



NEWSLETTER N° 11

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CONTENTS

Welcome

Sound vs Noise

A Very Sound Solution!

Events Update

Strong Support for Wind in NZ

NZ Windfarms Update

New Staff

Mission Statement

“To become the leading supplier
of wind turbines for
wind power projects in
New Zealand and Australia.”

WE HAVE DONE IT!

We have a much quieter wind turbine thanks to the sustained efforts of many people. It's taken a year but the modifications that have been made make us confident we have the best wind turbine in the world.

In July 2003 the Windflow prototype was first placed on Gebbies Pass and we all celebrated reaching that milestone. One year later, after a sustained effort from numerous people and preliminary sound measurements, we are celebrating a much quieter turbine being back on the hill! Due to the lower sound levels and often high background noise, it has been difficult for the council to get measurements that confirm compliance. As a result of discussions with neighbouring residents in Gebbies and McQueens Valleys, the council are measuring sound levels over a two week 24 hour operation period after which we expect all systems go.

We plan to start building on the Te Rere Hau windfarm site near Palmerston North over this summer. As part of the resource consent process for Te Rere Hau a most successful open day with neighbours was held in late July and received good feedback and support.

The recent New Zealand Wind Energy Conference in Palmerston North has shown that wind energy is definitely on the agenda of most electricity industry players and there is increasing interest from local government and businesses. We had excellent discussions with these parties at the conference and discussions will continue as performances data verifies the benefits of the Windflow 500.

Also keep an eye out for a new look website at www.windflow.co.nz and the launch of www.windfarms.co.nz in the near future. Our office manager Terry Moon is redesigning the Windflow site so potential customers, shareholders and other interested parties will find all they need to know. We'll let you know when the new web sites go live.

I'd like to end with personal thanks to all those – shareholders, staff, board, contractors - who have brought the company where it is today. AH Gears in particular deserve a special mention for turning their already superbly designed gearbox into a superbly quiet one! And thanks also those who have emailed, called or dropped by with words of encouragement. It's an exciting road and we're glad to have you all aboard!

Geoff Henderson
CEO and Director



Noise vs Sound

A Very Sound Solution

Anything with moving parts is going to make some sound. The term 'noise' is a way of describing unwanted sound.

Typically the main sound a wind turbine makes is the blades moving through the air. A secondary source is mechanical noise from the rotating machinery such as the generator and gearbox.

Our Gebbies Pass prototype however had these sources back to front and, because of a resonance, was amplifying gearmesh noise to a measured sound power of 108 dBA. The modifications have now eliminated this noise and brought us well below the industry norm (around 105 dBA) to less than 101 dBA. It is important to note that this market positioning has been our fundamental incentive to get this right.

Now you can still hear the blades swishing, but the problem gearmesh noise is gone!

Yes, the noise problem has been resolved! After substantial engineering efforts over the past months, the gearbox and shaft vibration causing a single boring note (E flat above middle C) has now been eliminated. Preliminary measurements at Gebbies Pass show a 7 dBA reduction giving us confidence that we will be operating well within our Resource Consent requirements. We expect this to be confirmed after the Banks Peninsula District Council (BPDC) two week sound emission monitoring period.

The noise problem history...

As mentioned in earlier newsletters, although both the BPDC night-time rural environment standard and the NZ standards have higher levels (typically 40 dBA), Windflow agreed to comply with a level of around 30 dBA, in part due to the uniquely quiet environment of the McQueens Valley, but also due to the marketing need to achieve international best practice.

Measurements in November last year identified a level of around 31 dBA in the McQueens Valley. A 5 dBA 'tonal penalty' was also added to this due to a peak in our tonal curve at the 311 Hz frequency (shown in figure 1). This gave us an assessed sound level of around 36 dBA.

Gearbox vibration was identified as the main noise source and after extensive investigation it was found that the tone was being amplified by the low speed shaft and then propagated by the blades.

The solution...

