THE MAGAZINE OF THE INSTITUTE OF ENERGY

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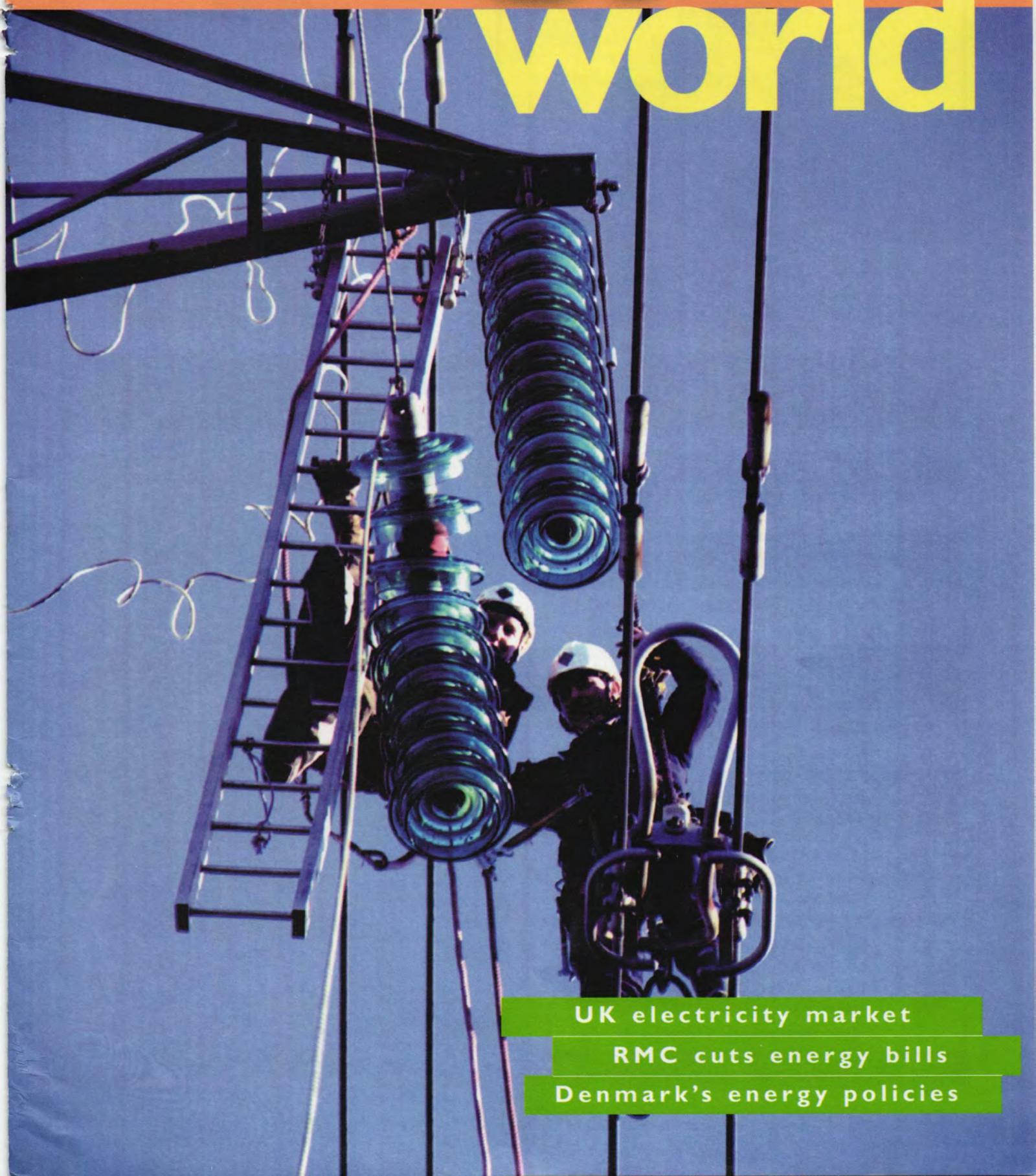

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OF THE INSTITUTE OF ENERGY
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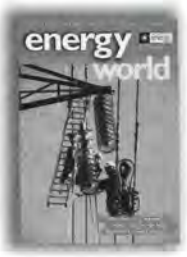

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COVER

Overhead electricity line maintenance. The National Grid Company is now a subsidiary of National Grid Transco, along with gas distribution company Transco, following a merger of the two companies begun back in April last year. Shares in the new company, soon to be based in a new building at the Warwick Technology Park, started trading on the London and New York Stock Exchanges in October.

