

Vergnet Wind Turbines
275 kW – 1 MW
Innovative design for Farwind® locations

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2008 international wind-diesel workshop
Girdwood, April, 24

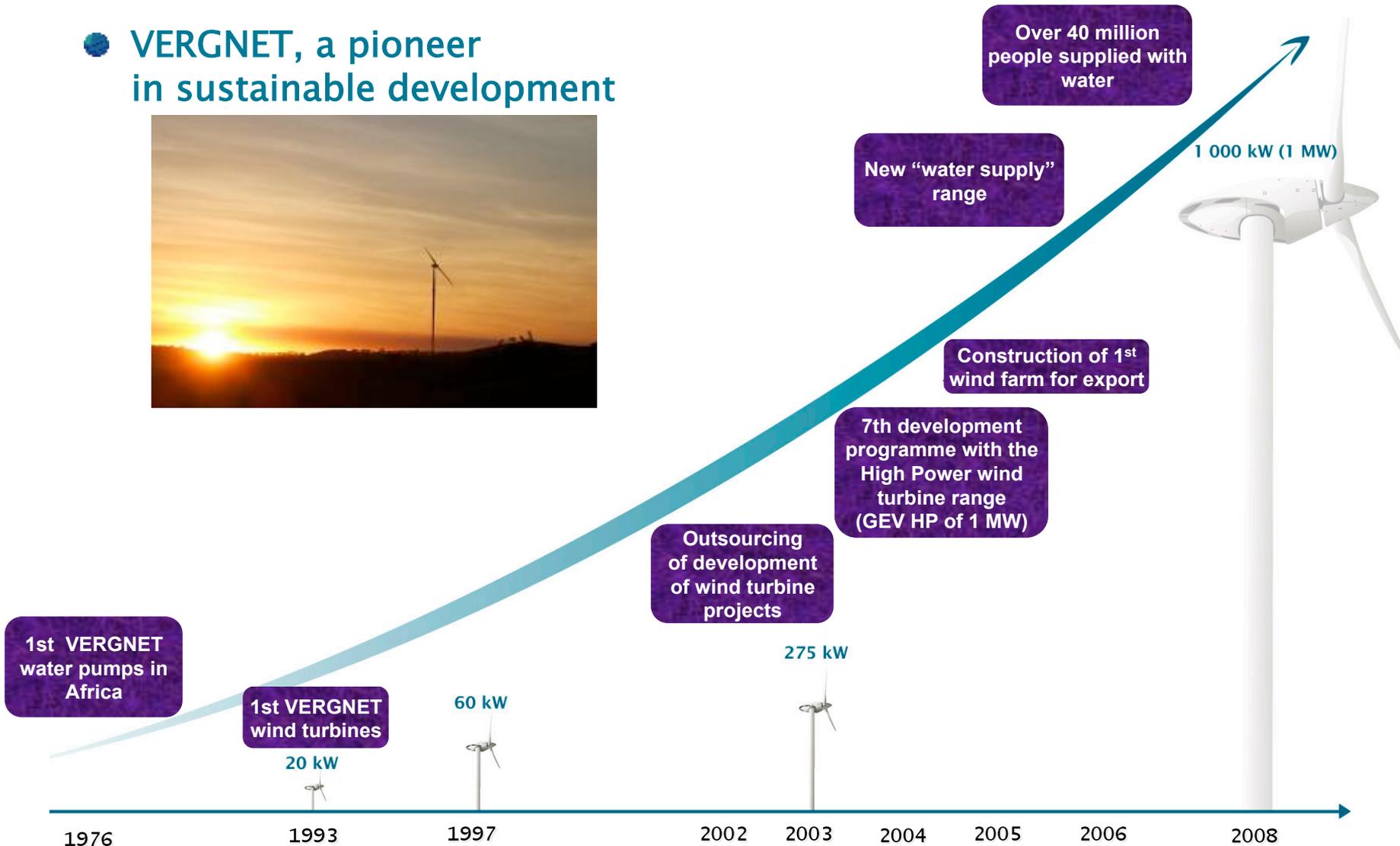


What are we going to talk about ?



