

Rewriting the rules of power

Technology and innovation in energy markets will boost the UK's economic performance, writes **Jorge Pikunic**, managing director of Centrica Distributed Energy and Power

The energy landscape of the years to come will be shaped by three trends: connectivity, consumer attitudes, and clean energy.

Connectivity is everywhere. By 2015, 15.4 billion connected devices were installed, and this number is expected to rise to 30.7 billion by 2020. Energy suppliers can now give customers meaningful insights from an intelligent energy system, prompting more informed and efficient energy use.

In the home, that means giving our customers products and services that help them easily manage the energy they use. Our successful Hive technology products give customers the ability to remotely manage central heating, lights and security - something that would have seemed far-fetched 10 years ago.

In the business environment, the rapid growth in connectivity has been a key factor in underpinning our Distributed Energy & Power (DE&P) business. The premise for this business is simple; to help organisations and businesses take control of their energy and turn it into an opportunity.

The growth of our Distributed Energy business is also dependent on the second trend in the energy landscape – changing attitudes to energy.

Our customers want affordable energy, choice and control. Sometimes they also want to reduce carbon emissions, but above all they want simplicity. The most progressive businesses are thinking about their energy strategies and see energy through a new prism. Where once they saw energy as just a cost, we are helping businesses see energy as a source of value, resilience and competitive advantage. A first step for many businesses is to understand exactly how they are using energy.

Key to our DE&P business is our range of Panoramic Power solutions. These products bring a pioneering approach to helping businesses to understand their energy consumption. Panoramic Power provides an affordable way of bringing together wireless sensor technology and cloud-based analytics to give businesses real-time, actionable insights on their energy usage. But it is not only about understanding the energy they are using. It is also about

optimising their operations. Devices and machinery can “talk” to customers to tell them if they’re performing badly, need maintenance, or if they’re wasting energy. Some of our customers are already enjoying the productivity rewards of this technology by bringing down energy and maintenance costs and preventing downtime.

The third and perhaps most visible trend is renewable energy. In 10 years the UK’s wind power capacity has grown from 2 gigawatts (GW) to over 15GW, and our solar capacity has grown from a negligible amount to almost 10GW. Because they are intermittent, however, the fluctuating availability of energy from renewable technologies creates significant challenges for the power grid. An increasing proportion of the energy bill covers the cost of managing this fluctuating availability.

Such is the expansion of renewable energy – in particular the amount of solar energy being harnessed by businesses and homeowners – that National Grid recently predicted record lows for peak power demand this summer. This prediction came following

a sunny weekend in March this year, when net power demand during the afternoon on the Saturday and Sunday was lower than the demand during both the nights over that weekend.

This shift in the pattern of demand was unprecedented, but it is likely to be repeated. If smarter and cheaper ways of providing flexibility to the system are not developed, this could lead to periods where expensive options, such as turning off inflexible generation, will have to be used to balance the system.

These three trends – connectivity, consumer attitudes and clean generation – are happening at a pace. They will change the energy system in many ways, and energy companies have had to adapt or risk becoming obsolete.

Firstly, we will see major growth in flexibility. Flexible generation, demand response and storage will become more valuable. People and businesses will have the information they need about their energy use at their fingertips, and they will manage it intelligently. The grid will function in a different way. When more power is needed, that power will not only come from large

power stations but also from smaller and more flexible power stations, from large batteries, and from domestic batteries (sometimes charged by customers’ own solar panels). Businesses will choose to turn down – or off – equipment that isn’t in use. The smartest (and cheapest) options will prevail.

Power infrastructure, too, will become more flexible. Our battery storage project in Cumbria, for example, is being built on the site of a former coal power station, but offers a 49MW supply that can respond to fluctuations in demand in under a second. It is one of the largest and most sophisticated projects of its kind, but others will follow its lead.

The location of energy, too – where it is produced and managed – will change. There will be a need for some large-baseload power stations, but energy production is starting to decentralise. We will see a large increase in energy generated closer to the point of use.

This can already be seen in the £19 million Local Energy Market trial in Cornwall, in which we are testing the use of flexible electricity demand, generation and storage. In this project, businesses will receive grants to cover the cost of a variety of initiatives, including energy audits, smart technology upgrades and new energy-storage units. The project will provide valuable real-world insight to help the government, regulators and the private sector understand how the UK can best develop a flexible and less centralised energy system.

The thread that runs through all of these changes is the democratisation of energy. The balance of power is shifting from a handful of producers to thousands of large energy users and millions of consumers, all of whom also have the power to produce energy.

We believe this democratisation will help to contribute to productivity, boost quality of life and create new industries that deliver jobs. The days of energy as a one-way transaction – only produced centrally, and supplied to end users – are coming to an end.



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