Take the first step – vote yes

John Ingham CEng FInstE, Secretary and Chief Executive, the Institute of Energy

It is with a sense of expectation and hope that I wish all members of the Institute of Energy a very happy and prosperous new year. 2003 will be, by any standards, a milestone in our proud and distinguished history as we consider the future, based on the merger proposal set out in the Prospectus document which all paid-up members will receive at the beginning of January.

This Prospectus has evolved from nine months of detailed discussion and consultation with all concerned parties, including independent advisers (who undertook a comprehensive due diligence exercise from which a realistic business case was derived), merger steering groups representing both Institutes, the Privy Council, the Charity Commission, EC (UK), the InstE Council – where approvals were sought and given – and, most importantly, members, who have been kept informed at every stage through merger update newsletters, *Energy World* and the website. Members were also given the opportunity to attend more detailed merger presentations at specially convened branch meetings, with the opportunity to discuss specific issues and raise any questions. Having undertaken most of those meetings myself and travelled the length and breadth of the country, I have been encouraged by the feedback and grass roots support for the merger proposal.

The same views are also being reflected through the Institute of Petroleum and it is in this spirit of co-operation and aspiration that the Presidents, on behalf of our respective Councils, commend the proposal to the membership. Consequently, for the first time since the Institute of Energy was founded every member, be they corporate or non-corporate, individual or Group has the right and opportunity to vote on this most important issue. The future is literally in our hands, as we consider the proposal to merge the Institute of Energy and the Institute of Petroleum to create a new Royal Chartered body and Learned Society, licensed by the EC (UK), called the Energy Institute, embodying all that is best about the two to become *the* preferred home for *all* energy professionals.

We have come a long way since 1927 and, just as the then Institute of Fuel was very relevant to its membership, so 75 years on we must remain relevant to a membership that now encompasses the most diverse range of energy professionals in our history and to an energy industry that is increasingly integrated and inter-related, and international in its outlook. As the Institute of Energy we have achieved so much; as the Energy Institute we have the opportunity to achieve so much more, by building on the achievements, the proud heritage and the traditional competencies of the Institute of Petroleum and ourselves.

The new Institute will be financially robust and better resourced to strengthen and build on the present scope of activities and member services, and to develop mobility and career support services. With an extensive national branch network and a stronger international presence, comprising some 12,000 individual members and over 700 Group Members, we have the opportunity to be influential in the global energy industry and the scope to serve all professionals within the sector. As we have the remit now, energy in its breadth will be covered, encompassing upstream exploration and production; processing and distribution; utilisation/energy efficiency; power generation; renewables; sustainable development; energy trading and retailing.

From inception, the new Institute will be able to offer a comprehensive and impressive range of services and activities to which all members will have ready access and by which we will ably fulfil our learned society/educational remit for the public benefit. These encompass:

- Royal Chartered professional body and learned society;
- registered charity;
- licensed body for registration of engineers through EC (UK);
- extensive range of technical and scientific programmes;
- Professional Development services;
- education and training programmes;
- industry standards authority;
- wide range of events and conferences, ranging from workshops and seminars to prestige lectures and industry showcases;
- extensive library and information services, both paper and e-based;
- e-services; and
- publications, both technical/industry specific and magazines.

We will take forward from each Institute those services and activities most valued, and, through consultation with members, review and develop these progressively.

This is, in essence, what we as members are being asked to vote on. Do we want to take this opportunity to move forward and belong to a professional body which is influential and has status and relevance to the industry we serve? Having joined the then Institute of Fuel as a student member in 1967, I have seen and experienced the changing nature of the energy industry over the past 35 years and also appreciated the way my Institute has changed to accommodate the changing needs of its members. I have also had the privilege to serve the Institute in so many different capacities, through branch committees and on Council as an Honorary Officer and proudly last year as your President. With this insight I believe that we have the opportunity to create something new and exciting and, by merging with the Institute of Petroleum, that we are laying the foundations for the future of all energy professionals. It is only the beginning but every journey starts with the first step.

The first step is to vote and I would endorse the recommendations of our President, John Blackhall and Council, and urge you to support the proposed merger and vote in its favour.

BE reprieved until February, 'time to close nuclear – or coal – plants' as overcapacity crisis continues

The Government has extended its £650 million loan to ailing nuclear generator British Energy (BE) until February. The loan, designed to keep BE afloat while it found a way to restructure its business, was originally due to be repaid at the end of last November. The company now has until next month (February) to put in place a restructuring plan.