- ▶ Company history
- ▶ The Farwind® market
- ▶ VERGNET in the world
- ▶ GEV MP275 kW
- ▶ Wind-Diesel installations
- ▶ GEV HP 1 MW

● VERGNET, a pioneer in sustainable development



MAINSTREAM INDUSTRY

Strong interconnected grids

Environmental motivation

Developed infrastructure and logistics

**Regular weather conditions : no hurricanes,
5.5 to 8 m/s**

Technological answer

- Conventional turbines
- Three blades rotor
- Heavy nacelle and tower
- Large and deep foundations
- Unit power from 2 to 5 MW

FARWIND®

Generate their electricity from oil

- Petro electricity countries
- Cost saving motivation
- Small to medium size grids
- Isolated , weak grids

Difficult context

- Reduced infrastructure and logistics
- Irregular weather conditions Hurricanes area
- Medium to strong winds (6,5 to 10 m/s)

Technological answer

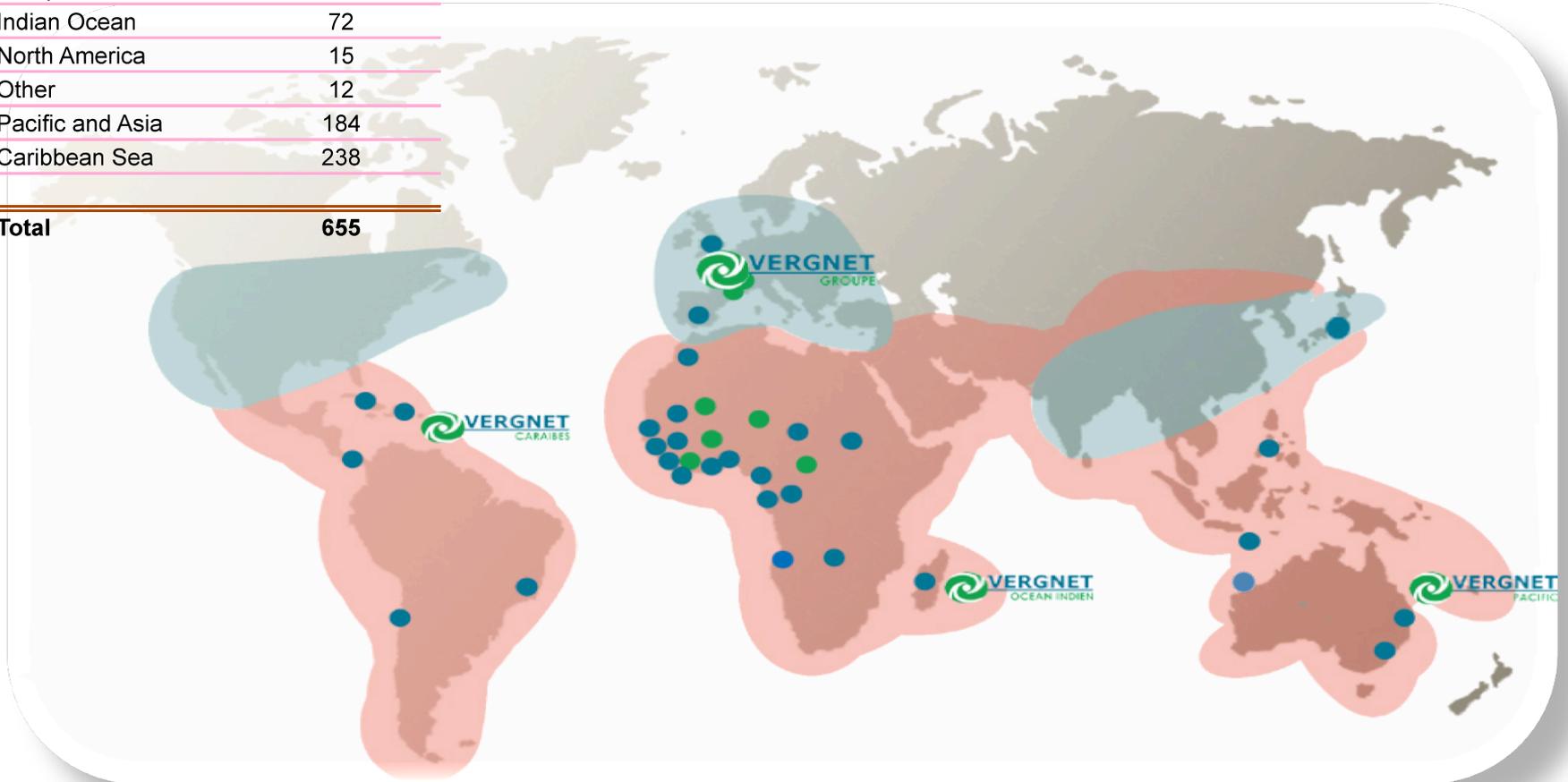
- Without crane / small crane
- Standard trucks transportation
- Hurricane proof turbines



