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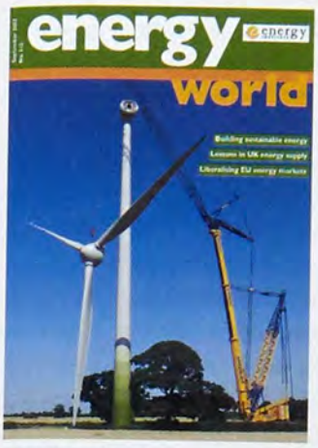

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Cover

Building wind power – the final stage of erecting the UK's tallest wind turbine in Swaffham, Norfolk. Engineers from Ecotricity supervised the lifting of the blades onto the top of the 85m high tower in July. The 1.8 MW turbine was built following demands from local people after the success of the town's first turbine. Ecotricity, which styles itself as the UK's first green electricity company, aims to build enough green generating capacity to supply one million homes with renewable energy, at tariffs no higher than those for conventional power.

Viewpoint

Changing times in the energy world

'We live in changing times' is a theme I seem to have used on many occasions in recent years, at talks and conferences. It has never been more true than today: we have recently seen the publication of the Energy White Paper with its long-term aims for the reduction of carbon dioxide emissions by 60% out to 2050, with the emphasis placed on renewable supplies and energy efficiency, whilst nuclear power remains on hold. We expect more details on specific measures early next year.

We are entering a new phase for energy supply in the UK, with 50% of natural gas expected to be imported by 2010, and becoming net importers of oil at about the same time. Our 2010 horizon for Kyoto and domestic targets will be in sight soon. Supplies of conventional oil are projected to peak at about 2015. We are looking towards mandatory EU emissions trading and the labelling of buildings. We are now starting to talk of carbon management rather than energy management. We have new technologies such as fuel cells, which have been around the corner for many years, but now really are beginning to arrive. In fact, the first stationary application in the UK, at Woking Park Leisure Centre, was commissioned in January 2002. Of some concern is the fact that emissions from aviation are expected to grow substantially, offsetting much of the hard work being undertaken to reduce those from terrestrial sources, however, the Energy Institute, through its extensive aviation technical programme, is well-placed to work with industry on these challenges.

During the mid-nineties, the world of energy management was fairly quiet, since priorities were towards ever-cheaper prices in the post-privatisation era and we hadn't yet reached Kyoto. Today, many organisations have moved back to energy efficiency, either for more traditional cost savings or because corporate social responsibility has set a new agenda requiring a reduction in 'carbon footprint' where the driver is not short-term financial gain, but the desire for a public position of responsibility. One City institution is seriously considering installing a photovoltaic array or small wind turbine on its roof to demonstrate that responsibility. In the longer-term, businesses are likely to be more successful by setting a wider goal than just the bottom line.

However, many other organisations are still at square one. The Energy Efficiency Accreditation Scheme, for which the Energy Institute fulfils the crucial role of Accrediting Body, plays an important part in helping organisations to set goals for the establishment of a successful energy management programme and then sticking to it through the regular re-assessments. About 200 organisations have been accredited and the Scheme is now forming close links with the Action Energy programme, which has similar aims of encouraging actions and long-term commitments.

One area in which the UK is somewhat behind its friends in mainland Europe is that of public awareness. Many people understand about the damage emissions of carbon dioxide are doing to the environment, but fail to appreciate the role they can play in their personal lives or by taking an interest in what is happening at their workplace. The problem of small businesses and the lack of time they may have for energy management is well known. This can often be addressed by someone on the staff having a personal interest and making things happen by putting in some extra time. There are now emerging views that much more should be done to raise public awareness in this area and that much closer links are made between the home and the workplace. For example, why don't those messages that we do see, targeting us in our homes, encourage us with '.... and by the way, when you go into the office tomorrow, ask the boss what the company is doing'?

Another area which links to this is that of education. One of my roles is that of Visiting Professor at City University in London, where we run courses for both undergraduate and postgraduate students in energy technology, economics and management. We have significant demand from overseas students, but messages are still not reaching UK residents as to the importance and need for these skills in the future. Possibly because of the downturn in demand for energy managers in the nineties, this area is still not seen as one offering major career opportunities. This is probably compounded by the lack of interest in engineering generally in this country, although, of course, one does not need to be an engineer to be an energy manager.

Returning to renewables, it is heartening to observe the growing interest in small scale embedded generation. At last we are beginning to see closer links between renewable technologies and the mainstream demand-side world. For example, there are moves to encourage the integration of small wind turbines into building design. Leading financial institutions are offering expert support to businesses wishing to invest, and domestic PV installations now attract grants of up to half the cost.

Finally, of course, I am delighted with the launch this month of the new Energy Institute. Quite clearly, it will have a key role in contributing to and supporting the wide range of activities now emerging as we move into the new, low carbon world.

by Martin Fry, CEng FEI, President of the Institute of Energy

Offshore wind energy to enter the mainstream; 15% of homes could be supplied by 2010

Proposals for the next generation of offshore wind farms large enough to provide up to 6 GW of new energy generation by 2010 – enough to power 15% of UK households – have been approved by Trade Secretary Patricia Hewitt.

Three strategic areas of shallow waters – the ideal environment for siting offshore wind turbines – have been identified by the Crown Estate and the DTI as appropriate for development: the Thames Estuary, the Greater Wash and the North West. The sites were originally identified in November in the DTI's Future Offshore consultation, but have since been subject to rigorous environmental assessment, to assess the impact of proposed development, before sites could be offered for leasing.

Hewitt has now asked the Crown Estate to invite wind farm developers to tender for sites in all the areas.

Patricia Hewitt said: "this announcement represents a big step towards meeting our [renewables] goals. It will help the UK renewables industry to grow, building on our world-leading expertise in offshore manufacturing, creating over 20,000 new jobs in manufacturing, installation and maintenance, as the wind farms take shape."

This will be the second round of leasing to be announced for offshore wind farm development. The first round, announced in December 2000, resulted in 17 proposals from developers, two of which are already under construction: at North Hoyle, near Rhyl, and Scroby Sands near Great Yarmouth. In total Round 1 should result in more than 500 turbines, generating 1.5 GW.

Round 2 is far more ambitious in scale, with each farm comprising hundreds – rather than tens of turbines. The energy produced will be sufficient to power more than 3.5 million households – or almost 9 million people, more than the population of Greater London or twice that of Scotland. Site leases for the second phase of wind farms will be awarded in the autumn and construction is expected to begin in the next few years.

Meanwhile, FKI plc has unveiled its new UK facility for manufacturing its DeWind wind turbines at Loughborough. The facility is expected to provide a substantial number of jobs over the next two years and in its first year will have the capacity to produce over 130 wind turbines. DeWind was acquired by the Energy Technology group of FKI plc in June last year and, due to the rapid development of wind power expected in the UK over the coming years, FKI has decided to locate one of its global manufacturing sites in the UK.

Seacore, one of Europe's largest specialist marine construction and geotechnical drilling contractors, is working to get the UK's largest offshore wind farm at North Hoyle, located between 8 and 11 km off the coast of North Wales near Rhyl, off to a flying start. Working from its purpose-built jack-up platform Excalibur, the company is installing thirty 4 m diameter steel monopile foundations in the seabed for the 60 MW North Hoyle offshore wind farm. The wind farm is to be operated by National Wind Power Offshore. The steel monopiles, ranging in length from 48 to 53 m, will each support a 2 MW Vestas V-80 turbine with 80 m diameter, three-blade rotor.

Government funds major PV, community renewables projects

A series of solar powered buildings, including the largest planned solar power installation in the UK, on the Co-operative Insurance Society tower in Manchester, are among 21 new projects due to receive a total of £2 million funding from the Government. The funding is for projects spread from the Western Isles to Cornwall and from London to Llanelli.

The funding is part of the DTI's Photovoltaic Major Demonstration Programme. The 21 projects are the fourth set of proposals approved since the programme began in 2002.

Other projects include:

- ***housing association homes in Blackburn, rural Lincolnshire and London;***
- ***a business centre in Gateshead;***
- ***a college in Leeds;***
- ***a bus garage in London; and***
- ***a building owned by the Environment Agency in Oxford.***

While funding of these schemes was announced in June by the then Energy Minister Brian Wilson, his successor, Stephen Timms was in post in July to announce the first round of community-based renewable energy projects to receive funding under the Government's £10 million Clear Skies programme – see page 4 for details of ministerial movements.

The 22 successful applicants will share more than £500,000 to part-fund a range of locally sustainable energy projects.

Tax breaks for 'biofuels, hydrogen; not LPG'

One of London's new 'bendy buses' running on Shell's GTL fuel

Tax breaks intended to favour environmentally-friendly fuels do not currently reward those least damaging to the environment, according to a new report: *Tomorrow's Low Carbon Cars*, from the Institute for Public Policy Research (ippr). The report argues that tax incentives should benefit biofuels instead of liquefied petroleum gas (LPG).

Tax breaks for LPG – which costs half the price of petrol at the pump – are expected to cost the Government £60 million in lost revenue this year, says the ippr. This is despite the fact that the environmental benefits of LPG have been growing increasingly weak as conventional cars become less polluting. Biofuels, derived from woody crops and crops such as rapeseed and sugar beet, produce less greenhouse gases but receive a higher rate of duty than road gas fuels.

Julie Foley, ippr Transport Research Fellow said, "The tax break on LPG can no longer be justified on environmental grounds and needs to be progressively reduced. The Government should develop tax incentives which take into account pollution created in production and distribution and place more emphasis on expanding the market for biofuels and hydrogen."

Not everyone agrees, though. Philip Sellwood, Chief Executive of the Energy Saving Trust, which runs the Government's TransportEnergy programme that provides grants to encourage the early adoption of cleaner fuels – including LPG – also disagreed. "On a well-to-wheel basis, quality approved LPG vehicles still perform by reducing carbon dioxide in relation to petrol and diesel and have proven air quality benefits over both conventional fuels. EST agrees with ippr that there needs to be Government support to kick-start the market for promising new low carbon fuels, but not at the expense of existing low carbon fuels."

Meanwhile, a London bus running on Shell's new ultra clean fuel has been launched. Shell, London General and the DaimlerChrysler subsidiary EvoBus (UK) will be trialling the fuel over the next few months on a 507 'bendy bus' running from Waterloo to Victoria stations. A fleet of Volkswagen cars is also currently testing the fuel in Berlin, Germany.

Shell gas-to-liquids (GTL) transport fuel is a synthetic product derived from natural gas rather than crude oil. It is virtually free of sulphur and aromatics, and is claimed to offer significantly lower vehicle emissions of local pollutants such as nitrogen oxide, particulates, carbon monoxide and hydrocarbons than conventional diesel. It can be used in conventional diesel engines without the need for any modification and offers a cost-effective means of reducing local air emissions.

The GTL fuel is currently produced on a relatively small scale at Shell's plant in Bintulu, Malaysia.

Rewiring Britain for CHP and distributed generation

The first step towards 'rewiring Britain' has been taken by energy regulator, Ofgem, as it begins work to set new price controls for the local electricity networks from 2005.

