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NZ Energy Minister, Hon Phil Heatley inspects the first Windflow turbine for export to Scotland – October 2012

CEO introduction

It has been a positive year with major milestones passed. We have completed our licence agreement with GD SATCOM, continued to work towards licensing the company's IP internationally, and exported our first turbine to the UK, while meeting our obligations in respect of the Te Rere Hau wind farm.

The partnership with GD SATCOM is going very well. We are working together fielding enquiries for the turbine in GD SATCOM's territories (North and South America, Africa, and US territories and military bases worldwide) and have introduced them to our contacts in those markets, particularly where there is potential for sales of the existing Class 1 50 Hz turbine. Our electrical engineer, Darren Webster, co-presented with GD-SATCOM on the turbine's electrical benefits at the African Wind Energy conference in Cape Town in November which was well received.

We are working with the Texas-based GD SATCOM engineering team to progress the design of the 60 Hz turbine and the lower wind, Class 2A variant, which is intended to be prototyped in 2013. GD SATCOM is now promoting both the Class 1A "GD33-500" and the Class 2A "GD45-500" on their website www.gdenergysolutions.com.

We have also had discussions with other potential licensees in Asia and Europe for both the 500 kW variants and core technologies for multi-megawatt turbines.

There is more certainty in the UK market after the UK government published its decisions on the Feed-In Tariff (FIT) review in late July. From 1 December 2012, 100 – 500 kW wind turbine projects are confirmed to receive a FIT tariff of 17.5 p/kWh plus a 4 p/kWh export tariff. Once a project has its FIT contract, the tariff will increase each year with inflation. However the initial FIT rate will also be subject to reductions in April each year of between 5 – 20% depending on uptake in the previous year. FIT projects are also now able to be pre-accredited to lock in this rate before the turbine is commissioned.

In October we achieved the milestone of sending our first 'export' turbine to the UK. We dedicated this 99th nacelle 'Barrie' after our late Chairman Barrie Leay and Energy Minister Hon Phil Heatley attended the send-off (covered by TV3 – see website for link). The nacelle arrived in Scotland in early December and the blades are expected to arrive in time for Hogmanay. The turbine will be installed on Westray (an island in the Orkney Island group, north of Scotland) in early 2013 and owned by a limited partnership between Windflow Hammer Ltd and the local developer on Westray.

We have just reached agreement with landowners for sites for the second and third turbines destined for the Orkney Islands. All three of these turbines will be funded through a loan agreement with one of our major shareholders. We also have parties interested in owning the projects or providing refinancing once commissioned.

The Te Rere Hau wind farm continues to operate above its warranted availability and NZ Windfarms Q3 report noted that the 97 turbines earned \$6 million (2.5 times the amount than the same period in the previous year) by producing 88,500 MWh (enough electricity to power all households in the Masterton district for a year).

This steady progress has occurred against a very tight financial position and we were pleased to secure the mix of debt and equity earlier this month to take the company through to the proposed capital raising early next year. There is still a lot of work to do and we are confident of realising next years' goals. Again, I would like to thank all our shareholders for your support and wish you happy holidays. We continue to work to rebuild value during these difficult times.

Geoff Henderson, CEO/Director

Windflow's 2-blade turbine expertise goes international

Windflow featured in the April 2012 edition of WindPower Engineering with an article titled 'Teetering toward two-blade turbines'. An excerpt is below and the whole article can be found on our website or linked here

