Turbine stats.

http://www.enercon.de/en-en/752.htm
Amongst other features, the annular generator is a key component in ENERCON's gearless wind generator design. This low-speed synchronous generator is directly connected to the rotor. Generator output voltage and frequency vary with the speed and are converted via the ENERCON Grid Management System to be fed into the grid. This allows rotational speed control to be optimised; the annular generator is thus perfectly independent of the grid. By adjusting or 'pitching' the blades and through electrical excitation via the turbine control system, rotational speed and power output are constantly checked and optimised. The electrical power produced by the annular generator passes into the ENERCON Grid Management System which comprises a rectifier, the so-called DC Link and a modular inverter system. The inverter system defines the essential performance characteristics for output to the grid and ensures that the power output corresponds to grid specifications. Here in the inverter system, voltage, frequency and power are converted accordingly. Via the transformer, inverter voltage (400 V) is stepped up to the appropriate medium voltage required by the grid or the wind farm network.
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http://www.bwea.com/ref/generating.html

When they are running, the output power of wind turbines varies second by second, depending on the strength and turbulence of the wind. The effect of the tower as the blades rotate past it also introduces a periodic disturbance in the power output, which is greater at high wind speeds. These power fluctuations cause voltage variations on the local electricity network, termed flicker. Limits on the flicker any connected equipment can cause are defined in reference 2 and are set to avoid disturbance to other consumers. Flicker is only likely to be a problem for small groups or single turbines, especially large machines connected at lower voltages. Stall-regulated wind turbines should produce less disturbance than pitch-regulated turbines. Variable-speed turbines should have very little effect.

The PES (Public Electricity Supplier) engineers may be concerned that wind turbines with induction generators (as is most common) will also cause disturbances when starting. This is largely a problem of the past, as "soft-start" units are fitted to most designs. However, the voltage step that will occur when a wind turbine shuts down from full output, perhaps due to high winds, must also be considered. Limits are set in reference 2. It is usually accepted that, under normal conditions, it is very unlikely that more than one or two turbines will shut down simultaneously.

Harmonics

Variable-speed wind turbines can cause harmonic voltages to appear on the network, which can cause equipment to malfunction or overheat, and disturb other consumers. The PES will work to the limits set out in Reference 3 which will avoid disturbance to other consumers. The problem can be reduced by fitting filters, at additional cost. Fixed-speed wind turbines will generate harmonics for the short periods when their soft-start units are in use, but this generally is not significant.

Costs

The costs given here are very approximate and should be taken as a guide only (they could easily double in some circumstances). They are classified by the voltage level at the point of connection to the PES system. The costs are only for PES equipment, and exclude the switchgear, cables, transformers and other equipment within the wind farm. Costs for reinforcement of the network at remote locations are also excluded from these estimates. The costs include capitalised charges to cover future O&M (operation and maintenance) of the PES equipment provided specifically for the project. PES's often insist this is paid as a capitalised charge, typically 25% of the capital cost. Others allow this to be paid as an annual charge.

- Low Voltage This is only feasible for very small generators connecting directly to the existing network. Costs will vary so widely that it would be misleading to state any here.
- 11kV Grid connection equipment: £20,000 - £60,000
- Overhead line: £15,000 - £30,000/km
- 33 kV Grid connection equipment: £120,000 - £150,000
- Overhead line: £20,000 - £35,000/km
- 132 kV Grid connection equipment: £800,000 - £1,000,000
- Overhead line: Insufficient information

These costs are for a single connection only - in fault conditions or during maintenance of the network, the wind farm may not be able to generate.

Excerpt from a Christopher Booker article:

The Government talks of building 10,000 windmills capable of generating up to 25,000MW of the electricity we need. But when it does so, it – like the BBC – invariably uses that same trick of referring to “capacity”, without explaining that their actual output would be well below 30 per cent. (Last year, onshore turbines generated just 21 per cent of their capacity.) In other words, for all that colossal expenditure – and even if there was the remotest chance that two new giant turbines could be built every day between now and 2020 – we could only hope to generate some 6,000MW.

This is not only way below our EU target, it is only a tenth of our peak demand during those cold, windless weeks last winter, when wind power was often providing barely 1 per cent of the power we needed.

To keep the lights on during such times, for every new megawatt of wind capacity we build it will be necessary for to build a megawatt of capacity from gas-fired stations, kept wastefully running 24/7, chucking out carbon dioxide. This will add further billions to the bill we shall all have to pay, while ensuring that wind power does nothing whatever to reduce our overall emission of CO_2.