Price controls are the main way in which the regulator protects consumers on price, quality of service and security of supply provided by the monopoly companies which run Britain's 14 local electricity distribution networks. Setting new price controls for 2005 is a major project for Ofgem over the next 18 months.

This 4th price control review for the electricity distribution companies raises important new challenges for Ofgem and for the industry including:

- ***ensuring that customers' interests are fully met by giving the companies the right incentives to deliver a good quality service and security of supply; and***
- ***providing incentives for the distribution companies to connect distributed generators – typically smaller, renewable and CHP generators – in a way that is efficient and at least cost to consumers and to the environment.***

Ofgem also published a discussion paper on innovation that looks at how distribution companies could be encouraged to use innovative techniques, such as creating 'power zones', to connect distributed generation in ways which will reduce costs in the longer term.

Meanwhile, as if to demonstrate its commitment to CHP, Ofgem has installed a gas-fired CHP unit from ENER·G Combined Power Ltd at its London headquarters. The 206 kW unit, basically sized to meet the base heating load of the building, is also linked to a thermal storage system so that surplus heat produced can be stored and used when required.

Stephen Timms (above) is the new Minister for Energy (and e-commerce and postal services) at the DTI, following the departure of Brian Wilson, who retired from Government in a reshuffle in June.

UK fossil fuel production and consumption both fall in 2002, as does CHP capacity; renewables and transport consumption rise

Summary energy statistics for the UK in 2002 showed a remarkably consistent trend: down, fell, reduced. UK energy *production* was down by 2% in 2002 compared with 2001, and energy *consumption* fell by 2.5%. Oil, gas and coal production all fell.

Breaking the pattern, electricity generated from renewable sources was up by 13% over the year. The same cannot be said for renewables companion, but lighter green technology, CHP, which was down in terms of installed capacity but up by electrical output.

Energy consumption in the transport sector grew, predictably, but the rate of growth is slowing, said the DTI, in its *Digest of UK Energy Statistics 2003*.

Energy production and trade

Primary fuel production in the UK in 2002, at 239.9 million tonnes of oil equivalent, was 2% lower than in 2001. Natural gas production fell a further 2% in 2002, following the first fall in 12 years seen in 2001.

Crude oil production in 2002 fell, but by less than 1%, and oil still accounted for 47% of indigenous fuel production. Coal production was down 6% in 2002 compared to 2001. Imports of coal decreased by 19%, but they still constituted 48% of the UK coal supply.

Energy consumption

Like production, UK energy consumption in 2002 also fell, by 2.5%.

Energy consumption by final users (that is after conversion to secondary fuels, such as electricity or road transport fuels) at 168 million tonnes of oil equivalent, fell by 2% in 2002. Consumption decreased in the transport, domestic and commercial sectors, while slight rises were seen in industry and non-energy uses.

Overall gas consumption fell by 1%. However, gas demand for electricity generation rose by 5% per cent, taking gases share of the UK's supply of electricity to almost 40%. Total oil consumption in the UK fell by less than 1% in 2002 to 76 million tonnes of oil equivalent. The majority of this, 70%, was consumed by transport.

Coal consumption decreased by 9% in 2002. There was a 6.5% fall in consumption by major power producers (consumers of 76% of primary coal demand). Mild 2002 winter temperatures led to a 23% fall in disposals of coal to the domestic sector, but the domestic sector only accounts for 4% of total coal consumption.

Electricity generation and supply

Total electricity demand in the UK in 2002 was 395 TWh, a reduction of less than 0.5% from 2001. However, indigenous electricity supply increased by over 0.5% because there was a reduction in net imports of electricity to 8 TWh: gross imports decreased by 14% and exports almost tripled.

The domestic sector was the largest electricity consumer in 2002 (115 TWh), although industry was a close second (112 TWh). Both sectors showed almost no change from their consumption levels in 2001.

Total electrical capacity of good quality CHP plants in the UK in 2002 was 4,742 MWe, an 11 MWe reduction from 2001. This was due to the closure of 22 schemes. However, electrical output from CHP increased by 7.5%, although it remained 9% down from the record level of 2000.

Nuclear sources were used to generate 24% of UK electricity in 2002.

There was a 13% increase in the proportion of electricity generated from renewable energy sources in 2002, taking the proportion of UK electricity generated from renewables to 3%. Installed generating capacity of renewable sources rose by 3.5% in 2002, mainly as a result of a 25% increase in wind capacity and a 5% increase in the capacity of sites fuelled by biofuels and wastes.

Energy consumption

Growth in energy consumption in the transport sector is slowing. By 2002, transport energy consumption had increased by 94% since 1970, but only 12% out of that increase had taken place since 1990. The largest increase between 1990 and 2002 occurred in the air transport sector, where consumption rose by 53% to meet growing demand for international air travel.

The Digest of UK Energy Statistics 2003 is available for £35 from the Stationery Office, and on the internet at: www.dti.government.uk/energy/inform/dukes

Helpline helps secure European R&D funding

The Energie Helpline UK has been set-up by the DTI and DEFRA to raise awareness of the over 1 billion euros of funding being provided by the European Commission to support R&D, demonstration and take-up of sustainable energy technologies over the period 2003 to 2006. The Helpline also aims to help UK organisations to submit high quality proposals.

This is a continuation of the support provided during the EU's 5th Framework R&D Programme during which UK organisations secured over 180 million euros for projects under ENERGIE – 21% of the total available.

The two programmes involved are:

- the 6th Framework Programme (FP6) for research, technology development and demonstration which includes a budget of 810 million euros for sustainable energy technologies; and
- Intelligent Energy – Europe (IEE), a new 200 million euros programme to encourage the take-up of energy efficiency products/services and renewable energy sources.

Contact Helen Fairclough on tel: 0161 874 3636, email: energie@enviros.com and website: www.dti.gov.uk/ent/energie

Global oil production falls as gas grows; China burns lots more coal

World oil supply is becoming more diverse and world oil production capacity comfortably exceeds world oil demand, according to BP Chief Economist Peter Davies, speaking to launch the 2003 edition of the *BP Statistical Review of World Energy*.

Davies went on to highlight increases in oil production from Russia, the Caspian, the deepwater Atlantic Basin and Canada documented in the Review. However, global oil production was down slightly on 2001 figures.

China accounted for 68% of the increase in global primary energy consumption in 2002, and has become a major energy consumer and importer. Consumption of coal, which accounts for 66% of Chinese energy use, grew a massive 28%. Oil consumption increased by 5.8%, or 332,000 barrels a day, accounting for all of the world's oil consumption growth in 2002. China replaced Japan as the world's second largest oil consumer, says BP.

Natural gas is the world's preferred non-transport fuel. Outside the Former Soviet Union (FSU) gas consumption has grown by 3.4% a year over the past decade and its share of total energy consumption is now roughly equal to coal at 24%

Commercial (non-hydro) renewable energies are growing rapidly, but their contribution to total world electricity generation remains small (1.7% in 2000 compared to 1% per cent in 1990), says BP.

Global oil production declined by 415,000 barrels a day, or 0.7%, from 74.4 million to 73.9 million barrels a day. OPEC daily oil production fell to 28.2 million barrels a day, a drop of 1.87 million barrels a day (6.4%). Global oil consumption was broadly flat, increasing by 290,000 barrels a day from 75.5 to 75.7 million barrels a day. All of the increase is attributable to China where oil consumption increased 5.8%, or 332,000 barrels a day.

Global natural gas production increased by 1.4%, from 2,493 billion cubic metres (bcm) to 2,527 bcm. North America was the only region to experience a production decline. A price-driven drop in drilling activity explains some of the production decrease, but the maturity of US and Canadian gas producing basins was also a factor.

World consumption of natural gas increased in 2002 by a relatively strong 2.8% on the strength of a 3.9% increase in US consumption and a 7% increase in non-OECD Asia Pacific consumption. Growth in natural gas consumption outpaced growth in world primary energy and its share of total energy consumption is now roughly equal to coal at 24%.

Coal was the fastest growing fuel in 2002 with coal consumption increasing 6.9% in 2002 on the strength of an extraordinary reported increase in China of 28%. Excluding China, world consumption increased just 0.6%.

Consumption of nuclear power increased by 1.5%, with most of the increase coming in Asia. World consumption of hydroelectric power increased by 1.3% from 2001, but was still less than in 2000. Nuclear and hydroelectric power each account for about 6% of total world energy consumption, adds BP.

BP Statistical Review of World Energy 2003 is available at www.bp.com/centres/energy

The world's most northerly wind farm – located at Havøgavlen in Finnmark, northern Norway – was opened in the summer. Comprising sixteen 2.5 MW turbines (visible on the hillside above the town) and operated by Nordex, the wind farm has been connected to the grid since last October. The scheme was made possible by collaboration between Norsk Hydro and the Dutch energy company, Nuon, by combining sales of green certificates on the Dutch market and electrical power from Havøgavlen in Norway.

First CDM project approved for Brazil

A landfill gas management project in Brazil is one of the first two projects to have its methodologies approved by the Executive Board of the Clean Development Mechanism (CDM). The Clean Development Mechanism, one of the 'flexibility instruments' included under the Kyoto Protocol, enables carbon credits to be earned by approved projects resulting in greenhouse gas (GHG) emission reductions in developing countries.

The project is supported by the London-based ICF Consulting on behalf of its client VEGA, a subsidiary of French company SUEZ Environnement.

ICF Consulting's Abyd Karmali said, "ICF Consulting's role was to provide strategic support to SUEZ and its Brazilian subsidiary at all steps of the CDM project cycle leading up to an independent validation, provided by a third party. We undertook a baseline study, designed a monitoring and verification protocol, and prepared the project design document."

Marcos Ferreira, ICF Consulting's Managing Director of Brazil Operations, adds, "We believe this project sends a very positive signal to companies in Brazil and elsewhere that the Clean Development Mechanism is finally open for business and that projects that maintain a high standard of environmental integrity will be granted carbon credits that can be used either to manage a company's emissions risk exposure or generate additional revenue for environmental investments."

EU emissions trading scheme finalised for 2005

The European Parliament has put the finishing touches to its emissions trading scheme, thereby finalising a Directive which will give carbon dioxide a market value across the Community from January 2005.

Environment Commissioner Margot Wallström said that the compromise package adopted, "means that the largest emissions trading scheme in the world to date will be a reality from 2005, and that the architecture foreseen under the Kyoto Protocol is coming to life. Companies across 25 countries must now start incorporating climate change into day-to-day commercial decisions, and begin assessing what innovative steps they can take to reduce emissions."

Emissions trading will, for the first time, set limits on the emissions of carbon dioxide from energy-intensive sectors. Companies reducing emissions to a level below their limit can sell this over-achievement to other companies above their limit, or 'bank' it for future use. A company's strategy will largely depend on the price at which emission reductions are traded. In this way, the EU scheme will not only allow emission reductions to take place at minimum cost to the economy, but it will also bring climate change into the boardroom through giving carbon reductions a value, says the EC.

The EU scheme will be the first multi-national emissions trading scheme in the world, and will cover all the Member States of an enlarged European Union. It is estimated that about 46% of the EU's total carbon dioxide emissions in 2010 will be brought under the scheme. The EU is encouraging other countries to adopt measures to tackle climate change such as emissions trading, and has indicated its willingness to link the EU scheme to trading schemes in those countries that have ratified the Kyoto Protocol. The Kyoto Protocol has been ratified by over 110 developed and developing countries across the world, although this does not include the US which has withdrawn from the global framework for addressing climate change.

