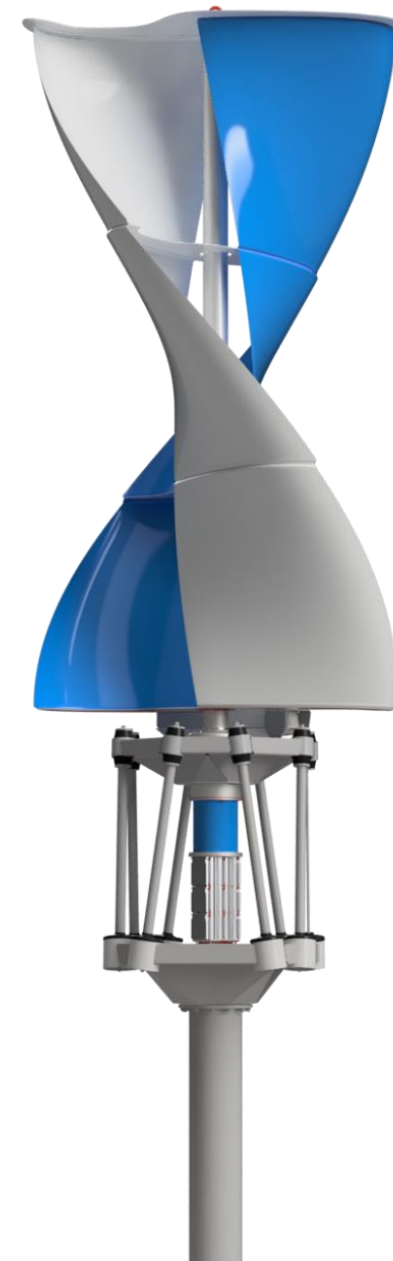


Customers



2.) Typical features of the Savonius

- **Zero Emission**
friendly to people, birds and bats
- **Efficient generation of energy**
- **Robust and stormproof**
up to 180 km/h (112 mph)
- **Perfect addition to solar energy, hybrid !**
anticyclical to all kinds of weather
- **Symbol for turn of energy policies (hotels, malls)**
powerful design, wind from all directions 360 °
- **Scalable installation on roofs**
small wind parks, shopping malls, parking lots etc.



1

Vibration decoupler

- Decoupling of all possible vibrations in the rotor towards the roof/pole



2

Savonius wing design

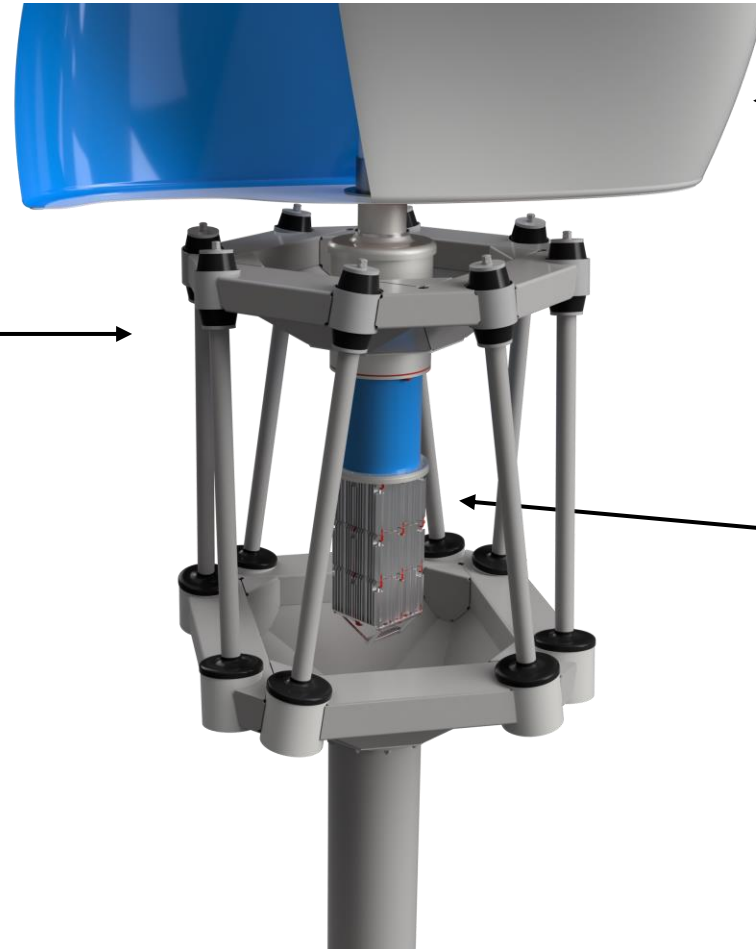
- Robust rotor with quiet but powerful torque



3

Generator

- Integrated controller
- Sealing IP68
- Constant DC output voltage for charging a battery, or with an AC inverter to feed into the grid.

