Wind-Solar-Kleinkraftwerk Hybride System

Frido Stutz

NewGreenTec GmbH

sustainable energy innovations
info@newgreentec.com
https://www.linkedin.com/company/newgreentec/
www.newgreentec.com

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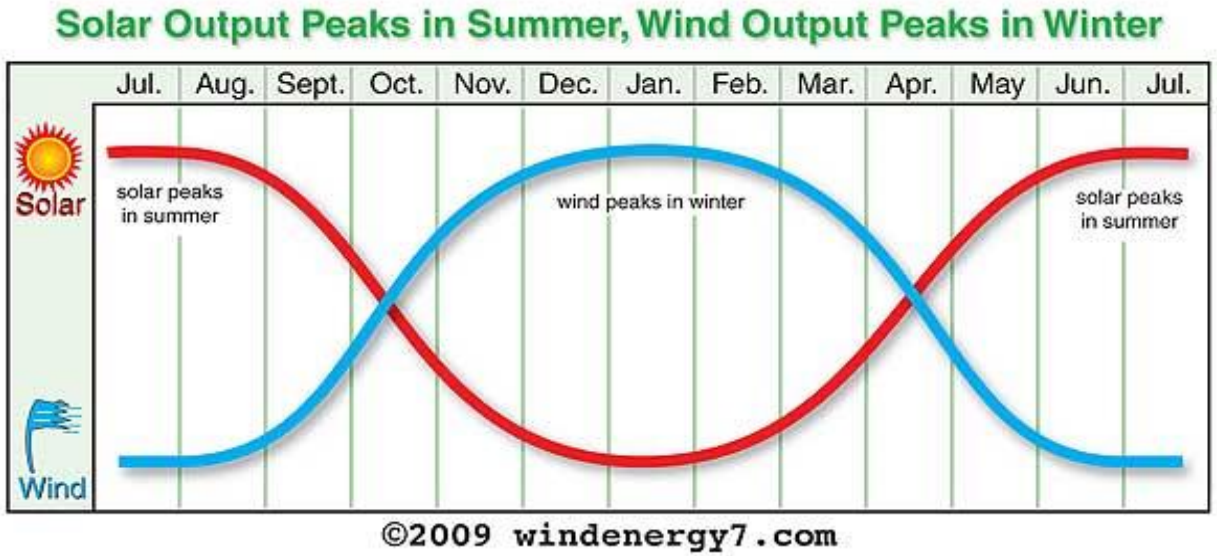
Warum hybrid?