The final changes voted through in the compromise package include details of the method of allocating allowances, the quantity of allowances allocated, credits from the Kyoto Protocol project mechanisms (Joint Implementation and the Clean Development Mechanism), and the future extension of the scheme to other sectors.

UNFCC says carbon emissions will rise

Greenhouse gas emissions from developed countries are expected to increase by the end of this decade, according to a report released by the United Nations Framework Convention on Climate Change (UNFCC). The report anticipates that the combined greenhouse gas emissions from Europe, Japan, the United States and other industrialised countries could grow by 8% from 2000 to 2010 – to about 17% greater than 1990 levels – despite measures to limit emissions.

Meanwhile, improving economies in central and eastern Europe will cause emissions from the developed world as a whole to increase by 11% from 2000 to 2010, to about 10% above 1990 levels.

The news bodes poorly for the 1997 Kyoto Protocol, which requires developed countries to reduce their average emissions to 5% below 1990 levels by 2012 at the latest.

After initial setbacks during its installation, a wave energy power plant is now generating power for a local electrical grid in Denmark. The Wave Dragon is an offshore floating device that captures ocean waves in an elevated reservoir, then converts that reservoir's stored energy into electricity by running the water through a hydroelectric turbine as it is returned to the ocean. During its initial installation offshore, the unit was damaged and its wing-like 'wave reflectors' had to be towed to shore for repair. In early June, the reflectors were re-attached, and the unit has since been connected to the grid. The prototype is currently running with one turbine, but the company plans to add another six turbines by the end of the year.

First Irish Sea wind farm

GE Wind Energy and Airtricity, Ireland's largest renewable energy company, plan to develop a 25 MW wind farm in the Irish Sea to provide power for the Irish electricity grid. The project, to be located about 10 km off the coast of Arklow, will be the first feature GE Wind Energy's giant new, 3.6 MW, wind turbines.

Designed and optimised for offshore applications, the new GE 3.6 MW machine features a rotor diameter of 104 m.

Eddie O'Connor, Chief Executive of Airtricity, said: "Ireland is 90% dependent on imported energy. Airtricity is working with others in the wind industry to demonstrate that the Arklow project is the first phase in energy self-sufficiency for this country."

Initially, GE Wind Energy will operate the facility as a demonstration site. Under the terms of the agreement, Airtricity will hold an option to purchase the project after its demonstration is complete, approximately two years after first operation.

Melchett Lecture

Supplying Britain's gas

– will lessons from the past help the in

Britain's gas and electricity industries have both experienced fundamental change over the last few years, and more is to come. Here, in an edited version of his 2003 Melchett Lecture, Sir John Parker charts some of the major past revolutions, and suggests that those to come will be just as daunting.

by Sir John Parker FREng, Chairman, National Grid Transco

As a nation we are fortunate in being able to take for granted the engineering knowledge, skills and experience that make it possible, at the flick of a switch, to have instant access to the energy which powers the economy and ensures the wellbeing of millions of homes.

The energy industries are capital intensive and those of us managing them need to plan years ahead. In planning long-term, we need to remind ourselves how rapidly the picture can change, and often in surprising ways.

To illustrate this, let us mentally transport ourselves back ten years to the world as it looked in 1993. This was the time when the first interconnector gas pipeline to Continental Europe was being promoted with backing from the British Government. On the assumption of a continuing abundance of gas from UK offshore fields, the intended purpose of the pipeline was to export surplus UK gas to other European markets for a decade and more.

Little did we realise that by the year 2000 – only two years after commissioning of the Interconnector in October 1998 – the production of gas from our offshore fields would reach a peak and begin a prolonged process of decline. Certainly, the idea that within twenty years we could be importing over half of Britain's gas requirements would have been unthinkable.

Back too in 1993, British Gas, as a unified company, still dominated the UK gas industry. Although the first regulatory moves were being made to open up the industrial and commercial gas markets to competition, few people would have bet on the successful introduction of competition to the domestic gas and electricity markets within five years. And I am sure that no-one at that time foresaw that the electricity supplied under the British Gas brand, now owned by Centrica, would become the market leader.

Even today, the European Parliament has only just passed the new Gas Directive requiring all EU markets to achieve full competition in the domestic sector by 2007.

Returning to the year 1993, I doubt that anyone would have dreamt that by 2003 a leading international company called National Grid Transco would be providing the essential infrastructure for our gas and electricity industries. Indeed, the very idea that British Gas might voluntarily split itself into three successor companies would have seemed far-fetched in the extreme – let alone that one of them, the Lattice Group, would later merge with the parent company of the National Grid of England and Wales, then jointly owned by the newly-privatised regional electricity companies, or RECs.

Today in Britain, our gas networks serve 21 million consumers in total, transporting over half the country's energy needs. With 24 million gas pipes in 800,000 roads throughout the country, the total length of Transco's network, about 280,000 km, is enough to go around the world about six and a half times. National Grid's high-voltage electricity network in England and Wales includes 7200 km of overhead line, 640 km of underground cable and some 340 substations.

Managing and keeping accurate records for assets on this scale calls for some of the largest and most advanced information systems to be found anywhere. In Transco alone, these involve some 40 terabytes of data – equivalent to 60,000 CDs. In operating these systems and those needed to enable the shared use of its network, Transco handles 50% more daily data transactions than a large clearing bank.

Modern gas industry began in the late 1960s

The modern British gas industry began in the late 1960s with the advent of natural gas from the first North Sea discoveries. British Gas, at that time in public ownership, did an excellent job in managing the countrywide conversion to natural gas, and establishing the arterial system of pipelines for transporting the gas produced offshore from the coastal terminals where it was landed to the local distribution networks.

But the real starting point for the process of change which has transformed the British gas industry was the privatisation of British Gas in December 1986.

At the time, British Gas and its regional Boards were the British Gas industry, and not just

s and electricity

industry face new changes?

Sir John Parker receiving his Melchett Medal at the Royal Society in June.

onshore. British Gas was involved in gas production in the North Sea and in Morecambe Bay. The UK fields were developed by oil and gas companies under long-term take-or-pay contracts with British Gas, and their output was dedicated exclusively to these contracts.

Privatisation was not expected to change this. British Gas was transferred into the private sector as the long-term monopoly supplier to the entire market. The transportation and supply of gas was seen as an inseparable natural monopoly, and an economic regulator – initially Ofgas, and later Ofgem – was created to manage the forward-looking, incentive-based system of regulation set up to drive down unit costs to the benefit of consumers.

Only later was it recognised that the huge advances in information technology and real time computer systems would make it possible to separate the true natural monopoly – the provision of the integrated transportation network – from the competitive supply of gas to end consumers. The realisation that the gas transportation network could be run as a common service to competing suppliers led on to the progressive liberalisation of the British gas industry beginning in the early 1990s.

Living as we do in the midst of continuous change, it is easy to overlook the scale of the transformation which has taken place – much of it unforeseen at the time of privatisation.

Growth of gas to power – and competition

Just as the 1960s was the formative period for the modern British gas industry, so too it was for our electricity supply system. This was established on the basis of very large, strategically-located power stations, mainly coal or nuclear, linked to the regional distribution networks and continuously balanced against demand by the old CEGB.

What hadn't been anticipated when plans for the privatisation of the electricity industry were being drawn up in the late 1980s was the rapid emergence of the new breed of efficient, combined cycle, gas-fired power stations. With this new technology now available, the combination of competition between gas producers and regulatory pressure on Transco which drove down gas prices in the 1990s underpinned the so-called 'dash for gas' in the generating sector. Today, gas is the fuel for roughly 40% of UK electricity generation, and this proportion is projected to increase even further with the retirement of nuclear and coal-fired power stations.

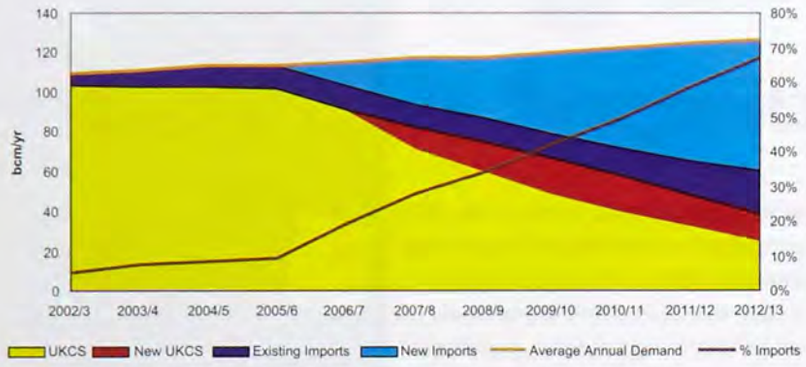
The rapid build-up of clean, highly efficient gas-fired power stations to replace our ageing coal-fired stations has been a key factor behind the UK's early success in meeting the Kyoto emissions targets. Indeed, greenhouse gas emissions as a whole, have been reduced by some 14% since 1990 and, within this, carbon dioxide emissions have fallen by 9%.

In England and Wales some 25 GW of generating plant, roughly a third of the capacity, has been replaced over the last ten years, largely through the shift to gas-fired generation. Over the same period, National Grid's transmission capability has increased by around a quarter so as to handle bottlenecks more efficiently, as well as the 15% increase of peak electricity demand over that period. With apologies for the commercial, I should add that National Grid's controllable unit operating costs have been reduced by 55% since 1990, with improved levels of system availability and reliability.

These developments have served to stimulate competition in the power generation sector while diversifying the fuel mix. The full benefits of this competition, at least in the electricity wholesale market, have emerged with the replacement in 2001 of the original electricity Pool for centrally despatching competing electricity plant in England and Wales with NETA – the new system of bilateral trading between generators, suppliers, traders, and customers to drive efficiency and provide greater choice.

The implementation of NETA was a notable achievement for the electricity industry, not least for National Grid which had the task of commissioning new commercial arrangements and enabling systems. Importantly, this new market has shifted the initiative from generators towards suppliers. A combination of factors, including increased competition in generation, over-capacity, and NETA, have seen wholesale prices fall by 40%

Melchett Lecture



Annual gas supply/demand match - demand rises very slowly but imports are set to soar

since 1998, when the reform programme began. From April 2001 to February 2002 baseload prices fell by 19% and peak prices by 27%. I need hardly add that for some companies the transition has been very painful.

Within the industry there is an active debate as to whether there is a case for radical change to adapt NETA to meet the industry's future requirements, especially in the context of future investment. Or, whether change should continue on a progressive and evolutionary path – as the Government's recent Energy White Paper proposes. More of this later.

Carbon reduction is a central UK objective

Now to the challenges facing Britain's gas and electricity industries as they respond to a new set of forces, set in the policy framework of the Government's recently-published Energy White Paper.

Rightly in my view, the Government has used this review of UK energy policy to address the threat of climate change, and specifically the recommendation from the Royal Commission on Environmental Pollution to reduce carbon dioxide emissions by 60% by the year 2050. On the precautionary principle, the Government has now made carbon reduction a central objective of UK energy policy, thereby establishing a new trajectory for our energy industries.