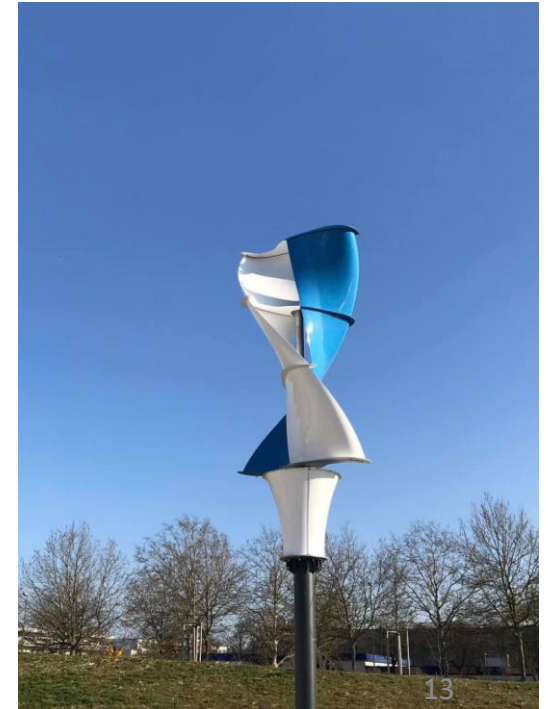




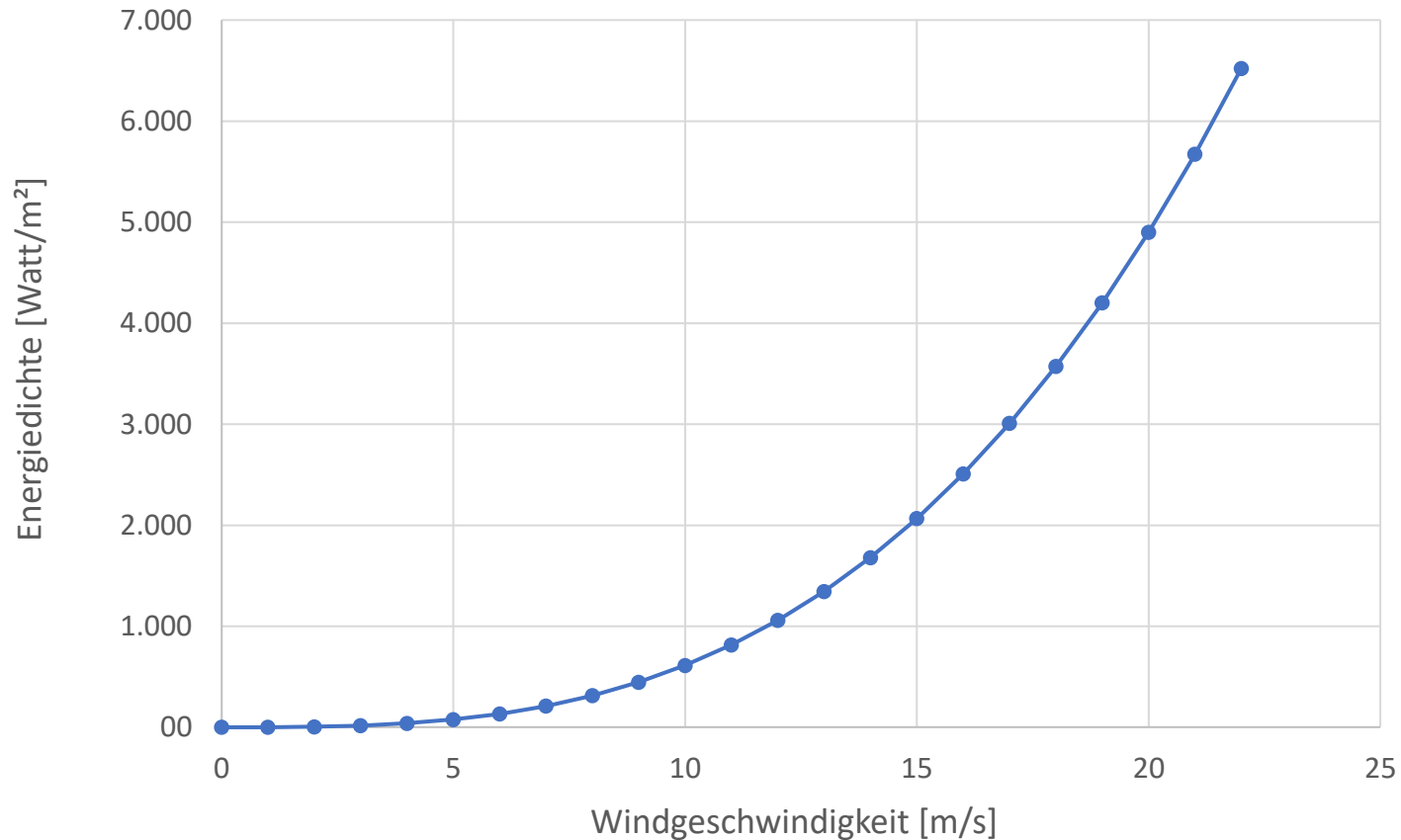
March 2023



Confidential



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