**VERGNET's solution is totally focused on the
Farwind® areas of the world.**

More than 600 turbines in the world

Geographical Area	Quantity of WEC
Africa	37
Europe	97
Indian Ocean	72
North America	15
Other	12
Pacific and Asia	184
Caribbean Sea	238
Total	655



Source: Company



Design

Production of wind turbines in Ormes (headquarters)



Production



600 VERGNET wind turbines

Maintenance



Installation



Production of blades in Béziers (Aérocomposit Occitane subsidiary)



GEV MP 275 kW

Unique, patented, tiltable wind turbine



Principles:

- Competitively priced
- Hurricane resistant
- Can be transported to any site
- Can be installed on any site
- Easy maintenance



- Twin-blade, tiltable wind turbine on guy wire-supported tower
- Proprietary technology protected by a series of patents

- **Light Logistics**

- The wind turbines can be transported in containers on all types of site, whatever the infrastructures and logistics available



- **Installation without heavy equipment**

- Wind turbines wholly assembled on the ground, then erected with the help of a simple hydraulic winch
- 9 drillings and 15m³ of concrete



- **Easy maintenance**

- Wind turbine maintenance on the ground following lowering of the machine



- **True cyclone protection**

- Lowering and ground harnessing of wind turbine in less than one hour
- Protection recognised by insurers



- **Powerful hurricane**

- ▶ Guadeloupe and Martinique were hit hard from 17 August 2006
- ▶ Over 50% of the electricity distribution network was damaged

- **VERGNET wind turbines were lowered as the hurricane neared**

- ▶ 216 wind turbines lowered in 14 hours
- ▶ 21st time turbines have been successfully lowered since 1993

