Hannevind
VINDKRAFT AB

Sweden's leading manufacturer of small-scale wind power stations!

Product Information

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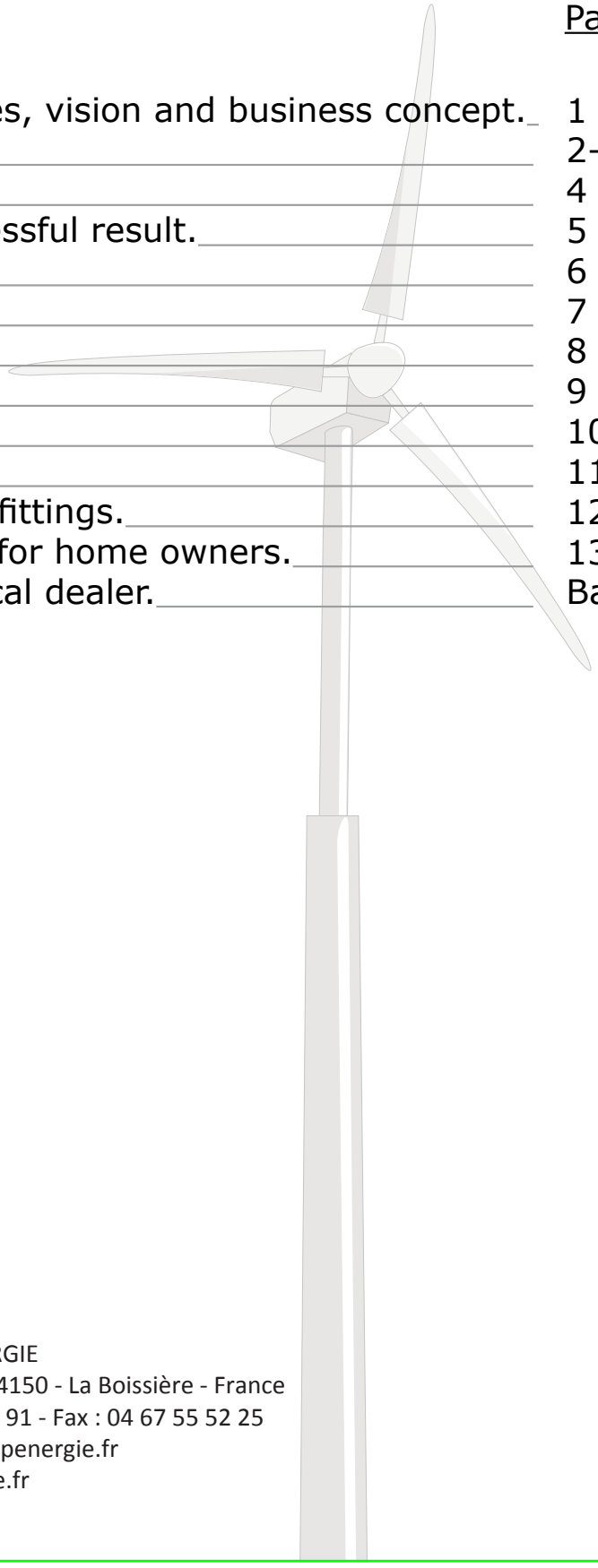

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Hannevind VINDKRAFT AB

The company

The development of designs and controls has been managed by innovator Sven-Åke Hannevind since the year 2000. Hannevind Vindkraft AB was formed in November 2004 by Paula and Sven-Åke Hannevind. In July 2007 Kristianstads Svets & Montage AB, a company of 20 employees acquired Hannevind.

Board chairman: Göran Månsson
CEO: Sven-Åke Hannevind

Activity

Hannevind Vindkraft AB produces small-scale wind power stations that are installation-ready for the cottage, estate, farm or small company. Hannevind Vindkraft AB offers a complete solution with operation secured products. The products are easy to transport, simple to assemble and require very little maintenance. For security reasons and in order to full guarantee will apply we recommend investing in one of our package solution alternatives.

Vision

We shall be the natural choice for renewal energy solutions. Together with sub-contractors and market leading partners. Hannevind Vindkraft AB has a vision to be the natural choice for renewal energy solutions.

