1. **Title of proposed idea/innovation:**

**BLADELESS WIND TURBINE**

1. **Briefly explain newness/uniqueness of the innovation**

**Unmet Need:**

Coastal regions have massive wind energy potential, but the existing traditional wind turbines lug behind with certain limitations. The things include: Environmental Impact: The conventional wind mills have negative impacts on the local bird and bat populations, as well as generate noise pollution. Aesthetic and Space related issues: Big wind turbines consume a lot of space and there involves an issue that it may not be pleasant for people living in local community. Operational limitations: Conventional turbines are subject to corrosion and other damage in salty, harsh coastal environments, leading to high maintenance and operating costs. Energy Access: Several of the coastal regions are difficult-to-reach and completely off-grid with no reliable source of energy. Bladeless wind turbines are an excellent solution to satisfy the burgeoning need of clean and renewable energy without many environmental or logistical problems.

**Uniqueness :**

Attacking many of these challenges at their core, bladeless wind turbines offer some distinct advantages: Low Environmental Impact: Being absent large spinning blades is less dangerous for the local wildlife (birds and bats). Blow noise is significantly reduced: they generate less noise than their traditional counterparts, thus cutting down on the effect that this may have in residential or sensitive areas. Less Maintenance: With less of the parts that can break and a simpler design, they are better suited to take abuse from the weather conditions, salt water corrosion etc. seen in coastal areas. Less Land Needed: Bladeless turbines are more versatile and can be smaller and take up less space, which makes them perfect for urban areas or when aesthetics are a concern. Affordable: The

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| low cost of production and maintenance mean that renewable energy can be a cheaper option for many.    **Novelty :**   * Vortex-Induced Vibration Technology (Bladeless turbines harness aerodynamic effects like vortex shedding to generate power.) As the wind goes through it, this creates vortices that make the turbine shake. * Less Mechanically Complex: Its design without blades and gears makes it easier to build. Minus a drive shaft, it requires far fewer moving parts than what has been considered standard in turbine engineering. * Potential Immobility: The ability to work with buildings and not exclusively with wide-open spaces means bladeless wind turbines may end up in niche applications like cities or other high-people areas where traditional turbines are more difficult to deploy. Both suitable for small scale (residential) as well as large scale (for commercial) applications, due to their compact size and less invasive design. * Less Material: The simple configuration requires less material and therefore steel and concrete when compared to large traditional turbines, making them cheaper to build but also more environmentally appealing. It contributes to reducing the carbon footstep at production and transport level. * Vibration Energy Production — Where traditional wind turbines capture kinetic energy through rotation, bladeless designs produce electricity by converting oscillations directly into electrical power. The result is a novel direction to bring wind power, using wind, of course and through a different mechansim of leveraging the mechanical capabilities for renewable purposes.     **Product Developed :**  The Vortex Bladeless Wind Turbine is an elliptical oscillating non-blade wind turbine that produces power using the vibration from the vortex. The structure is slender and shaped like a mast allowing the structure to bend in the wind and therefore harness the energy from the wind. The product is intended for small-scale domestic and urban use, mainly in places where the installation of conventional turbines is impossible because of noise, safety of animals, or lack of space. It is low maintenance, affordable, and green. Even though the invention is still in the developing phase, the prototype has been made and tested |

successfully offering an innovative solution in the harvesting of wind energy.

1. **Concept & Objective**

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| **Concept :**   * Vortex Shedding * Energy Capture * Conversion to Electricity **Objectives :**   The aim of a bladeless wind turbine is to enable the provision of a more environmental and efficient method of producing renewable energy as compared to the conventional wind turbines. Particularly, its objectives include:   * + 1. Enable the Environmental Safety: At any rate, it lowers the threats to animals like birds and bats as a great ‘revolution’ blade is not involved hence lower noise pollution making it appropriate for the building and other delicate places.   + 2. Allow More Use of Blade Less Wind Turbine: A smaller size and a design that is less bulky allow introduction where ordinary turbines cannot be used like inside the cities, on the buildings and at the sea shores.   + 3. Bring Down Wind Power in Less Warm Climate: Fewer moving parts in a simpler system also mean cheaper manufacturing, easier construction, cheaper maintenance and hence lower cost of wind energy which will be a benefit to many users.   + 4. Strengthen Energy Independence: The wind turbine works like a cooling machine for the environment entirely made of alloys hence no rusting of mechanized turbines within coastal regions since this could bring discomfort over time.   + 5. Increase the Energy Efficiency: This is: help the world in the shift to her clean energy path by providing effective, safe, and advanced wind energy solution to accelerate the push for energy transition. |

1. **Specify the potential areas of application in industry/market in brief.**

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| **Opportunity:**  To understand user preferences, expectations, and concerns regarding the use of bladeless wind turbines for clean energy generation.    **Value Proportion:**   * Eco-Friendly Energy Generation * Cost-Effectiveness * Space Efficiency * Durability and Low Maintenance * Aesthetic Appeal * Energy Independence * Innovative Technology |

1. **Briefly provide the market potential of idea/innovation.**

As global desires towards climate change mitigation and support for clean energy sources, there is a strong demand for clean energy sources. The Renewable energy market is going to witness huge dynamics thereby providing spaces for creative features such as bladeless wind turbines.

Urban and Domestic Markets:

Due to the demand of urban areas towards clean source of energy, these types of turbines are suitable in addition to other existing uses for household applications due to their small size and less cluttered appearance. This offers a huge opportunity cost in regions with high population density.

Marine Regions:

Marine regions present opportunities in wind energy which is available but is often short of efficient wind turbines as solutions. However, there is also the potential of developing bladeless turbines that will be less compromised even in such markets.

Cheap Alternatives:

Due to the reduction in cost of production and cost of servicing, such wind turbines are viewed as a possible solution economically both in a household setting and a business environment targeting cost restrained customers and business overall.

State Policies

Numerous countries are keen on promoting the use of green energies through the giving out of tax reliefs, subsidies, and various payments, this in return can aid in the market adoption of the state of the art innovations such as Bladeless wind turbines.

6. **Block diagram / Flow chart**

