

Reinventing the wind turbine model

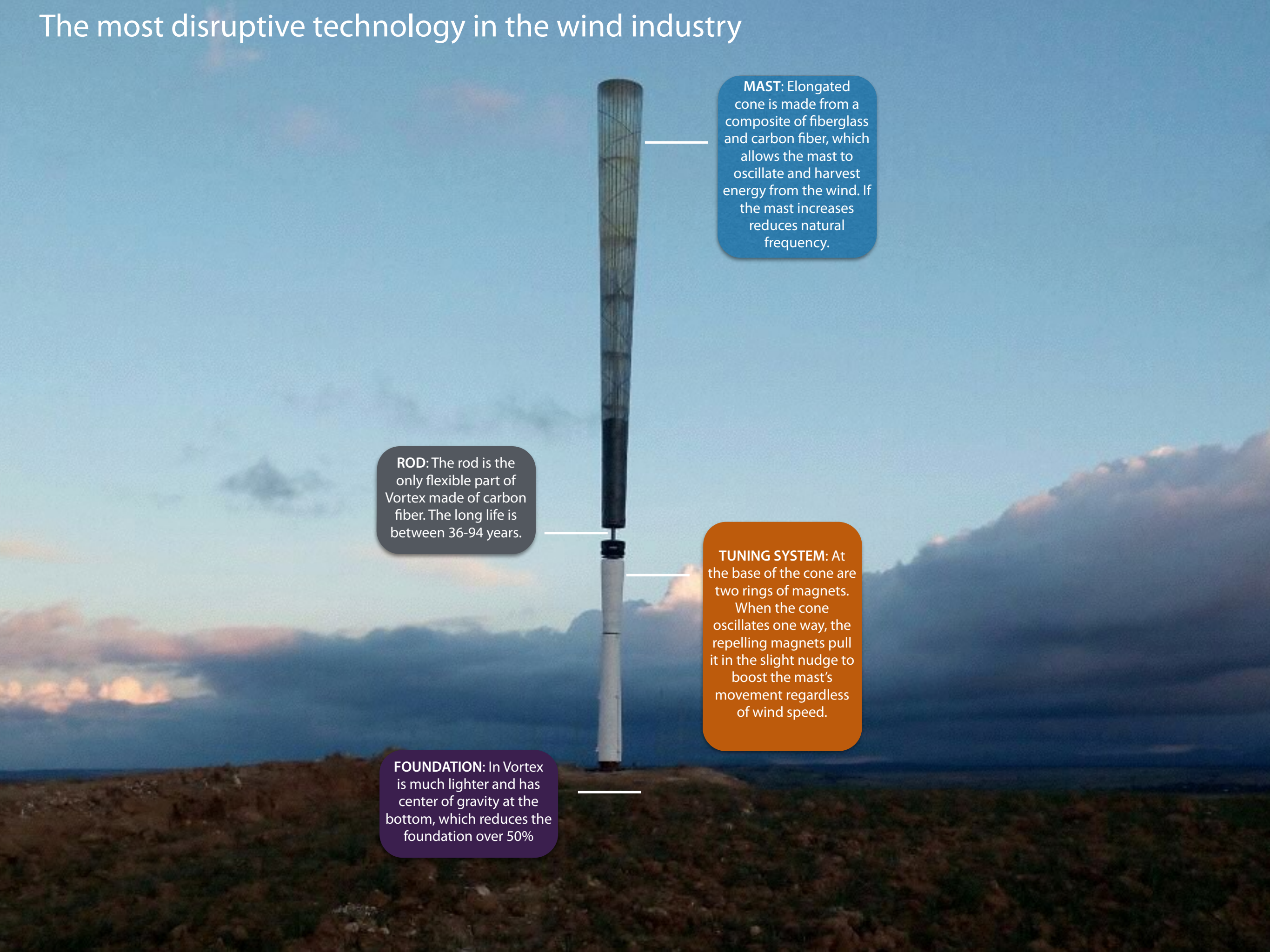
# VORTEX

Bladeless



\*in case you can't see the video, link <https://youtu.be/WqcNc9bKINY>

# The most disruptive technology in the wind industry



