



BRINGING YOU THE LATEST IN INDUSTRY NEWS

Summer 2018
Newsletter

ARENA Capital brings new investment to Earthmill Maintenance

By Oliver Leake



Ian Greer, CEO, Arena Capital & Steve Milner, Managing Director of Earthmill Maintenance

It has been a challenging couple of years for the farm-scale wind industry with the Government prematurely ending the Feed-In Tariff, then manufacturers such as Endurance going out of business. At Earthmill we have had to completely restructure our business, and the work we do today goes way beyond standard maintenance.

Since the launch of our maintenance business in 2016 we have worked really hard

to grow our fleet and support our customers on farms across the UK who need spares, repairs and general servicing to keep their incomes on track.

We had a fleet of less than 200 turbines under maintenance contract two years ago and we have grown that by 20%.

We now have over £1m in spares stock, with engineers based across the UK, and we saw an opportunity to grow this business further

and consolidate our position as the leader in farm-scale turbine after care.

The investment will see a boost in working capital, as well as a 25% immediate increase in clients from Arena's 75-strong fleet of working turbines. Earthmill expects to grow stock levels to include larger items such as blades, gearboxes and generators to ensure quicker repairs. New engineers will join the team to broaden geographic coverage and reduce call out times for emergency repairs, decreasing down time and lost revenues when customers' turbines lose power.

Commenting on the investment, Ian Greer CEO of Arena Capital Partners said: "The last few years have seen a great deal of consolidation as the wind energy market has stabilised. As the operator of a substantial fleet of turbines ourselves, we wanted to get smarter about how we maintained these investments.

"Earthmill has risen through the marketplace to stand out as an obvious partner for our fleet, but also as an investment opportunity that makes perfect sense," he said.

"The new resources and increased capital, as well as the additional fleet will allow us to offer really good coverage in just about every UK location, and we look forward to bringing more customers on board as we increase our coverage across the UK," added Mr Greer.

PAGE 2 – TURBINE BUY BACK SCHEME

Learn how the ARENA investment gives you the opportunity to cash in on your wind turbine.

FULL STORY PAGE 2

ARENA Launches Turbine Buy Back Scheme



Following the acquisition of Earthmill Maintenance, ARENA Capital have earmarked a new fund to grow their current portfolio of turbines to 100 by the end of the year. They currently own 75 turbines following their purchase of the Earthmill owned fleet.

The opportunity allows owners of 50 to 500kW turbines to release capital currently tied up in the turbine whilst eliminating the risks of ownership whether it was installed by Earthmill or another developer. Those who do choose to sell will continue to benefit from cheap energy and receive an annual payment for the remainder of the 20 year Feed In-Tariff in exchange for continuing to host the turbine on their land.

Turbine ownership can yield great rewards, but as with any large investment there always remain an element of risk. This is especially the case when you consider that turbines are mechanical items with many moving parts, often operating in the most hostile of environments.

With over £1m of spare parts in stock and our growing team of engineers providing broad geographical coverage, Earthmill Maintenance are able to react fast to any servicing requirements. In fact, we are proud

to be able to say that on average our fleet of over 250 turbines is available for generation over 99% of the time, greatly surpassing the industry standard. In real terms, this means we can keep our customers generating and earning money.

However as the turbines age, evidence of wear on some components means that upgrades will be required in order to preserve the longevity of the machines. Following the unfortunate collapse of several turbine manufacturers such as Endurance, many owners have been left without the peace-of-mind of a warranty for their turbine and so it will be they who will have to foot the bill for the upgrades.

Earthmill Maintenance Managing Director, Steve Milner commented "whilst some of our customers are happy to retain the responsibility of their turbines and are planning to make the necessary upgrades, others have expressed that they would prefer to cash out now and enjoy a lower level of risk.

He added, "We are therefore inviting any of our clients who might be interested in selling their turbine to get in touch.

"A simple formula is applied to determine the value of the turbine and then it's up to the owner to make a decision, it's really that simple."

EARTHMILL MAINTENANCE THE FACTS



Better Service, greater income

Earthmill Maintenance's fleet constantly exceed the manufacturer target of 95% availability, frequently achieving over 99% turbine availability – in commercial terms; that additional 4% availability could be as much as an extra 10,400 kWh per year.

FAST FACTS

99%

Average availability for generation for Earthmill fleet

10,400kWh

How much extra annual energy production that could mean to you (above the manufacturer target).

FOR MORE INFORMATION

To discuss the Turbine Buy Back Scheme, talk to someone from the Earthmill Maintenance team today.

