

Windflow Technology Limited

Windflow 500 Wind Turbine

ISO and IEC Certificates

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Document Control

Version History

Revision №	Date	Comments	
Rev 0	25 January 2011		
Rev 1	29 August 2011	The ISO 9001:2008 Certificate has been renewed and updated in page 7.	
Rev 2	26 March 2014	The ISO 9001:2008 Certificate has been renewed and updated in page 6.	
Rev 3	10 April 2017	The ISO 9001:2008 Certificate has been renewed and updated in page 6.	

This Issue

Prepared	Checked	Approved for Use:
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1. Introduction

Windflow Technology is a New Zealand based wind turbine designer and manufacturer, with its primary product being the Windflow 500 (a 500 kW turbine).

The Windflow 500 is certified to IEC Class 1A (Edition 3), the most recent and rigorous wind turbine standard. It is one of the first turbines in the world to achieve this highest level of certification and one of two IEC certified turbines in the 100 - 500 kW size range available in the United Kingdom.

Windflow Technology is ISO 9001 certified and uses only quality assured component manufacturers. Components are made in NZ, Australia and Europe, and the nacelle is assembled and pre-commissioned by Windflow in Christchurch, New Zealand. Towers for the UK market are intended to be manufactured in the UK.

Lloyd's Register awarded its Type Approval Certificate to the Windflow 500 turbine in September 2010 in what was the final step in a process than spanned four years. The certificate confirms that the turbine meets Class 1A of the latest design standard IEC 61400-1:2005 (edition 3) which attests that the Windflow 500 will operate for more than 20 years in the strongest, most turbulent wind regime in the IEC classification. It gives interested parties and purchasers of the Windflow 500 turbine confidence that the turbine has been rigorously tested to operate in the highest strength winds.

International standards and their use in technical regulations on products, production methods and services play an important role in sustainable development and trade facilitation through the promotion of safety, quality and technical compatibility. With the increasing globalisation of markets, International Standards as opposed to regional or national standards have become critical to the trading process ensuring a level playing field for exports.

This document contains international certificates achieved by Windflow Technology and its wind turbine, the WF500.



2. Certificates Descriptions

2.1 ISO 9001:2000

Windflow achieved ISO 9001:2000 on the 17th June 2008, subsequently recertified to ISO 9001:2008, and has renewed it in February 2014. The ISO 9001 certification is regarded by many as a baseline activity for companies moving into international trade and export arrangements. The International Organisation for Standardisation better known as ISO falls into the same bracket of international standards bodies as International Electrotechnical Commission (IEC) and the International Telecommunication Union (ITU).

2.2 IEC Certification

Lloyd's Register awarded its Type Approval Certificate to the Windflow 500 turbine in September 2010 in what was the final step in a process than spanned four years. The certificate confirms that the turbine meets Class 1A of the latest design standard IEC 61400-1:2005 (edition 3). Class 1A certification attests that the Windflow 500 will operate for more than 20 years in the strongest, most turbulent wind regime in the IEC classification. It gives interested parties and purchasers of the Windflow 500 turbine confidence that the turbine has been rigorously tested to operate in the highest strength winds.

The IEC process involved the following stages:

- 1. Gaining ISO 9001:2000 Certification (subsequently recertified to ISO 9001:2008) from Lloyd's Register Quality Assurance.
- 2. Gaining Type Approval from Lloyd's Register. This includes:
 - a. A Manufacturing Conformity Statement and
 - b. Three Design Appraisal Documents (Structural Design, Process Plant and Machinery Design and Electrical and Instrumentation Design). These DADs approve 2,800 pages of engineering calculations, 37 specifications and more than 200 drawings as well as measurements of acoustics and power output, function and safety tests of the machine and static and fatigue tests of the blade.

The current ISO 9001 Certificate, Type Approval Certificate and the Type Approval Design Appraisal Document are reproduced on the next pages. Originals are available for viewing at the Christchurch, New Zealand office of Windflow Technology, and other Design Appraisal Documents are also available on request.

3. Lloyd's Register Quality Assurance ISO 9001:2008 Certificate



CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

Windflow Technology Limited 42 - 44 Mandeville Street Riccarton, Christchurch New Zealand

has been approved by Lloyd's Register Quality Assurance Limited to the following Quality Management System Standard:

AS/NZS ISO 9001:2008

The Quality Management System is applicable to:

The design, development, production, installation and servicing of wind turbines.