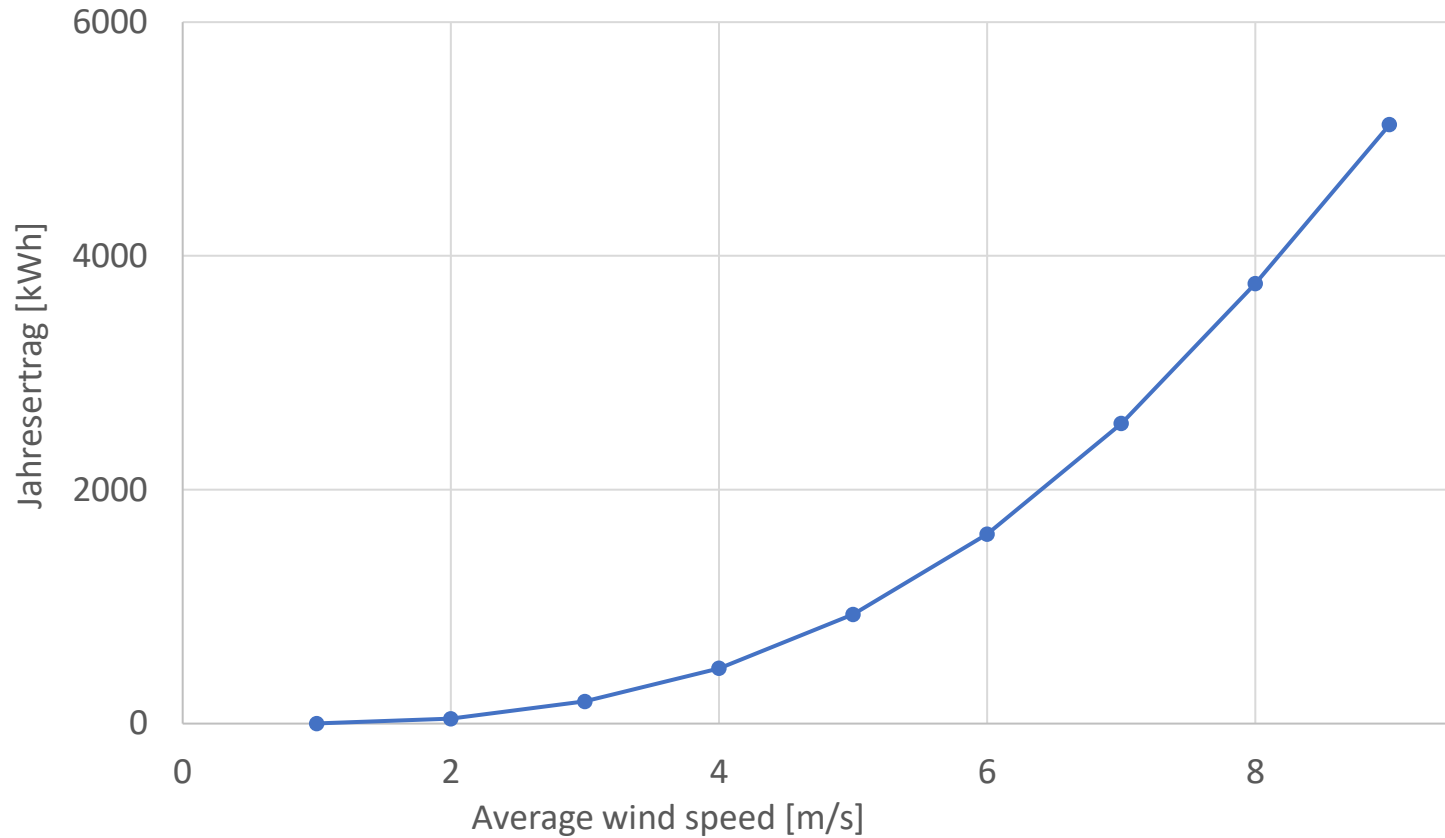


- The wind speed affects the result of the energy density to the third potential.