Call 01937 581011 or email info@earthmill.co.uk

Endurance Upgrades & Fixes

By Steve Milner



I'm conscious some clients are being targeted with information promoting several upgrades for the E series turbines.

To avoid unnecessary confusion we should explain Earthmill Maintenance's position on the information you may have received. As we are turbine owners ourselves, we too will have to pay to have these upgrades completed where required. We therefore understand the importance of making the right decisions to ensure the longevity of our turbines.

As such, we have taken the time to evaluate ALL the various solutions being offered in order to give our clients (and ourselves) an independent view on what if anything is best suited to each particular site and situation.

Because Earthmill are not manufacturing any of the proposed upgrades we can offer a balanced view. If you would like to talk to us about this, please give the office a call. 01937 581011

Bed Plate Fixes

In some of the older turbines in the Endurance E-3120 fleet there has been instances of cracking in the bedplate of the nacelle due to fatigue.

Out of our fleet of 250 turbines, to date there has only been 1 failure requiring a complete

new bedplate. Some high wind-speed and turbulent sites have however developed cracks requiring attention.

Earthmill Maintenance and Natural Generation have been working with an engineering company that specialise in welding repairs and have developed a robust process to strengthen the original bedplate to prevent further cracking.

The process is relatively inexpensive in comparison to a complete new bedplate and does not require the nacelle to be removed. To date we have performed 80 of these repairs and have had zero repeat failures.

It is our belief that that this process would be sufficient as a preventative measure for the majority of Earthmill installed sites. However for more exposed and turbulent sites, a new bedplate may be the long term solution.

Replacement Bed Plates & Shafts

There are currently three companies offering solutions for replacement bed plates. We have visited all three of these companies in order to evaluate which offer the best solution and have concluded that the UK based Turbine Engineering Development Ltd was the one we thought most appropriate for our clients.

The new bedplate is designed and manufactured in conjunction with Lindhurst Engineering who have experience in nuclear and aerospace engineering projects and is built to withstand even the most turbulent and exposed sites.

For more information call the Earthmill Maintenance team on 01937 581011 or come and chat to us at one of the shows we will be attending this summer (see page 6).



Expander pins

Prior to the unfortunate news of the bankruptcy of Endurance Wind Power there was a very important upgrade which Endurance had planned to offer throughout the fleet of E3120 wind turbines.

This important upgrade is to change how the blade is connected to the turbine. The existing blade guide pin was fitted during the installation of your turbine. It's a simple bolt which allows the blades to move laterally on the hub and pitch when required in excessively high winds and overspeed conditions. Over time the existing blade guide pins have started to wear the guide holes on the hub, increasing in size and elongation. This excessive wear has a number of detrimental side effects to the operation and maintenance costs of the turbine.

1. Premature Tie Rod Failure

The tie rods are designed to support the blades pitching if there is an over speed situation. Increased wear in the blade guide pins adds stress to the tie rods through shock loads which we think is an important factor in the premature failure of existing tie rods.

2. Reduced efficiency and turbine generation

Even a small amount of wear means the blades are no longer held in their optimum position and angle of pitch, which in turn results in a gradual deterioration of the turbines performance and production figures. Case studies at Endurance test sites looked at power curves before and after the upgrade. The results produced improvements in generation across the whole power curve estimated at a 5% increase to annual energy production (depending on the wear level of wear of the original hub).

3. Other factors to consider

There are other issues associated to the pin movement, such as possible noise complaints, spring failure within the blade which ultimately shears off resulting in blade failure.

Costs

The costs for the upgrade work will be between £3,500 and £5,500 + VAT per turbine depending on the level of wear and size of the elongation. The procedure for the upgrade varies depending on the condition of the existing blade assembly and blade type.

Earthmill engineers have all been trained in the installation process and we have purchased the specialist tooling required to ream out the worn guide holes in situ without removing the nacelle.

Personally I think this is a very important solution to a growing issue. As you know we own and operate a number of E-Series turbines ourselves and the obvious question is what do we plan to do? We will be scheduling in all of our own E-Series fleet to have the new pins installed over the coming months.

The solution has been designed to last for the full life of the turbine apart from the bushes; which are wearing parts and will be inspected within the normal service schedule. The manufacturer of the 'expander' pin warranties the pin for 10 years.

X-Series Gearbox Failure

We have recently witnessed a small number of gearbox failures in our X-Series fleet. We are working with a number of gearbox specialists to determine the cause of failure and to develop a fix. At present it is unclear if the issue is an inherent design failure that applies to the entire fleet or if the failures are isolated cases. Our X-Series clients will be kept informed as soon as we have further information.