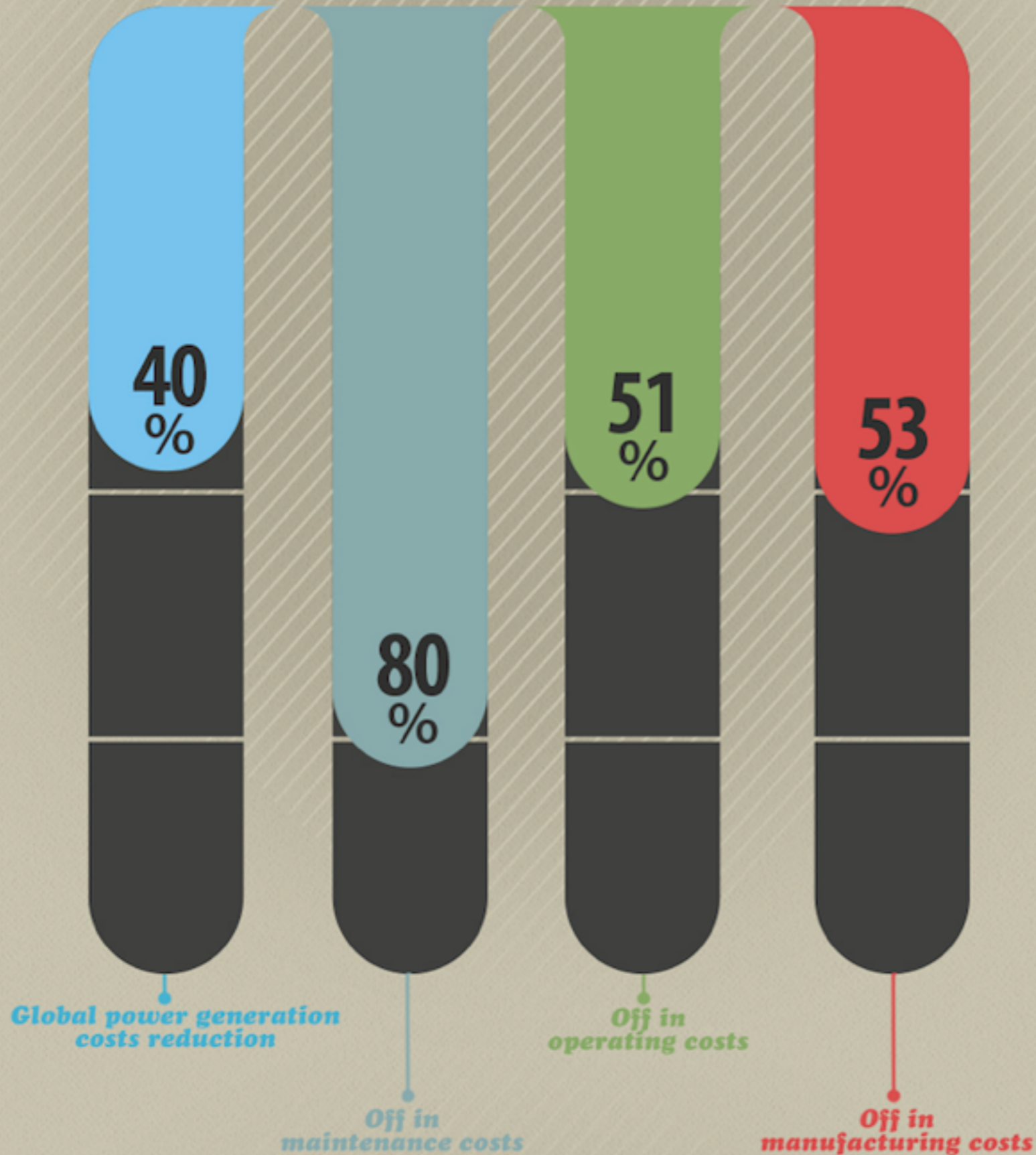
**MAST:** Elongated cone is made from a composite of fiberglass and carbon fiber, which allows the mast to oscillate and harvest energy from the wind. If the mast increases reduces natural frequency.