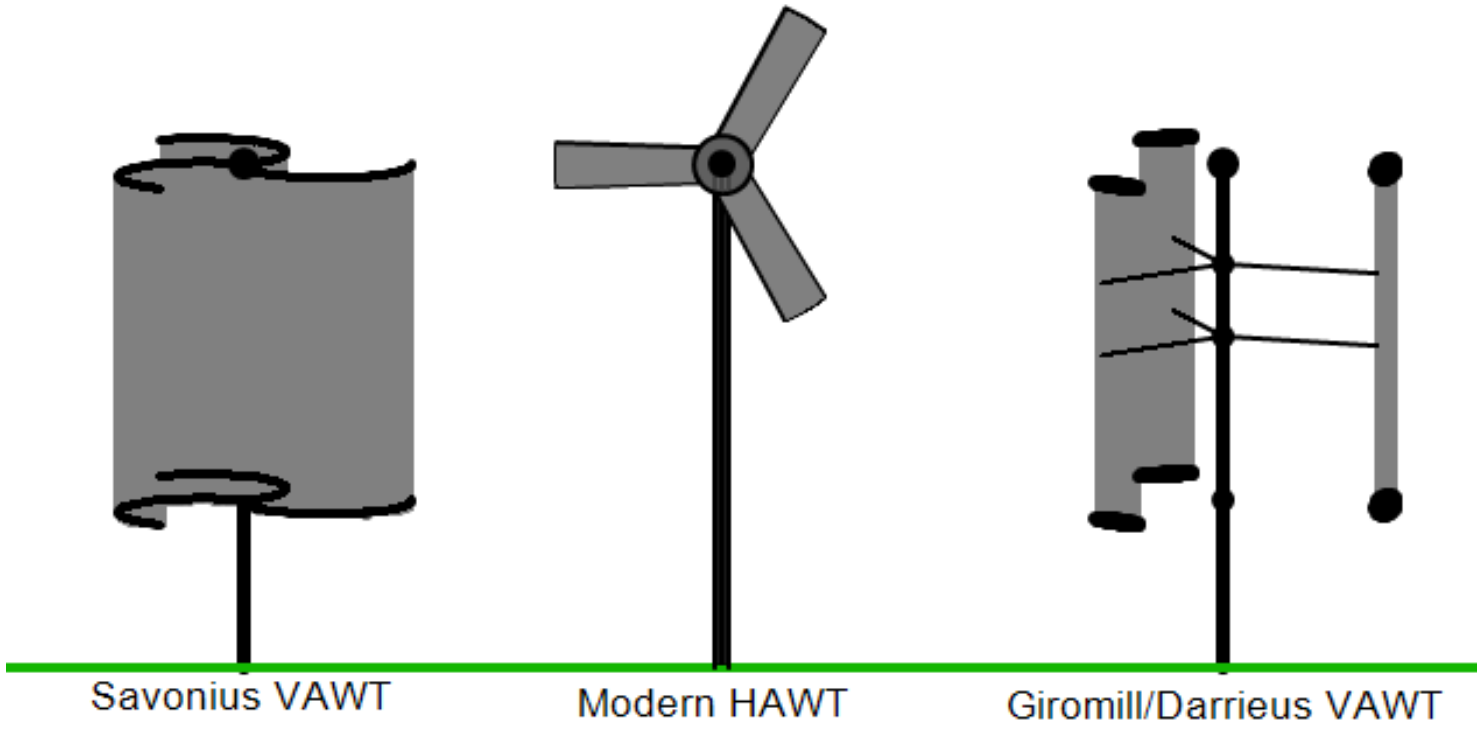
Winter: ¾ der Windenergie. Sommer: ¾ der Sonnenenergie



Aufgabe:

1. **Wie Wind und Solar kombinieren?**
2. **Wie die Installationskosten reduzieren?**
3. **Wie die benötigte Fläche reduzieren?**
4. **Wie die Gebäude dazu optimal nutzen?**

Die Windturbinen



Energie im Wind:

d/2 * A * v^3 (W/m2)

Wirkungsgrad:

P_{eff}/P_{max} (%)

Kosten/Nutzen:

P/Invest. (kWh/CHF)