- $P_{\text{wind}} = \frac{1}{2} * \rho_{\text{Luft}} * v^3 * A$

- ρ_{Luft} : specific weight of air
- v : wind speed
- A : area considered

Possible annual yield per turbine with increasing average wind speed





2. Prototype-installation of a wind turbine at an ASFiNAG rest area (Rastplatz „Schäffern Ost“ (47.486220, 16.099684))

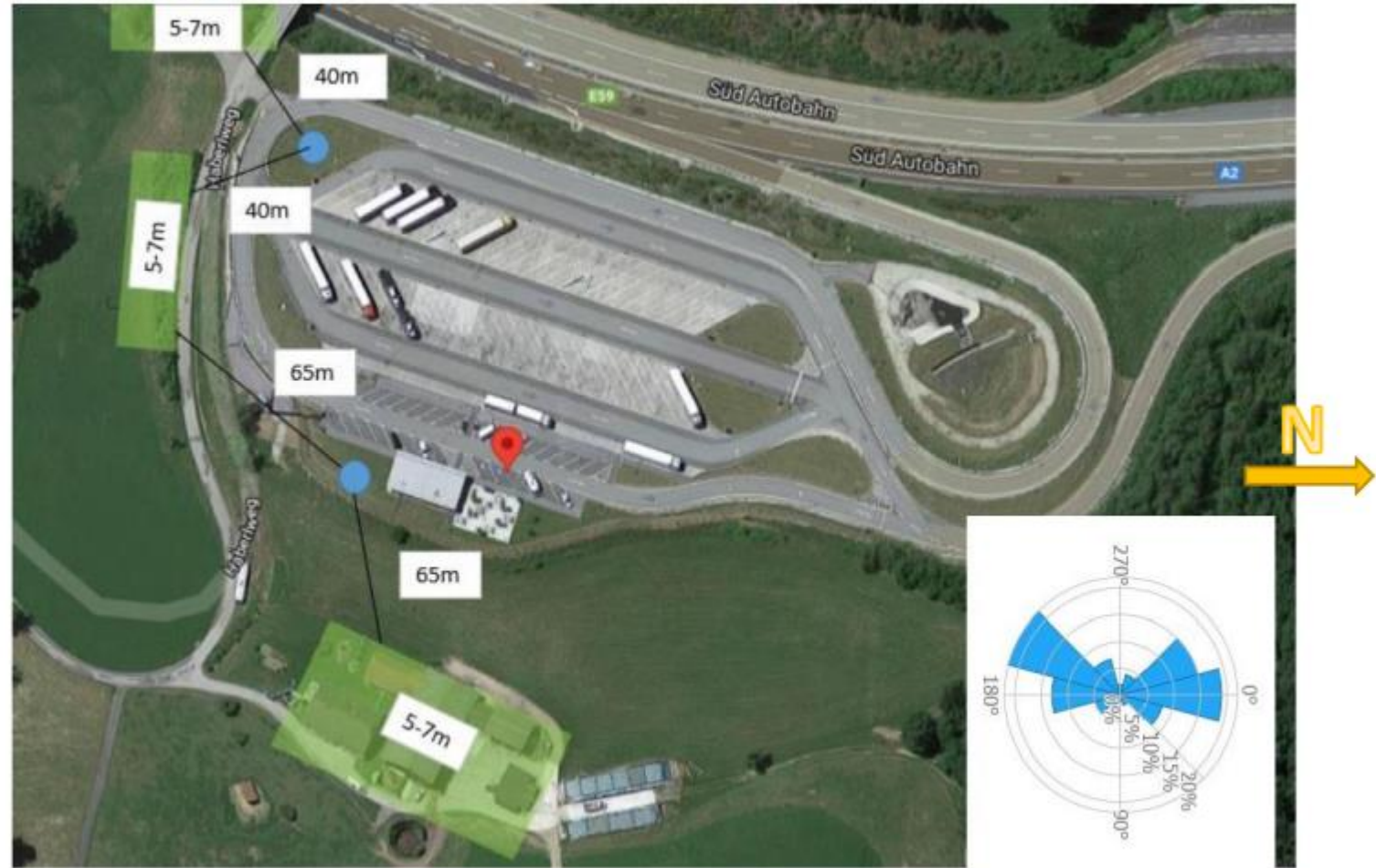


Abbildung 20 Hindernisbewertung Schäffern Ost



LS Helix 3.0 at the Hyatt Düsseldorf coming soon

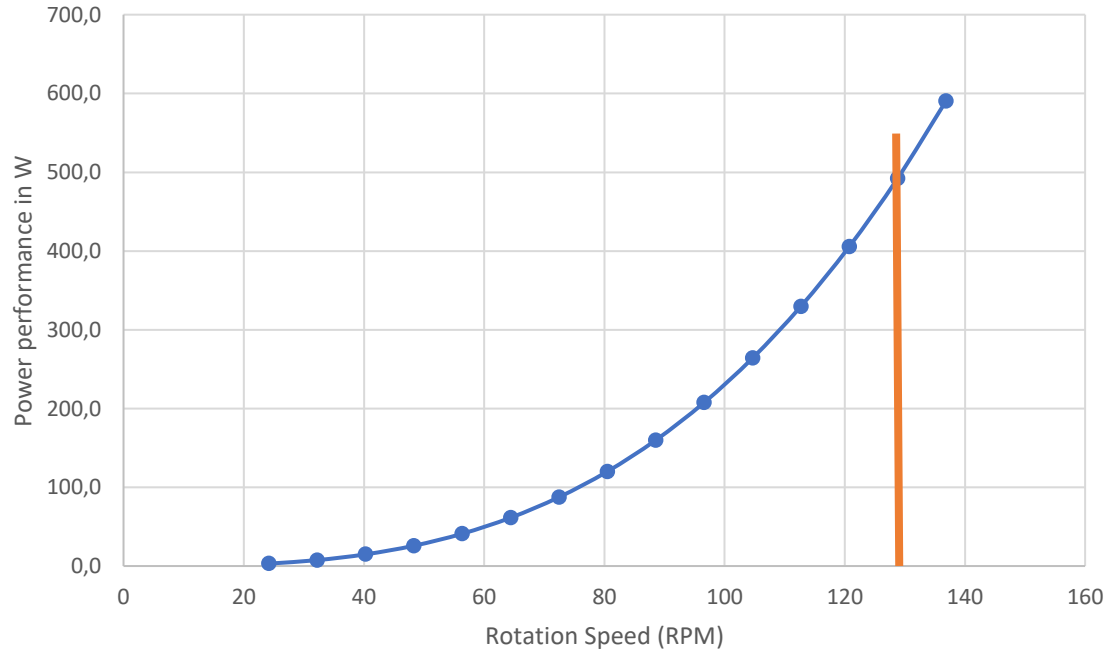


Double-Helix 0.5 Marina

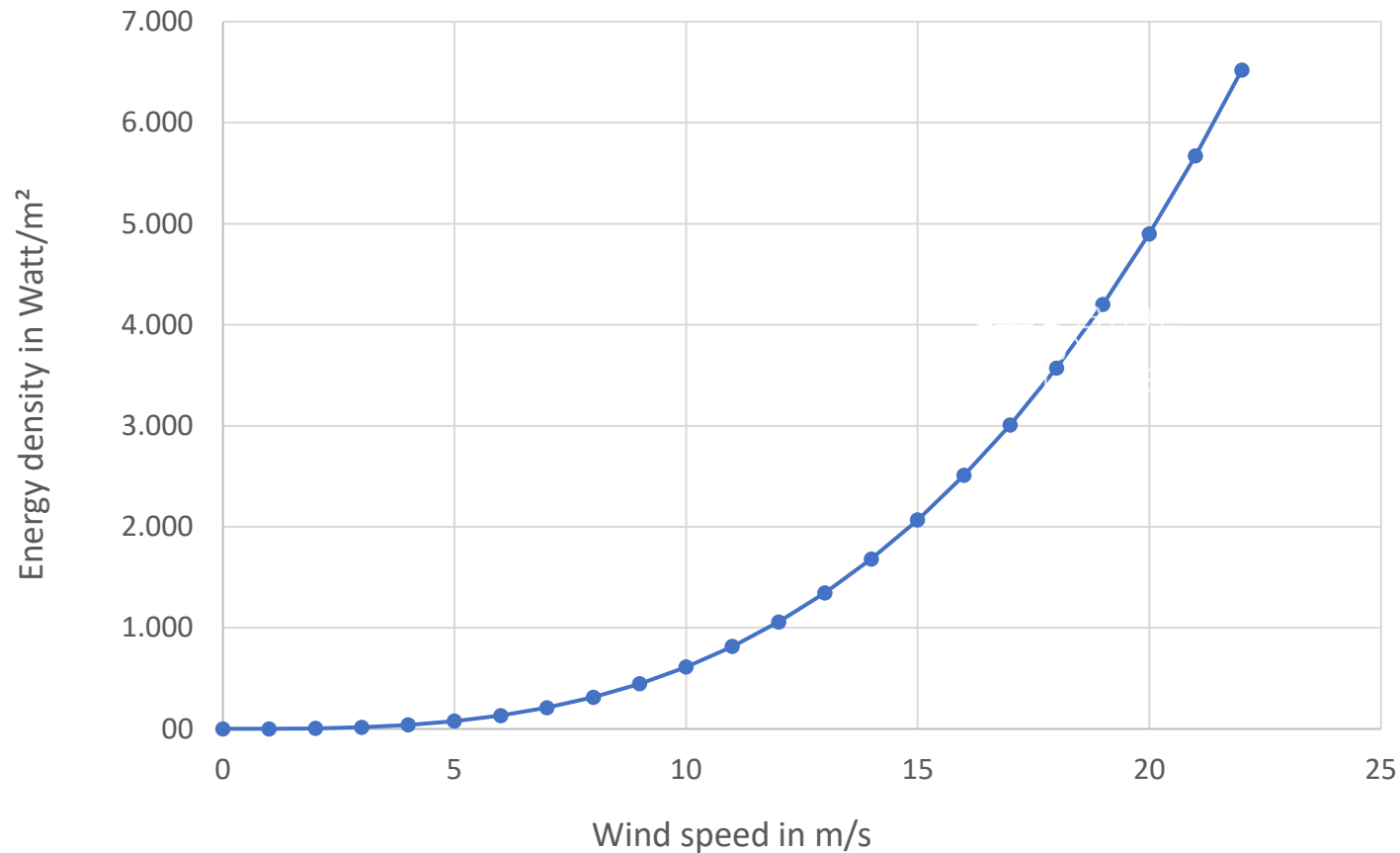


Key Features

- Early start-up at 2m/s wind speed
- Storm-proof up to 50m/s wind speed
- Unique foundation design and material selection for Houseboat applications.



Nominal Power	500 W (Rated voltage = 48V at 130 RPM)
Cut in Wind Speed	3 m/s (10km/h)
Dump Load	20 m/s
Surviving Wind Speed	50 m/s (180km/h)
Height of the rotor	1 m
Rotor diameter	1.4 m
Rotor surface area	1.4 m ²
Number of rotor blades	4
Rotation speed	20-130 rpm
Material	Glass-fiber reinforced Plastic (GFRP)
Total weight	88 kg



- The wind speed affects the result of the energy density to the third potential.
- $P_{\text{wind}} = \frac{1}{2} * \rho_{\text{Luft}} * v^3 * A$
 - ρ_{Luft} : specific weight of air
 - v : wind speed
 - A : area considered



Main features

- Rated Power 8 kW at 11 m/s Windspeed (Generator from EMF Motors)
- Net Inverter AC, III Phase, 10 kW
- Controller from ABB
- Storm-resistant to 200 km/h (50 m/s) of wind speed
- Back-wind principle, with passive wind tracking
- Quiet operation
- High efficiency (40 - 45 %)
- Full-Power production during storms
- Mechanical pitch control through folding blades (Patent)



Control of the angle of attack



1

back-wind principle

- Space for movable blades
- Independent wind tracking



2

Flexible wing suspension

- Control of the angle of attack (pitch adjustment along the wind speed)

