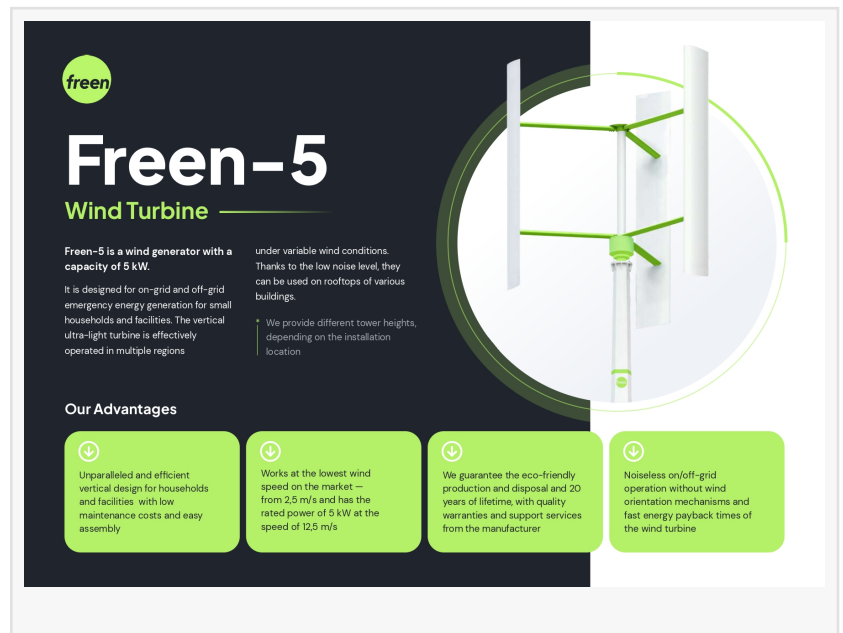


# How FREEN's Small Wind Turbines Use the Darrieus Principle to Harness Wind Power

*FREEN, an innovator in wind energy, introduces a line of small wind turbines that utilize efficient and environmentally friendly Darrieus rotor technology.*

KOHTLA-JÄRVE, IDA-VIRUMAA,  
ESTONIA, November 17, 2023

/EINPresswire.com/ -- In a world where sustainable energy consumption and ecological responsibility are becoming key priorities, FREEN presents its unique solutions in wind energy. The company's products combine innovative design, efficiency, and eco-friendliness, making them sought-after in the modern energy landscape. A key element uniting all FREEN small wind generator models is the use of patented technology based on the Darrieus rotor principle.



“

FREEN's wind generators are fundamentally designed around the Darrieus rotor. We have optimized the shape of the blades and their load distribution to achieve maximum efficiency”

*Nikolai Grebenkine, Team  
Leader of FREEN*

The Darrieus rotor, also known as a vertical wind rotor, is a fundamental element in the wind energy technology used in FREEN's products. This type of rotor was developed by French engineer Georges Darrieus in 1931 and has since proven to be an effective means of generating wind energy. Its distinctive feature is its vertical axis of rotation, which allows it to capture wind from any direction. This makes it ideal for various wind conditions. The Darrieus rotor consists of several blades arranged around a vertical axis. These blades are designed to maximize the use of wind's kinetic energy to generate electricity.

The Darrieus rotor is a key element in many modern wind generators, combining innovation and efficiency. Its vertical axis effectively captures wind from any direction without the need for reorientation mechanisms. This makes it particularly suitable for urban conditions, where wind direction can often change. Additionally, the Darrieus rotor is

known for its low noise level, making it an ideal choice for installation in residential areas. Its ability to work efficiently at low wind speeds expands its geographic range of application, allowing it to be used in various climatic conditions. The simplicity of the Darrieus rotor's design ensures ease of maintenance and reduces operational costs, making it an economically advantageous choice. Moreover, using the Darrieus rotor in wind generators enhances the ecological sustainability of the system, contributing to the reduction of carbon dioxide emissions and other harmful substances.

FREEN's product line includes several models of small wind generators that use the Darrieus principle at the core of their operation.

"FREEN's wind generators are fundamentally designed around the Darrieus rotor, which has already proven its productivity in aerodynamic engineering. We have optimized the shape of the blades and their load distribution to achieve maximum efficiency even at the lowest wind speeds. This allows [FREEN-5](#), [FREEN-15](#), and [FREEN-55](#) to generate energy in conditions where traditional horizontal turbines would be ineffective. Our approach to integrating aerodynamic innovations opens new horizons for the use of wind energy," notes Nikolai Grebenkine, Team Leader of FREEN.

FREEN-5, a lightweight vertical wind turbine with a nominal power of 5 kW. Its light weight (500 kg) allows for its installation, including on rooftops. It provides simplicity in assembly and cost-effectiveness in maintenance, while being capable of operating efficiently even at low wind speeds.

FREEN-15, flagship product with a power of 14.7 kW, is multifunctional, suitable for both grid-connected and off-grid systems. This generator starts to generate electricity at wind speeds of 3 m/s, while having a low noise level, making it ideal for use in various conditions.

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## Freem-15

Wind Turbine

Freem-15 is a wind generator with a capacity of 15 kW.

It is designed for on-grid and off-grid energy generation for homes and farms. The vertical ultra-light turbine is effectively operated in multiple regions under variable wind conditions.

Patented wing design does not require reconfiguring the turbine to the wind's direction change. Thanks to the low noise level, they can be used on various residential and public buildings.

\* We provide different tower heights, depending on the installation location

**Our Advantages**

- Unparalleled and efficient vertical design for households and facilities, with low maintenance costs and easy assembly
- Works at the lowest wind speed on the market — from 3.3 m/s and has the rated power of 14.7 kW at the speed of 14 m/s
- We guarantee the eco-friendly production and disposal and 20 years of lifetime, with quality warranties and support services from the manufacturer
- Noiseless on/off-grid operation without wind orientation mechanisms and fast energy payback times of the wind turbine

**freem**

## Freem-55

Wind Turbine

Freem-55 is a wind generator with a capacity of 57 kW.

It is designed for on-grid and off-grid energy generation for personal and commercial use. The vertical ultra-light turbine is effectively operated in multiple regions under variable wind conditions.

Patented wing design does not require reconfiguring the turbine to the wind's direction change. Thanks to the low noise level, they can be used in various areas.

\* We provide different tower heights, depending on the installation location

**Our Advantages**

- Unparalleled and efficient vertical design for households and facilities, with low maintenance costs and easy assembly
- Works at the lowest wind speed on the market — from 3.3 m/s and has the rated power of 56.7 kW at the speed of 13 m/s
- We guarantee the eco-friendly production and disposal and 20 years of lifetime, with quality warranties and support services from the manufacturer
- Noiseless on/off-grid operation without wind orientation mechanisms and fast energy payback times of the wind turbine

FREEN-55, currently in the certification preparation stage, is a generator with a nominal power of 56.7 kW. Thanks to its power and the ability to operate at wind speeds from 3.3 to 16 m/s, it is suitable for a wide range of applications.

#### About FREEN:

Founded on the principles of innovation, sustainability, and efficiency, FREEN specializes in developing advanced wind energy solutions. With a focus on integrating cutting-edge aerodynamic designs, FREEN has established itself as a leader in the small wind turbine market. The company's commitment to ecological responsibility and technological excellence drives its mission to provide reliable, cost-effective, and environmentally friendly energy options worldwide.

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