Die duale Vertikalachs-Windturbine VAWT

→ Windrichtungs-unabhängig
→ Leise
→ Tiefe Start-Drehzahl

→ Böen-resistent
→ Keine Gefahr für Vögel etc.
→ Robust

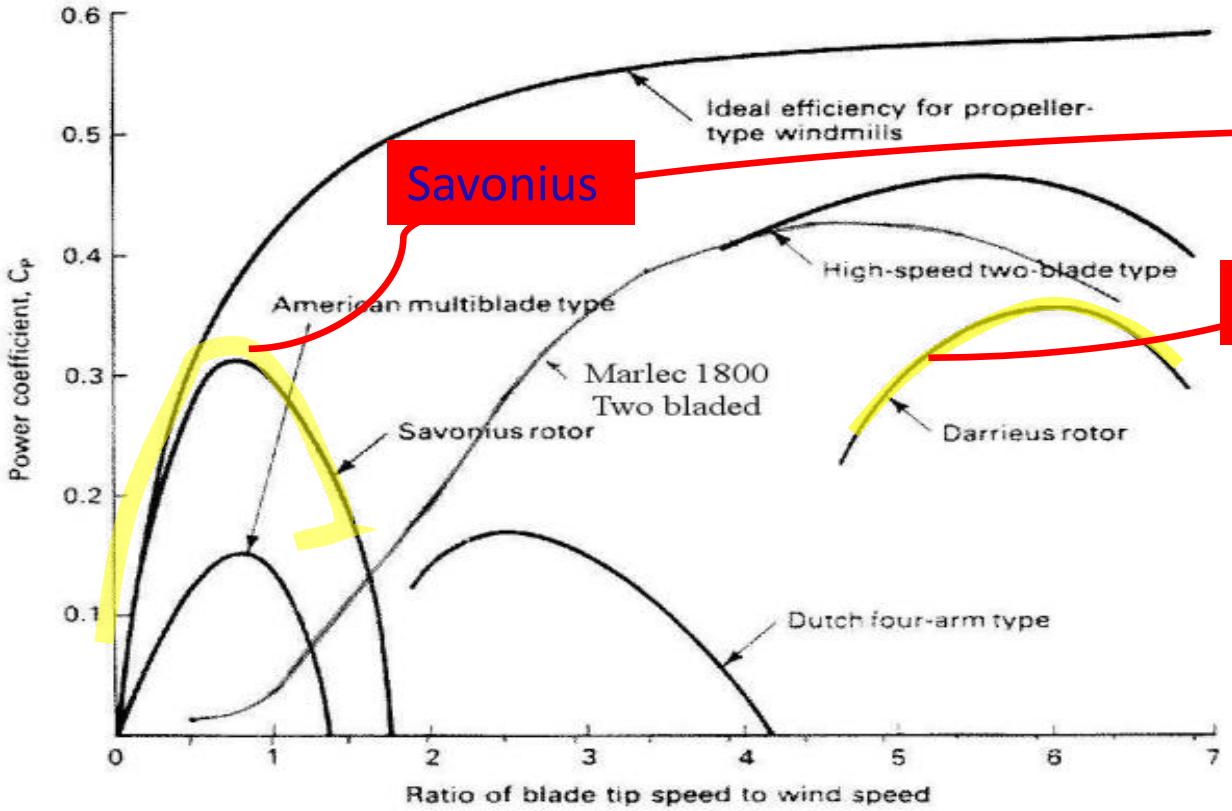
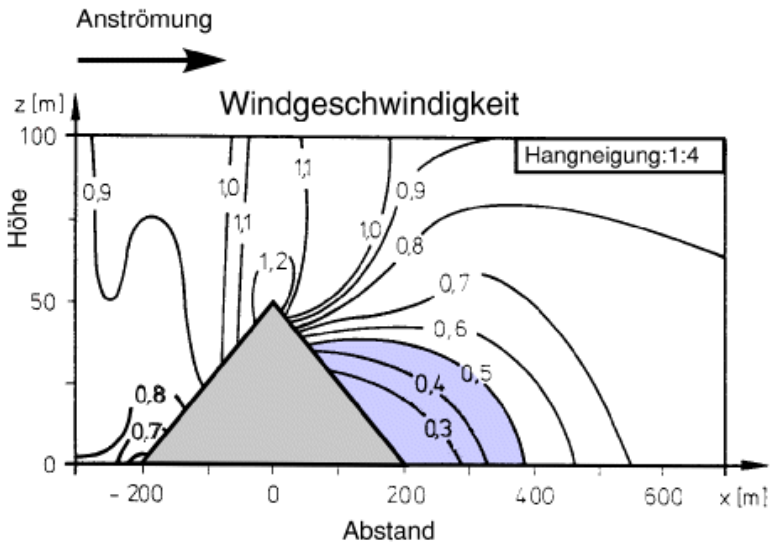
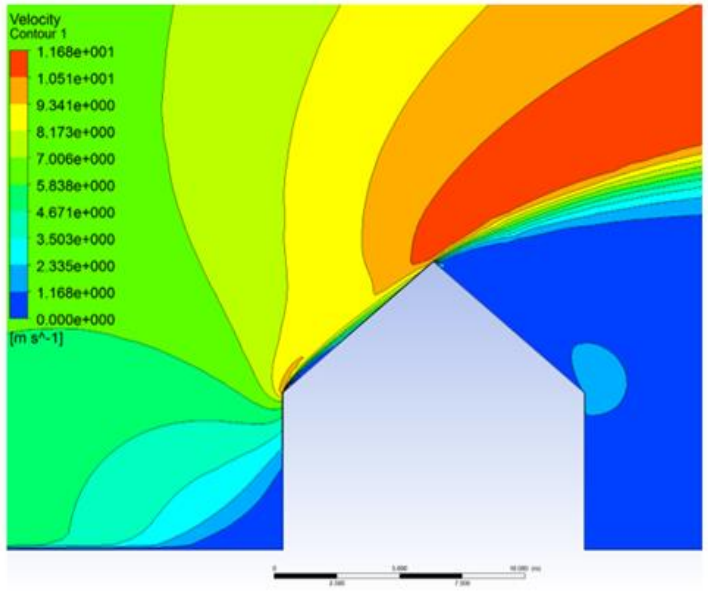