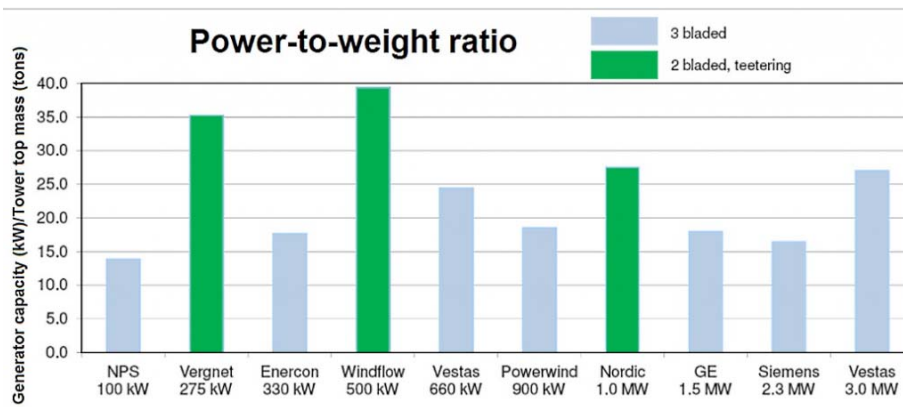
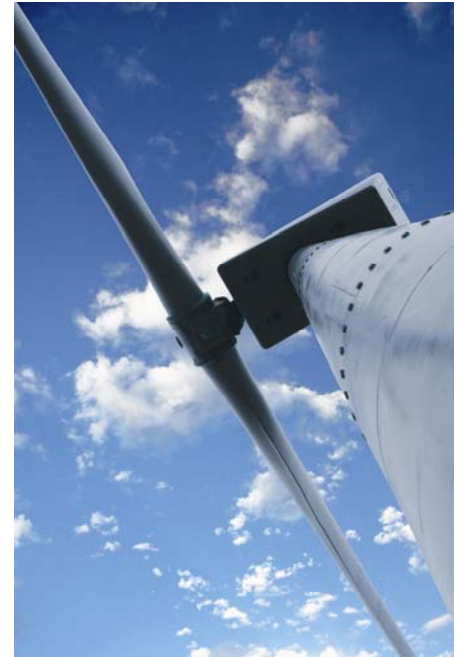
<http://www.windpowerengineering.com/design/teetering-toward-two-blade-turbines/>

Two-blade rotors offer fundamental advantages in light weight and low cost — if they teeter stably. The rotor assembly of a mainstream three-blade wind turbine moves with one mechanical degree of freedom: it rotates. As blades turn and bend unequally due to turbulence, wind shear, and tower shadow, the resulting bending moments are reacted by the bearings and structure supporting the main shaft.

The power of two

The rotor assembly of a teetering two-blade wind turbine moves with two mechanical degrees of freedom: as it rotates, it teeters on a hinge between its hub and main shaft. Within engineered limits, this teetering can be mechanically free, eliminating bending fatigue loads through the main shaft due to turbulence, wind shear, and tower shadow. Eliminating these fatigue loads enables reduced weight throughout the main bearings, gear case, mainframe, yaw bearing and tower.

The accompanying chart compares ten modern wind turbines, illustrating that the Windflow 500 has the highest power-to-weight ratio.



First 60 Hz Turbine Scheduled for 2013

The preliminary design of the Class 2, 60 Hz 500 kW turbine has been agreed and Windflow is working on the detailed design for GD SATCOM.

The turbine will retain the two-blade rotor (extended to 45 m diameter) and Torque Limiting Gearbox, with gearing stepping up to 1800 rpm so that the synchronous generator can output electricity at 60 Hz.

The first 60 Hz turbine is expected to be built, installed and commissioned in mid-late 2013.

Windflow turbine design avoids major sources of downtime

A study of over 350 turbines as part of a €7.7 million EU Reliawind study (<http://www.reliawind.eu/>) carried out from 2008 - 2011, has found that in-hub pitch control systems and power electronic frequency converters are the two largest sources of downtime for wind turbines.

As the Windflow turbine uses a synchronous generator directly on line, it avoids the need for electronic frequency converters.

Windflow's two blade pitch-teeter coupled design also avoids having an in-hub pitch control system.

The reliability of Windflow turbines at the Te Rere Hau wind farm is evidenced by achieving over 96% availability since January 2010. The turbines recently passed the 300 turbine-year milestone (100 turbine-years with availability greater than 95% is the industry norm for being "commercially proven", a milestone which the Windflow 500 passed in June 2010). While O&M costs have been higher than expected, due in large part to some non-recurring initial design issues, they are in line with other reported O&M costs from wind farms in New Zealand using European turbines.

First three turbines for the UK

In early December the first exported Windflow nacelle arrived on the Orkney Islands in Scotland, destined for the Hammer farm on Westray. A second turbine is being funded for the New Holland farm on the main island of Orkney about 10 km south of Kirkwall. A third is also being funded for Luddenhill farm to be installed about 30 km north-west of Kirkwall. These first three turbines will all be funded through formal loan agreements with a major shareholder which was approved by shareholders at a special meeting in July. For the New Holland project, the landowners have an option to be part or full owners of the project which is attractive due to their high returns. Windflow may retain ownership of some projects but is also in discussions with third parties to own these turbines or provide alternative financing.