Even if we set aside the threat of climate change, we cannot escape the fact that, driven by population growth and economic development, ever-increasing global demand for fossil fuels is unsustainable – and probably on a timescale that will make it difficult to achieve an orderly, painless adjustment to renewable energy sources.

So, while I endorse the thrust of the Energy White Paper and its policy objectives, I would perhaps question its reassuring tone in some places, and the implication that the new course which has been set can be achieved with little impact on consumers or the UK economy. On the contrary, I believe that Britain's energy industries and their consumers are facing considerable challenges as regards costs and supply security; and that the sooner we acknowledge this and begin tackling them on a realistic basis, the better.

In the case of our gas and electricity industries, what then are the big challenges? I will concentrate on three of them:

- first, the extent to which the Government's new energy policy places heavy reliance on gas as the prime source of energy and energy security over the next two decades and more; and coupled with this, the rapidity with which the British gas industry and its offshore and onshore infrastructure must now adjust to its growing dependence on imports;
- second, the challenges for the electricity industry and its enabling infrastructure in achieving the Government's ambitious targets for renewables and embedded generation, including CHP plant; and
- third, the daunting challenge of meeting the future needs of our energy industries for skills and professionalism.

On the first of these challenges, the Energy White Paper, with its ambitious plans for reducing carbon emissions, places heavy reliance on gas as our prime source of energy and energy security. Gas already provides over 40% of our primary energy, and we have the largest gas market in western Europe.

Gas for embedded generation and small-scale CHP will itself make an important contribution to the energy efficiency targets. Five to ten years hence, gas will also be needed to back up the intermittency of renewable sources, initially mainly wind. And gas will probably take the strain from the progressive retirement of the nuclear power stations and, for environmental reasons, most of the conventional coal-fired stations.

UK gas production is set on a course of steady decline

Gas production from UK offshore fields peaked in 2000 and is set on a course of steady decline. The depletion of the UK fields is being hastened by the export of surplus summer gas to Continental European markets. Transco's latest analysis indicates that by the winter of 2010/11 roughly half Britain's gas demand will need to be met by imports. In its increasing dependence on gas

imports, Britain will join much of Western Europe which is nonetheless well placed in having access to about 70% of world gas reserves via long-distance transmission lines, or as LNG in ships.

Already those on the supply side of the industry are moving to fill the rapidly growing supply gap. Together, the new Norwegian gas, notably from the major Ormen Lange field, the expanded interconnector capacity for imports via Continental Europe, and the prospective imports of LNG should be sufficient to meet our needs for the next ten years and more. But gas supplies for the winter peak are already tight, and the timing of these new import schemes will be critical.

Major projects such as these will, in any event, be subject to slippage – sometimes through local planning delays and sometimes the physical execution of the project. Subsea offshore developments like Ormen Lange are at the frontiers of technology and practice. Interconnectors from the Continent will be dependent on connectivity to adequate upstream transmission capacity, and not least, the commercial arrangements providing access to it. At the receiving end, Transco will need to adapt our National Transmission System to accommodate this new diversity of imports and the variability of the new supply patterns.

Ensuring the security of Britain's gas supplies during this rapid period of transition will be made more challenging by the limited capacity of the UK's strategic gas storage. Surrounded by our own offshore gas fields, the British gas industry has essentially been operating a just-in-time system. As we look ahead to growing dependence on a diversity of imports, the need to cushion the impact of occasional supply shocks, or periods of extreme weather, will become more pressing. The market will need to invest and perhaps adapt the contracting regime to meet this need.

One of the advantages of our liberalised gas market is the scope which it offers to create more flexibility on the demand side. The most readily available flexibility on the demand side comes from the opportunity to change the fuel mix for power generation – releasing gas to other parts of the market. But with plant margins in the electricity industry currently projected to become tighter, this will not be so easy.

Renewables, CHP and emissions trading

The second of my challenges is that faced by the electricity industry and its enabling infrastructure in achieving the Government's ambitious targets for renewables, CHP and embedded generation generally.

Renewable energy, certainly that from wind farms, is intermittent in character. It follows that as the renewables contribution to our electricity supplies increases, so we must back this up with generating plant which can reliably and efficiently provide the necessary flexibility.

The basis for rewarding those who provide such capacity lies at the heart of the current debate surrounding NETA, the new wholesale market for electricity. Few would dispute that NETA has been successful in stimulating competition and promoting the efficient use of the existing generating capacity. Looking to the future, the key issue is whether NETA will secure the timely provision of new capacity to reinforce the intermittent contribution of renewables.

Looking ahead, the question being debated between the market participants, the Government and the Regulator is whether imbalance prices will have the sharpness necessary to provide an unambiguous signal to those considering making long-term investments. Investors need to be sure that, under NETA, prices will be allowed to rise, as well as fall.

A further complication will be the Government's intention that the UK will be an early participant in the new EU emissions trading scheme; this is a central feature of the Energy White Paper. This pan-European market in emissions permits is intended to intermediate and release market forces to identify and bring forward the most cost-effective options for reducing carbon emissions. There is no doubt it will have far-reaching consequences, many of them not easy to foresee at this point.

This scheme will, however, lead to a further

England vs Argentina, 7 June 2002 - National Grid Transco needs to ensure that electricity supply follows demand

We need to move pretty quickly to a position where the offshore wind farm developers have confidence that, if they build the turbines, the linking infrastructure will be there in time to get their power to market.

period of uncertainty for would-be investors in new generating capacity, including renewables.

Back to the question of flexible generating plant which is needed to provide back-up for intermittent renewables. Here, coal still has its proponents – better still, coal used in clean plant. Nuclear electricity is very capital-intensive and the unit fuel costs are low, so baseload, rather than flexible operation has been favoured. Gas-fired power stations are a relatively low-cost means of converting gas to electricity. Gas plant can also be responsive and commissioned in relatively short time scales. But with greater import dependence, the challenge of a long, capital-intensive physical supply chain will remain.

Another important aspect of renewable electricity, certainly that from large wind farms, both onshore and offshore, is the need for the additional transmission capacity to bring these sources to market. National Grid Transco GT has been working with the Scottish transmission companies on the Renewable Energy Transmission Study – RETS – which modelled the impact on the transmission networks of up to 6 GW of onshore wind generation being developed in Great Britain. We have also carried out studies looking at the impact of wind generation capacity being developed in The Wash, the Thames Estuary and elsewhere.

National Grid Transco is exploring the practicalities of developing the required offshore infrastructure, while discussing possible approaches to licensing and funding with wind farm developers, Government and the Regulator. We need to move pretty quickly to a position where the offshore wind farm developers have confidence that, if they build the turbines, the linking infrastructure will be there in time to get their power to market. In any event, National Grid Transco is ready to play its important part in the drive to meet the White Paper's renewable targets.

Callum McCarthy has coined the phrase 'rewiring Britain' to describe the conversion of our current passive electricity distribution networks to active networks capable of handling embedded generation. Investment apart, achieving this efficiently and safely will be a huge task for our electricity industry.

Less than 100 UK students study power engineering

This leads me on to the third of the major challenges which we face – the daunting task of meeting the future needs of our gas and electricity industry for skills and professionalism.

On this subject, the Energy White Paper points out that even without the building of new nuclear power stations, the British nuclear industry will need to recruit around 19,000 graduates and skilled trades people over the next 15 years. In all the energy industries we are becoming increasingly dependent on ageing workforces. Nearly a third of those working in the offshore oil industry are over 40, and only 6% under 25.

Against this, our needs for skills and professionalism of the highest calibre are increasing on all fronts. The drive for energy efficiency, the ambitious targets for renewable energy, the continuing attack on fuel poverty, and countrywide programmes for 'rewiring Britain' and replacing our old metal gas mains, taken together represent a step change in the demand for skills and professionalism.

For me, the scale of this task was exposed most starkly when I recently learnt from the President of the Institution of Electrical Engineers that today we have less than 100 undergraduates studying power engineering at British Universities – and some of these are overseas students who may well return to their own countries.

The picture is not all doom and gloom. GWINTO, the national training organisation for the gas and water industries, has been doing sterling work in tackling the skills gaps with innovative programmes geared to the needs of employers and their employees. The gas industry, with notable contributions from Transco and Centrica, has been successful with ground-breaking initiatives to attract talent from sources such as young offenders, lone parents and the long-term unemployed. We have also been successful in retraining people from declining industries such as the steel industry.

New challenges

I began by describing the changes which have beneficially transformed our gas and electricity industries over the last decade and more. Rapid and sometimes unexpected changes have been successfully managed.

Looking ahead, the challenges I have sketched in the latter part of this article are at least as daunting as those successfully overcome in the past. We must not under-estimate the scale of the task but with common purpose, and with a sound framework of public policy and regulation, I believe that we can tackle them with confidence.

World's first offshore tidal current turbine device for Devon

A patch of sea approximately 3 km north-east of Lynmouth in North Devon has become host to what developer Marine Current Turbines Ltd (MCT) believes to be the world's first full size device for harvesting flowing sea currents.

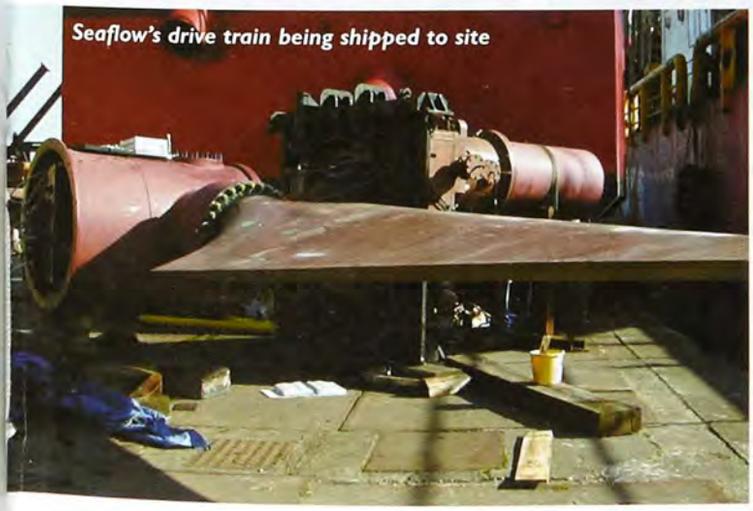
With a rated power of 300 kW (enough to power 200 typical UK households), the 'Seaflow' device is the first marine renewable energy system of significant size to be installed in a genuinely offshore location, whether for tidal or wave energy, says MCT, rather than onshore or in sheltered, largely land-locked waters.

The project marks the stage at which the technology for exploiting marine energy has moved into the harsher, but energy-richer environment in which it needs to operate.

The turbine is the culmination of a £3.5 million project that is being conducted by a consortium of UK and German companies and supported by the British DTI, the Joule Programme of the European Commission, and the German Government. The project aims to test the prototype turbine and demonstrate technology which MCT will further develop to a commercially viable stage over the next few years.