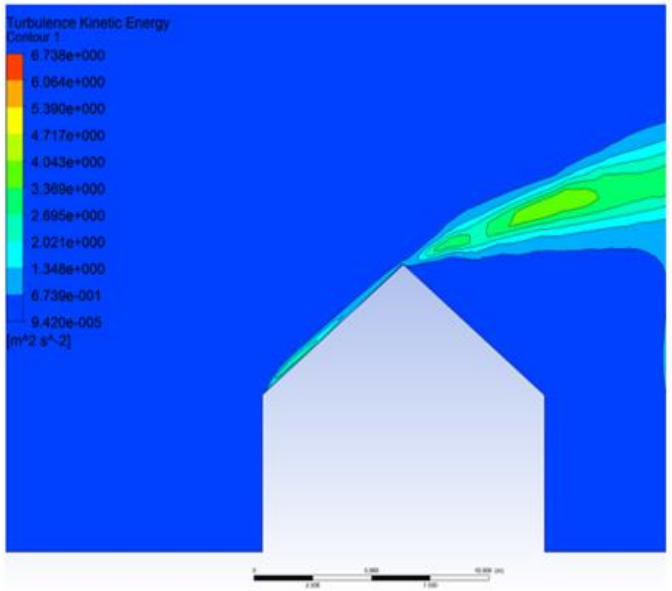
Figure 1-13: Cp vs λ curves for various turbine configurations