**ROD:** The rod is the only flexible part of Vortex made of carbon fiber. The long life is between 36-94 years.

**TUNING SYSTEM:** At the base of the cone are two rings of magnets. When the cone oscillates one way, the repelling magnets pull it in the slight nudge to boost the mast's movement regardless of wind speed.

**FOUNDATION:** In Vortex is much lighter and has center of gravity at the bottom, which reduces the foundation over 50%

# Costs



The Vortex technology reduces overall costs when we compare with conventional wind turbines



## **Maintenance**

**Conventional  
wind turbines  
needs**

**400**

**Litres**

**150**

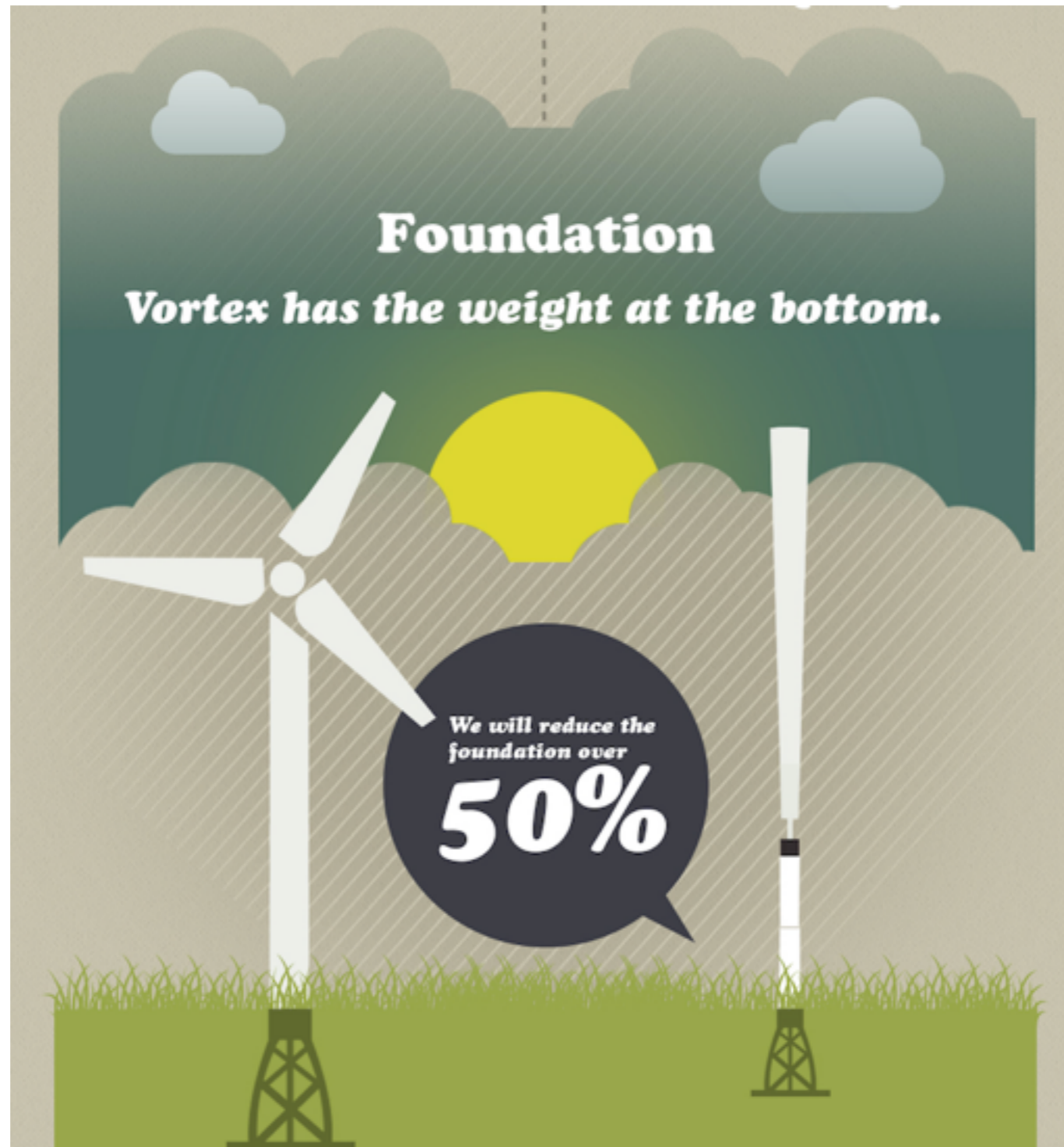
**Gallons  
of oil per year**

Vortex doesn't have any gear or moving part in contact.