Firstly we would like to acknowledge the **efforts and patience** of all those involved, especially Andy and Steve at AH Gears, IRL, Matrix Engineering, and the University of Canterbury Mechanical Engineering Department.

The prototype gearbox was sent to Auckland for a series of modifications and tested on the specially built gearbox test rig which will allow testing and running in of all future gearboxes for the Windflow machines. Measured sound levels at the factory showed that the vibration and therefore the 311 Hz tone had been eliminated (see figure 2). Noise dampening modifications have also been made to the tower and blades.

On July 14th the gearbox was reinstalled at Gebbies Pass. Our preliminary near-field monitoring confirms that the tone has been eliminated and residual sound levels are 7 dBA lower. Council confirmation of consent compliance has been delayed as wind conditions over the past weeks have meant that background noise levels have been too high, or the wind too light for the turbine to run.

The future...

As a result of discussions with our neighbours in mid August, the turbine will be running for 24 hours a day for a two week period starting August 30th which will enable the Council's independent acoustic consultant to monitor continuous sound emissions and achieve finality on the sound level issue. Watch this space!

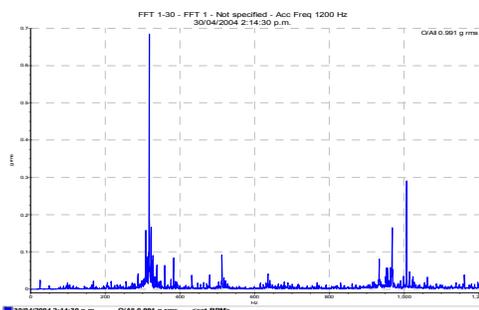


Figure 1 – Vibration test showing 311 Hz frequency caused by gearbox second stage and shaft resonance

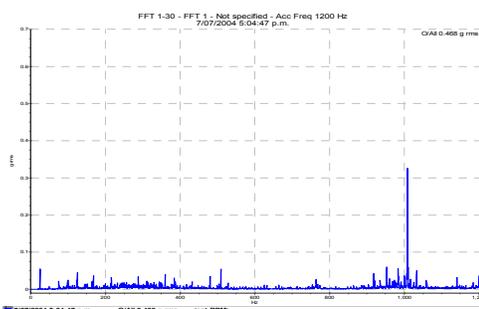


Figure 2 – Vibration test showing elimination of 311 Hz frequency after modification

Events Update

NZ Wind Energy Conference

We are busy spreading the news about Windflow and our technology. Here are some highlights of past and future events.

EMEX 2004 – May 11-13, Auckland, NZ.

We shared a stand with AH Gears, displaying our new 550 kW test rig, Windflow 500 gearbox and a full size blade to almost 7500 attendees.



Photo: AH Gears and Windflow display, EMEX

AusWEA Conference – July 28-30, Tasmania, Australia

Geoff presented a paper on Windflow's unique Torque Limiting Gearbox and synchronous generation during the 'future focus' session on Thursday 29th July.

World Energy Congress – Sept 5-9, Sydney, Australia

Hosted by the World Energy Council, this event is recognised as the principal triennial event within the global energy sector, and has attracted up to 5000 delegates. This year's theme is "*Delivering Sustainability: Opportunities and Challenges for the Energy Industry*" and being right next door, it will be the perfect timing and location to highlight the advantages of Windflow Technology to the world. Visit us at stand #518.

Climate Change and Business – Nov 3-5, Auckland

Windflow will be present at this joint NZ/Australia conference and trade expo.

NZWEA

Three days, 28 presentations, 160 delegates, two wind farm visits...

The future of wind energy in New Zealand is assured if the enthusiasm of the speakers and delegates at this year's NZ Wind Energy Conference is anything to go by.

Presentations covered topics such as policy, planning & consenting, environment & community, grid/electrical, legal & finance, technical aspects of wind systems, project construction case studies and keynote addresses from Hon. Pete Hodgson (Minister of Energy), Roy Hemmingway (Electricity Commissioner), and Jacob Andersen (Danish Trade Commissioner).



