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THE ENERGY PROVIDER

Angela Knight, chief executive of Energy UK

This is an area of very real concern. A large percentage of our electricity is produced by coal-fired power stations that are being phased out. The UK is moving away from fossil fuels and towards more low-carbon generation, alongside new nuclear power stations. The authorities need to allow for a steady phasing out of old plants as the new technology comes on stream. This will maximise stability and give confidence to customers and generators.



THE RESEARCHER

Neil Atkinson, director of research and analysis for Datamonitor Energy

In practice, the lights will stay on in the UK. Tighter capacity doesn't mean we will all be using candles. It just means that if several extreme events happen at once the lights could go out, but even then industrial customers would be cut off first. What is unavoidable is higher prices, as demand for gas increases. The lack of development of our shale gas supplies means there will be no help from that quarter for at least five years (unlike in the US, where natural gas costs are just a third of their 2008 price).

BRIGHT IDEAS

Three developments that will shape our energy future



FLOW BATTERIES

Flow batteries can store large quantities of energy, making them well suited to smoothing out variable power supplies. "Energy storage is essential if we are to generate a major portion of our electricity from intermittent renewable sources," says Professor Aziz, of Harvard School of Engineering and Applied Sciences. Currently expensive and difficult to maintain, Aziz predicts the next generation "may play a big role in a move away from fossil fuels".



CARBON CAPTURE AND STORAGE (CCS)

Coal is plentiful but its combustion is impossible to reconcile with the UK's legal obligations to reduce CO₂ emissions by 2050. Viable CCS could capture CO₂, transport and store it, potentially in aquifers or depleted oil fields at sea. In a process known as enhanced oil recovery (EOR) the storage can help maximise depleted fields, improving economics. If viable, CCS will clean up industry and large-scale power generation and some experts believe it will be critical in meeting 2050 targets.



BEATTIE PASSIVE BUILD SYSTEM

Originating in Germany, the term "Passivhaus" refers to a construction method for highly energy efficient buildings. Beattie Passive are the only UK company with a Complete Build System certification from the Passivhaus Institute. Its construction method – creating a continuous insulation seal around the core of a timber-structured frame – is revolutionary. "It delivers Passivhaus performance at normal build costs," says Chief Executive Pete Halsall.