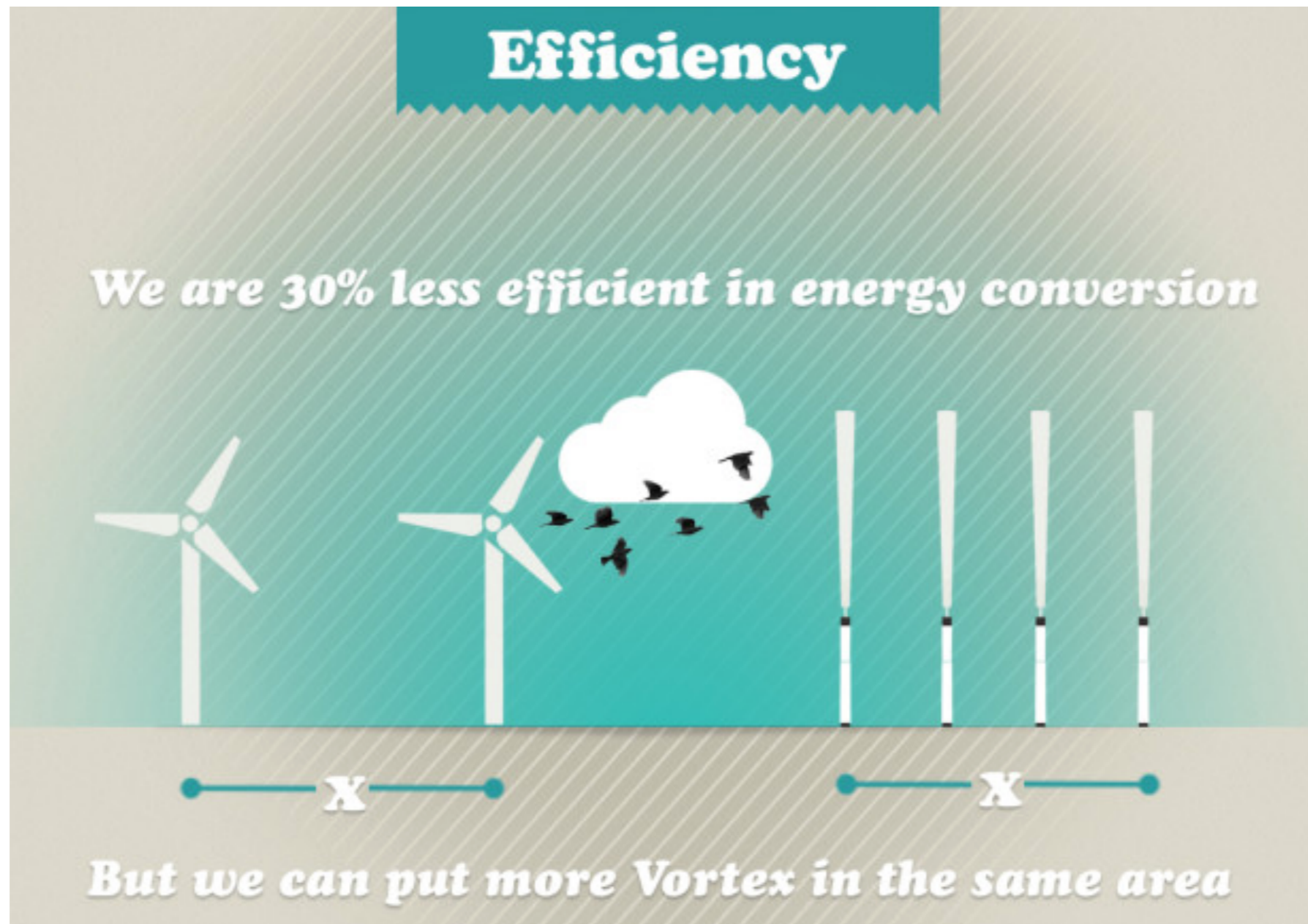
No oil needs, no maintenance for mechanical replacements.