The company found itself close to insolvency last autumn due to exceptionally low wholesale power prices, themselves caused by a combination of the fiercely competitive market (facilitated by NETA) and oversupply in generation capacity (see *Energy World* November/December 2002). Several other generators experienced similar, but less severe problems and several power plants have been 'mothballed' by generators until prices begin to rise again.

Powergen's October acquisition of three coal-fired power stations, and the company's retail business, from a suffering TXU, was another result of the market conditions.

As well as extending its loan to BE, the Government acknowledged that the current restructuring plan will involve it "contributing significantly" to BE's historic liabilities, and that this will cost taxpayers some £150 to £200 million a year for the next decade.

Predictably, environmental groups reacted with anger at the announcement that the Government is to support the nuclear generator at a time of oversupply.

Greenpeace published a report, *The closure of British Energy's nuclear power stations*, commissioned from the well-respected consultant, ILEX, which concludes that all of BE's nuclear power stations could be closed in the next 2-3 years, without the lights going out. The ILEX report shows that the National Grid's 20% safety margin can be maintained on the UK electricity system if wholesale prices return to 1999 levels. This would give owners of conventional power stations the incentive to keep them open, re-open plants that have been mothballed, and encourage new gas plants to be built, says Greenpeace.

Greenpeace says that it and the Green Alliance will now review the options available to the Government to maintain a secure electricity supply and continue to control carbon emissions if the UK's nuclear power stations are closed down rapidly – not an easy task.

Matthew Spencer, Greenpeace Energy Campaign Director said, "The Governments final line of defence for the British Energy bail-out collapses under ILEX's dispassionate analysis. The Government should use the opportunity created by this British Energy crisis to negotiate an early closure of the company's nuclear power stations. It would rebalance the power market, staunch the flow of taxpayers money to the nuclear industry, and prevent the generation of 20 years of highly radioactive waste."

Meanwhile, the left-leaning think-tank the Institute for Public Policy Research (IPPR) has said that the Government should explore the possibility of using incentive payments to encourage early closure of some of Britain's coal-fired power generation capacity. Publication of *British Energy: crisis or opportunity?* closely followed the collapse of energy company TXU Europe and an announcement by Powergen that it would mothball a quarter of its UK generation capacity.

The IPPR paper argues that closing some of Britain's oldest and highest carbon dioxide emitting power stations would:

- reduce the problem of chronic overcapacity, allowing wholesale energy prices to stabilise at a more sustainable level; and
- help achieve security of supply by providing clearer incentives for investment in the new generating capacity that will be needed as Britain's nuclear reactors retire between now and 2020 – at present, overcapacity means that virtually no new power plants are being built.

The massive, 300,000 tonne Bonga hull has arrived safely at AMEC's Wallsend facility on Tyneside after a 13,000 nautical mile journey from South Korea. The company will now spend 10 months managing the project to turn the hull into one of the largest and most complex floating oil and gas production facilities ever built. The vessel is scheduled to begin working for Shell off the west African coast in early 2004.

New framework for offshore wind; onshore projects

Britain's on and offshore wind energy industry is moving into a higher gear with the launch of a major new Government support programme and a cluster of new wind farms either opening or being planned.

The most significant initiative - at the consultation stage - is a new 'Future Offshore' strategy launched by the Government to help unlock the future for offshore wind. The strategy aims to ensure the orderly development of a UK offshore wind industry which would contribute an enormous amount towards Britain's energy needs, thus underpinning a substantial manufacturing industry. "With a domestic market in place, we will also be able to contribute to developments around the world," said Energy Minister Brian Wilson, adding that the global market for offshore renewables is predicted to be worth £8 billion by 2007, mainly in Europe.

According to the DTI, the new document proposes that:

- The immediate future of wind farm development should be focussed in three strategic zones which offer the best development potential – the Greater Wash, the Solway Firth down to North Wales and the Thames Estuary. This will not preclude other proposals, which should be notified as soon as possible.
- Strategic Environment Assessments (SEAs) of the three key areas will be made so that scale and location of development is environmentally responsible. This will be done before the Crown Estate invite bids for the next round of site leases (expected in April) and also before the European directive requires all member states to do so (July 2004).
- New exploration licenses be given for sites beyond the twelve mile legal limit from the shore to enable work to go forward before a new legal framework to be set up enabling development beyond this limit. This would be necessary, for instance, in the Outer Moray Firth where a proposal is being drawn up for outside the territorial limit.
- A new bidding process for wind farms should be introduced which will make the most efficient use of the sea-bed.