Hammer farm, Westray, Orkney Islands

Westray is a mid-sized island in the Orkneys. The project has planning permission, a grid connection agreement, landowner agreement and the nacelle and blades were shipped from New Zealand in October. The turbine will be installed in early 2013 after the tower (being supplied from Germany) is erected and the electrical connection is ready.



Left: The 99th nacelle in the container being unloaded on the Orkney Islands

Right: Gravity pad foundation under construction at Hammer farm, Westray

Windflow UK sales and marketing activities

We continue to support potential customers, several of whom have now obtained planning permission to install Windflow turbines. There are presently 12 leading UK projects for individual turbines in the pipeline awaiting planning consent or grid connection offers, or with very good prospects for the future. In addition there are another 12 UK turbine sale prospects that are being actively progressed through the feasibility process by WUK's two UK marketing staff and three UK dealers. The majority of these are in higher wind speed and remote areas which play to our strengths, especially the Highlands and Islands of Scotland.

New dealer in Scotland



We have recently appointed Ecodyn as a new dealer in Scotland, joining current dealers VG Energy and Bryan J Rendall.

Ecodyn is based in Newburgh, Fife, with offices in Skye and Oban. They have a team of nine full-time professional staff, have installed dozens of turbines across Scotland and are currently working on around a hundred projects from 6 kW to 7 MW.

For more information see

<http://www.windflow.co.uk/dealers>



Windflow UK at the All Energy exhibition in Aberdeen, May 2012. Andy Strowbridge (far left) presented a paper on the importance of site assessment at the International Small and Medium Wind conference in Glasgow, April 2012. A copy can be found here:

<http://www.windflow.co.uk/pdfs/the-importance-of-site-assessment-for-turbine-selection#>



Photomontage for the Hammer Farm consent application on Westray

Capital raising early 2013

The purpose of the capital raising will be to allow the company to take advantage of the opportunities arising in the UK and through licensing.

Keep an eye out for more information on this in the New Year.

Windflow working side by side with Industrial Research Limited

With the office space in Christchurch at a premium, Windflow has been leasing out available parts of the factory and offices on short term contracts.

As of July, approximately 20 Industrial Research Limited (IRL) engineers and office staff are sharing the Christchurch head office space with the Windflow team, and are leasing part of the factory for some of their research projects.

IRL has previously partnered with Windflow on projects such as gearbox vibration analysis and wind blade testing.

Welcome new staff



Adam Fuller - R&D Project Engineer

A native of Oklahoma, Adam earned a BS in aerospace and mechanical engineering at Oklahoma State University in 2007, and recently completed his PhD (design and analysis of a water turbine) at the University of Canterbury. Adam joined Windflow in late June and is working on the Class 2 design project, as well as investigation of a number of issues at TRH.

Welcome new directors

Michael Chick - Chair

Michael Chick has some 40 years of experience in medium and high technology companies focused on international growth since qualifying in electrical engineering in Wales.

Until 2009 he was CEO of Tait Ltd, a Christchurch based high growth radio equipment manufacturer with revenue in excess of \$200 million and close to 1000 staff. He remains a Director of Tait and a Trustee of its controlling shareholder as well as being Chairman of some smaller electronic companies. Michael has held CEO/MD positions in a number of different companies having also undertaken a successful management buyout of one of the operations. He is a Chartered Engineer and Fellow of the Institution of Engineering and Technology.

Michael is also director and chairman of the company's subsidiaries Windflow UK and Windflow Hammer Ltd. He has joined Windflow to assist it to build successfully upon the strong engineering base to one with equally strong commercial capability.



Angus Napier - Director

Angus Napier qualified as a Chartered Accountant and was for many years a member of the Institute of Chartered Accountants in England and Wales and in New Zealand. Prior to April 2000 Angus held a variety of full-time employment positions, most latterly as Senior Advisor, State-Owned Enterprises, to the Crown Company Monitoring Advisory Unit within the Treasury. Earlier positions were Internal Audit Manager, Standard Chartered Bank, Hong Kong; and financial management consultancy and external audit roles with KPMG Peat Marwick, in New Zealand, Hong Kong and England. Since 2000 his focus has been as an Independent Management Consultant.



Rago Paschma – Mechanical Engineer

Rago was born in Germany and travelled extensively before coming to NZ 22 years ago. Qualified as a master toolmaker and with a Bachelor of Engineering from Ireland, Rago previously worked as an automation engineer. For Windflow he proposes, tests and implements trouble shooting solutions at TRH.

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