Reduces the maintenance costs by 80%

Vortex foundation is 50% smaller

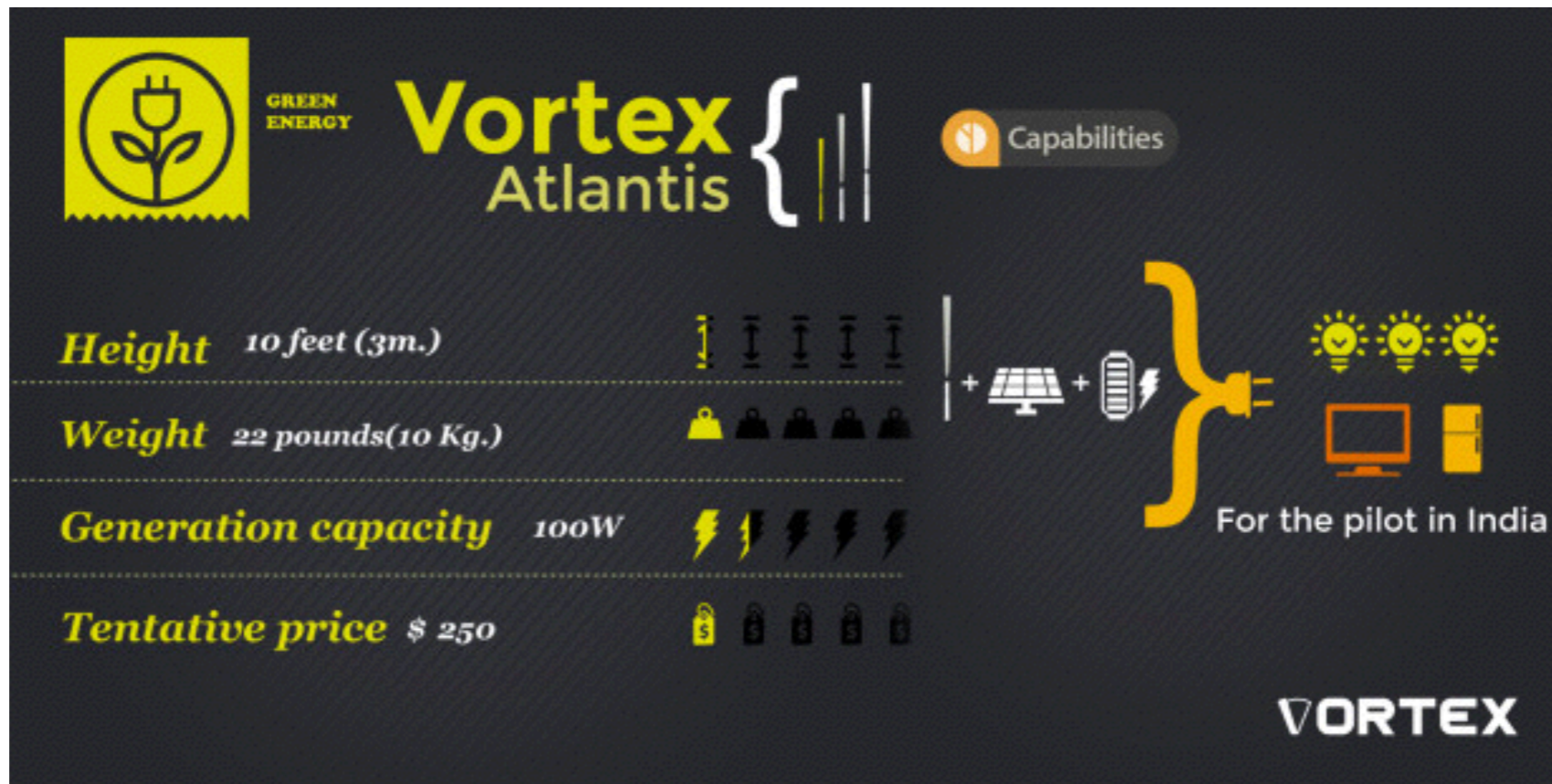


Vortex installations can provide more power output per area compared to conventional wind turbines



