

SWCC Wind Turbine Certification Program

No./SWCC 10-16

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CERTIFICATION HOLDER:	EVALUATION SUBJECT
Eveready Diversified Products (Pty) Ltd. T/A Kestrel Renewable Energy Eveready Road, Struandale Port Elizabeth, South Africa www.kestrelwind.co.za	BRAND: Kestrel
	MODEL: E400nb
	TYPE: Small Wind Turbine – Electricity producing, with swept area less than 200 m ²

PRODUCT CERTIFICATION SYSTEM:

The SWCC wind turbine certification program includes safety and durability evaluations and performance and acoustic ratings for small wind turbines as established in the *ICC-SRCC Rules for Wind Turbine Listing Reports* per the standard listed below. The program also includes periodic factory inspections and surveillance of the manufacturer's quality management system and field evaluations.

COMPLIANCE WITH THE FOLLOWING STANDARD(S): AWEA 9.1 – 2009,
Small Wind Turbine Performance & Safety Standard

TURBINE PARAMETERS:

The following parameters were provided by the manufacturer and verified by the testing laboratory.

Rotor Configuration:	Horizontal (HAWT)	Power Form:	240 VAC, 1-phase, 60 Hz
Number of Blades:	3	Maximum Power:	3,025 W
Rotor Diameter:	4.0 m	Maximum Voltage:	550 VDC, unloaded generator output
Rotor Swept Area:	12.6 m ²	Maximum Current:	25 ADC, short circuit generator output
Cut-In Wind Speed:	4.0 m/s	Peak Power:	3.0 kW @ 19.5 m/s
Cut-Out Wind Speed:	N/A	Inverter:	Power One Aurora
Overspeed Control:	Electromagnetic Stall Regulation		

POWER PERFORMANCE RATINGS:

Power performance ratings are determined from the laboratory testing and calculated in accordance with the methods in the AWEA 9.1-2009 standard. Actual power, energy production and sound levels will vary depending on site conditions for installed turbines. Ratings are provided at standardized conditions to allow for comparison between certified turbines.

AWEA Rated Annual Energy @ 5 m/s

Estimated annual energy production assuming an average wind speed of 5 m/s (11.2 mph), a Rayleigh wind speed distribution, sea-level air density, and 100% availability.

AWEA Rated Sound Level

The sound level that will not be exceeded 95% of the time, assuming an annual average wind speed of 5 m/s (11.2 mph), a Rayleigh wind speed distribution, sea-level air density, 100% availability and an observer location 60 m (~200 ft) from the rotor center.

AWEA Rated Power @ 11 m/s

The wind turbine power output at 11 m/s (24.6 mph) at standard sea-level conditions.

3,930
kWh/year

55.6
db(A)

2.5
kW

DESIGN & DURABILITY:



Turbine design complies with AWEA Standard 9.1 – 2009 for an IEC Class I SWT with an average wind speed (V_{ave}) of 10 m/s and reference wind speed (V_{ref}) of 50 m/s.

As a result of the particular wind distribution that occurred during the test period, it was not possible to demonstrate IEC Class I wind conditions. The turbine duration test complies with AWEA Standard 9.1-2009 for an IEC Class II SWT with an average wind speed (V_{ave}) of 8.5 m/s and reference wind speed (V_{ref}) of 42.5 m/s. The turbine satisfied Duration Testing requirements with an Operational Time Fraction (OTF) of 100%.

IDENTIFICATION:

Certified turbines must be identified with the certification mark below in accordance with the [Rules for Certification Mark and Certificate Use](#) and labeled in with the information below per AWEA 9.1:



1. Manufacturer's name and model number.
2. Turbine serial number
3. SWCC certification number
4. AWEA Rated Power
5. AWEA Estimated Sound Level

Turbine parameters marked with an asterisk in the preceding section are recommended for inclusion in turbine specifications per §7.4 of AWEA 9.1.

CONDITIONS:

The small wind turbine certification is subject to the following conditions:

1. Turbine must be installed and operated in accordance with the manufacturer's instructions and local codes. Where applicable, turbines interconnected to electrical supply grids must be in accordance with the manufacturer's instructions, local codes and utility requirements.
2. Performance and acoustic ratings have been determined in accordance with the testing and calculation methods established in the compliance standard listed. Actual performance will vary based on the specific usage, installation and local environmental conditions.
3. Compliance assessment is conducted in accordance with the requirements and scope of the listed standard. The certification does not include testing or assessment of the tower or tower foundation. The certifications do not address electrical safety.
4. Certifications are not to be construed as representing aesthetics or any other attributes not specifically addressed in the listed standard, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use.
5. There is no warranty by ICC-SRCC express or implied, as to any finding or other matter in this certification, or as to any product covered by the certification.
6. Changes to the design of this wind turbine are to be approved by ICC-SWCC. If changes are made to the turbine without approval, this Certificate is not valid.
7. This document must be reproduced in its entirety.
8. Certification status should be confirmed on the ICC-SWCC Directory at www.smallwindcertification.org and are subject to annual review and renewal.

Shawn Martin

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