AT5-1 Wind Turbine

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SEGEN

Segen is meeting the need for affordable clean energy.

Segen is committed to the production of clean and affordable energy through the development of sustainable energy generation projects.

Segen is an authorised distributor and installer for the Iskra 5kW turbine which is the most efficient and cost effective small wind turbine in its class currently available on the UK market. The Iskra small wind turbine generates exceptional levels of power even in relatively low wind conditions.

Segen can supply, install and support the Iskra turbine to power community and local authority projects, farms, country estates, industrial units, rural domestic properties, offices, schools and many more applications.

Segen works in a partnership with site owners, financiers, suppliers and other stakeholders to guide projects through the process until the energy starts to flow and beyond.

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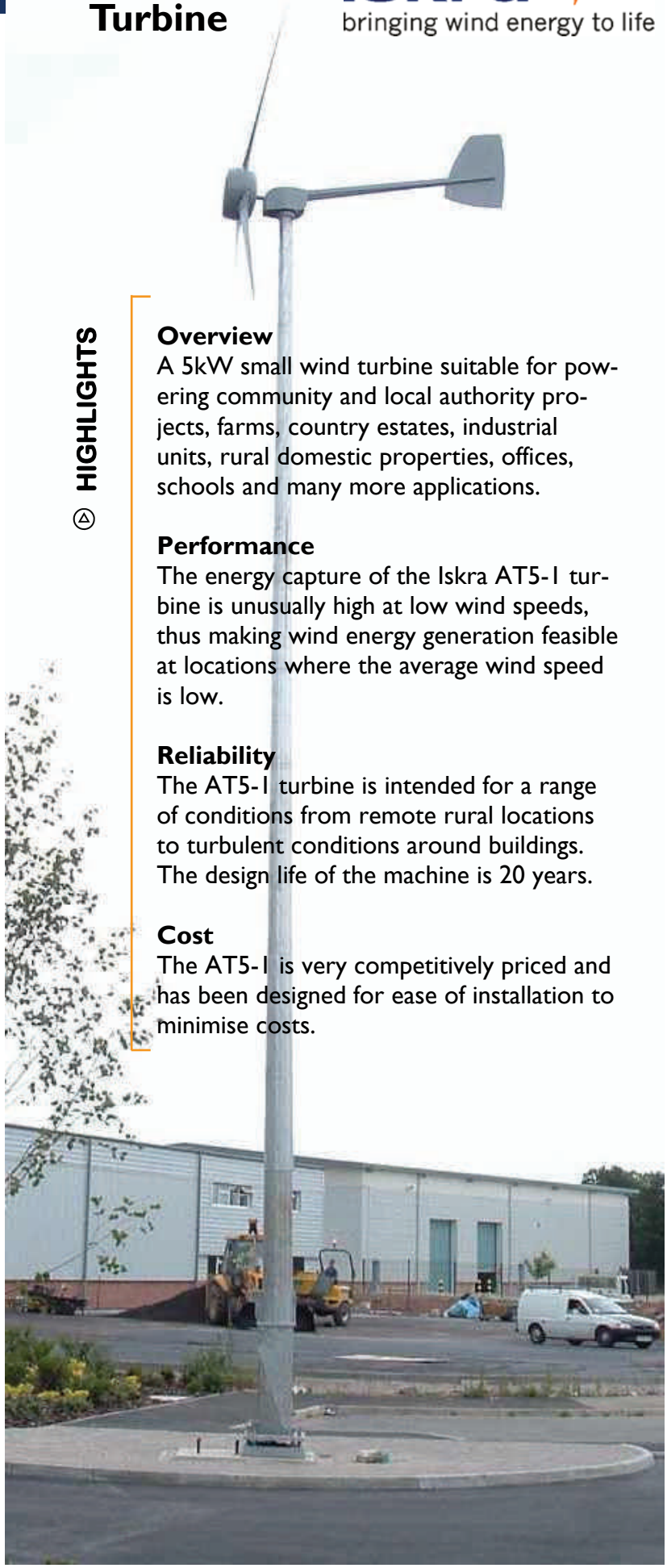
HIGHLIGHTS



Overview
A 5kW small wind turbine suitable for powering community and local authority projects, farms, country estates, industrial units, rural domestic properties, offices, schools and many more applications.

Performance
The energy capture of the Iskra AT5-1 turbine is unusually high at low wind speeds, thus making wind energy generation feasible at locations where the average wind speed is low.

Reliability
The AT5-1 turbine is intended for a range of conditions from remote rural locations to turbulent conditions around buildings. The design life of the machine is 20 years.

Cost
The AT5-1 is very competitively priced and has been designed for ease of installation to minimise costs.

AT5-1 Technical Specification

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Efficiency

Aerodynamic

The blades are specifically optimised for low wind speed operation. An exceptionally efficient profile for the blade aerofoil has been adopted and the blades are longer than is usual on a machine of this rating. Accurate manufacture is essential to reproduce the required blade shape and keep drag low.

Also, the passive pitch control allows the blades to be at the optimum angle for low wind speed, pitching the blades to prevent overload in high winds or at high rotor speeds.

Electrical

For very high electrical efficiency, a 3-phase generator using rare earth permanent magnets has been specially designed for the turbine.

Mechanical

The generator is designed to work at low rpm and so can be directly driven by the rotor. A gearbox is therefore not needed, thus eliminating a source of inefficiency, noise and potential maintenance problems.

EFICIENCY FOR MAXIMUM POWER GENERATION

Characteristics

Generator rating	5 kW at 11 m/s
Rotor speed	200 rpm nominal (variable)
Cut-in wind speed	3 m/s (6.7 mph)
Survival wind speed	60 m/s (134 mph)
Rotor diameter	5.4 m
Rotor orientation	Upwind
Number of blades	3
Blade material	GRP composite
Control system	Passive blade pitching
Gearbox	None
Brakes	Electro-dynamic
Generator	Permanent magnet alternator
Yaw control	Tail vane
Tower height	9, 12 or 15 m, depending on site
Tower	Free-standing or guyed.

Performance

At a particular location, the wind speed will vary about an annual mean value. The expected energy yields for the AT5-1 at various annual mean wind speeds (AMWS).

AMWS m/s	Annual MWh	Daily kWh
4	3.6	10.0
5	7.5	20.0
6	11.9	32.6
7	16.2	44.3
8	19.9	54.5
9	22.7	62.3

Note: The annual electricity consumption of a medium size home is in the region of 4 to 6 MWh. This is equivalent to a daily consumption of 11 to 16 kWh.

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