Although a Vortex unit converts energy at 70% of a conventional wind turbine, the higher density of units per installation area results in higher energy output

# Pilot test and products for 2016-17



**GREEN ENERGY** **Vortex Atlantis** Capabilities

**Height** 10 feet (3m.)

**Weight** 22 pounds (10 Kg.)

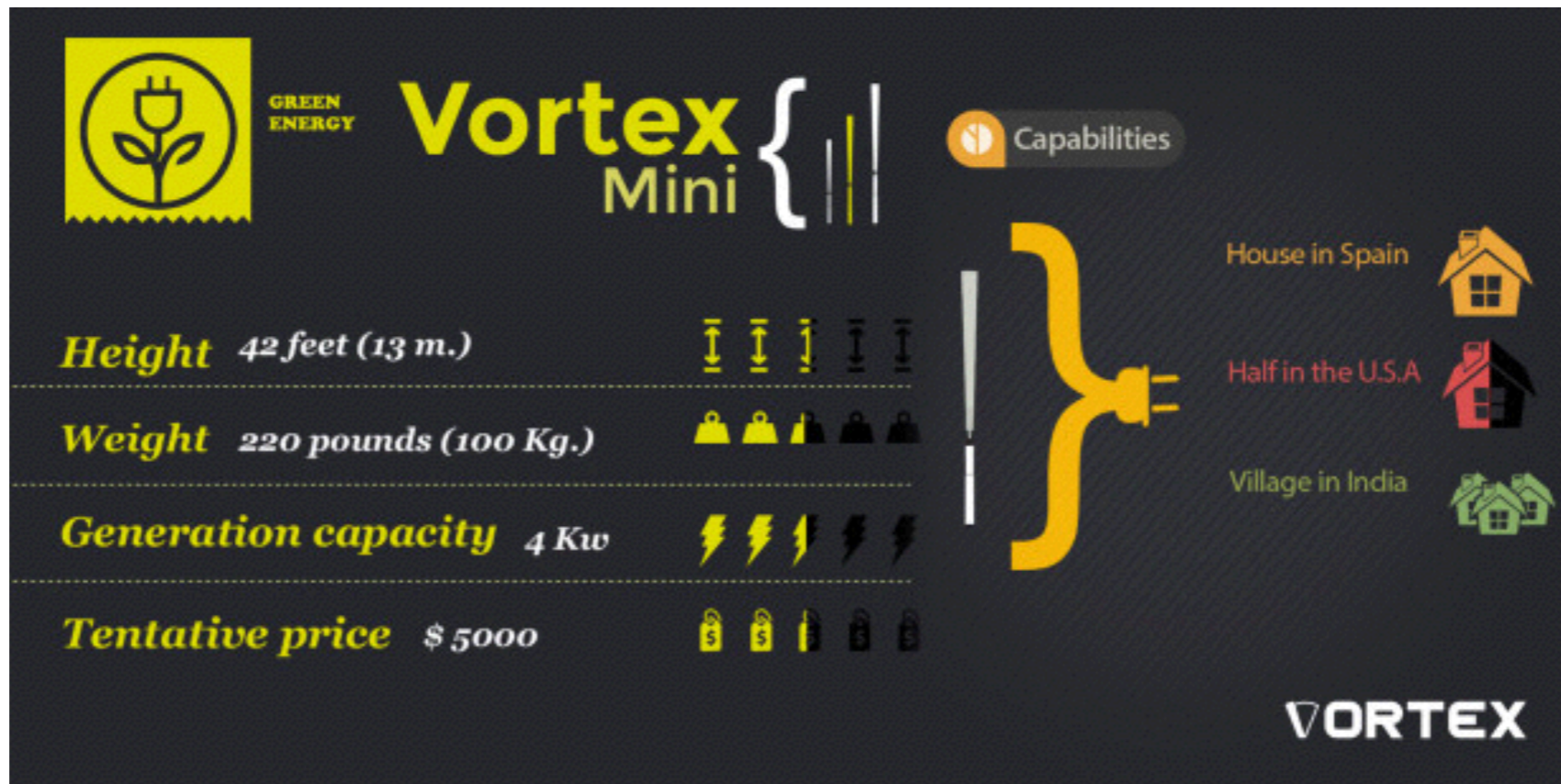
**Generation capacity** 100W

**Tentative price** \$ 250

For the pilot in India

**VORTEX**

The infographic for Vortex Atlantis features a green logo with a plug and leaf, the text 'GREEN ENERGY Vortex Atlantis', and a 'Capabilities' icon. It lists specifications: Height 10 feet (3m.), Weight 22 pounds (10 Kg.), Generation capacity 100W, and Tentative price \$ 250. A diagram shows a solar panel and battery connected to a power plug, which is then connected to three light bulbs, a monitor, and a refrigerator. The text 'For the pilot in India' is positioned below the plug. The Vortex logo is at the bottom right.



**GREEN ENERGY** **Vortex Mini** Capabilities

**Height** 42 feet (13 m.)

**Weight** 220 pounds (100 Kg.)

**Generation capacity** 4 Kw

**Tentative price** \$ 5000

House in Spain

