

让我们共同创造风能革命



JOIN THE  
WIND  
REVOLUTION

**VORTEX**

Power Technologies

上海沃振能源科技有限公司



## 上海沃振能源科技有限公司

沃振无叶片风力发电机是全新的革命性设计,用风力发电的同时,还能媲美太阳能发电的效率和便利性,具有成本低、占地小、对环境友好等特点,是新能源技术的突破和创新之作。

VORTEX POWER IS A WIND GENERATOR WITHOUT BLADES. DESIGNED TO BE ANEQUIVALENT OF SOLAR ENERGY IN FEATURES AND COST-EFFECTIVENESS OVER TIME.

WIND  
POWER  
REVOLUTION





上海沃振能源科技有限公司（以下简称“沃振”）致力于开发和生产全球独有的无叶片风力发电机组，推动这项革命性的风力发电技术产业应用；建设及运营无叶片风力发电场；实现中国制造、生产、运营无叶片风力发电机及其零部件；开发无叶片发电机组及其零部件与相关技术和服务的出口业务。

Vortex Power is a tech startup. We are developing an environmentally friendly wind generator which needs no blades. At this stage, we are designing this technology for small wind on-site energy generation and distributed energy in residential areas, specially thought to work on-grid or off-grid alongside other Vortex units or regular solar panels. Vortex is a different and innovative way of harnessing energy from wind.



涡流无叶片技术荣获：  
Vortex Bladeless has been awarded with:

沃振无叶片风力发电机是通过涡流脱落的空气动力学效应产生的共振现象，最大限度的来捕捉风力，而并非通过传统的旋转方式。相较传统的风力涡轮发电机具备更多优势，如：占地面积小、运营成本低、维护简单方便、对环境更加友好等特点。随着技术的提升，无叶片风力发电机在功能和成本效益上将与太阳能电池板更相似。其耐磨损、性价比高、持久性、便于安装和维护、环境友好和土地利用率高等特点必将迎来市场广阔的投资和发展前景。

Our aerogenerators are based in vortex induced vibration's resonance. Somehow, Vortex wind generators are more similar in features and cost-effectiveness over time to solar panels than to regular wind turbines. It is a wind turbine which is not actually a turbine since it does not rotate. This eliminates the need for oiling and reduces other expensive maintenance and installation costs.

西班牙  
2020年创新PYME大奖  
Spain Innovation PYME 2020

欧盟2020卓越奖  
EU's H2020 Seal of Excellence



## REINVENTING WIND ENERGY

# 产品特点

## FUNCTIONALITY

**VORTEX**  
Power Technologies

**更轻**

LIGHTER

**更安静**

QUIETER

沃振无叶片风力发电设备的设计简单,重量轻,可以非常高效地利用物理现象发电。它没有齿轮箱,在运行时不需要润滑剂,也不会产生任何废物,从而减少了维护工作。与普通的旋转式风力发电不同,沃振无叶片风力发电机不会产生噪音。此外,它的涡流组件几乎不会干扰雷达波或者无线电信号,因此对鸟类和蝙蝠种群等生物的影响会小得多。我们的设计允许振荡运动,但是没有传统风力发电那么激烈,因此可以将其放置在任何地方,既不会影响环境,也不会影响野生动物。

Its simple design and light weight allow very efficient use of raw materials. It doesn't need lubricants nor produces any wastes while operating, reducing maintenance. Unlike regular rotating-based wind power, we expect Vortex technology to be noiseless. As an extra, Vortex's components barely interfere on radio signals. Impacts on birds and bats populations are expected to be much lower. Our design allows an oscillatory movement, less aggressive than traditional wind power, which allows it to be placed anywhere without disturbing people nor wild-life.