High uptake for Insurance Backed Warranty Provision

Following the unfortunate collapse of turbine manufacturers Endurance, hundreds of turbine owners were left without warranties. Reacting to our client's concerns, Earthmill Maintenance took action and teamed up with CNC Asset Ltd to design the insurance backed warranty which gives peace of mind and security to Endurance E series and X series owners. Covering breakdown for key electrical and mechanical parts, including the nacelle control cabinet (NCC) and main control cabinet (MCC), generator, gearbox, main shaft and blade linkages.

Since the launch of the Insurance Backed Warranty back provision over a third of Earthmill clients have already opted to cover their turbines.

The insurance backed policy provided by CNC Asset Finance and underwritten by A-Rated insurer Lloyd's of London protects any Endurance E or X-Series owners from electrical or mechanical breakdown of components up to £250,000.

Operations Manager, Dave Broadbank said "the level of uptake has surpassed even our own expectations. Our clients are enjoying the peace-of-mind that the insurance backed warranty brings and do not have to worry about a costly bill if a major component on their turbine fails."

The 36 months warranty policy comes at a fixed price with income protection as an optional extra.

To discuss Insurance Backed Warranties call Earthmill Maintenance on 01937 581011 or email info@earthmill.co.uk.

Earthmill are an Introducer Appointed Representative of CNC Asset Limited who are Authorised and Regulated by the Financial Conduct Authority under firm reference 306207.

INSURANCE BACKED WARRANTY IN BRIEF



Insurance provided by CNC Asset Ltd.



Cover for electrical or mechanical breakdown up to £250,000



Includes key components including generator, gearbox, main shaft & MCC



To discuss the Insurance Backed Warranties, talk to someone from the Earthmill Maintenance team today.

Call 01937 581011 or email info@earthmill.co.uk

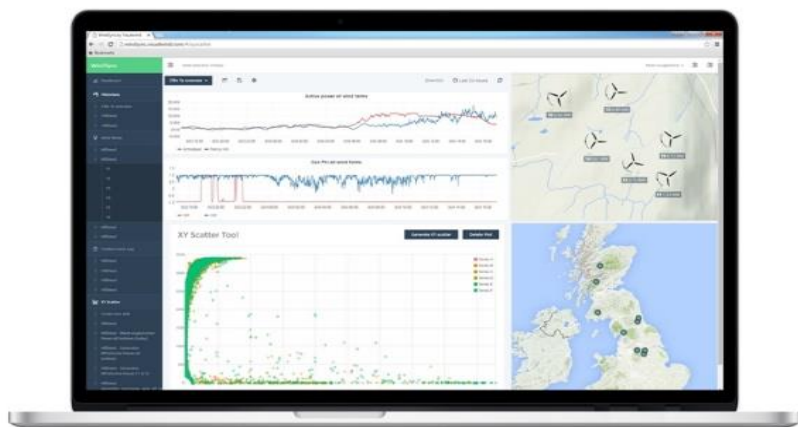
GET IN TOUCH...

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Wind Sync monitoring system proving a success

by Matthew Dowley



Last winter saw Earthmill Maintenance swap their entire fleet of turbines from the outdated monitoring platform ERIC to the new purpose built Wind Sync software. Around 600 of the 800 Endurance turbines installed in the UK are now monitored by Wind Sync.

Six months later (and despite its significantly smaller price tag in comparison to its predecessor), the new software is proving to be a great success with increased response times, better connectivity and improved turbine performance.

The new software prompts turbines to automatically notify the Earthmill Maintenance techsupport team of a shut down in order to get to work on resolving a problem straight away. This better level of control results in resolving alarms and faults faster.

Operations Manager Dave Broadbank commented "Windsync allows the operations team to work on remote fixes to problems that would previously have required an engineer site visit. This drives down our clients operational costs whilst increasing uptime."

Wind Sync also provides a more in-depth analysis of performance and historical data to show how well a turbine is working. This allows the operations team to see where a turbine can be fine-tuned to improve performance.

"We can now adjust parameters so that the turbine does not shut down in safe high winds, extending the operational power curve" added Mr Broadbank.

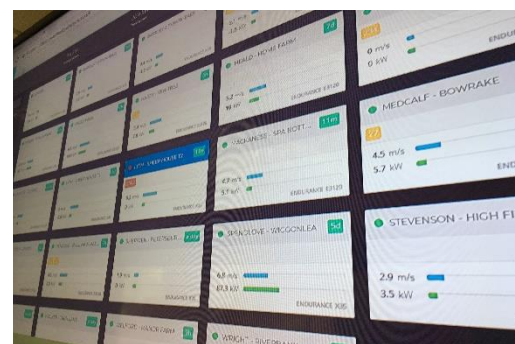
Improved connectivity is also a benefit that has been noticed since the installation of the new software, with most turbines being visible 24/7 with no loss of communications.