Windflow presented two papers; 'Creating manufacturing jobs for New Zealanders', and 'Synchronous and Synchronised Wind Power Generation'. Copies of presentations can be downloaded from the NZ Wind Energy Association website (www.nzwea.org.nz).

Strong Support for Wind in NZ

A survey report released on July 1, 2004, commissioned by Energy Efficiency and Conservation Authority (EECA), looks at attitudes amongst the general public with regard to electricity generation options. It examined a variety of issues related to public perception of generation from each of Wind, Hydro, Geothermal, Gas and Coal resources.

The report shows strong levels of support for wind developments nationally and locally with some 82% of respondents approving or strongly approving of wind power. When people were asked if they support a wind farm being built in their local area, 80% were supportive or neutral (60% support and 20% neutral) with only 18% opposed and 2% undecided.

When asked 'How would you feel about having a wind farm built in your local area if you could not hear them but could see them across the road from your house' 65% of respondents remained supportive or were ambivalent.

This survey provides further evidence that New Zealanders are supportive of wind energy at a local and national level and that they would like to see more of their power generated from clean and renewable sources.

The survey had a margin of error of +/- 3.6% at a 95% level of confidence. The UMR report can be downloaded from the EECA website www.eeca.govt.nz

New Zealand Windfarms Ltd



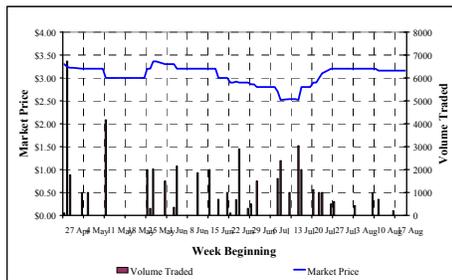
In preparation for NZ Windfarms Ltd's separation from Windflow Technology and the capital raising this summer some key changes and appointments have been made. The board now consists of five very experienced directors; Derek Walker, Juliet McKee and Vicki Buck (who has stepped down from the Windflow board) are the independent directors with Keith McConnell and Barrie Leay sitting on both the WTL and NZWL boards. To ensure separation Geoff Henderson and Heugh Kelly have also stepped down from the NZWL board but remain on the WTL board. The other new appointment is Chris Freear into the position of NZWL CEO. Chris was previously the Business Development Manager for WTL.

NZWL (currently a wholly owned subsidiary of WTL) is the company which will own and operate wind farms throughout New Zealand, with the Palmerston North wind farm – Te Rere Hau being the first of many such developments. The intention is to develop this 104 turbine, 52 MW site over the next four years using the Windflow 500 turbine.

NZWL intends to use the world's best turbines in its developments, and hence NZWL now has a preferred supplier agreement with WTL.

NZAX – Share Trading History

The line graph shows the market price while the columns show the volume of shares being traded.



To view this graph daily go to:

<http://www.nzx.com/nzxmarket/nzax>

and search for stock code WTL

(There is also a link on our website.)

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Have we got your correct address details, including current e-mail address? If not, please let us know.

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New Staff
Windflow is pleased to welcome the following new staff members:

Tracey Humpage – Receptionist (Part-time until Nov.)

While Terry Moon is developing the new website, Tracey will be the greeting face and voice at Windflow and is helping keep the office flowing smoothly. Tracey loves all forms of art, hates maths (in all its forms!), and consequently brings a nice balance to all the engineers here!



Sheralee MacDonald – Marketing Assistant (Part-time)

With Chris Freear now heading up NZ Windfarms, Sheralee will be assisting with general marketing activities, helping develop the marketing strategy, co-ordinating displays and promotions, newsletters and business development. She has a variety of skills and experience that will serve Windflow well including work experience in the energy and environmental technology sectors (EECA and Canadian Environmental Technology Advancement Corporation (CETAC-WEST)) as well as holding a Post-graduate Certificate in Resource Studies at Lincoln University, and a Marketing degree from Massey University.

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