Half in the U.S.A

Village in India

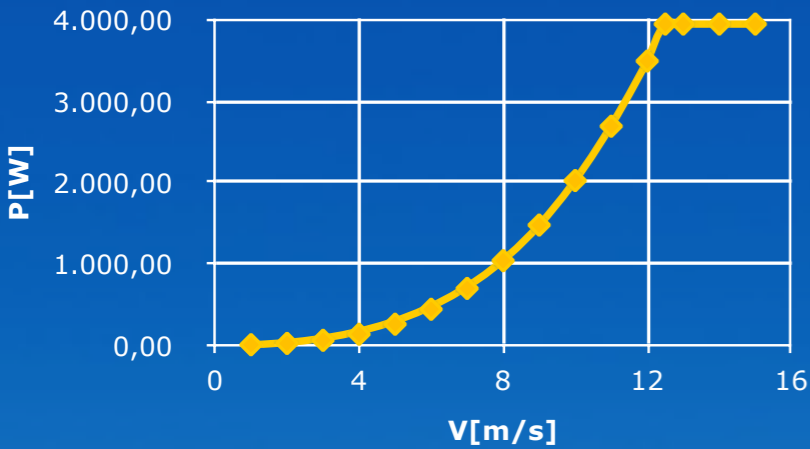
**VORTEX**

The infographic for Vortex Mini features a green logo with a plug and leaf, the text 'GREEN ENERGY Vortex Mini', and a 'Capabilities' icon. It lists specifications: Height 42 feet (13 m.), Weight 220 pounds (100 Kg.), Generation capacity 4 Kw, and Tentative price \$ 5000. A diagram shows a power plug connected to three house icons. The text 'House in Spain', 'Half in the U.S.A', and 'Village in India' is positioned to the left of the plug. The Vortex logo is at the bottom right.



# USING SOLAR COMBINED WITH VORTEX REDUCES SOLAR PAYBACK BY APPROXIMATELY 20%

**VORTEX 4kW POWER CURVE**



**VORTEX**  
4kW



City: Visakhapatnam  
State: Andhra Pradesh

Wind Average Speed	6,9 m/s
Annual Production by Vortex	12991 kWh
Daily Production by Vortex	11,86 kWh

Sunny hours per year	2388,67 h
Power	160 W
Panells Photovoltaics	80
Efficiency	90%
Annual Solar Energy	23954,4 kWh
Daily Solar Energy	65,62 kWh

Amortization Photovoltaic:

