

# Wind Turbine Optimisation



**2-15%**

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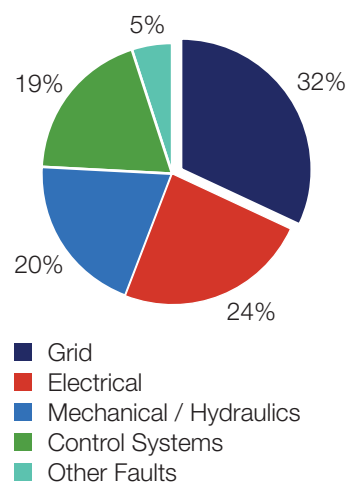
**An upgraded controller can increase output by up to 15%. Just one example of a range of ways in which a turbine can be optimised to increase performance**

FENI's sister company, Realise Energy Services, offer a range of bespoke turbine services which are designed to identify and then rectify performance issues. Typical improvements have been found to produce between 2% – 15% increased output.

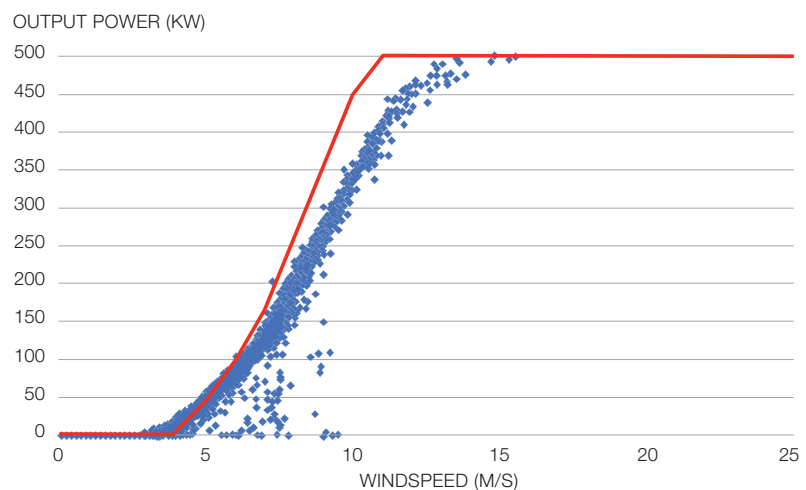
Many turbines we visit are initially found to be operating below their optimal efficiency. This can be due to a variety of issues from site specific conditions, parameter and control settings to blade pitch and electrical equipment design.

The result of this is lack of availability and poor performance causing loss of production and reduced income.

**Graph showing the main reasons for turbine poor performance**



**An under-performing turbine's power curve**



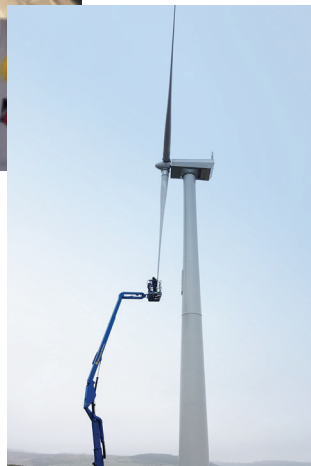
## The Importance of Data

Turbines are constantly producing large amounts of data. Useful information can often be buried within large data sets. Not all turbine owners have the time or understanding to analyse what can be over 400 different operational and error codes. Through regular and educated analysis of your data, many underlying faults can be picked up and rectified. Realise Energy Services hold customer data in a special protected '**data vault**' and provide regular reports on performance and faults.



Parameter setting adjustments to optimise efficiency

Site specific blade alterations to improve performance



## Engineering Optimisation

There are two key factors affecting income – turbine 'availability' and turbine 'performance'.

1. **Availability** – This is the biggest reason for loss of income. Availability can be controllable (e.g. the turbine) and uncontrollable (e.g. grid, weather). How can you maximise availability?

- Planned and proactive maintenance through a comprehensive service and maintenance agreement
- Efficiency improvements – turbine settings, electrical design, component upgrades
- Better use and analysis of data to identify issues and solutions
- Ensuring your turbine is set up correctly for your site conditions

Realise Energy Services can offer a range of services and new technology to improve availability.

2. **Performance** – There are a range of common issues leading to generation losses which are generally due to either site specific conditions such as turbulence or operational issues such as:

- Poor blade condition – pitting, insects, oil, dust, etc.
- Misaligned blades
- Incorrect blade pitch angle
- Poorly calibrated anemometer / wind vane / yaw settings
- Electrical losses in the tower – e.g. incorrect cable sizing
- Electrical losses between the tower and G59 cabinet – e.g. meters too far away from generator
- Cut in / Cut out parameters – turbine losing production due to incorrect settings

### Solutions to issues

- Preventative maintenance – e.g. blade cleaning and re-coating
- Blade pitch adjustment and calibration
- Anemometer and wind vane calibration
- Installation of correct cables and components
- Cable condition inspection
- Moving meter positions
- Changing parameters to suit site specifics
- Upgrading controllers and software

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**Interested? Contact us on 028 7930 0606 or [info@farmenergyni.co.uk](mailto:info@farmenergyni.co.uk) to find out how we can optimise your turbine**