The technology consists of rotors mounted on steel piles set into a socket drilled in the seabed. The rotors are driven by the flow of water in much the same way that wind turbine rotors are driven by the wind; the main difference being that water is more than 800 times as dense as air, so quite low velocities in water will generate significant amounts of power. The project, in effect, involves the development of a turbine which can generate up to 300 kW in a 2.7 m/s (5.5 knot) current. The energy generated, being derived from tides has the very significant advantage, compared in particular to wind, of being predictable.

Maintenance of the device while it is submerged in fast currents would be exceptionally challenging and expensive, so a key (and patented) feature of the technology is that the rotor and drive train (gearbox and generator) can be raised completely above the water surface. Once raised, any maintenance or repairs can readily be carried out from the structure, attended by a surface vessel.



Seaflow's drive train being shipped to site

The Seaflow device with the rotor and drive train in the raised position for maintenance

Martin Wright, Managing Director of MCT said, "The development of this technology is of great importance in helping us all to move towards the use of clean, non-polluting energy resources. It taps into a huge, predictable and clean energy resource, namely fast tidal stream currents, which are to be found at many locations around our coast. It has the potential to make a major contribution to future energy needs without causing pollution or any significant environmental harm.

The industrial consortium is made up of:

- Marine Current Turbines Ltd (MCT) – the owner and developer of the technology;
- Seacore Ltd – specialist offshore engineers from Gweek, Cornwall;
- Bendalls Engineering – a precision steel fabrication company from Carlisle;
- I T Power Ltd – renewable energy engineering consultants from Basingstoke;
- Corus UK Ltd – steel suppliers;
- ISET eV – electrical power and control specialists, a spin-off company from the University of Kassel in Germany; and
- Jahnel Kestermann GmbH – manufacturer of marine and wind turbine gearboxes from Bochum, Germany.

The project is partly financed and supported by the project partners and through the investment of external partners such as the London Power Company, the generating arm of London Electricity Group.

Long-standing readers of *Energy World* may remember a memorable cover photograph of a precursor to the Seaflow device, developed by IT Power, and being tested in Loch Linnhe, Scotland, back in June 1997. The same issue reported the then new Labour Government being urged to reform the electricity Pool, National Power and RJB Mining planning to build a clean coal power station, and production records for North Sea oil still being set.

Contact Marine Current Turbines Ltd at tel: 01256 470149, website: www.marineturbines.com

From colliery, via coppice, to wood fuel

Two of Britain's former colliery sites are about to be restored with new uses: a sustainable fuel producer and site for energy efficient homes.

The former Dinnington Colliery site, near Rotherham in South Yorkshire, is one of many collieries that closed in the 1980s leaving a legacy of contamination and dereliction. The site, now owned by Yorkshire Forward, the Regional Development Agency for Yorkshire and Humberside is about to be restored, using short rotation willow coppice planted at the site, to produce fuel for heating once again. Plans also include a locally sustainable heating scheme.

Russell Dixon, of English Partnerships, which is funding the work, said "Often brownfield site regeneration creates park use. Although this creates a local amenity for the area, it also creates a management liability for the local authority. The strategy for this site is to generate income from the green space while regenerating the area."

English Partnerships commissioned Future Energy Systems (FES), part of AEA Technology Environment, to facilitate the restoration and planting of the site. FES has been at the forefront of developing the phytostabilisation system of regeneration to be used at the site.

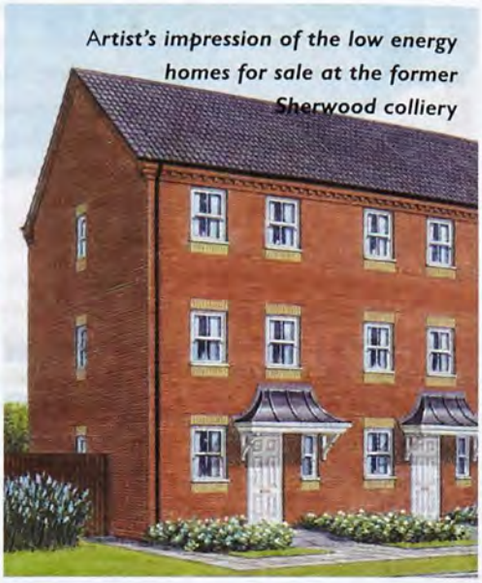
The colliery site is rather acidic. To treat this, the contaminated land will be given an application of organic material, treated sewage and green waste compost. Then fast-growing, willow and poplar trees will be planted at high density as a coppice crop. The trees have a growth rate of around 1–2 m per year, so the appearance of the site will be altered rapidly. The roots anchor and stabilise the surface soil while autumnal leaf fall contributes to the establishment of a natural soil layer. After at least three full seasons of growth, the resulting woodland will be about 3 m tall and can be harvested to be made into wood chips and burnt to produce a local and renewable source of energy. Different sections of the woodland can be cut back each year to maintain a more interesting landscape. Full-scale planting of the scheme is scheduled to go ahead in spring 2004.

Plans also include a local wood heating scheme which will use the wood chips as fuel for boilers in local buildings.

FES developed a market mechanism to overcome many of the traditional problems associated with using wood fuels. In particular, the cost of wood-fired boilers has been a barrier to take-up but, under this scheme, customers will not need to buy them. Instead, boilers will be supplied free to users, and remain the property of the wood heat company. The capital costs of the boilers will be covered by the contract for heat supply. However, the heat will be supplied at a price competitive with fossil fuels.

It is hoped that at least ten medium-sized boilers will join the scheme to make it viable.

Meanwhile, at the former Sherwood Colliery site near Mansfield, a range of energy-efficient 'EcoHomes', developed as part of a major regeneration scheme, are about to go on sale. The development, which was kick-started with land reclamation funding of £3.5 million from national regeneration agency English Partnerships' National Coalfields Programme, is being carried out by national housebuilder Bellway and overseen by the East Midlands Development Agency. The 41 acre (17 ha) site has been derelict since 1992. Once complete, it will comprise a new community of 313 environmentally-friendly houses and flats, 12 acres of parkland and seven acres of land scheduled for employment.

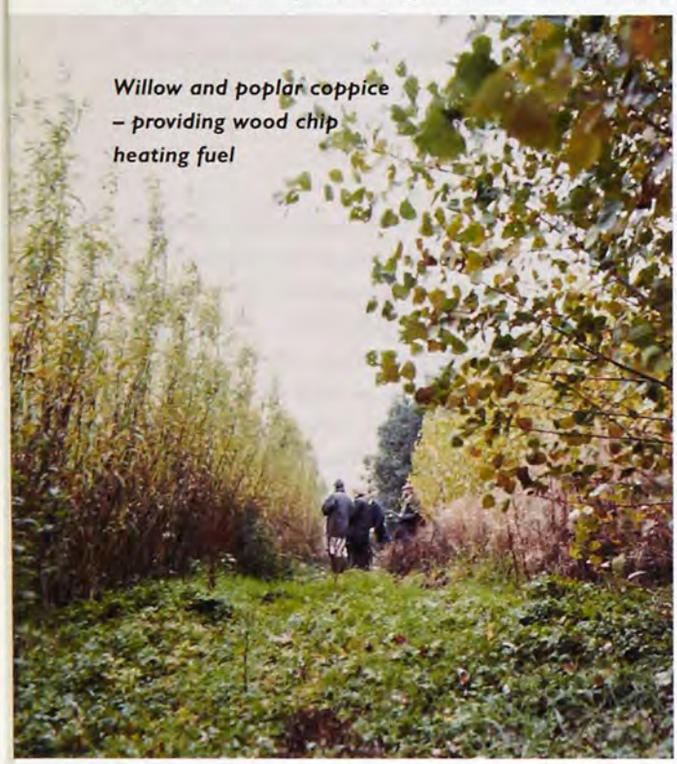


Artist's impression of the low energy homes for sale at the former Sherwood colliery

The homes are being developed by Bellway East Midlands division, in partnership with Leicester Housing Association, and 15% will be 'affordable housing'. All will be accredited as EcoHomes, conforming to internationally recognised environmental standards established by the Building Research Establishment. EcoHomes are designed and built to be energy efficient, utilising recycled materials and super-insulation, and cutting down emissions of carbon dioxide.

The housing development is the first phase of the Sherwood Colliery regeneration programme. Plans for the rest of the site include a local shop, the upgrading of surrounding roads and water supplies, improved access for pedestrians and a cyclepath network.

Contact Future Energy Solutions, tel: 01235 433147, website: www.future-energy-solutions.co.uk



Willow and poplar coppice – providing wood chip heating fuel

Welsh wind farmers join 'barefoot engineers' to win international awards for sustainability

Some of the participants in the Moel Moelogan community-owned wind farm

Nine community-led sustainable energy projects from around the world competed for the prestigious Ashden Awards for Sustainable Energy 2003, and £150,000 in prize money, with winners ranging from a Welsh wind farm to a programme delivering solar power to 130 Himalayan villages in India.

Now in their third year, the Awards recognise and reward inspirational renewable energy projects which provide social and economic benefits for their local communities, whilst protecting the environment. This year saw the introduction of a UK category alongside three developing nations categories of Enterprise, Community Welfare and Food Security. Winners in each category receive £30,000 towards development of their programme.

UK Winner: Moel Moelogan wind farm

A community-owned wind farm set up by three Welsh upland sheep-farming families to provide an important alternative source of income and energy for the community. The farm has three turbines producing enough energy for 1,600 homes.

The award will go toward building a further 11 turbines producing a sustainable, long-term source of income for the local communities. Farming has provided income over several generations for the local families; the wind farm now offers a more secure future in the face of declining revenues from their traditional livelihood.

International Community Welfare: Barefoot College, India

Since 1990, the college has helped to electrify households in 136 villages in remote Himalayan regions, using photovoltaic solar power. Village energy committees are established and training is provided for 'barefoot' engineers, leading to technical and financial self-sufficiency. The Award will help the college spread its work more widely.

The runner-up was the Madrid Association of Engineering Without Borders, Peru, which is installing solar-powered communication systems at 39 remote forest health posts.

International Enterprise: West Bengal Renewable Energy Development Agency

Solar Island has no access to the national grid. WBREDA supports nine solar mini-grid systems providing power for more than 1,000 consumers for up to six hours each day. The Award will be used to train residents in plant maintenance, management and operation, providing local employment and enhancing the sustainability of the system.

The runner-up was India's Madhya Pradesh Affordable Clean Lighting Options for Street Hawkers Project, which rents solar powered lanterns to local market stall sellers.

International Food Security: The Energy and Research Training Centre in Eritrea

The centre works with local women to produce and distribute smokeless, fuel efficient clay stoves which reduce firewood collection time whilst creating cleaner, healthier living and working environments. The Award will be used to train 900 women to make stoves, each of whom will train a further 10 women in their village to do the same.

The runner-up was Prolena Nicaragua, which produces and promotes fuel-efficient stoves for small household tortilla businesses.

Transporting PV panels in the Indian Himalayas

Are you getting the best out

Some 50,000 boilers currently operate at industrial and commercial premises in the UK, providing steam/hot water for various industrial process uses and/or space heating. These boilers consume around 35 million tonnes of oil equivalent (mtoe) each year at a cost of some £3 billion. Natural gas accounts for around 75% of fuels used in these boilers, followed by oil (20%) and coal (5%).