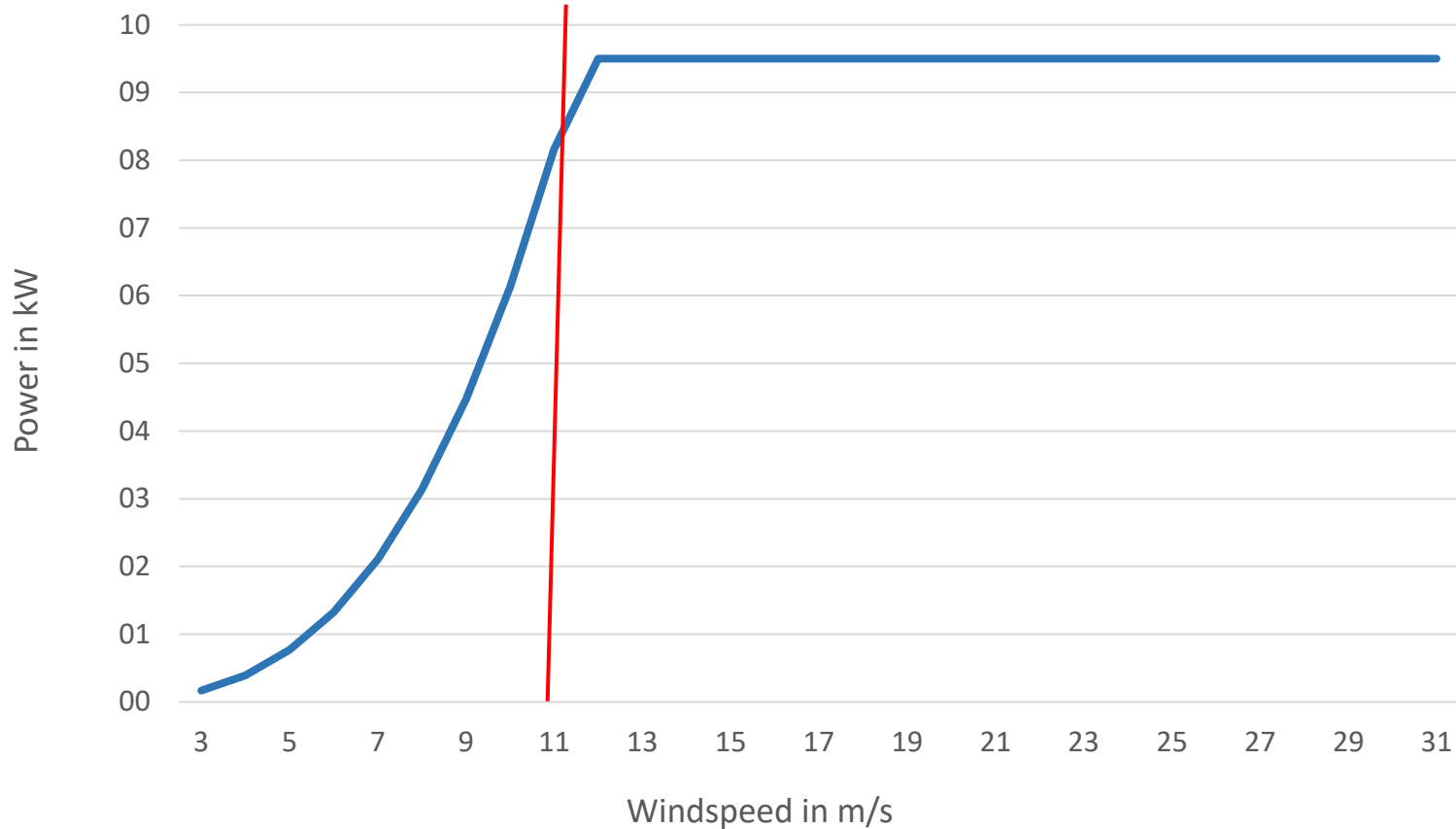


3

Gas pressure spring damper

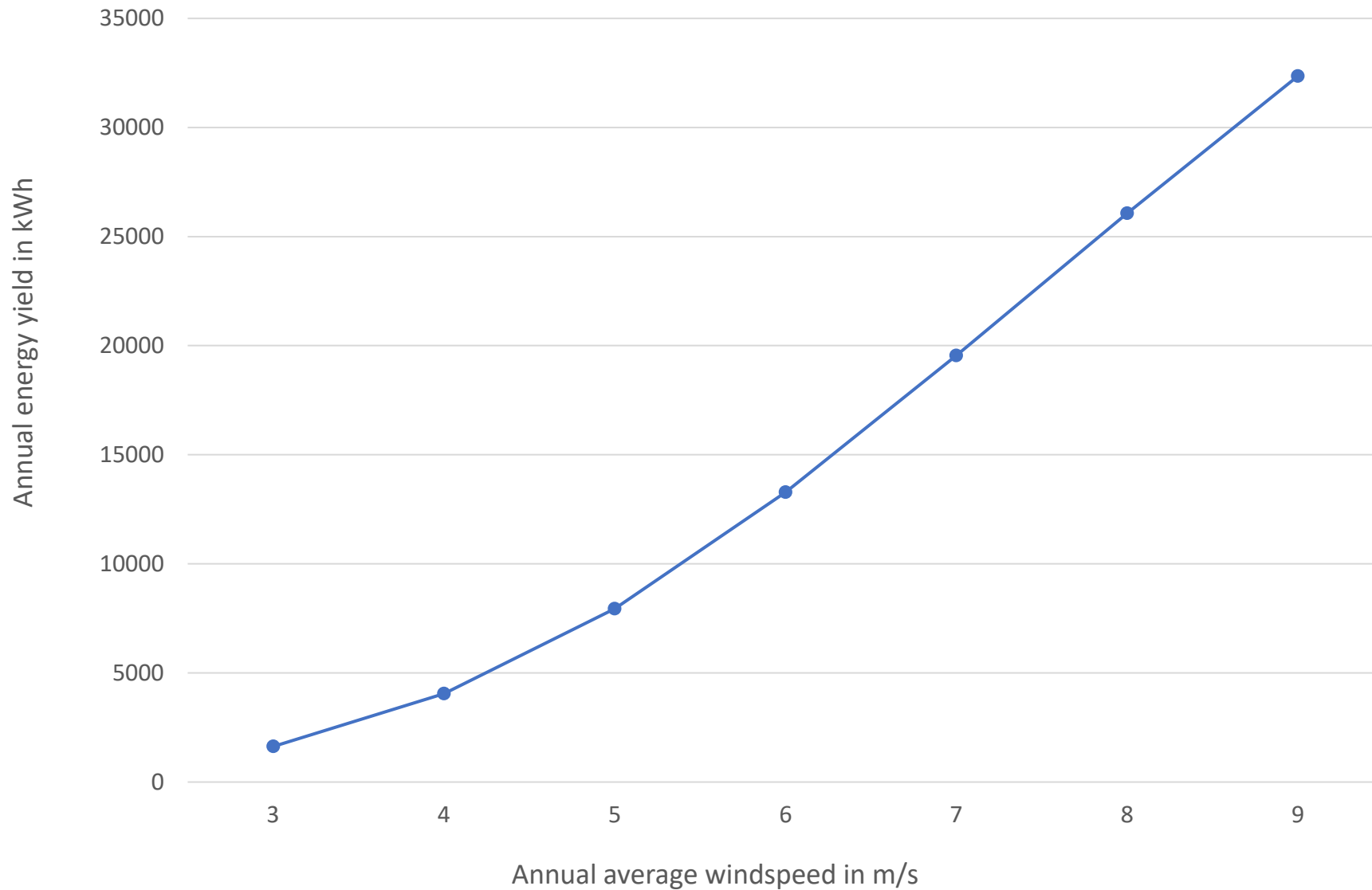
- Control of the folding function Protection against spin-out

HuraKan 8.0: Power of the turbine at rising windspeed



Rated Power (11 m/s)	8 kW
Cut-In Windspeed	3 m/s
Recommended minimum tower height	12 m
Rotor Diameter	6 m
Number of blades	3
Maximum rotational speed	250 rpm

Possible annual energy yield with changing average windspeed



Installation with Steelroot Foundation



1 Delivery



2 Installation



3 Final SteelRoot



4 Digging the hole



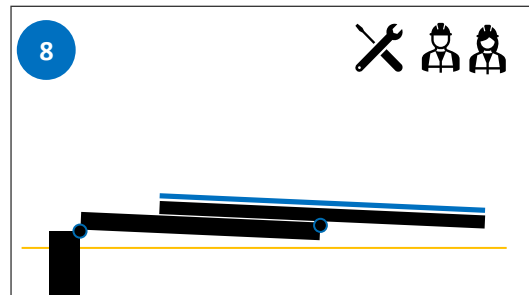
5 Lifting into the hole with the excavator and arrange