Business concept

We shall provide a reliable source of energy for a low investment cost. Our wind turbines generate from 8000-100 000 kWh/year, and the pay-back period is 6-12 years with today's prices of electricity and an annual wind speed average of at least 6m/s. The designed life span of the wind turbines is least 20 years.

Product overview Hannevind wind power stations

Model	*Hannevind 5,5 kW*	*Hannevind 11 kW*	*Hannevind 15 kW*
Turbine Diameter	6 m / 236,2 in	10 m / 393,7 in	10 m / 393,7 in
Number of blades	3	3	3
Connection	On or Off grid	On or Off grid	On or Off grid
Annual energy output	10 000 kWh	20 000 kWh	30 000 kWh
Building permit	Yes	Yes	Yes
Assembly alternative	Small self-supporting lattice tower	Self-supporting lattice tower	Self-supporting lattice tower
Available mast heights	15/33 m	21/27/33 m	21/27/33 m
Cut-in wind speed	2-4 m/s	2-4 m/s	2-4 m/s
Maximum output at:	9 m/s	9 m/s	9 m/s
Tower-top weight without blades	150kg	350kg	400kg
Voltage	400V 3-phase	400V 3-phase	400V 3-phase

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Product overview Hannevind wind power stations

Model	*Hannevind 22 kW*	*Hannevind 30 kW*	*Hannevind 45kW*
Turbine Diameter	13 m / 511,8 in	13 m / 511,8 in	18 m / 708,7 in
Number of blades	3	3	3
Connection	On or Off grid	On or Off grid	On or Off grid
Annual energy output	40 000 kWh	50-55 000 kWh	100 000 kWh
Building permit	Yes	Yes	Yes
Assembly alternative	Self-supporting lattice tower	Self-supporting lattice tower	Self-supporting lattice tower
Available mast heights	24/30/36 m	24/30/36 m	24/30/36 m
Cut-in wind speed	2-4 m/s	2-4 m/s	2-4 m/s
Maximum output at:	9 m/s	9 m/s	9 m/s
Tower-top weight without blades	650kg	700kg	1500kg
Voltage	400V 3-phase	400V 3-phase	400V 3-phase

Technical description of Hannevind's wind power stations.

The **5,5-45kW** wind power stations utilizes a motor to follow the wind direction.
The power stations are three bladed and attached to the gear-box's main axle via a hub which was developed by Hannevind. The generator is asynchronous, meaning that when a power interruption occurs, the power station loses its magnetism and therefore its ability to deliver power. This protects line personnel from turbine generated power in the event of an outage. This also causes the brakes to activate and prevents the turbine from overrunning and causing damage. Apart from power interruption there are additional protections which stop the turbines when, for example, imbalance or storms occur. During normal operation in wind velocity up to 10-12 m/s, the turbine performs normally, and when the wind increases over these values it is yawed out of the wind approximately 45 degrees, but continues to deliver power. In this situation, the wind is measured at 15 minute intervals, and if peaks exceeding the specified values continue to be measured, the power station remains in this position. If the wind decreases, the power station is yawed toward the wind again. At wind velocity over 18-20m/s the power station is yawed 90 degrees out of the wind and is shut down with the brakes. This is controlled by a computer which is preprogrammed for standard wind conditions, but also easily can be adjusted to customer specific parameters. Surpluses of the energy can be used to heat water or can be sold to your electricity supplier.

Hannevind wind turbines which are connected to the power grid are always connected on the customer's side of the electricity meter. As soon as the rotor reaches the correct rotating speed, it begins to deliver electricity proportional to the wind velocity.

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Requirements for a successful result

- Yearly average wind speed of 5-6m/s.
- No physical obstructions to the wind's flow.
- Appropriate distances from neighbors.
- Soil conditions which are appropriate for constructing the foundation of the wind power station.
- It is incumbent upon the customer to conduct the soil assessment and calculate the concrete foundation.
- Approval of the utility owner for the connection, to ensure that the cable/ wire gauge capacity is adequate for the wind power stations output.

Hannevind 5,5kW

- Hannevind Wind power station: 5,5 kW generator including controls and (3) 3 meter fiberglass blades.
- Galvanized Self-Supporting small Lattice Tower 15-21 meter.
- Power and control cable, tower height +4m, not included.
- Assembly approximately: 8-16 hours.
- Bolt groups with associated fix-template for casting in foundations is to be bought separately for each tower size.
- Time of delivery: Set by local dealer.