- **No material damage reported**

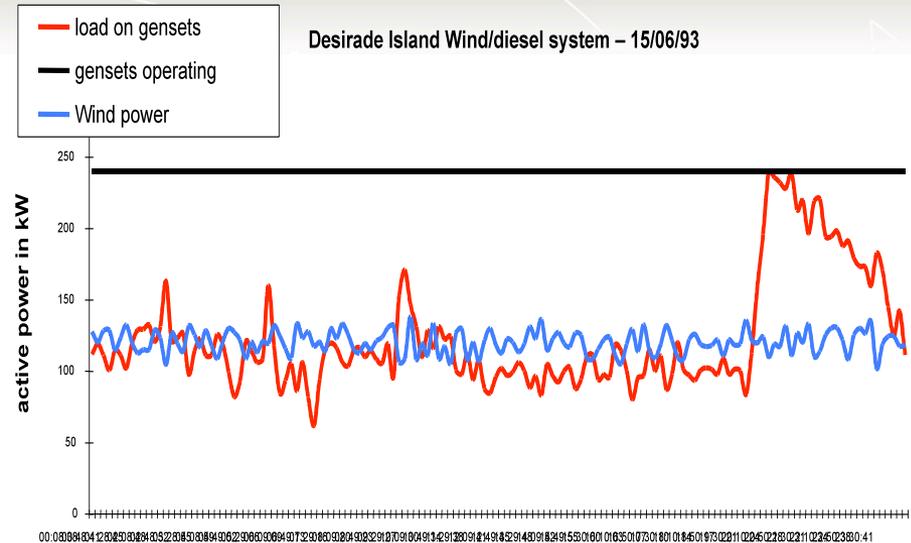




Wind Diesel experience (La Desirade)

Population 1 500 habitants
 Customer EDF
 Supplier VERGNET SA
 Commissioning July 1992

Diesel plant
 3 x 240 kW RENAULT VI
 1 x 160 kW RENAULT VI
 Min load on gensets : 50 % of nominal power



Time

Av. wind speed: 9.5 m/s

Winf farm

Wind power: 12 x 12 kW = 144 kW

Energy production

Energy delivery : 1.6 GWh/y
 Wind energy delivery 682 MWh / year
 Avg wind penetration rate 40 %
 Max wind penetration rate 70 %



Wind Diesel experience (Saint Pierre & Miquelon)

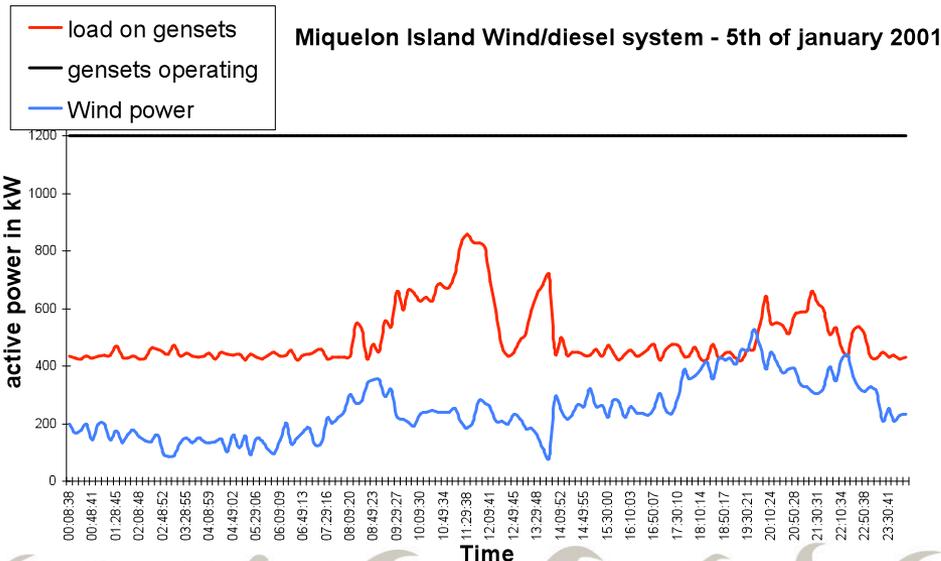
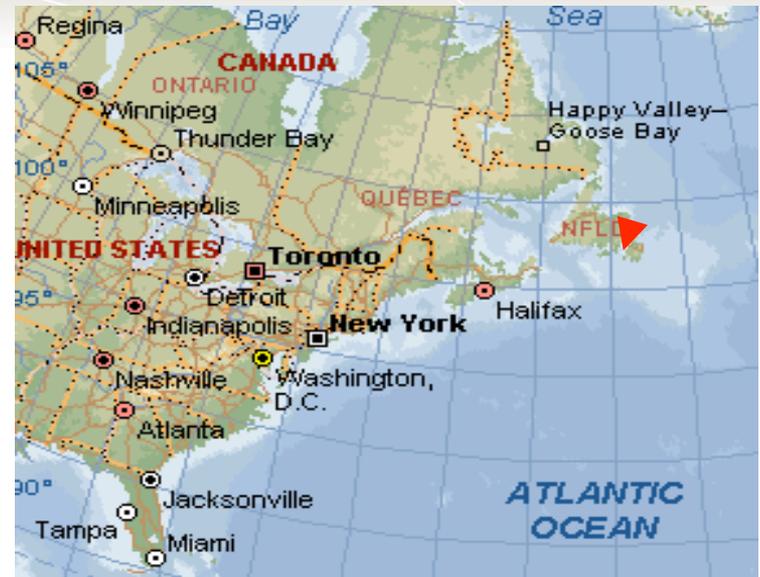
Population 700 p
 Customer EDF
 Supplier VERGNET SA
 Commissioning March 2000