However, many of these boilers are relatively old and do not make use of many of the measures that are now available that would improve energy efficiency, cut carbon dioxide emissions and save money. Many boilers are also not operated properly to optimise their performance. The reasons for this include inadequate training of operators, lack of incentives and a poor understanding of the inefficient use of energy and its associated costs. As a result, significant amounts of energy are wasted which could easily be saved through some simple, tried and trusted measures. This article describes how Action Energy is working to help companies operate their boilers both efficiently and cost-effectively.

Surveys carried out by Action Energy on approximately 300 boilers operating at over 100 sites in the UK indicated that, on average, energy savings of 7% could be made by improving boiler efficiency. These sites provided a representative range of industrial, public and commercial users of steam/hot water. Analysis of the survey data also helped to identify various measures to improve boiler efficiency such as:

- adjusting combustion conditions (burners, air fuel ratio, etc);
- installing blowdown heat recovery;
- installing automatic oxygen trim controls;
- using economisers;
- improving operating procedures and sequential boiler controls (sites with more than one boiler);
- installing flue gas isolation dampers (sites with more than one boiler);
- replacing old boiler(s) with more efficient modern one(s);
- carrying out boiler maintenance;
- upgrading boiler controls;
- installing automatic total dissolved solids (TDS) control; and
- improving insulation.

Independent investigations under Action Energy have demonstrated the effectiveness of a number of these measures on boilers operating at selected UK sites. These measures have helped to achieve significant reductions in fuel use, resulting in considerable cost savings and giving a short payback period of typically 1–3 years. Action Energy case studies and guides (see facing page) describe the results of these demonstrations and offer advice on best practice.

To help businesses achieve the huge potential energy, carbon and cost savings, Action Energy has introduced a number of new initiatives, including free impartial advice and financial incentives.

Interest-free Action Energy Loans

Action Energy Loans are aimed specifically at small and medium sized enterprises (SMEs). The £10 million Action Energy Loans scheme offers interest-free loans of between £5,000 and £50,000 to help SMEs buy energy efficient equipment to replace or upgrade existing facilities. Repayments are made over four years and the savings can often be greater than the loan repayments.

Tax breaks

The Energy Technology List is designed for companies and organisations wishing to procure energy efficient equipment and details over 4,000 products, which meet Government-prescribed energy efficiency criteria. Only investment in products listed on the Energy Technology List may qualify for an Enhanced Capital Allowance (ECA), a tax relief permitting businesses to deduct 100% of capital expenditure against their taxable profits in the first year. Qualifying expenditure can include the cost of buying the equipment as well as the cost of installation and transporting the equipment to the site.

Businesses will pay less tax on their profits when investing in energy-saving boiler plant equipment falling within the following types of equipment:

- automatic TDS control of feedwater in boiler;
- biomass boilers;
- boilers over 400 kW thermal output;
- burners and controls;
- condensate return systems;
- condensing boilers up to 400 kW thermal output;
- condensing economisers;
- flue gas economisers;
- heat recovery from boiler blowdown;
- oxygen trim controls;
- pipe insulation;
- sequence controls; and
- variable speed drives.

For further information about interest-free Action Energy Loans, the Energy Technology List and ECAs, visit www.eca.gov.uk or call the Action Energy helpline on 0800 58 57 94.

Other Action Energy initiatives

Action Energy has placed renewed emphasis on the provision of site surveys and site-specific advice to help organisations identify and implement opportunities for energy savings. Call the helpline for information about Action Energy Surveys, feasibility studies and buildings Design Advice.

In addition, an initiative for small and medium sized companies has been introduced in England in partnership with the Energy Saving Trust. Free Energy Reviews to identify areas for energy savings and recommend practical low-cost actions can be provided by a network of Local Advisors. Companies that undertake the reviews could save up to 20% on their energy bills.

# of your boilers?

Free publications from Action Energy

The following publications give information and practical advice on energy efficient boiler operation.

GPG030 Energy efficient operation of industrial boiler plant.

This Guide draws the attention of new and existing boiler users to opportunities for achieving substantial and cost-effective savings.

GPG221 Improving boiler energy efficiency through water treatment.

This Guide describes good water treatment practice, outlines the effects of impurities in water on the energy efficiency of boilers, and explains how savings can be achieved by reducing energy, water, chemical and maintenance costs.

ECG066 Steam generation costs.

This Guide highlights the costs of steam generation and the potential for reducing costs based on information from energy surveys at over 100 sites. It discusses the scope for cutting energy use and presents a league table of recommendations for saving energy.

GPCS338 Improving efficiency by renewing boiler burners and controls.

This case study describes the savings made when a hotel replaced its worn-out burners. New burners and controls have resulted in average savings of £13,750/year with a payback period of three years. Both boiler downtime and maintenance costs have fallen significantly.

GPCS339 Heat recovery from boiler blowdown.

Heat recovery from boiler blowdown is often recommended as a way of cutting energy use in steam generation. As the blown-down water is always much hotter than the make-up water, waste heat recovery can be worthwhile. This case study is based on a steam recovery vessel used with a TDS control system to minimise blowdown and to recover heat from flash steam. The system achieved energy savings worth £5,740/year, giving a payback period of 1.7 years on an investment cost of £9,660.

GPCS382 Energy and cost saving in hot water boilers through the use of isolation dampers.

In many of the boilers used to provide a continuous supply of hot water, the water continues to flow through the boiler even when the boiler is not being fired. This results in the loss of heat to the natural draught flowing through the boiler. This case study describes a successful project that reduced these losses by fitting an automatically closing isolation damper in the flue stack to prevent the natural flow of air through the boiler when it is not being fired. The system requires minimal maintenance and has reduced fuel consumption by 12%, saving over £1,000/year.

GPCS 383 Energy savings through effective control of boiler water treatment.

This case study describes how the Michelin Tyres' site at Stoke-on-Trent has reduced its annual steam blowdown by improving the control of its boiler water treatment system. The improved control has resulted in cost savings of over £20,000/year from reduced steam losses, chemical costs, effluent costs and pre-treatment costs, giving a simple payback of nine months.

NPFP059 Condensing economiser on a gas fired steam boiler.

This case study describes how energy savings worth £55,480/year were achieved by fitting a condensing economiser to a gas-fired steam boiler rated at 8.5 MW thermal output. The payback period was 1.8 years.

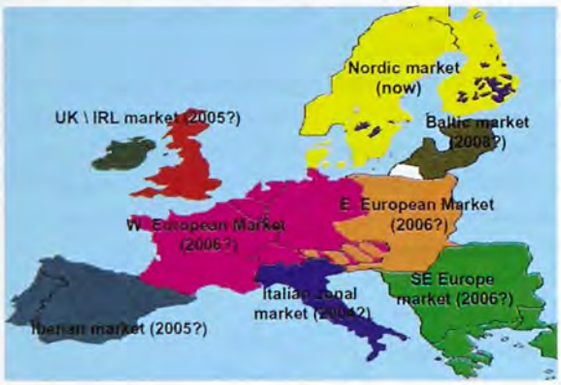
Steam boilerhouse efficiency improvements.

A new case study (to be published later this year) describes how total energy savings worth £57,700/year were achieved on a gas-fired steam boiler through a combination of a non-condensing flue gas economiser and an improved boiler combustion control system. The payback period was less than a year.

Copies of all Action Energy publications can be ordered on the Action Energy website (www.actionenergy.org.uk) or from the helpline on 0800 58 57 94.

Opportunities in the EU's

The European Union has been progressively liberalising its gas and electricity markets since 1997, when a Directive setting common rules for the internal market in electricity came into force. The Parallel Gas Directive was adopted in 1998. Last year, the EU agreed a very significant change by moving from the earlier 'competition within member states' regime to a 'competition across the EU as a whole' regime. This has major implications for UK companies and was the subject of a British Energy Association workshop, held in June 2003. Speakers were: William Webster, a senior economist in the Energy and Transport Directorate of the European Commission; Paul Hallas, Business Development Director – Europe of Centrica plc; and myself. This article summarises the presentations and discussion and draws out some of the challenges for UK companies in the liberalising markets of the EU during the years ahead.



by Graham Ward FEI, Chairman, British Energy Association and Partner, PricewaterhouseCoopers graham.n.ward @uk.pwc.com

The new Directives and Regulations have made very rapid progress indeed, with the text being agreed between Council and Parliament on 16 June 2003 and being in force now. Most of the provisions will be effective from July 2004. The package of measures is far reaching in its effects. Competition will be open to all non-household customers from July 2004, with full market opening three years later. Fair access to markets will be underlined by a requirement for legal unbundling of transmission networks by July 2004 and of distribution networks by 2007, with network access being required to be granted on the basis of regulated tariffs. Transparency in respect of commonly-expressed customer concerns will be met by a universal service obligation in electricity for households, with an option to extend to small business enterprises, combined with the labelling of energy sources for electricity supply and an obligation on Member States to monitor security of supply.

Networks

The EU has recognised the crucial importance of networks in facilitating competitive markets. For example, although legal unbundling of distribution networks will not be required until 2007, management unbundling will apply from next year. Indeed, network management may not participate in any other activities of an integrated undertaking, and prohibitions on conflict of interest will be introduced and enforced via a compliance programme. Regulatory authorities within member states will have responsibility for ensuring non-discrimination, effective competition and the effective functioning of the market, including giving ex-ante approval of access conditions, tariffs and balancing services.

Building on the experience of introducing competition in individual member states, the EU's new package will include basic principles for entry and exit charges to networks and congestion management, where charging should be market-based and non-discriminatory. A standard costing method, applied to actual flows, will be used to calculate inter-TSO compensation (that is between different transmission system operators). For electricity, the detailed guidelines will be subject to streamlined administrative procedures in order to facilitate rapid adoption.

The new Directive, recognising the pivotal position of energy in achieving economic success, will establish the overall legislative framework of the EU internal energy market, in order to promote competition, make industry more competitive and benefit the economy as a whole. In order to achieve those objectives, the transition process needs to rule out discrimination, achieve a playing field that is level in fact, provide a satisfactory level of transparency and initiate a properly functioning trans-EU internal market.

In electricity, however, the fact is that the networks were not built to facilitate EU wide competition and there are a number of national and regional bottlenecks. It may be, therefore, that the early days will see the development of regional, rather than trans-EU, markets and that a single price or implicit auction can be expected only at regional level. One would, however, expect to see explicit auctions between those regional markets. The map (left) gives an indication of possible regional markets, within this scenario.

Despite the excellent progress that has been made, however, there are many outstanding issues to be resolved. In the electricity market, one of the most important is to increase inter-connector capacity, which will require a clear strategy and decision-making process together with a financial reward framework, set out in advance, for each potential project. Once this has been achieved it should be possible to reduce market concentration, for example by introducing a more appropriate market design and strengthening the responsiveness of the market on the demand side. Other issues include protecting security of supply and promoting customer choice.

In the gas sector, a number of issues are being discussed via the Madrid Forum. As with electricity, security of supply is an issue. For gas, it needs to be considered in conjunction with EU level tarification, transparent capacity allocation and progress on technical inter-operability. Tariff 'pancaking' (where transmission charges from each cross-border transaction are added together to give a higher than cost-reflective result) is a particular challenge in the gas market. The

liberalising energy markets

Commission will pursue cost reflectivity and a tariff structure based on 'entry–exit' in order to facilitate competition.

