Winds of change

The answer (to your energy needs), my friend is blowin' in the wind. The UK is buffetted by lots of it. Denise Chevin *finds windmills may soon play a major part in our lives.*

THEY ARE cheap, green and great for scaring off the birds. Every home should have one – a windmill that is. Out of the question? Not if you speak with engineer Andrew Stobart. The 64-year-old renewable energy specialist has been working on the "small is beautiful" approach to harnessing wind energy.

Stobart says Denmark, Germany and other European countries now have housing estates powered by community windmills while China has thousands of such installations.

If the greener wing of the German government has its way, small roof-top or garden wind turbines will become as common as satellite dishes. They are considering making it mandatory for all houses to be fitted with photoelectric cells and small 2 m diameter, 500 W wind turbines.

The electricity generated by the two technologies would be fed into the local electricity network for on-the-spot use or, when generated by night-time winds, to be stored in a battery for day-time use.

Blustery Britain has half the EC's wind energy potential, so the benefits of adopting the same approach here would be enormous: "If the 20 million households in the UK had a little energy collection system of 500 W then the amount of power generated would be the equivalent of 10 nuclear power stations," says Stobart.

"And that's not taking into consideration office buildings. Roofs are the biggest area of unused space; no one has considered developing that."

Stobart, a long-time renewable energy campaigner, realises there is a long way to go before planners and the British public are persuaded to go down that path. What angers him is that the possibilities are not even being debated.

The Government last year changed its tune on wind energy, but is putting its money into subsidising large-scale wind farms covering hundreds of hectares. The electricity they generate will be bought at a premium price and fed straight into the national grid.

The Government says it wants to encourage companies to invest in renewable energy generation which it sees providing at least 20% of the nation's electricity demand by 2025 with wind power accounting for 10% of that. Well aware that Nimbyism might scupper the plans, the DOE has circulated a draft planning document intended to encourage local authorities to look favourably on wind farms.

Known among fellow wind power buffs as a "real enthusiast", Stobart wants to see the middle man cut out and

Wind power enthusiast Stobart promotes windmills for heating.

smaller-scale turbines sited next to buildings and factories.

This makes sense, he argues, because 40% of all power generated goes to heating buildings and this direct method avoids the complexities of feeding into the national grid.

The electricity generated would go into a heat store – which could be as straightforward as an immersion heater in the tank of hot water for the central heating.

"A major problem with many renewables is energy storage as the energy is not always wanted at the time it arrives. One advantage of using wind power for heating is that when a cold wind blows the building requires heat. And when it is sunny, buildings with air-conditioning require power."

Stobart has something of a vested interest in selling the idea. Last year, together with Cirencester-based developer RH Edmondson Properties, he set up Resource Conservation which builds some wind turbines and imports others from Denmark. Stobart previously worked at Trimblemills, a producer of small heating turbines. The company no longer exists, but Stobart has resurrected some of the technology at Yorkshire-based Resource Conservation.

Roof-top windmills for housing are still a dream at this stage so Stobart's firm is concentrating on selling medium-sized machines in areas and for applications where the technology is more appropriate. Industrial estates, hotels, housing developments, hospitals and farms in coastal regions or on land above 150 m are the sort of customers he is hoping to attract.

Wind turbines become worthwhile with an average wind speed of 18 m/s (12 mph); the other main requirement is a 100 m^2 plot of land to support foundations. Stobart sells turbines ranging from just a few kilowatts up to a 220 kW Dutch windmill that measures 25 m diameter and 30 m high and costs £130 000. Installation takes three to four days.

Danes and bacon

In Denmark, where houses are better insulated and each household is reckoned to use 6000 kW hours a year, such a turbine operating in average wind speeds of 18 m/s would generate enough electricity to supply 67 houses.

"In Denmark these schemes are common. What pushed the Danish government into backing wind power is lack of indigenous energy sources," explains Stobart.

Resource Conservation is undertaking surveys in Yorkshire and Lincolnshire for landowners hoping to make use of wind power. The keenest interest has come from pig farmers; large farms can easily run up annual electricity bills of £60 000 for heating the sties. Any surplus power could be sold on to the grid.

Resource Conservation is also developing a wind generator that Stobart says could make roof-top generation for very large offices and factories a practical option. The prototype consists of nine contra-rotating 15 kW turbines on a single support tower.

"The value of wind energy blowing is worth about £90m a day," says Stobart. "It's all out there and we're not using it. It will be expensive to harness, but it will carry on blowing from now until doomsday."

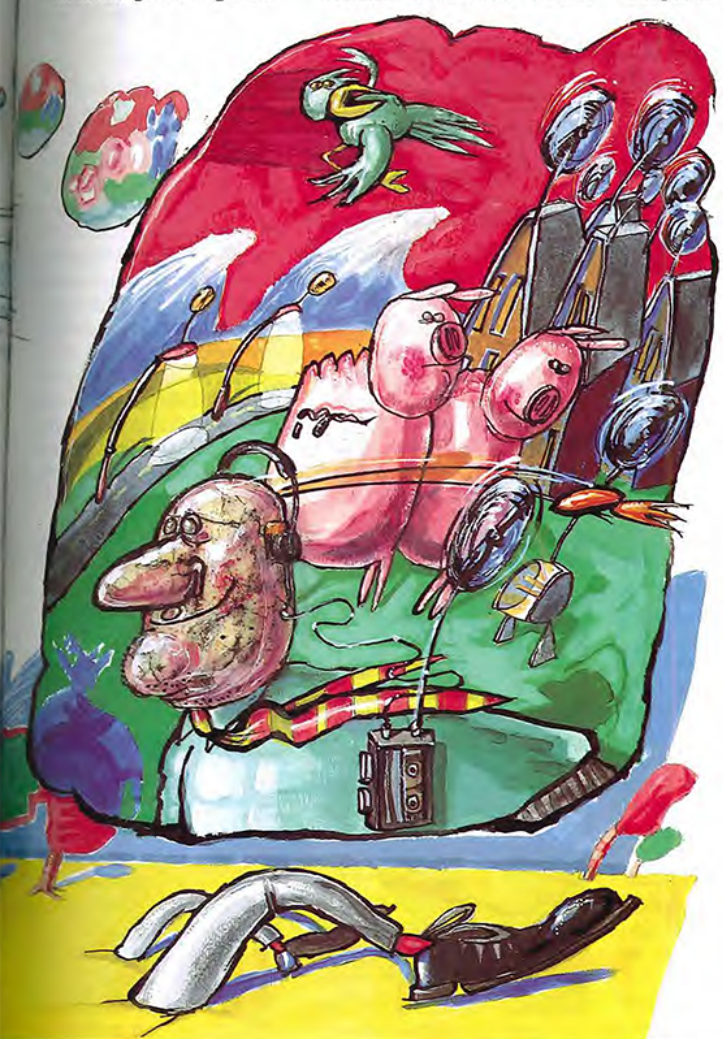
Just what the doctor ordered

WIND POWER will supply 10% of the energy required for a low-energy hospital being built in Ashington, Northumberland.

The 305-bed Wansbeck General is 60% more energy-efficient than a standard hospital. One major difference is its windmill. Electricity generated from the 100 kW turbine will used for heating and lighting.

"We put it up last November and it hasn't stopped going round since," says deputy project manager Bill Elliott. He is confident that the 6 m diameter machine, now something of a tourist attraction, will deliver the 450 kW daily dose of power.

The £21m hospital is being built with Laing Northern in a joint venture with Crown House Engineering for the Northern Regional Health Authority. It is due to be completed at the end of September.



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