Earlier, Energy Minister Wilson announced £20 million of new Government support to be equally split between the first two proposed offshore wind farms to have gained all the necessary consents: near the coast of North Wales and operated by National Wind Power, and offshore Norfolk, operated by Powergen. The two farms will have a total capacity of up to 170 MW.

Wilson was also busy in November officiating at the opening of Scotland's most powerful onshore wind farm, a 24 turbine, 31 MW project at Bowheat, near Peebles.

Also onshore, local councils have granted planning consent for two new wind energy projects, with a combined capacity of 50 MW, to be built by National Wind Power. The projects are a 24 turbine, 48 MW wind farm to be located 30 km south west of John O'Groats, Scotland, and a three turbine, 2 MW wind cluster on the Isle of Wight.

LPG into rural areas

The uptake of liquefied petroleum gas (LPG) in rural areas is to be targeted by a new, £1 million 'Boost fund' from the DTI. There will be a special focus on four of Britain's most rural areas, where petrol prices are highest and therefore the gains from converting to LPG are greatest.

The new fund will, says the DTI:

- boost the distribution of LPG conversion specialists, particularly in the Highlands and Islands, mid and north west Wales, East Anglia and Cornwall;
- boost the uptake of new LPG vehicles by fleet and business users, leading to the wider availability of nearly new and used LPG vehicles in rural areas in the longer-term; and
- encourage leading car-hire firms to introduce LPG vehicles into their fleets, both in cities and in the four focus areas.

The final drive on 'The London Connection' – a 20 km cable tunnel for the National Grid Co has been completed by the tunnelling division of J Murphy and Sons at Canons Corner, at the end of an 8 km drive from Cricklewood, London

The completed 3 m diameter tunnel will carry new 400 kV cables, linking substations at Elstree and St John's Wood, needed to meet increasing power demands in the capital. Installation and commissioning of the cable will now be undertaken by ABB for handover to National Grid in spring 2005.

Re-opening North Sea's first oil field

Energy Minister Brian Wilson has given the go-ahead for two British companies to redevelop the first ever UK North Sea oil field, Ardmore (formerly known as Argyll), creating 100 new jobs.

Activity at the field came to an end in 1992, when operations became uneconomic and the field was decommissioned. It has been lying fallow ever since. Now Tuscan and Acorn, its new operators, are to use the latest well technology, which should lead to a two year project to recover 21 million barrels of oil that were previously unreachable.

Energy Minister Wilson has also congratulated UK-based companies on their success in winning contracts worth more than £260 million on BP's Clair project. AMEC of Wallsend was awarded a £50 million contract to provide the main fabrication and integration work for the Clair Phase 1 Project, including production of the deck and flare boom. The contract will safeguard jobs for several hundred AMEC staff who have been working on a major project for offshore Nigeria. Work is due for completion in April 2004.

Meanwhile, Heerema of Hartlepool was awarded a £20 million contract to construct a drilling module, including main modules and derrick. The module will weigh around 4,500 tonnes and will employ nearly 300 people, benefiting local companies in Hartlepool.

Blood is thicker than oil – Hain

Foreign Office Minister Peter Hain (who was briefly Energy Minister earlier in this parliament) has questioned the price that the UK, and other western countries, pay for oil, and made a link between international politics, oil and energy conservation.

Speaking at an energy symposium organised by the Royal United Services Institute, Hain wondered aloud whether the political price – which may soon extend to war – that the west pays to maintain the availability of Middle Eastern oil supplies is too high.

Hain said there are three clear priorities for action:

- "first, to do everything we can to ensure stability in the Middle East by creating the conditions for a Palestinian State and a secure Israel;
- second, to diversify our supplies of oil as much as we can (though this cannot eliminate our dependence on the Middle East); and
- third, to take urgent action to reduce our long run dependence on oil as our principal transport fuel."

The costs of maintaining security in our current energy system are huge, added Hain. Paid predominantly by the US, the costs of protecting our Middle East oil supplies are as high as $15-25 a barrel - that is about a dollar a gallon. These costs rightly belong in transport energy accounting, "we should factor these sizeable external costs into all our decision making – for example in transport policy – rather than placing them in a separate box marked 'security'."

The vulnerability of oil supplies to disruption over the next few decades increases the urgency of addressing the third priority: of reducing our dependence on oil as a transport fuel, said Hain.

"Times of crisis can often be a powerful stimulus to technological development. Modern communications and computing technologies drew their initial impetus from the security challenges of the Second World War and the Cold War. Today we face different challenges to our national security, but a similar opportunity to create responses which can benefit both our security and our economy."