Diesel plant

2 x 1200 kW
 1 x 800 kW
 4 x 500 kW

WARTSILA
 WARTSILA
 POYAUD

Min load on gensets : 50% of nominal power



Av. wind speed: 8,6 m/s

Wind farm

Wind power 10 x 60 kW = 600 kW

Energy production

Energy delivery : 6 GWh/y
 Wind energy delivery 1,7 GWh / year
 Avg wind penetration rate 30 %
 Max wind penetration rate 59 %

Wind Diesel experience (Coral Bay)

Customer : VERVE ENERGY
Commissioning : August 2007

Diesel plant

7 x 320 kW Low Load Powercorp

Flywheel

1 x 500 kW Powercorp

Wind farm

Wind power 3 x 275 kW = 825 kW

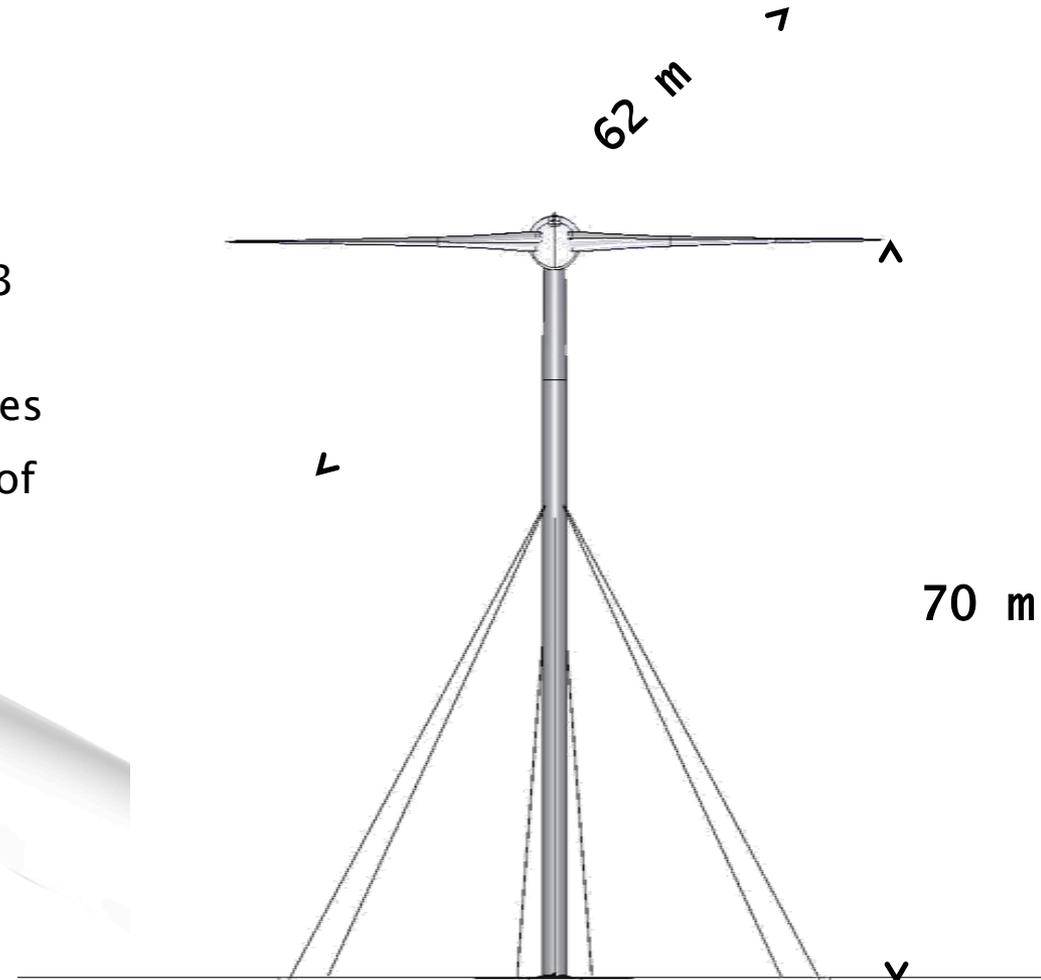
Energy production

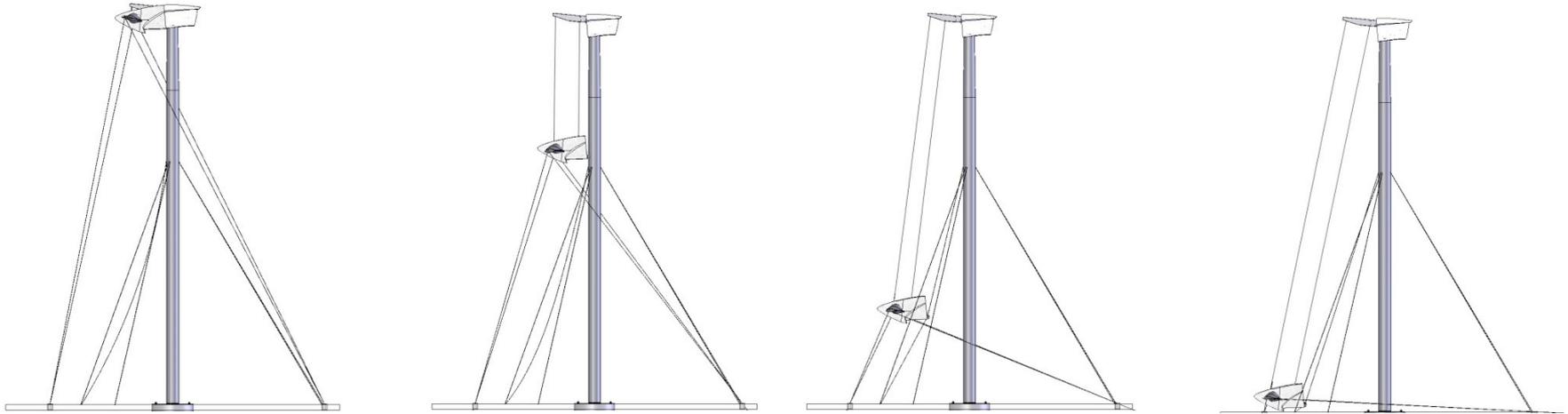
Av. wind penetration rate >60 %

Max wind penetration rate 95 %



- ▶ GL certified
- ▶ Teetering hub
- ▶ Pitch control
- ▶ Variable speed
- ▶ Light foundations (50 – 80 m³ concrete)
- ▶ All parts in 40' TC, excp. Blades
- ▶ Easy installation: Small crane of 50 t, Self erecting device, Birdlike™ system





- ▶ Easy installation
- ▶ Hurricane protection
- ▶ Major components repair
- ▶ Two people, 3 hours



THANK YOU FOR YOUR ATTENTION !