An entry strategy

From the point of view of a UK company, how will the challenges of succeeding in this newly competitive market be met? Reshaping of the structure of continental European utilities appears to have reached a consolidation phase, with the major companies now digesting several major acquisitions. For UK companies, facing limited further growth potential in their home markets but nevertheless with unrivalled experience in fully competitive energy markets and in using those markets to sell other products, liberalisation in Continental Europe provides a solid opportunity. The psychology of local customer bases, however, indicates that tying up with local strategic partners is more likely to succeed than trying to break into the market using only a UK brand. The Centrica approach in Belgium provides a good example. Centrica has a 50% interest in Luminus in Belgium, which is a retail joint venture with a number of municipal utilities. Its market strategy is based on a customer-focused culture, rapid response, innovation and a lean operating cost base.

regulatory pressure, rather than business strategy, continues to be the main spur to environmental strategy and performance

In the EU as a whole, however, there have been differences between theoretical market accessibility and the ability to break into the market in practice. If the new Directive is to succeed, the European Commission will need to keep a close eye on what is happening on the ground. This will include a close examination of earlier moves in some member states to protect incumbent suppliers and the 'managed' nature of several continental wholesale electricity markets.

Opinion formers

The attitude of senior executives of a broad base of European utilities is summarised in a PricewaterhouseCoopers market report: *Movers and Shapers 2003, Utilities – Europe*. This offers the views of more than 100 European utilities leaders drawn from 19 countries. Both EdF and E.ON are seen by their peers as the leading global energy players, with RWE attracting only half as much support and other companies less than a tenth. Incidentally, these three companies are also highly respected in the United States.

Worries about how the market might develop, however, are deep-seated with both regulation and continued wholesale price volatility at the top of the list of factors that will affect and obstruct the development of the market over the coming years. The move from intra-member state competition to pan-EU competition is seen as increasing market risk. In the face of the harsh winds of the bearish capital markets, few executives appear to favour the asset-light corporate model of previous years. Convergence and vertical integration are the biggest drivers of merger and acquisition activity, motivating over half of all deals done during 2002. Portfolios with strong positions in both generation and networks look set to continue over the coming years. In particular, vertical integration is seen to offer shelter from market risk exposure, credit risks and uncertain market liquidity.

Perhaps surprisingly at first sight, in the light of the post Enron turmoil, trading has moved to play a much broader role in the strategies of European utility companies. Europe's utility leaders are moving to consolidate their trading capabilities, having faced significant 'catch-up' challenges in previous years. Companies are engaging in a range of internal changes and reporting reforms in the wake of recent energy trading turmoil but there remains an open question as to whether this will be enough to ensure investor and regulatory confidence.

On the environmental front, the business gains of a positive approach to environmentalism are finally beginning to emerge. Nevertheless, regulatory pressure, rather than business strategy, continues to be the main spur to environmental strategy and performance. As companies engage in tangible aspects of environmental performance, however, such as investment in renewables, the business benefits are becoming more apparent.

Ten challenges to successful penetration of the continental gas and electricity markets were identified (right). These challenges will not be easy to meet but the mood of our meeting was that they will be met and that UK businesses can succeed in the pan-EU markets.

Challenges

1. establishing clear rules for the pan-European gas and electricity markets, especially in respect of truly open access;
2. consolidation of the players within the sector to provide appropriate geographic spread, critical balance sheet mass and generation/supply hedging;
3. openness and consistency of regulation across the EU;
4. technological advance, including renewables and fuel cells and the consequent affects on the wires and pipes businesses;
5. cost efficiencies, especially cost of capital (although it is questioned whether enough is being spent on research and development);
6. energy trading, certainly to manage risk and possibly to create profit centres
7. volatility of prices and of policy;
8. a full understanding of the needs of customers in different member states and how to create customer loyalty;
9. physical security in the face of terrorism; and
10. positive handling of environmental issues to establish proper relationships with all stakeholders while running a sustainable and profitable business.

Events

September

Towards zero carbon: renewables, fuel cells and embedded generation
Organised jointly by the EI and UK-ISES
Conference, 3 September
London
Contact: Energy Institute
Tel: 020 7467 7173
Email:
kcrabb@energyinst.org.uk

Use of nitrates to control bacterial problems
Conference, 9 September
London
Contact: Energy Institute
Tel: 020 7467 7174
Email:
lviscione@energyinst.org.uk

Frank Whittle: his life and achievements
Lecture, 10 September, London
Contact: Energy Institute
Tel: 020 7467 7173
Email:
kcrabb@energyinst.org.uk

Gas to liquids
Conference, 10-11 September
London
Contact: SMi Conferences Ltd
Tel: 020 7827 6138
Email: jnesbitt@smi-online.co.uk

The environment: vision, values and innovation
10-12 September, Harrogate
Contact: CIWEM
Tel: 0113 242 4200
Email: sarahhickinson@aquaenviro.co.uk

Business strategy and the environment
Conference, 15-16 September
Leicester
Contact: ERP Environment
Tel: 01274 530408
Email:
elaine@erpenv.demon.co.uk

Introduction to energy management
Course, 16 September, Leeds
Contact: Energy Institute
Tel: 020 7467 7178
Email: ndlm@energyinst.org.uk

Retail marketing
Training course
16-19 September
Contact: Energy Institute
Tel: 020 7467 7151
Email:
nwilkinson@energyinst.co.uk

Part L Building Regs
Course, 18 September, London
Contact: Energy Institute
Tel: 020 7467 7178
Email: ndlm@energyinst.org.uk

Annual golf day
Social event, 18 September
Durham
Contact: EI North East Branch - Peter Gauntlett
Tel: 0114 236 7515
Email:
peter@cause19.fsnet.co.uk

The effects of IPPC on power generation
Seminar, 18 September, London
Contact: Madeline Willis
Tel: 020 7973 1260
Email: m_willis@imeche.org.uk

Renewable energy finance
Forum, 22-23 September
London
Contact: Euromoney Energy Events
Tel: 020 7779 8103
Email: energyevents@euromoneyplc.com

Supply and distribution: organisation, operations and economics
Training course
23-26 September
Contact: Energy Institute
Tel: 020 7467 7151
Email:
nwilkinson@energyinst.co.uk

Developments in the built environment
Conference, 23 September
Watford
Contact: Inside UK Technology
Tel: 01293 611622
Email: clive@iukt.co.uk

The emerging carbon market
Workshop, 23 September
Brighton
Contact: Power Ink
Tel: 01273 202920
www.power-ink.com/workshops.htm

Renewable energy markets
Workshop, 24 September
Brighton
Contact: Power Ink
Tel: 01273 202920
www.power-ink.com/workshops.htm

Eighth Grove Fuel Cell Symposium
24-26 September, London
Contact: Elsevier Science
Tel: 01865 843691
Email:
sm.wilkinson@elsevier.com
www.grovefuelcell.com/ioe.htm
Co-sponsored by the Energy Institute

Building sustainability, value and profit
Conference, 24-26 September
Edinburgh
Contact: CIBSE
Tel: 020 8675 5211
Email: hq@cibse.org
www.cibse.org/edinburgh
Co-sponsored by the Energy Institute

Envirenergy
Conference, 25 September
Leeds
Tel: 01257 276176
Email: envirenergy@washingtondowling.com
www.envirenergy.org.uk

Low carbon power markets
Workshop, 25 September
Brighton
Contact: Power Ink
Tel: 01273 202920
www.power-ink.com/workshops.htm

How carbon will affect the power market
Briefing, 26 September, Brighton
Contact: Power Ink
Tel: 01273 202920
www.power-ink.com/workshops.htm

Registering on an event seen here?
If you are registering on an event which you have seen listed here, please don't forget to mention to the organisers that you saw it listed in the Energy World Events Diary.
For further information about events, and to view the Energy Institute's events calender please click on to our website at: www.energyinst.org.uk

October

Sixth Petroleum Geology
Conference
6-9 October London
www.geolsoc.org.uk

Talent strategies
Discussion, 14 October London
Contact: Energy Institute
Tel: 020 7467 7174
Email:
lviscione@energyinst.org.uk

Educating the workforce
Course, 8 October, London
Contact: Energy Institute
Tel: 020 7467 7178
Email: ndlm@energyinst.org.uk

Monitoring and targeting
Course, 16 October, London
Contact: Energy Institute
Tel: 020 7467 7178
Email: ndlm@energyinst.org.uk

ENVEC
Conference, 8 October
Weston-super-Mare
Contact: Phil Harding
Tel: 0117 900 1801
Email: pharding.gosw@
go-regions.gsi.gov.uk

Sustainable energy expo
Exhibition, 21-23 October
London
www.sustainable-expo.info
Co-sponsored by the Energy Institute

Renewable realities
Conference, 13-17 October
Orkney
Contact: Aquatera Ltd
Tel: 01856 850 088
Email: office@aquatera.co.uk

Energy efficiency expo
Exhibition, 21-23 October
London
www.energy-expo.info
Co-sponsored by the Energy Institute

Environmental solutions expo
Exhibition, 21-23 October
London
www.environmental-expo.info
Co-sponsored by the Energy Institute

Heat recovery steam generator
Conference, 28-29 October
Birmingham
Contact: Madeline Willis
Tel: 020 7973 1260
Email: m_willis@imeche.org.uk

Autumn Lunch
22 October, London
Contact: Energy Institute
Tel: 020 7467 7106
Email:
lthwaite@energyinst.org.uk

Introduction to energy management
Course 29 October London
Contact: Energy Institute
Tel: 020 7467 7178
Email: ndlm@energyinst.org.uk

Industrial ventilation - one day course

For the last ten years, the EC has financed the industrial ventilation project, INVENT, promoting energy efficiency and the removal of toxic gases in the workplace. During the last twenty years, demands on industrial ventilation have increased. EU legislation has become stricter concerning the quality of indoor air, and there are also a number of ISO standards which are concerned with this matter.

This one day course aims to reflect the work undertaken by this EU project to date. Covering energy use in ventilation, the health risks and legislation, this event is relevant to anyone working in heavy industry involved in workspace pollution control. Delegates will be shown practical ways in which to improve air quality and save energy, thus reducing costs.

Eric Curd, a chartered engineer and member of the EI, will be leading the course. Having worked in this area for a number of years, Eric has worked with INVENT for the last ten years as the UK delegate.

Places are available to members at £125 and non members at £175. To book your place, please contact the Events Office on 020 7467 7173 or email kcrabb@energyinst.org.uk

www.sd4bp.com

The Energy Institute participated to in the launch of the Sustainable Development for Building Professionals (SD4BP) website at a cross-industry consortium on 10 July at the Unison HQ. The event was well attended, and has attracted attention from a wide variety of sources.

Developed under the DTI's Partners in Innovation programme, and supported by ABS Consulting, the website has been developed by a consortium including leading companies involved in sustainability, the construction industry, and professional and academic bodies.

The website aims to help building professionals find training courses to develop their sustainability skills and capabilities, and to address the need for greater awareness of sustainability issues amongst all professionals involved in the built environment. Course details range from university courses to individual CPD modules, complete subject areas, residential courses, events and seminars.