Carbon Vision R&D fund

The Carbon Trust and the Engineering and Physical Sciences Research Council (EPSRC) have launched a new, £14 million investment initiative which aims to marry the needs of business with the capabilities of university R&D departments to deliver on low carbon technologies and solutions in the UK.

The partnership, Carbon Vision, has been formed to ensure effective collaboration between research and commercial interests. Under the scheme, identified demands from business for low carbon technologies and solutions will be matched against university R&D departments best able to research ways to address these demands and overcome existing barriers in the innovation chain.

RV Triton, the first trimaran of truly ocean-going size, is the world's largest to be powered by a medium voltage electric propulsion system. Seen by some as a stepping stone towards the world's first all electric warship, RV Triton is capable of pivotal turning and speeds of 20 knots.

The ship's propulsion system is based on two 2 MW (6000 V) diesel generators, converted by switchboards fitted with FID 5000 drive systems, from FKI Industrial Drives, to supply a 3.5 MW motor used to power the central thrust shaft of the main hull of the vessel.

IEA approves of Greek moves to diversify fuel mix

Greece has done well to diversify its fuel mix and supply sources, but must ensure that it can meet growing energy demand, says the International Energy Agency (IEA), summarising its new review of Greek energy policy. The IEA welcomes the Government's policy to increase energy links with its neighbours and noted that "a well-designed market reform is essential in the electricity and gas sectors to attract private investment."

Greece is geographically isolated from most other European IEA Member countries and depends heavily on imported energy, especially oil. Lignite is the only major domestic fuel and has been extensively used for power generation. The Government is working to diversify fuels and supply sources and to improve relationships with neighbouring and producer states, notably Azerbaijan, Iran, Kazakhstan and Turkey.

Electricity demand is forecast to increase by 4.5% per year over the decade 2000-2010 and supply is forecast to be tight over the next three to four years, even if planned power plants are commissioned on time. Imports of electricity can play only a marginal role since transmission capacity is limited. Further regulatory reform is urgently needed to attract investment in new generating capacity, says the IEA.

Natural gas was introduced into Greece's energy balance in 1996 and, by 2000, it accounted for 6.1% of primary energy supply. Demand is growing fast and forecast to increase four-fold by 2010. The review report approves the Government's efforts to diversify supply sources, to increase liquefied natural gas and storage capacity, and to build links between Greece, Italy and Turkey.

Greece has ratified the Kyoto Protocol. Under the EU burden-sharing agreement, Greece's greenhouse gas (GHG) emission target for the first commitment period is set at 25% above 1990. In 2000, Greece's energy-related carbon dioxide emissions, were 24% over the 1990 level.

Greece's efforts to curb the growth of GHG emissions have traditionally focused on supply-side measures, such as replacing coal and oil by natural gas. Yet energy intensity in Greece has been constantly increasing. Demand per unit of GDP now exceeds the OECD Europe average and energy demand per capita has reached almost 80% of the OECD Europe average. The report recommends placing greater emphasis on the efficiency of energy end-use, since substantial emission reductions could be achieved by low cost measures. The Greek Government is working to this end by promoting third party financing of energy efficiency projects, introducing voluntary agreements with industry and improving public transport.

First elements of US hydrogen infrastructure

The US Department of Energy (DOE) has opened what it says is the world's first hydrogen energy station that can provide both fuel for vehicles and electricity. Located in Las Vegas, Nevada, the new $10.8 million station is the result of a private-public partnership between DOE, the City of Las Vegas, Plug Power Inc, and Air Products and Chemicals, Inc.

Producing both hydrogen fuel and electricity may be an attractive approach for future hydrogen merchants, who will be able to generate a steady revenue stream from electricity sales while their fuel sales to hydrogen vehicles ramp up.

Housed in the city's vehicle maintenance and operation service centre, the new station combines an on-site hydrogen generator, compressor, liquid and gaseous hydrogen storage tanks, dispensing systems, and a stationary fuel cell. It is capable of dispensing hydrogen, hydrogen-enriched natural gas and compressed natural gas.

Meanwhile, the California Fuel Cell Partnership (CaFCP) is also building hydrogen infrastructure, commissioning its first 'satellite' hydrogen fuelling system last October in Richmond, California, about 70 miles from the CaFCP headquarters and primary refuelling facility in West Sacramento. Stuart Energy manufactured and installed the fuelling system, which uses electrolysis to generate hydrogen from water and it requires only one or two minutes per refuelling.