**风力发电能和鸟类  
共享阵风**

WIND INDUSTRY AND BIRDS  
CAN SHARE THE SAME WIND

**更环保**

GREENER







与

没有齿轮 GEARLESS

不用润滑油 OIL-LESS

无需市电 LOWER CARBONFOOTPRINT

独立运营 STANDALONE

低维护 LOW MAINTENANCE

自动快速相应风向变化 QUICK RESPONSE TO WIND CHANGES



# 传统叶片风机相比的技术优势

**安静** SILENT **重量轻** LIGHTWEIGHT

**不伤害鸟类** HARMLESS TO BIRDS

**长生命周期** HUGE LIFESPANS

**高回报** HIGHER ROI

**最少原材料** LOWER COST

**最大化利用空间** SPACE OPTIMISATION

COMPARE WITH TRADITIONAL WIND TURBINES



# 低成本

**VORTEX**  
Power Technologies

## FEASIBILITY



沃振无叶片发电技术的优势之一就是发电成本低。我们估算的平准化能源成本(LCOE)相较于传统风力发电的成本低很多,实现更高的投资回报。这些成本的降低来自于巧妙的设计和材料的使用。无叶片风力发电机不需要机舱、支撑结构、齿轮或叶片等传统风力发电的昂贵部件。

One of the advantages of Vortex technology is the low costs associated. We have estimated that Vortex turbines' levelized cost of energy (LCOE) will be lower, which would allow a faster return over investment. These cost reductions come from a clever design and usage of raw materials. There is no need for a nacelle, support mechanisms, gears or blades, that are costly components in conventional wind power.

## 风力发电的全新典范

A NEW PARADIGM  
IN WIND POWER



此外,无叶片风力发电机的维护成本也降低了,因为它不需要重新校准或添加润滑油的齿轮或制动器。在设备疲劳方面,它使用的碳纤维寿命可达数十年。由于沃振无叶片风机重量很轻,重心更靠近地面,与传统涡轮机相比,锚定或地基要求大大降低,从而简化了安装。

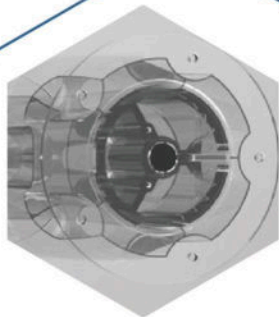
There is also a cost reduction on its low maintenance. It has no gears or brakes which need readjustment or oiling. About fatigue, carbon fibre's lifespan is rated on several years. Thanks to being very lightweight and to have the gravity centre closer to the ground, anchoring or foundation requirements have been reduced significantly compared to regular turbines, easing installation.



开发  
DEVELOP

创新  
CREATE

鼓舞  
INSPIRE



头帽  
HEAD CAP

裙管  
SKIRT SLEEVE

核心(碳纤维棒)  
CORE (CARBON FIBER ROD)

磁钢  
MAGNETIC STEEL

基底 / 锚定部  
BASE / ANCHORING

基本上,沃振无叶片风力发电技术是由一个与弹性杆垂直固定的圆柱体组成。圆柱体的套筒在可校准的风力范围内摆动,然后通过交流发电机系统产生电能。它以空气动力学的涡流共振现象为基础,利用冯-卡门涡旋效应捕捉风能,这一过程被称为涡旋脱落或涡街。通过这种物理现象,无叶片风机的“头帽”摆动十分平缓,这使得沃振风力发电机可以放置在间隔很近的地方,无需维护,相互之间也不会产生干扰。

Basically, Vortex technology consists of a cylinder fixed vertically with an elastic rod. The cylinder oscillates on a calibratable wind range, which then generates electricity through an alternator system. It is based on the phenomenon of aeroelastic resonance, harnessing energy from the wind on the emission of Von Karman's vortices, a process called vortex shedding or vortex street. This way the device oscillates with a gentle movement which makes them perfect to be placed quite close with almost no maintenance nor disturbances between them.

