Bladeless wind turbine generator

Bladeless wind turbine generator

Eco-friendly bladeless small wind energy. Startup technology Vortex wind power ...

Vortex Bladeless Ltd.,,?,,?

Vortex Bladeless Ltd. is a Spanish technology startup company that is developing a specific type of wind power generator without rotating blades or lubricants.[1] Power is produced from resonant vibrations when wind passes through the turbine and is deflected into vortices in a process called vortex shedding.[2]

This technology might replace previous solar electricity installations, such as low-power systems, off-grid generation, autonomous systems, and distributed generation of electricity.[3]

Vortex Bladeless is currently working on two future products that are expected to be commercially available in 2021. The specified goals for each model are:[10]

With Vortex technology, the amount of energy harnessed grows exponentially squared by height and cubed by wind speed. Thus, bigger Vortex devices are desirable since production costs grow more slowly than power generation with height, giving as a result more profitable and efficient devices able to work with higher winds. As of 2021[update], because of their small and medium-sized enterprises (SME) status, the firm is only working on these small wind turbine alternative devices.[11]

In early 2014, Vortex obtained public funding from the Centre for the Development of Industrial Technology (CDTI) and began to collaborate with Barcelona Supercomputing Center (BSC)[14] and their huge computing resources for the simulations on vortex-induced vibrations (VIV), magnetic field interactions, and finite element method magnetics (FEMM) researches needed for their development.[15] The proof of concept was validated and the story of Vortex began winning the South Summit Award 2014 in the category of Energy and Industry.

During 2017, the firm kept developing their alternator and tuning system. Since this technology is considered as new in many aspects intervening (geometry, movement, energy conversion system), it has been a harder development than the firm expected. The collaboration on this stage of the Microgravity Institute of the Technical University of Madrid and the European University of Madrid, alongside CDTI, Altair, Birdlife and Barcelona Supercomputing Center (BSC) were the key to obtain a feasible technology that can harness energy from the wind on this particular way. In this year the company obtained the "Innovation SME" seal of the Spanish government.[21]

In 2018, the firm began to plan to industrialize their aerogenerators. At this point, the firm faced many

problems due to the lack of feasible industrial production processes to mass-produce some of the pieces that use Vortex technology. The geometry and the materials were almost finalized at this stage, so the firm began a certification process for their current prototypes and obtained the ISO 9001. This certification is a regular process for every wind turbine in the European and American market. The standard is written for bladed and rotary turbines, and may need to be rewritten to certify Vortex devices as wind generators.[citation needed]

The goals of the firm for the future are to obtain the certification needed to start selling, and to set up a feasible method of production and logistics of shipping so they can start commercializing the first Vortex turbines for 2020.[2] They have recently shown performance tests in Puerto Cort?s, Honduras.[22]

Most relevant strategic partners for Vortex Bladeless are the Executive Agency for Small and Medium-sized Enterprises (EASME), the Centre for the Development of Industrial Technology (CDTI), Altair Engineering, and the Council of Castile and Le?n in Spain.[23] The awards won by the company or their team are all related to energy, innovation, and entrepreneurship,[24][25] listed by date:

Vortex Bladeless is attempting to produce a wind turbine that isn"t actually a turbine. All generators require a magnetic field, a conductor and motion to produce electricity. A small generator can only produce a small amount of power. It takes a lot of energy (movement) to make a generator turn. The biggest are generally turned by massive amounts of falling water, heat, steam or air. There is very little movement in the Vortex "turbine". All the movement at the top doesn"t translate to much down where the generator is. They use a linear generator.[28]