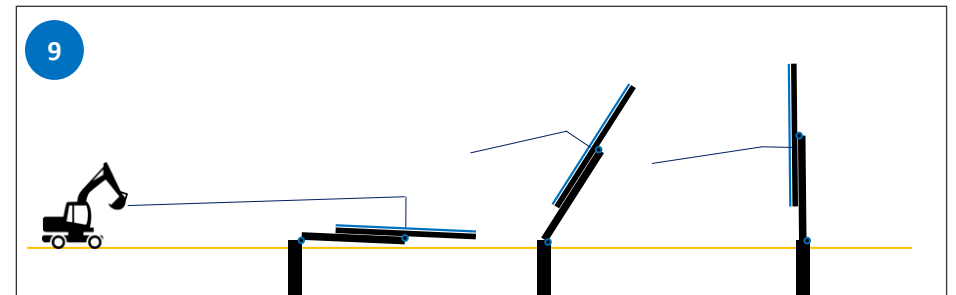
6 Bring in the excavated material and compact in layers



7 Finished foundation



8 Installation of the tracker lying



9 Erecting and bolting



LUVSIDE



ANYWHERE
SOLAR

**WindSun – the perfect match
between wind and solar energy**



Tracker + HuraKan 8.0

Performance Tracker: **15,6 kWp**

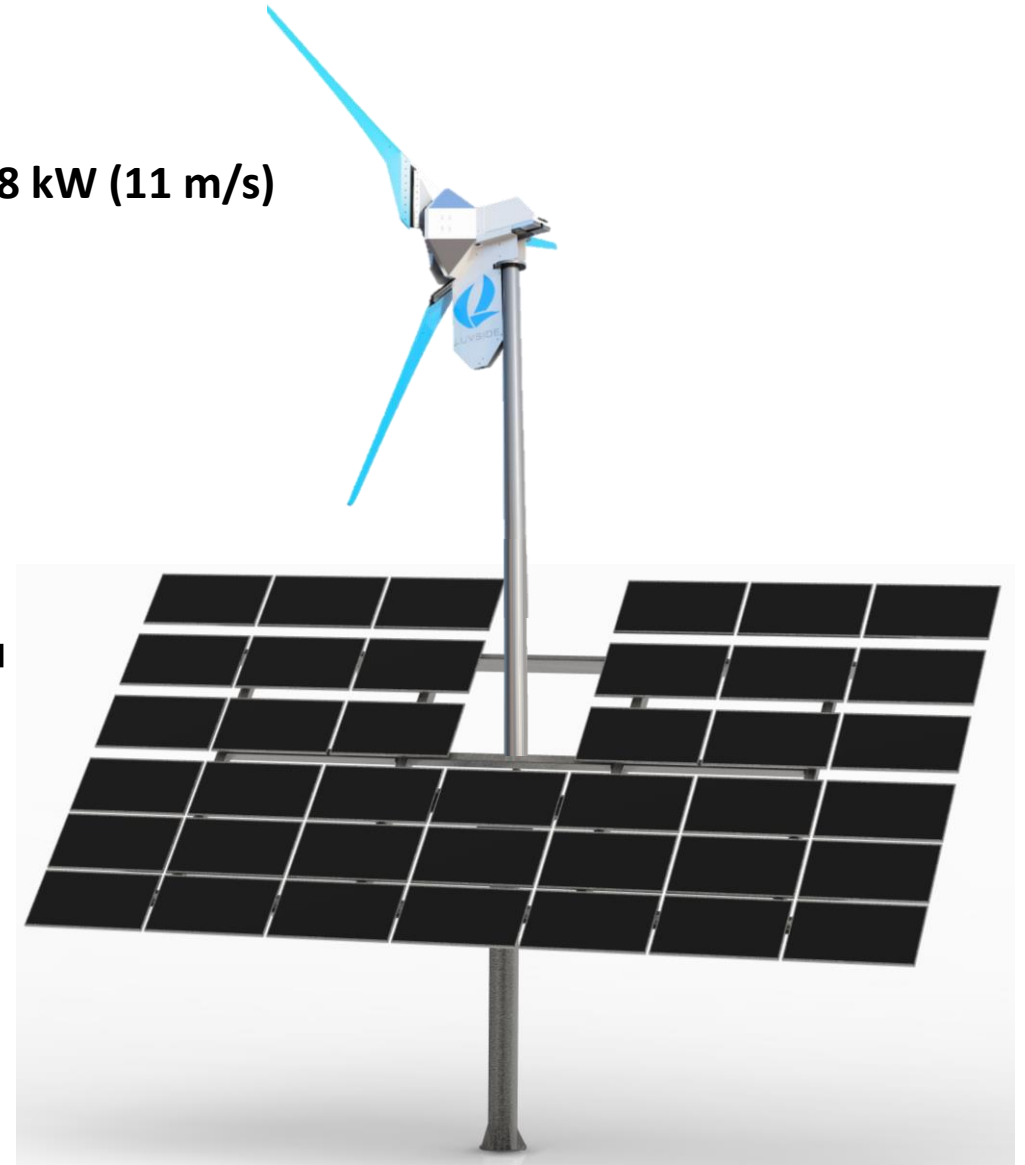
Performance HuraKan 8.0: **8 kW (11 m/s)**