**6,8 years**

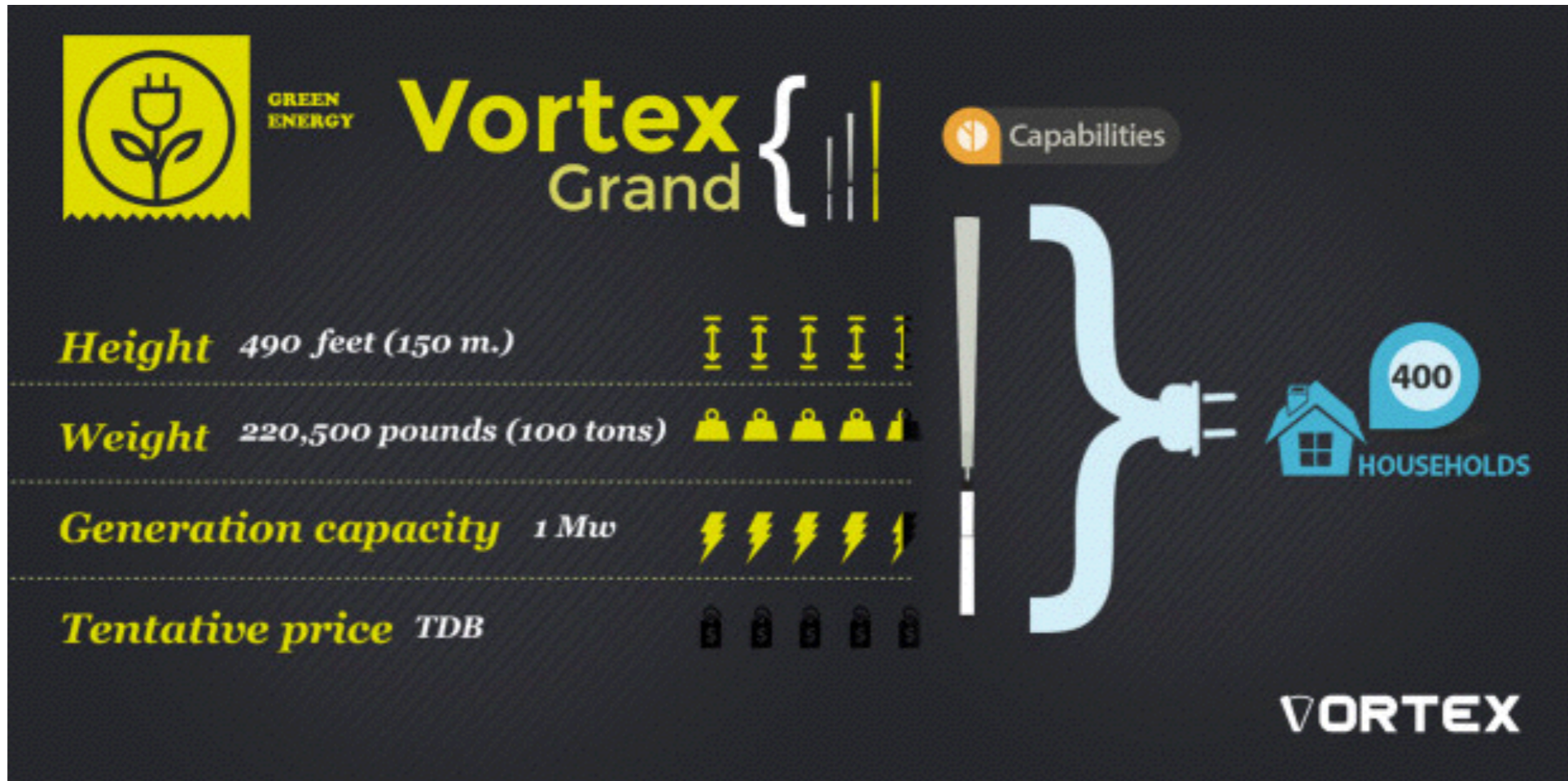
Amortization Vortex + Photovoltaic:

**5,05 years**

\*Cost of energy: 0,20\$/kWh



+1MW Vortex planned for 2019-20



Vortex will reduce the cost of energy by 40%

**53,1**  
€/MWh



**LCOE**

**37,9**  
€/MWh

Environmentally friendly.  
We reduce the Carbon Foot Print by over 40%





Raúl Martín  
Organization

David Yáñez  
Technology

David Suriol  
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