Unterschiedliche Darrieus VAWT

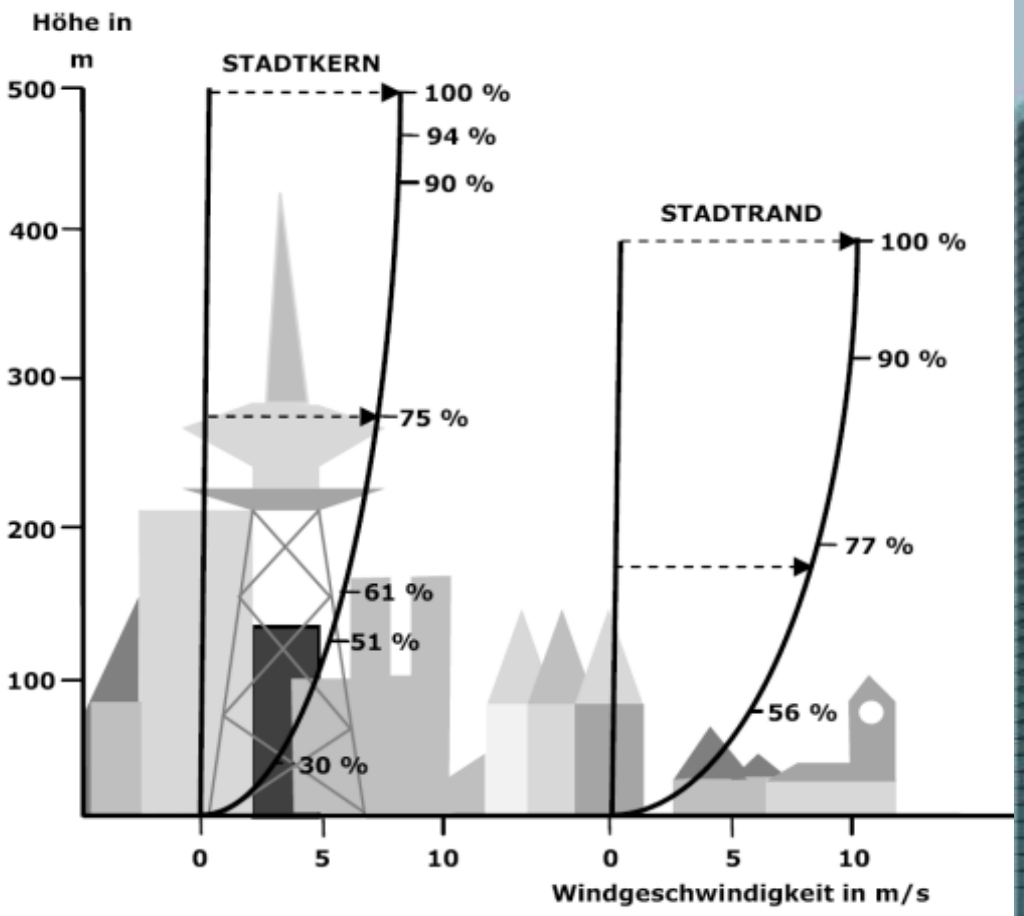
Wind am Gebäude

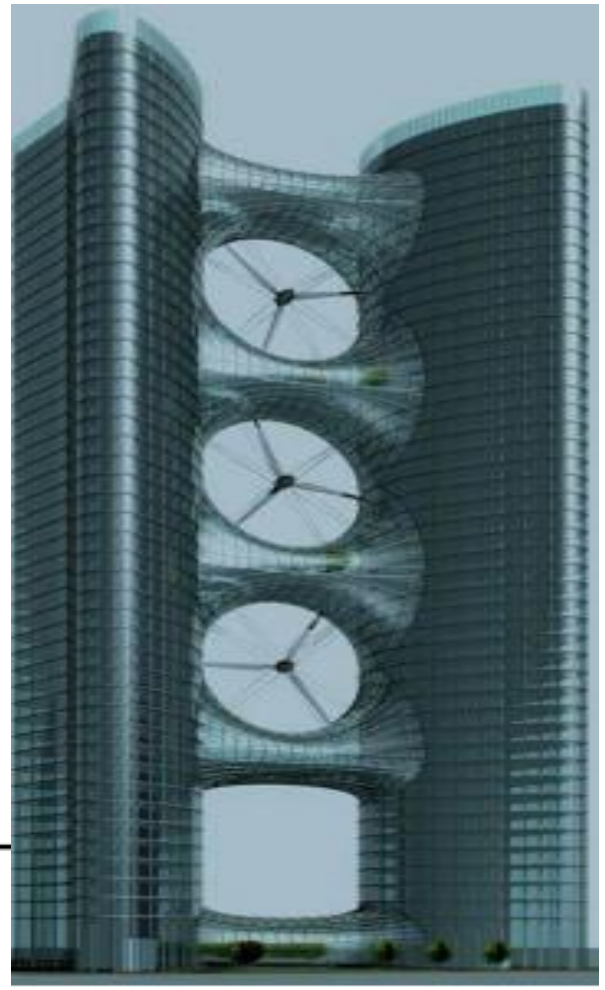






Urban Wind Farming





Kombination von Windturbinen mit PV und Speicher

1. Compact 2. plug & play 3. stand-alone 4. all-in-one 5. easy to set up

Installationen von NewGreenTec

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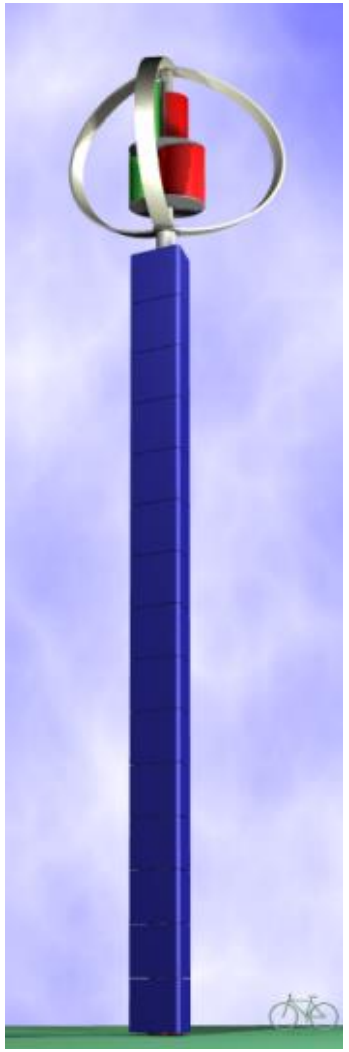
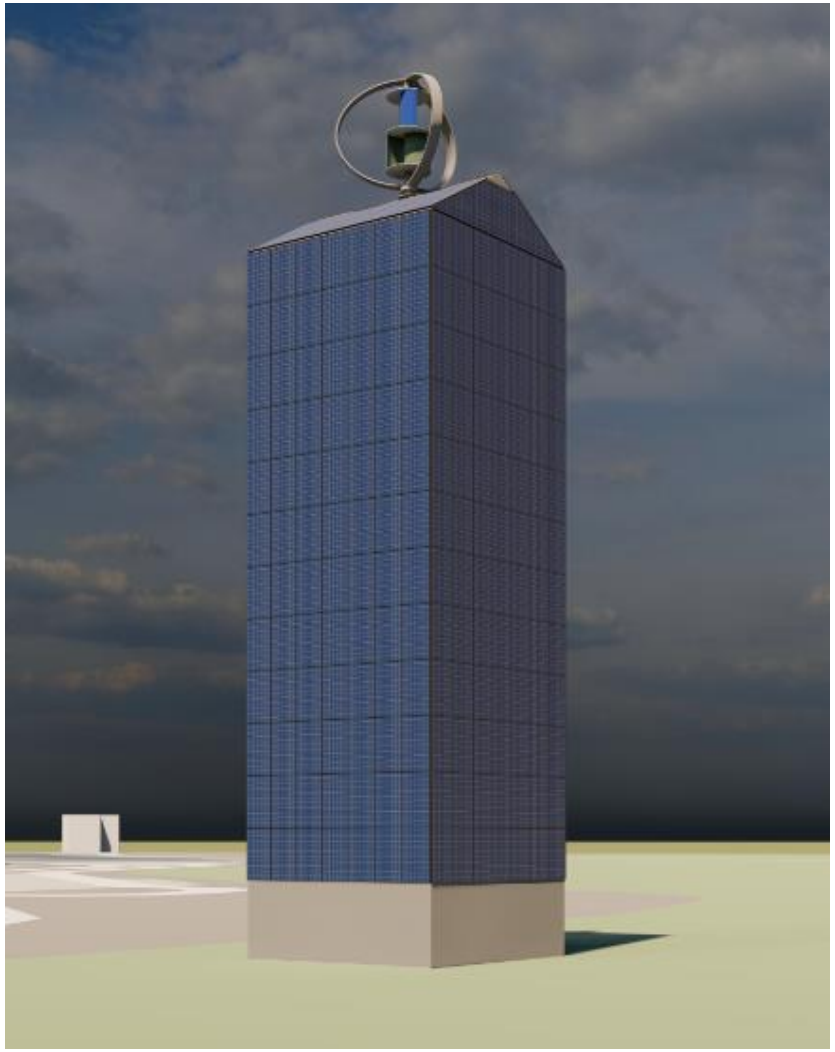
Projekt: XXL - EnergyTower





Spezifikationen:
- bis 30 Meter hoch
- 7x7 Meter
- 800 m2 PV
- 10 kW Windturbine

Anwendungen:
- Kommunen
- Autobahnraststätte
- eAuto – Ladestationen

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Markt: Anwendungen und Standorte

Viehstall
Scheune
Almhütte
Privathaus
Jagdhaus
Hütte
Pavillon
Vereinsheim
Messegelände
Zeltplatz
Sportplatz
Golfplatz
Baustelle
Kommunikations-knotenpunkt
Tankstelle

Emergency shelter
Border post
Military camp
Refugee camp
Native village
Water supply well
Wildlife resort
Research camp
Harbor
Highway service area
Boat deck
Telecom antenna
Monitoring devices
Weather station

Video-Überwachung
Leuchtturm-Navigations-Station
Schilder-Beleuchtung
Wächter
Notruftelefon
LED-Displays
Werbung
Mobiler Lichtmast

Parkplätze für die zunehmende Anzahl von Elektroautos, Transportern, Fahrrädern und Rollern etc.

