

DID YOU KNOW THAT YOU'RE A CLEANTECH COMPANY?

Market Adviser, Charles Osborne reports

The increasingly familiar rhetoric of a 'low carbon economy' and 'new green jobs' must translate in to tangible opportunities for British industry. The UK's vibrant ICT sector is well placed to benefit from a technology revolution sweeping through the global energy industry.

The first phase of the UK's future energy infrastructure is being planned and built now. Amongst the biggest short-term winners are supply-side consortia building enormous arrays of wind turbines. From Scandinavian energy giants such as DONG Energy (Denmark), Vattenfall (Sweden) and Statoil (Norway) to German engineering heavyweights like Siemens and Hochtief, big contracts for large developments are being won. This should not be seen as a threat to British business, but rather an opportunity to form competitive new alliances with world-beating partners.

Why should an ICT company take an interest in wind power?

- Several thousand wind turbines will be connected to the UK grid by 2020
- The wind does not blow all of the time, so the output from a wind farm is variable
- Our grid system must maintain a steady, regulated supply at all times
- Balancing supply and demand is a complex technical challenge

At present the grid system is relatively 'dumb' when it enters buildings, in many cases Victorian technology (a clockwork dial) indicates consumption. Follow the energy supply chain upwards and the measurement and control technology becomes much more advanced. This ability to measure and control will creep towards the demand-side of the system, much as switches in server racks spun out in to domestic routers and wifi hotspots. This 'internet-style revolution' of our energy system will happen in three phases:

1. Demand-side measurement and display of energy use, to reduce consumption
2. Transmission of data between energy producers and consumers
3. Two-way energy system with distributed storage and generation capabilities

Demand for hardware and software that can measure and control electrical systems in real-time will increase. From simple, ruggedized wi-max routers through web-based energy management interfaces to GSM-enabled sensors, selling existing equipment to both the supply-side (utilities) and demand-side (factories, offices, homes) under specialist cleantech brands represents a significant opportunity.

Network topology and data transfer protocols are not the primary areas of expertise at steel foundries or supermarket warehouses, but advanced process monitoring and control systems are increasingly commonplace. Whether connecting a control system to the local utility, piping data from production-line sensors to a web-based dashboard or placing energy-harvesting sensors on industrial equipment, the required ICT skills and technology required can be found in the UK and applied worldwide.



A DANISH CASE: Cooling system supplier partnering with energy company and supermarkets to increase efficiency and reduce CO₂ emissions

Partnering with DONG Energy (Denmark's largest utility) Danfoss are trialling a process that might prove to be a profitable revenue stream for supermarkets in the future, essentially leasing thermal capacity of refrigerators to the energy company, as needed, to balance load on the grid.

Incorporating remote control of systems with a particularly high electrical or thermal capacity is almost certainly cheaper than keeping several fossil-fuel fired power stations 'on standby'. Think of turning every freezer operated by Tesco down by one degree when a depression moves over a wind farm in the North Sea. This exact principle is being trialled by Danfoss in Denmark.

Danfoss might not immediately spring to mind when you think of 'cleantech', being principally a producer of components for refrigeration, heating, water and air conditioning systems. They supply control systems to supermarket cooling systems and represent a new-breed of Danish multinational, with R&D expertise located at home in Denmark, but customers and sales spread across the globe (48% in the EU, 18% in America and 14% in Asia).

Danfoss are trialling a project to utilise the vast thermal capacity of supermarket fridges/freezers to help balance load on the Danish grid, which has the highest penetration of wind power anywhere in the world. Danfoss components and control systems feature in a central control facility for a large number of supermarket fridges and freezers in Denmark. The project uses their thermal capacity as either a way to reduce load by bringing the temperature down (within agreed parameters), or as a buffer capable of absorbing excess electricity production.

Some supermarket IT infrastructure was already connected to external networks via TCP-IP, and some machines were running Linux which made the task of remotely monitoring temperatures relatively easy, in theory. However, retail payment systems used the same TCP-IP connections and were managed by central IT teams. Gaining permission to piggy-back off their connections proved so difficult that the solution was to install new, standalone wireless temperature sensors (transmitting data via GSM), which can run for several years powered by a single AA battery.

This basic principle can be extended elsewhere, the hardware and software required for remote and/or automated process control exists, whether it be for heating, power electronics, refrigeration or air conditioning.

Partnering with energy companies can potentially open up new markets, contribute to product/service development and provide alternative sources of revenue. With a well-earned reputation for technical excellence in this field Scandinavian energy companies are world-leaders and your company can get in direct contact with them to sell your solution and explore partnership possibilities, through UKTI and our network of Embassies across the Nordic region.