Some of the 0.1 W, white light-emitting diode (LED) lamps being supplied to villages in Nepal, India and Sri Lanka by Dave Irvine-Halliday's 'Light Up the World' Foundation based in Canada. Realising that a single such device can supply enough light for a child to read by, Irvine-Halliday founded his organisation to supply them where most needed. Using LED technology, the Foundation can light an entire village with less energy than that used by a single, incandescent 100 W light bulb. Irvine-Halliday has now become a '2002 Rolex Laureate' as a result.

Most EU countries 'will fail on renewables targets'

EU countries will fail to reach their target to double the share of renewable energy by 2010, according to WWF and EREF, the European green energy industry group, releasing their predictions one year after the entry into force of the EU renewables Directive.

By 2010 the EU is supposed to increase the share of renewably produced power to 22% of its total energy consumption. But research by WWF and EREF suggests that, with current policies, the 15 European countries are likely to miss this target, achieving together only between 15 and 17% of the EU's electricity consumption.

The worst offenders look like being Italy and the UK. It is estimated that, by 2010 only 17% of electricity in Italy will come from renewable sources, compared with its target of 25%. The UK has a 10% target, but will only achieve around 4%, say the two organisations.

France, supposed to develop renewable electricity up to 21% by 2010, is estimated to fall behind its target by 29 TWh, equal to the electricity consumption of 3.2 million people. However, the recently approved measures for renewables could reverse this trend, as demonstrated by the large amounts of wind power in an advanced stage of planning.

Even Germany and Spain, which have committed to favourable renewable energy policies, could fail to reach their targets. Germany will achieve 12% instead of 13%, while in Spain additional measures would be required to both boost biomass and control the fast-growing electricity demand (50% rise in the last decade and 30% more expected by 2011).

The only countries expected to achieve their targets are Denmark and Ireland.

Measures that guarantee premium prices for power generators, which go some way towards compensating for subsidies offered to fossil and nuclear power, prove to be the most successful policies to boost renewables, according to WWF and EREF. However, the report suggests that without urgent measures to cut rising electricity demand, the share of renewable energy will not increase enough.

3,800 fuel cells around the world

More than 3,800 fuel cell systems are currently operated worldwide, according to a new report by online resource, Fuel Cell Today. The first such systems were introduced in the 1950s and the improvement in performance and increase in the number of units since then has been impressive.

"The 58% annual growth rate shown by last year's figures is significant, following high growth rates in the preceding years", said Fuel Cell Today's Deputy Editor and co-author of the new report, Mark Cropper. "For example, there has been significant growth in the automotive sector, with over 300 prototype vehicles built around the world since the mid-1990s."

This growth is expected to continue as companies such as Toyota and Honda lease their first fuel cell automobiles towards the end of 2002. However, other uses for this technology are beginning to emerge, for instance powering laptop computers. Toshiba plans to sell a fuel cell powered laptop from 2004.

David Jollie, the website's Editor and the report's second author, noted the mix of applications revealed by this research. "Fuel cell technology has already shown its flexibility. Several hundred units have been used for stationary power generation and even a few submarines and motor scooters boast fuel cell power sources. However, in the longer term, fuel cells could become more important. For instance, we can easily envisage 10% and more of the car market using this technology."

Cropper continued "We have seen prototypes and early commercial units in many of these markets. Interestingly, phosphoric acid fuel cells were almost the only type being sold until two years ago but they are already being overtaken by proton exchange membrane (PEM) fuel cells, as the pace of development heats up."

Contact Fuel Cell Today at www.fuelcelltoday.com

Offshore wind approaches east coast US

A relative newcomer among wind energy developers is aiming to be a leader in US offshore wind power, with audacious proposals in development for 17 sites along the east coast. Winergy LLC lists sites off the coasts of Massachusetts, New York, New Jersey, Delaware, Maryland and Virginia as potential locations for its wind facilities. Most of the proposed wind projects total hundreds of megawatts each, and three exceed 1000 MW in capacity.

The current list of proposed projects totals 12,500 MW, the equivalent in peak capacity to 12 average-sized nuclear power plants. However, it is unclear how many of these projects will be developed. The company acknowledges that the permitting process for each site is likely to take three to five years.

Meanwhile, the first attempt to establish an offshore wind power plant in the US continues to move ahead, but slowly. The proposal, by Cape Wind Associates, LLC to build a 420 MW wind facility off the coast of Massachusetts currently faces difficult issues around the proposed siting of a 17 mile transmission line that will connect the wind plant to the New England electrical grid.

RMC aggregates £5 mi

RMC's international aggregates businesses are halfway through a 4–5 year energy efficiency campaign. Total savings are expected to reach £5 million per year in the next 2–3 years.