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Hannevind 11kW

- Hannevind Wind power station: 11 kW generator including controls and (3) 5 meter fiberglass blades.
- Galvanized Self-Supporting Lattice Tower 21-33 meter.
- Power and control cable, tower height +4m, not included.
- Assembly approximately: 16-24 hours.
- Bolt groups with associated fix-template for casting in foundations is to be bought separately for each tower size.
- Time of delivery: Set by local dealer.

Hannevind 15kW

- Hannevind Wind power station: 15 kW generator including controls and (3) 5 meter fiberglass blades.
- Galvanized Self-Supporting Lattice Tower 21-33 meter.
- Power and control cable, tower height +4m, not included.
- Assembly approximately: 16-24 hours.
- Bolt groups with associated fix-template for casting in foundations is to be bought separately for each tower size.
- Time of delivery: Set by local dealer.

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Hannevind 22kW

- Hannevind Wind power station: 22 kW generator including controls and (3) 5 meter fiberglass blades.
- Galvanized Self-Supporting Lattice Tower 24-36 meter.
- Power and control cable, tower height +4m, not included.
- Assembly approximately: 25-35 hours.
- Bolt groups with associated fix-template for casting in foundations is to be bought separately for each tower size.
- Time of delivery: Set by local dealer.

Hannevind 30kW

- Hannevind Wind power station: 30 kW generator including controls and (3) 6,5 meter fiberglass blades.
- Galvanized Self-Supporting Lattice Tower 24-36 meter.
- Power and control cable, tower height +4m, not included.
- Assembly approximately: 30-40 hours.
- Bolt groups with associated fix-template for casting in foundations is to be bought separately for each tower size.
- Time of delivery: Set by local dealer

Hannevind 45kW

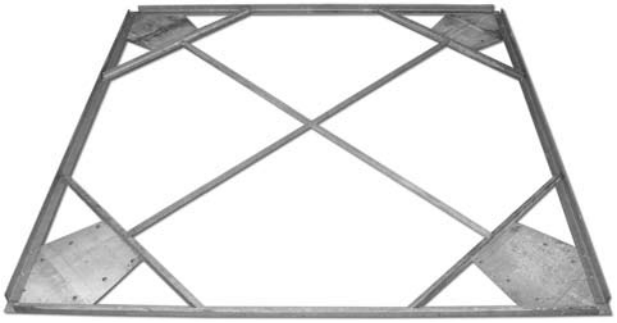
- Hannevind Wind power station: 45 kW generator including controls and (3) 8,5 meter fiberglass blades.
- Galvanized Self-Supporting Lattice Tower 24-36 meter.
- Power and control cable, tower height +4m, not included.
- Assembly approximately: 30-40 hours.
- Bolt groups with associated fix-template for casting in foundations is to be bought separately for each tower size.
- Time of delivery: This model is in its development and testing phase, no time frame is set for this models market release.

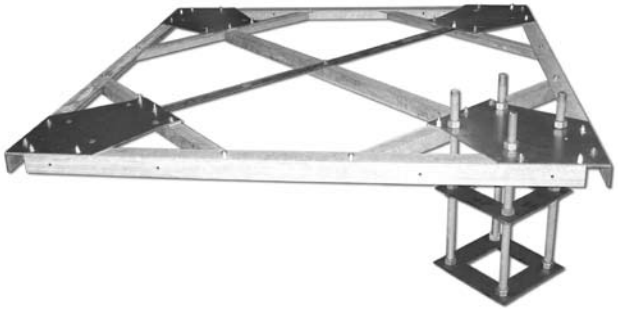
Bolt group: Mini Lattice Tower.
(four pcs. are needed).

Bolt group: Lattice Tower.
(four pcs. are needed).

Lattice tower 22 & 30kW, same as above but M24
(four pcs. are needed).

Founding frames can be borrowed to fix bolt groups in concrete.





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Maximum load possible for the following main fuses:

- 16A 11 kW
- 20A 14 kW
- 25A 17 kW
- 35A 24 kW
- 50A 34 kW
- 63A 45 kW

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