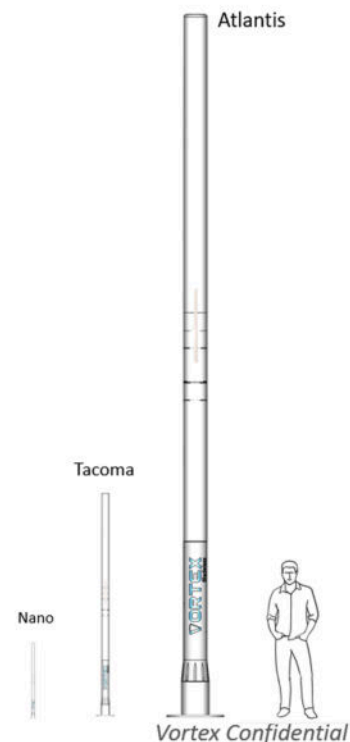
# 发电原理

## THE DEVICE



## 无叶片风力发电机产品系列

	分散式发电机			大型发电机
型号	Nano	Tacoma	Atlantis	Goliath
身高/直径	1.2m / 4cm	3.4m / 10.5cm	10m / 38cm	140m / 4.76m
重量	2.3 Kg	17 Kg	400 Kg	120 T
平均发电功率	7 W	150 W	2 KW	1 MW
最大发电功率	20 W	300 W	5 KW	2.5 MW
切入风速	2.5 m/s	3 m/s	3.5 m/s	6 m/s
额定风速	4 m/s	5 m/s	7 m/s	9.5 m/s
生命周期	12 年	25 年	27 年	> 30 年
年维护成本	0%	1%	2%	3%



## 扎根中国

## ROOT IN CHINA

### 品牌合作:

BRAND PARTNERSHIP:



华东: 投资建设全球第一个无叶片风力发电风场。

East China: Invest in the construction of the world's first bladeless wind farm.

包头: 投资成立无叶片风机的磁钢和电机生产基地。

Baotou: Invest in establishing a production base for magnetic steel and motors of bladeless wind turbines.

台湾: 投资建立了精密测试中心和风洞试验场。

Taiwan: It has invested in establishing a precision testing center and a wind tunnel test field.

# 发展方向

## ROAD-MAP

新技术的发展需要一个自然和逐步成熟的过程。沃振无叶片风力发电设备是同类产品中的首创，技术的发展也在快速迭代和完善中。迄今为止，我们已经开发出了1.2米(Nano)、3.5米(Tacoma)、10米(Atlatis)高度的无叶片风机,都是全球首创的成熟产品。我们预计在2025年推出更高的发电机。同样,在生产规模化的过程中,我们也在依靠国内合作伙伴的鼎力支持。

The development of new technologies requires a natural, gradual maturation process. Vortex devices is a pioneer in its category, with its technology evolving rapidly through iterations and improvements. To date, we have developed 1.2m (Nano), 3.5m (Tacoma) and 10m (Atlatis) bladeless wind turbines — all mature, world-first products. We plan to launch taller generators in 2025. Similarly, we rely on strong support from domestic partners to scale up production.





# VORTEX

Power Technologies

让我们一起改变风电的天际线。  
Let's change the skyline of wind power together.

起源于西班牙, 自有知识产权、面向全球市场。  
Originating from Spain, with its own intellectual property rights and targeting the global market.



WIND  
POWER  
REVOLUTION



# 新一代无叶片风力发电

## 安全·高效·零噪音

The new generation of bladeless wind power generation  
safe, efficient and noise-free



[sales@vortexpower.tech](mailto:sales@vortexpower.tech)

**VORTEX**  
Power Technologies

**上海沃振能源科技有限公司：**

上海市闵行区沪闵路6088号凯德龙之梦闵行商务楼2楼

**内蒙古沃泰斯新能源科技有限责任公司：**

内蒙古自治区包头市包头稀土高新技术产业开发区稀土路街道黄河大街86号时代广场G区-C1206

**沃德斯(温州)绿色能源科技有限公司：**

浙江省温州市龙湾区蒲州街道高新技术产业开发园区科技园文昌路166号415室

**西班牙公司：**

Vortex Bladeless S.L. Paseo de la Estación nº20, 05001 Ávila, Spain

**Shanghai Wozhen Energy Technology Co., LTD. :**

2nd Floor, capitaland Mall Minhang Business Building, No. 6088, Humin Road, Minhang District, Shanghai

**Inner Mongolia Wotaisi New Energy Technology Co., LTD.:**

No. 86, Huanghe Street, Rare Earth Road Sub-district, Baotou Rare Earth High-tech Industrial Development Zone, Baotou City, Inner Mongolia Autonomous Region, G Area -C1206, Times Square.

**Wodes (Wenzhou) Green Energy Technology Co., LTD.:**

Room 415, No. 166, Wenchang Road, Science and Technology Park, High-tech Industrial Development Zone, Puzhou Sub-district, Longwan District, Wenzhou City, Zhejiang Province.

**Spanish company:**

Vortex Bladeless S.L. Paseo de la Estación nº20, 05001 Ávila, Spain