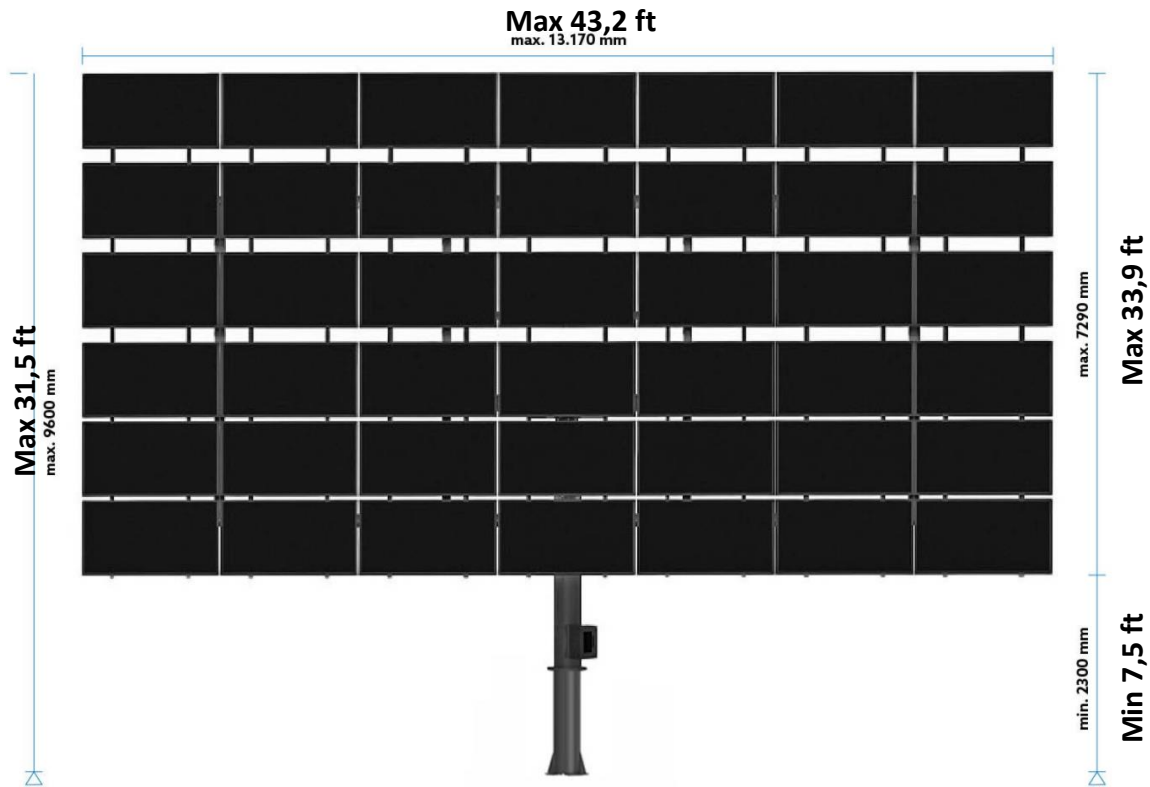


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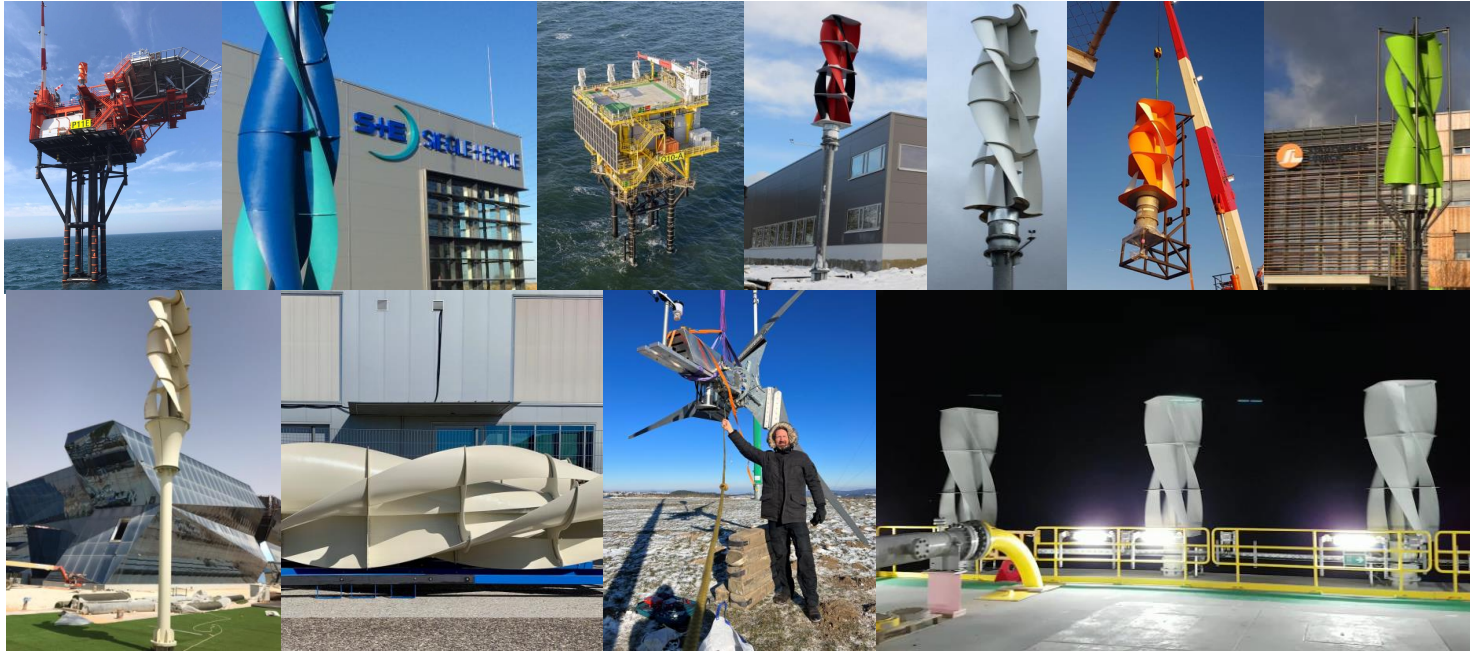


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Model	T 87 RE
Technology	2-axle Tracking
Construction	Column
Module surface	~ 807 sqft / max 43,2 x 33,9 ft
Performance	~ 14 - 18 kW (pending on modules)
Amount 60 cell-modules	42
Amount 72 cell-modules	36
Rotation angle	360°
Elevation Angle	-3 – 80°
Material Construction	Steel - coated
Module underconstruction	Aluminium
Control system	Inhouse development Made in Austria, internet enabled
Supply voltage	230 V / 50 Hz – can be adopted for AUS requ.
Operating Voltage	24 V



Customers



Partner



Known from



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