Approval Certificate No: MEL4000394 Original Approval: 17 June 2008

Current Certificate: 22 February 2017

Certificate Expiry: 30

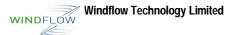
30 September 2018

Issued by: Lloyd's Register Quality Assurance Limited



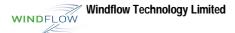
Level 16, 461 Bourke Street, Melbourne, Vic, 3000 This approval is carried out in accordance with the LRQA assessment and certification procedures and monitored by LRQA. To confirm the validity of the accreditation for this certificate please visit <u>www.jas-anz.org/register</u> March Review 11

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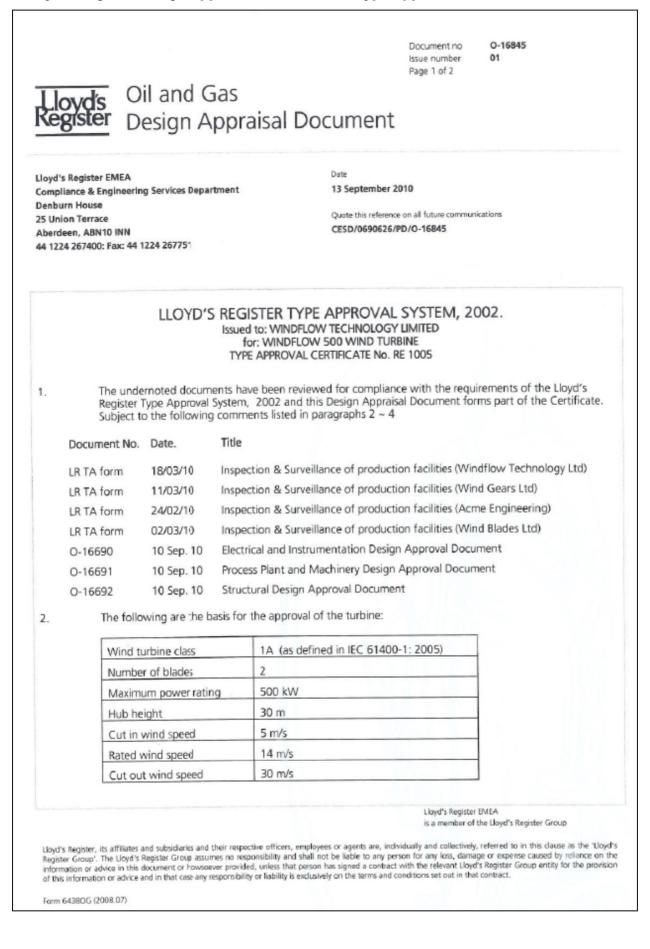


4. Lloyd's Register IEC Type Approval Certificate

Lloyd's Register				
5				
Type Approv	al Certificate			
	ernoted product(s) has/have been tested with satisfactory results in accordance with the loyd's Register Type Approval System.			
This certificate is issued to:				
PRODUCER	WINDFLOW TECHNOLOGY LIMITED			
PLACE OF PRODUCTION	44 Mandeville Street Christchurch, New Zealand			
DESCRIPTION	2 Bladed Wind turbine			
TYPE	WINDFLOW 500 WIND TURBINE			
APPLICATION	Land based Wind turbine			
STANDARDS	IEC 61400-1: 2005 IEC 61400-11: 2003 IEC 61400-12: 1998 IEC TS 61400-13: 2001 IEC 61400-21: 2001 IEC TS 61400-23: 2001			
RATINGS	500 kW			
from the specimen tested. The the equipment in order to obta	for equipment, the design, ratings or operating parameters of which have been varied e manufacturer should notify Lloyd's Register EMEA of any modification or changes to in a valid certificate." nent No O-16845 and its supplementary Type Approval Terms and Conditions form			
Certificate No.	RE 1005			
Issue Date	17 September 2010 Issue 02			
Expiry Date	16 September 2015			
Sheet	1 of 1 Compliance & Engineering Services Dep't, Aberdeen			
Lloyd's Register EMEA 25 Union Terrace, Aberdeen,	Lloyd's Register EMEA			
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5. Lloyd's Register Design Appraisal Document for Type Approval





			Document no Issue number Page 2 of 2	O-16845 01
3.	It is noted that high wind measured	data (wind speeds above	26 m/s) have not	t been submitted.
1.	We would recommend caution in usi provided for verification (such as add	ing the turbine outside IE litional measurements).	C 1A conditions	until fuller data can be
	aring this report, the undersigned surveyor on conflict of interest.	r is acting as an independ	dent person in acc	cordance with the applicable
Lead Ro Facilitie	DAVIES Datating Equipment Specialist, as & Safety Engineering Group ance & Engineering Services Department			
	sal Status Key			
A Ri	Approved Retained as supporting documentation for	r information only		
Type	<u>Iementary Type Approval Terms and Condition</u> Approval certifies that a representative same cable design criteria for the use specified here uct(s) designed or manufactured otherwise than	nple of the product(s) refe in. It does not mean or imp	oly approval for an	y other use, nor approval of an
Type requi	Approval is based on the understanding the rements of the Rules and Regulations are comp	at the manufacturer's rec plied with.	ommendations and	l instructions and any relevan
Type.	Approval does not eliminate the need for norm	nal inspection and survey pr	rocedures required	by the Rules and Regulations.
Lloyd Regis	I's Register EMEA reserves the right to cance ter Type Approval System Procedure.	el or withdraw this Type Aj	pproval Certificate	in accordance with the Lloyd
			Lloyd's Register	EMEA
				the Lloyd's Register Group
	380G (2008.07)			