What is the smart grid?

Smart technologies are rightly called so because they use the internet and advanced levels of automation to work effectively and efficiently, often making automated choices based on previous experiences and pre-sets.

Give me an example
Smart technology developments in the home have meant that you can now communicate with your boiler through an app on your phone. However, this doesn't stretch to asking your boiler how its day has been just yet.

Smart technology allows the user to control his or her central heating from anywhere with an internet connection. The bottom line is that smart consumer technology is being used to minimise wasted energy and lower energy bills.

Think bigger – smart grids
Smart grids use sophisticated energy sensors and control systems in the network to monitor energy usage and adjust to changes in energy supply and demand accordingly. This allows the grid to respond to changing energy demands and display information regarding real time energy usage.

The information smart grids provide also results in benefits for the consumer. When combined with smart metering, consumers have the power to access information about their energy usage and subsequent costs at their fingertips. This allows them to make informed decisions about energy usage.

Smart grids can also integrate renewable energy sources - like solar, wind and cogeneration - and offer critical information regarding renewable energy variables, such as weather and wind speed forecasts. This information allows grid operators to better plan the integration of renewable energy into the grid.

The benefits of smart grids are:

- More efficient transmission of electricity
- Quicker restoration of electricity after power failures
- Reduced operations and management costs for power companies and ultimately, lower costs for consumers
- Reduced peak demand, which will also mean lower electricity rates
- Increased integration of large-scale renewable energy systems
- Improved digital security

There is currently a clear movement towards driving smarter technology in substation automation. The focus will fall on greater control of the energy delivery network, plus live data visualisation of energy consumption. Advanced data analytics will collate, analyse and formulate essential information to refine energy forecasting and improve operational decision-making.

Think more flexible, compatible, highly automated energy platforms. Smart or what?