The RMC Group is one of the world's largest heavy building materials companies, with 2,500 sites in 27 countries. Some of its business units are relatively high users of energy in the form of electricity and liquid fuels such as diesel. Overall, the total energy bill is in the region of £200 million per annum. Noel Morrin, International Environment Director, has been responsible for instigating a far-reaching energy efficiency campaign which has the potential to save aggregate companies in the Group an estimated total of £5 million a year within the next 2-3 years.

Energy is already well managed by the cement sector of the business, which accounts for about 40% of total consumption. The next major consumer with potential for significant savings is the aggregates division. Aggregates form a major part of RMC's business, with over 400 quarries, and sand and gravel deposits operational in 16 countries, accounting for around 25% of the total energy bill. The efficiency campaign began two years ago when Morrin brought in Future Energy Solutions (previously known as ETSU and part of AEA Technology Environment) as consultants to investigate the potential for saving energy within this part of the business.

Auditing energy use on-site at an RMC quarry

The campaign started with 14 pilot schemes in seven countries, including the UK, the USA, Spain, Portugal, the Czech Republic, Hungary and Austria. Each pilot project began with a fast-track energy audit conducted by Future Energy Solutions (FES) to establish the biggest energy saving opportunities. These investigations included a close look at management systems. It is important to remember that the operations and staff using the most energy are generally not the ones who pay the bills. Morrin particularly wanted FES to make the links and then help RMC with on-site training to improve awareness of the issues, as well as the training required to change practices and procedures to achieve savings.

The audits identified significant energy-saving opportunities which could be expected to save RMC in the region of 5-20% on each participating site.

Management and training

The next stage was to set up an appropriate energy management structure within RMC. On-site energy managers and national co-ordinators were appointed by local business units and trained to identify and manage energy efficiency. This stage was initially conducted by FES in the UK headquarters and on-site internationally.

The next stage was to focus on the practical measures for saving energy, based on the opportunities found during the energy audits of the sites. Often fairly straightforward alterations to common practices, such as shutting-off equipment when it is not needed, have a significant impact. Many of the savings were associated with transport, with others mainly electrical.

Transport

Transport fuel is often not immediately recognised as an energy expense. However, it can add considerable costs to operations. A driver awareness campaign at one of RMC's sites in Spain has the potential to save the equivalent of around 750,000 kWh per annum of energy (fuels), with a 6 month payback period. A large proportion is used to transport material from the quarry to the process area. Clearly any reduction in diesel use through more efficient machines, maintenance, or driver awareness measures will significantly help to reduce site-specific energy consumption (SEC).

Driver training

Suppliers of trucks are often willing to provide training to drivers on efficient driving techniques. FES cites an example where 67% of a company's total energy was spent on diesel for transporting material on site, costing over £350,000 a year. A driver training campaign was estimated to make a 5% saving – or £17,500 a year - at very little expense to the company.

Route planning

Transport routes on-site needed to be planned to maximise efficiency. Identifying the most economical routes or positions of material to reduce diesel transport costs can make a large impact on fuel savings and emissions reductions. Better positioning of temporary storage positions of materials and the use of electrical conveyers for loading off site vehicles can also help to save energy and costs.

Motors

Improvements in electrical equipment and process control present very good energy-saving opportunities. FES estimated that 90-98% of the RMC pilot sites' electrical power is used for motors, and the company had already made very good investments in electrical equipment by installing variable speed drives (VSDs) and soft-start units.

FES recommended that sites should review their motor replacement policy and investigate the opportunities to replace some with higher efficiency motors (HEMs)

llion energy savings

as part of a 'replacement when broken' motor management policy. Replacing a damaged standard motor with a new standard motor or HEM, rather than a rewound unit, will provide a net efficiency improvement. A repaired motor will drop its efficiency by 0.5-3%, depending on the quality of repair. Although there may be a small cost penalty for a new motor, the payback period on the investment can be short, in the region of 1.5 years.

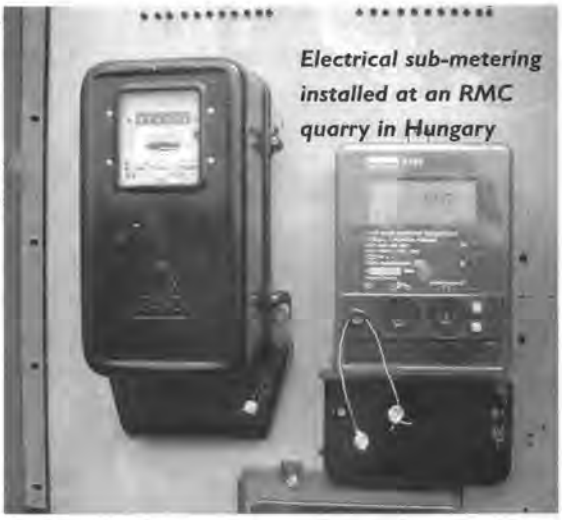
Downsizing motors can also improve efficiency, where motors are far bigger than they need to be, or where the process load has changed. Recommendations made by FES for site energy managers included full motor audits and monitoring of normal operational power consumption to look for opportunities for downsizing. Where downsizing opportunities exist, motors should be replaced from spares stock, or at the first point when a motor of reduced size becomes available. This way capital costs can be reduced.