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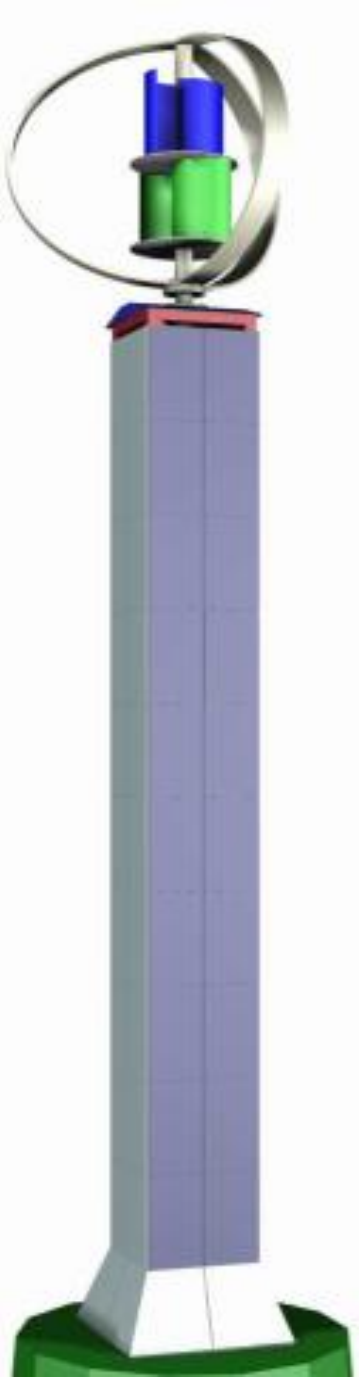


Vielen Dank für die Aufmerksamkeit

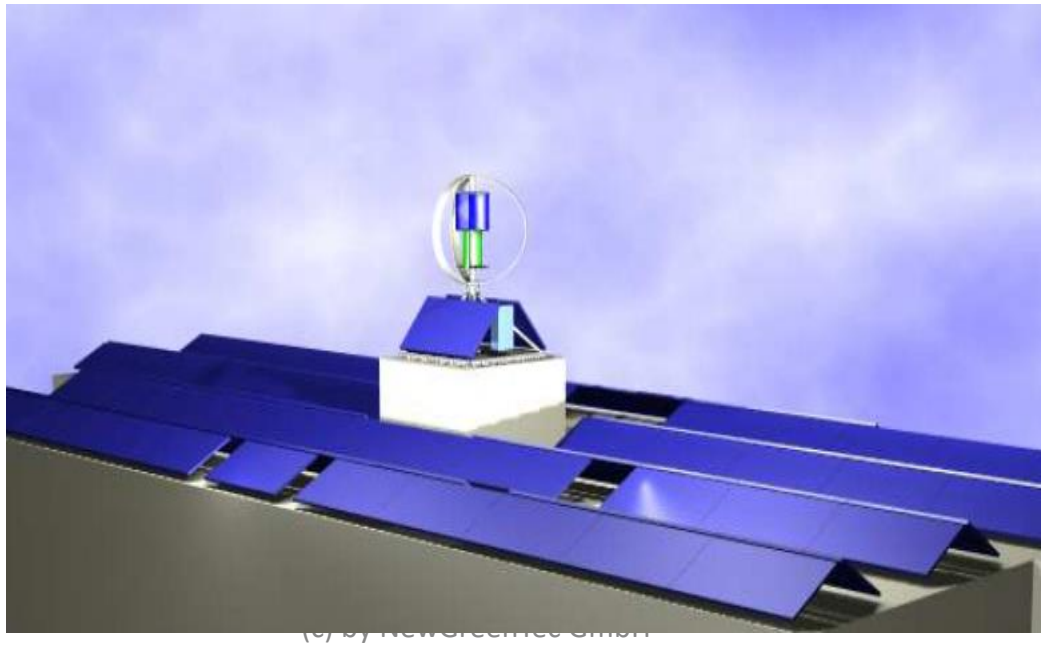
NewGreenTec GmbH

everybody`s personal power plant

www.newgreentec.com,

+41 79 300 5008

info@newgreentec.com



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