

Money for nothing?

Wind turbines produce free energy, but at a price, when health and safety regulations are considered. Alan Fitzpatrick explains how new approaches are avoiding dire straits

Pointers

- If plant engineers can demonstrate that lifting equipment is well maintained, lightly loaded and used infrequently, it may well be acceptable to extend the interval between inspections
- An example would be a runway track, traditionally inspected yearly, but under the LOLER risk assessment scheme, just once every 24 months
- Last year alone, Royal & SunAlliance issued nearly 5,000 serious defect notices to the enforcing authorities
- That's 5,000 pieces of equipment that had the potential to lead to serious or fatal accidents

Centre: performing safety inspections at the top of a wind turbine nacelle

There's no such thing as a free lunch – and that holds true for green energy generation, too. Even with wind farms, there is the price of the plant, installation, commissioning, operation and maintenance. There are also safety inspections under the relevant legal provision, mostly LOLER (Lifting Operations and Lifting Equipment Regulations) and the Pressure Systems Safety Regulations 2000, which are not cheap.

The good news is that, for some plants, there is scope to mitigate that cost of compliance. How? By using the provisions in LOLER that allow plant users to extend inspection intervals, following a risk assessment with a 'competent person'.

In 1997 Royal & SunAlliance (R&SA) carried out the first ever risk assessment-based approach in the UK for lifting equipment at the Drax coal-fired power station. It proved that, for an organisation with large amounts of lifting equipment that's well maintained, lightly loaded and used infrequently, it is acceptable to extend the interval between inspections.

Mitigating safety costs

That can make a big difference for wind turbines, as engineers specify increasing amounts of lifting plant. Early wind farms had limited lifting equipment, mostly jib cranes, chain blocks and safety equipment, such as rescue kit, fixed eyebolts and latchway systems – but later wind farms are different, also using overhead cranes, for example.

So in 1999, R&SA approached National Power, and drew up an inspection programme for its 300kW machines and subsequently the UK fleet's MW output wind turbines. Under its risk assessment scheme, in the first year of operation, an engineer surveyor checks the wind farm lifting equipment conventionally, but then, in the second year, if no deterioration has occurred and the surveyor can confirm that site operations and maintenance are satisfactory, the inspection interval is extended.

Which is great, except that, on modern wind

farms, there are further complications. First, with tower heights now reaching 60 metres, the HSE is pressing for passenger lifts on all new wind farms and, in some cases, on existing plant. Second, modern wind farms use hydraulic accumulators for braking and rotating the turbine blades, so there is also a requirement for examination under the Pressure Systems Safety Regulations. Unfortunately, there are issues with the latter, due to vibration, which causes bottles to rub against their fixings, leading to a reduction in material thicknesses. That has necessitated a heavy inspection programme, with the bottles having to be removed for checking.

R&SA engineer surveyors are now visiting wind farms that have passenger lifts, at the required six-monthly interval, and are averaging three or four towers per day on land-based plant. However, on offshore wind farms, especially those with the hydraulic accumulator issue, the current inspection schedule allows for just one tower per day.

But there's more. These figures assume that the farms are accessible.

With a number now being built offshore or in remote parts of the UK, that is not always the case. Frequently, the weather and availability of wind farm personnel are delaying factors. On top of all that, since last year's fatal accident, even a competent person accompanied by a qualified climber now has to undertake a two-day climbing course recognised by the British Wind Energy Association – which, in turn, restricts the number of engineer surveyors capable of undertaking wind farm inspections.

So what is the real cost of compliance? Currently, there are 152 wind farms of various sizes around the UK, contributing a theoretical 2,201MW to the grid. Allowing for various types of equipment and the requirement for accompanying engineers, the cost is around £360,000 per year, with lost generation during the inspections on top. Clearly, wind energy is far from free. **FE**