The Energy Institute has offered to consider the energy relevent academic and professional development courses offered on the website for approval and recognition.

The website will provide a reliable source of information for building professionals on where to gain training on sustainable development, as pressure to adopt sustainable business practice from government and the community increases.

By encouraging participation in these courses, we hope professionals will gain an understanding of what sustainable development is and gain knowledge of how they can build sustainable practices within the building profession.

Merger update - the launch of the Energy Institute

As we anticipated and advised readers in the last merger update, we are delighted to confirm that the Energy Institute was legally created on 1st July 2003. As your membership grade converts to the EI grade shown in the table below, the designatory letters you have been using now also change.

During July and August staff and systems co-located to 61 New Cavendish Street, the new home of the Energy Institute. To thank the Energy Institute's staff team, Council and Committee members for their contribution to on-going merger activities, a reception was held which was attended by more than 80 guests. At the reception, Louise Kingham, Chief Executive, thanked members and staff most sincerely for their support, "without your participation, guidance and often, your patience, we would not be here today celebrating the creation of the Energy Institute. For that I am most grateful to you all, including those who could not be with us today." The new Energy Institute logo was also finalised - following a number of member focus groups - and this was unveiled at the reception.

It is hoped that as many members as possible will join in the celebrations to launch the Energy Institute at a series of national and regional events being held from the beginning of September and that these events encourage members of both former Institute's to get to know each other.

Prof Martin Fry, InstE President, and Dr Pierre Jungels CBE, IP President, will continue to co-chair the Energy Institute's Council until the Winter of this year, when the first General Meeting of the Energy Institute will convene to record the outcome of the Council elections. At the same time, the first President of the Energy Institute will be appointed.

The new Energy Institute Branch structure was agreed at the last Council meeting. There are now 16 established Branches (13 in the UK and 3 overseas - Ireland, Netherlands and Hong Kong). These Branches have been developed in consultation with the original Branch committees and their members. In time we will contact members to check that affiliation to their Branch within the new structure is still appropriate. If not, this can easily be amended at members' convenience. Over the next few months, new Branches in Geneva and Houston will also be established.

The Energy Institute has also developed a new structure for Group Membership, with three distinct grades of membership, these being Group Member, Technical Group Member and Energy Institute Partner. A new grade of individual membership has also been developed to allow individuals a fast track route into membership without going through the full application process. This level of membership is called Affiliate and provides all the benefits of membership except those associated with professional recognition. More details on these and the various benefits available from membership can be found in new literature about the Energy Institute and on the website.

From the beginning of September, members will begin to receive correspondence from the Energy Institute, and will be able to visit the new website at www.energyinst.org.uk In addition, we will be contacting members to continue to deliver the commitments we made in the Merger Prospectus – to seek your views on some key issues and identify your future interests. Can we also remind you that if you were previously a member of both the IP and the InstE we would appreciate your notification of this, so that we can ensure you receive only one membership subscription renewal this Autumn. Please email membership@energyinst.org.uk

In the meantime, we aim to continue to keep you abreast of developments and we look forward to seeing you at one or more of the Energy Institute's forthcoming launch events over the next few months.

InstE	IP	Energy Institute
Honorary Fellow (HonFInstE) Companion	Honorary Fellow (FInstPet)	Honorary Fellow (HonFEI)
Fellow (FInstE)	Fellow (FInstPet)	Fellow (FEI)
Member (MInstE)	Member (MInstPet)	Member (MEI)
Associate Member (AMInstE)		Associate Member (AMEI)
Technician Member (TMInstE)		Technician Member (TMEI)
Affiliate		Affiliate
Graduate		Graduate (GradEI)
Student	Student (SInstPet)	Student
Group Member Academic Affiliate	Corporate Member	Group Member

ET Panel says thanks to long-serving member

The Education and Training Panel said a fond goodbye to its longest-serving member at its last meeting. John Willetts, CEng FEI, joined the then Institute of Fuel in 1954 and has been a Fellow of the Institute of Energy for over 40 years and has served on the Education and Training Panel and its various predecessors for an incredible 36 years.

He remembers the days when CPD was 'a new thing' and chaired the CPD Committee for a spell. In recent years his experience has been invaluable in training up newer members and guiding the various PD programmes with which the organisation has become involved. Former President John Ingham presented Mr Willetts with a certificate to mark his long service to the Panel and to the InstE, and members and staff joined in wishing him a long and happy retirement.

Maintaining engineering standards - would you like to help?

When the Licensed Members of the Engineering Council (UK) register Chartered and Incorporated Engineers and Engineering Technicians, a team of volunteers from the Engineering Institutions is on hand to aid the maintenance of comparable and consistent standards.

Although the Licensed Members are formally audited every five years, more frequent reviews and guidance are organised for them by the EC(UK)'s QA Department. Individuals from a team of some 55 Engineering Council Representatives (ECReps) are allocated by the Quality Assurance Committee to each of the Licensed Members for about five years. The volunteers attend meetings of Membership Committees or Accreditation or Education Committees to encourage a commonality of approach in registration. From time to time the ECReps join accreditation visits to Universities or attend Professional Review Interviews.

The team, is provided with training twice a year and comprises engineers and technicians with some experience of interviewing candidates for Institution membership, or of sitting on Membership or Accreditation/Education Committees or of Accrediting academic courses or industrial training schemes. Besides assisting the Institution to which they have been allocated, the ECReps, in promoting the sharing of best practices, are also able to bring back fresh ideas to the Energy Institute.

If you would like to join this team, or assist in regular reviews of the Engineering Institutions, please contact Sarah Beacock, Professional Affairs Director at: sbeacock@energyinst.org.uk

Energy Lunch

The InstE Energy Lunch was held at Savoy Place in London on 11 July. With over 200 guests, the lunch was extremely well attended and the Institute of Energy was delighted to use this event to celebrate with guests the InstE's achievements over the last 76 years, and look to its future as the Energy Institute.

The President of the Institute of Energy, Prof Martin Fry, and Chief Executive of the Energy Institute, Louise Kingham, spoke on the InstE's past successes and future goals. Whilst Martin O'Neill MP, Chairman of the Trade and Industry Select Committee followed the lunch with his personal views on the Energy White Paper, and UK energy policy, with some amusing anecdotes. The InstE would like to take this opportunity thank all of its guests who attended the lunch.

The InstE was grateful for the generous support of the Carbon Trust at this event. David Vincent, Technical Director, used the occasion to announce the launch of the Carbon Trust's Innovation Awards. Organised jointly with The Sunday Telegraph, this new awards scheme aims to recognise achievement by individuals and organisations in both public and private sectors that are taking imaginative steps or developing new technologies to reduce the UK's CO_2 emissions. The deadline for entries has now closed and the awards will be presented at a lunch on 6 November. The winning entry will receive the title 'Carbon Trust Innovator of the Year 2003'. For more information, please visit www.thecarbontrust.co.uk

Developing the engineering profession - your experience can help

Over 80 volunteers support the Engineering Council (UK) in the development of the UK Register of Engineers. The Register, which at present contains nearly 300,000 Chartered Engineers, Incorporated Engineers and Engineering Technicians, forms an important element in the maintenance of professional engineering standards in the UK. The Engineering Council (UK) constantly needs new people to replace retiring volunteers and to fill skills gaps.

The high repute of the UK system of registering engineers depends on the sharing of good practice and advice. The volunteers, as active members of the profession, are crucial to this work. The volunteers support the development of the Register in a number of different ways in order to ensure consistency, good communications and the exchange of good practices. They advise on the interpretation and implementation of the Standard (was SARTOR, soon to be UK-SPEC) which forms the basis of licensing. More generally they support and facilitate the development of effective management systems.

Volunteers get involved in one or more of the following areas: attending membership and accreditation meetings, accreditation visits and interviews; as members of Review Panels, assessing applicant Licensed Members, reviewing existing Licensed Members to ensure continued compliance, and taking part in specific Registration-related projects.

This role can be an interesting and rewarding means of making your experience available for the overall benefit of the engineering profession. Regular seminars and briefing sessions are held to ensure that the volunteers are up to date with current practices

If you are interested in becoming a volunteer please contact Sarah Beacock, Professional Affairs Director at: sbeacock@energyinst.org.uk

EI news

new members

Fellow
Mr Kevin Brown
Eur Ing Arthur Clive Walter Walter Energitama
Dr Alan Patrick Waterfield

Member
Mr Neil Johnson Delgaty
Hoarelea
Mr Stuart Carl Reck
Couch Perry and Wilkes Partnership
Mr Daniel Ndziwum Nuh
Energy Equipment Testing Services Ltd

Affiliate
Mr David Nicholas Harper
The Boots Company
Mr Peter John Martin
CORGI
Mr Mervyn Bowden
Marks & Spencer

Technician Member
Mr Gary Sinfield
Alldays Stores Ltd

Student
Mr David Forward

Associate Member
Mr David Lively
Birmingham Heartlands and Solihull NHS Trust

Graduate
Ms Sarah Davidson
IT Power
Mr Sophocles Poullis
Mr Matthew Robert John Gray
Mr Tobe Nwaogu
Mr Darren Parker
Ms Sylvia Baron
Mr Shaun Richard Anderson
Ms Rachel Child
ECOTEC Research & Consulting Ltd
Mr Paul Stanley Reed
The Halcrow Group
Ms Joanna Thomspon
Linden Consulting Partnership

Academic Affiliate
Frank F. Harrison Community School

Group Member
Gillespie & Cummings

Frank Kelly CEng FIPlantE

The Energy Institute is very sad to report that Frank Kelly, who was the EC(UK) representative on the Institute of Energy's Membership Panel, has died. Frank joined the Panel in 1998 and was still a serving member when he became ill earlier this year.

Frank was a greatly valued member of the InstE's Membership Panel and his enthusiasm was always in evidence. The job of EC(UK) representative is a demanding one but Frank always approached the task with professionalism and an eagerness to share best practice. The Chairman of the Membership Panel, Chris Boocock, said:

"Frank was a valuable asset to the Panel. The combination of his astute mind, experience and unwavering independence all delivered with a unique wit made Frank a very welcome and popular member of the Membership Panel. He contributed greatly to the quality of discussions at the Panel Meetings, which in turn was reflected in the quality of our members. Frank will be sadly missed."

people

Dr Laurence Britton
Dr Laurence G. Britton, a Fellow of the Energy Institute, and a 1974 graduate in Fuel and Combustion Science from the University of Leeds (PhD 1978) was recently elected to Fellow of the American Institute of Chemical Engineers and won their top award in Chemical Engineering Loss Prevention.

Gordon Parsons
Utilyx, the energy consultancy and procurement service provider, has recently appointed Gordon Parsons, ex TXU Sales Director, to spearhead a push into energy risk management. Along with a further four new employees, Gordon Parsons will help Utilyx meet the increasing demand from large energy consumers for energy risk management services.

Alistair Buchanan
Energy regulator Ofgem has announced the appointment of Alistair Buchanan as its new Chief Executive. Alistair is currently Head of European Utilities Research at global banking group, ABN Amro. Making this appointment had been the first priority for Ofgem Chairman-designate, Sir John Mogg. They will both officially take up their new posts on 1 October.

situations/wanted