Over 80 E3120s with previously intermittent connectivity have recently had firmware updates to their PLCs to help improve communications strength to the server. This has been provided to clients at no additional cost.

Earthmill Maintenance Managing Director, Steve Milner commented, "We are always striving to improve the level of service we provide to our clients and add value to what we offer. This usually involves lots of small, often unnoticeable improvements that when combined add up to our industry leading service and fleet availability of 99%.

"The impact of the upgrade to Wind Sync however has been clear to see. The software has already proven to take turbine monitoring to the next-level and along with the developers Visual Wind, we are still exploring the possibilities that the software can bring."

If there is a problem with your wind turbine you can call the office on 01937 581011 Mon-Fri between 8.00am and 5.00pm outside of these times out of office support is available by emailing TechSupport@earthmill.co.uk.



Greater Remote Capability

All turbines are monitored from the Earthmill Maintenance head office. Our live screens notify the team of a turbine shut down so action can be taken right away.



In depth performance analysis

"We can now adjust parameters so that the turbine does not shut down in safe high winds, extending the operational power curve"



Better Connectivity

"We can now adjust parameters so that the turbine does not shut down in safe high winds, extending the operational power curve"

Summer Shows 2018

by Oliver Leake



With winter now well and truly behind us and the reappearance of the sun it can only mean one thing. It's time to dust off your sun hat, slap on sun cream and get ready for this year's show season.

This summer Earthmill Maintenance will be attending The Royal Highland Show, The Great Yorkshire Show, Driffield Show and The Royal Welsh Show.

To discuss all things service and maintenance, turbine insurance backed warranties or to see how much you could earn by selling your turbine, make sure to stop by at our stand for a drink and chat.

Just look for the inflatable wind turbine, you can't miss us!

SHOW CALENDAR 2018

THE GREAT YORKSHIRE SHOW

10-12 July

Stand 390

THE DRIFFIELD SHOW

18 July

Stand H113

THE ROYAL WELSH SHOW

23-26 July

Countryside Care Area



GET IN TOUCH...

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Getting the most from your Power Purchase Agreement

When trying to maximize the return from your wind turbine the importance of PPAs is often overlooked.

Generally a power purchase agreement will be renewed every 12 months and at the end of that period turbine owners will receive an auto-renewal letter stating what the new export rate will be for the following year. What many people don't realise is that this rate can be negotiated.

Project Manager Matthew Dowley commented "I would urge all of our clients to pick up the phone and talk to one of the team here at Earthmill Maintenance when your PPA renewal comes through so we can negotiate a better rate on your behalf."

Earthmill Maintenance manage a fleet of over 250 turbines and have therefore developed strong working relationships with the PPA providers in order to obtain preferable rates.

"In some instances we have negotiated a higher export rate by as much 1 pence per kWh. Whilst this doesn't sound like much, it that could be worth as much as £2,000 a year for an E-Series turbine and £6,000 for an X-Series."

If your power purchase agreement is due for renewal, contact Matthew Dowley on 01937 581011 to ensure you get the best rates available.

WE ARE MOVING...



Earthmill on the move...

Since the collapse of Endurance, Earthmill Maintenance has invested over £1m in spare stock as well as expanded its team of engineers to cover the whole of the UK.

As the business grows so does its requirement for space to house both stock and new staff. So it is *goodbye Wetherby and hello Harrogate* as Earthmill prepare to move to a new purpose built facility on the outskirts of the Yorkshire town.

The new premises will include a dedicated gearbox workshop, storage for both consumables and large stock items such as spare blades, a roll in-roll out servicing line for major repairs and a larger, more suitable office space.

Don't worry, you don't need to update your records just yet. Building works are currently underway and expected to be complete later in the year. We will be in touch with our new address once we are ready for the move



What our customers say....

"The level of service provided by Earthmill was second to none"

***Chris Hobson,
Yorkshire Farmer***



Earthmill Maintenance Ltd

Marston House

Walkers Court

Audby Lane

Wetherby

LS22 7FD

01937 581011

www.earthmill.co.uk

info@earthmill.co.uk



Earthmill Maintenance Ltd is part of the Arena Capital Partners group

ARENA CAPITAL PARTNERS LTD.