

WindNest™

Self-aligning wind turbine

“Wind Power for Every Home.”

Technology

The invention is a self-aligning rooftop wind turbine designed to generate electricity efficiently for households. Unlike traditional large-scale wind turbines that require expansive open spaces and costly transmission infrastructure, this small turbine can be installed on rooftops. It features a compact, square-shaped blade system with a small radius that maximises torque and energy output, even in local wind conditions. The system also includes a smart microcontroller-based charging unit that automatically detects battery type and status, optimises charging cycles, and ensures quick, safe, and efficient storage of the generated power. Electricity is then fed directly into the household system through a controlled distribution box.

Market need

Energy demand in urban and semi-urban areas continues to grow, while grid electricity remains expensive, unreliable, or scarce in many regions. Traditional large-scale wind farms, though effective, require substantial infrastructure, remote locations, and high capital investment, making them inaccessible for individual households. The increasing demand for decentralised renewable energy solutions is driving the need for compact, affordable, and easy-to-use systems that can be deployed at the household or community level. A rooftop wind turbine that can self-align, efficiently capture wind, and directly supply electricity to homes addresses this need, providing an alternative or supplement to solar power.



Features

- A small-radius blade system arranged in a square format to capture more wind energy and maximise torque compared to thin, large-diameter conventional blades.
- Automatically adjusts to the wind direction for consistent energy capture without manual intervention.
- Microcontroller-based unit that identifies battery type and condition, ensuring optimal charging and storage efficiency.
- Energy is delivered directly into household systems through a controlled distribution box.
- Smaller footprint and fewer components, making it cost-effective and practical for residential use.



Benefits

- Eliminates reliance on large wind farms and long-distance transmission lines, reducing infrastructure costs.
- Provides homes with a reliable and renewable source of electricity, reducing dependency on grid power.
- Compact design and reduced component requirements lower manufacturing and installation costs.
- Optimised charging shortens battery storage time, improving system responsiveness.
- Supports clean, renewable energy generation at the point of consumption, lowering carbon footprint.
- Can be adopted by individual households, communities, or small businesses for distributed power generation.
- Utilises LiFePO₄, which is non-toxic and environmentally sustainable.
- Reduces processing complexity while enabling large-scale, stable battery production.
- Suitable for EVs, consumer electronics, and large-scale energy storage.



Industry

Energy

Potential applications

- Provides households with clean, renewable electricity and reduces dependency on the grid.
- Compact wind turbines suitable for limited-space installations.
- Supply electricity in areas with unreliable or no grid access.
- Complement solar panels for a consistent household power supply.
- A scalable solution for energy generation in local neighbourhoods or eco-villages.
- Automatic charging and energy distribution for household batteries and appliances.

Creator

Prof Lukas Snyman

Stage of development

Prototype

Intellectual property

Patent Protection

Desired relationship

Co-development, Investors