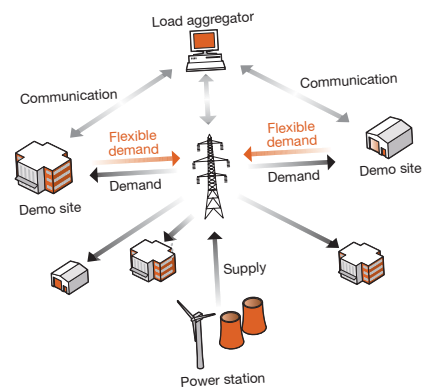


## Flexible demand: getting the power generation balance right



The UK needs to develop better ways of matching demand for electricity with generation to make the most of low carbon, renewable sources (eg wind power) and to reduce reliance on the oldest and least efficient power stations during periods of peak power demand. Introducing flexible demand technology into public and commercial buildings, and shifting the time of power demand away from peak periods could significantly reduce carbon emissions from UK power stations.



# Technology Strategy Board

Driving Innovation

Electricity generation must match consumer demand every minute of every day. In the UK, this is achieved by running some power stations in 'reserve' (ie below full output). Flexible demand technology has the potential to allow the electricity supply industry to reduce the need for fossil fuelled generating plants (eg coal and gas) to run in reserve, by introducing new and improved methods for matching electricity supply to consumer demand. The project will provide a technical demonstration of the technology, and map a communications and metering framework suitable for future development into a wide range of distributed demand and energy sources.

#### Potential benefits

- Help the UK meet its carbon reduction targets.
- Much greater use of generation from renewable sources.
- Maximum use of existing electricity transmission and distribution assets.
- Boost use of new technologies such as micro-generation and electric vehicles.
- Contribute to the security of the UK's electricity supply.

#### Development status

The project team formed from utility companies, manufacturers and UK universities has already developed and tested a prototype system. A large-scale demonstration of flexible demand technology in commercial heating, ventilation and air-conditioning (HVAC) and heat pump systems is planned for 2010 and will involve a number of sites in London and across the UK. Observations and computer modelling of power system scenarios will be used to determine the value and scope for using the technology across the UK.

#### Market potential

Demand side flexibility could reduce annual carbon dioxide emissions by between 300 and 700 tonnes for every MW of reserve held on spinning plant.

(Source: DTI Technical Report: URN 06/1432 2006).



‘Demonstrating flexible demand on this scale is a significant step towards lowering carbon emissions and meeting the challenges facing the UK electricity supply industry.’

Dr Chris Horne FIET, Department Head, Electrical Power Engineering, E.ON Engineering

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**Project number** 200083

**Duration** 24 months – ends December 2010

**Technology Strategy Board investment**  
£425,000

**Total project cost** £1 million

#### Current project partners

E.ON Engineering Ltd  
National Grid Electricity Transmission plc  
Space Airconditioning plc (in conjunction with Daikin Europe NV and Daikin Industries)  
Horstmann Group Ltd  
Viessmann Ltd  
Imperial College London  
Loughborough University

Collaborative research and development projects are one of the tools that the Technology Strategy Board uses to drive innovation in the UK. The Technology Strategy Board is a business-led executive non-departmental public body, established by the Government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve the quality of life. It is sponsored by the Department for Business, Innovation and Skills (BIS).

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