Again, staff training and awareness make a difference. Staff are encouraged to stop motors when they are not required, but also to avoid repeated stop/starts. A motor management policy at one RMC site has identified savings of around 50,000 kWh per annum with a 6 month payback. A related initiative on water audits and the fitting of variable speed drives to pumps will save around 80,000 kWh per annum at a payback of one year. The cost of both initiatives is approximately £3,600.

Temporary power supplies

The nature of quarry operations sometimes requires temporary electrical power supplies to be installed at remote locations. For example, using a diesel generator to drive a motor-driven water pump. However, care must be taken to confirm this is the best option, including an economic analysis. The provision of a diesel generator set driving a motor can be very inefficient and, in some cases, exceed the cost of installing an electrical supply from the local site distribution point.

For example, one RMC site using a diesel generator to supply a water pump system has the potential to reduce energy use and cost through the installation of a permanent electrical supply to the water pumps used to maintain the low water table at the quarry. Currently, two diesel generator sets each rated at 200 kVA are used to supply electricity for the pumps. Normally the pumps operate for 4,400 hours a year with three or four pumps in operation at any one time. The pumps are rated at 40/50 HP and therefore represent a load of approximately 150 kW when all four pumps are operating at full load. The annual diesel used (estimate based on three months data from site) to power the generators is 343,000 litres (representing 32% of site use and 117,000 euros). It was estimated that a permanent supply from the process area would provide a payback on investment of just 7 months.



Electrical sub-metering installed at an RMC quarry in Hungary

Monitoring and targeting software

The pilot studies identified the need for monitoring and targeting software to be developed. FES advised on the content of key areas of the software, such as meter management, compressors, drivers and CUSUM analysis. The software itself was developed in-house by RMC.

Morrin says that the software development has been crucial to the success of the campaign. Although it has not been expensive to develop, it has taken time to get right. The company now has a state-of-the-art monitoring and targeting system, which it runs on the group intranet.

The software is already available in English, Spanish, German, Czech and Portuguese, and has been designed so that it can be adapted for languages to be added when new sites are brought into the system. Obviously, workers on-site need to be able to use the system in their own language for it to work efficiently. The software also takes account of other international factors, such as non-metric units used in the USA.

The development of simple software that can make complex calculations like cumulative sum of savings (CUSUM) and SEC allows for the incremental effects of many small changes to be analysed. To achieve this, it was essential for all sites to agree to weekly reporting. Beforehand, some sites were used to monthly reporting, others to a daily system. However, all sites had to agree to working on the same reporting period to allow for comparisons using 'like for like' data, so that each energy centre at each participating site can track and check changes to determine their effects. This relatively minor change to site operations generated considerable debate in some countries and has still not been fully overcome.

Where sites are all prepared to report on a common frequency, this can be extremely valuable. For example, two sites may look similar, but analysis could identify two very different energy profiles. Once anomalies have been identified, the local management can investigate why they exist and determine a strategy for tackling them. The software provides the key to identifying these issues.

The virtual library

Sharing knowledge and experiences is helping individual energy managers to progress strategies to turn monitoring data into results. In June 2002, RMC launched a

virtual library of good practice, available on the company's intranet. This gives energy managers access to good practice information from other sites, as well as from external sources, including suppliers. The library helps energy managers to share their successes.

Access to this library will be invaluable to new site energy managers as they join the scheme. Once the energy manager has established their baseline data, they can determine the best strategy for making savings, based on the experiences of other mangers at similar sites – both within their own country and internationally. The value of the library will increase as new experiences and successes are added.

Savings of £5 million a year

At the outset, two years ago, Morrin knew that the scheme had to be integrated into business operations carefully. The work is being phased in, to be certain not to disrupt normal business. Once metering is in place, it can take about six months to establish the baseline data and for the energy efficiency strategy to be established. Typically, it takes about 12 months to get the point where progress can be seriously monitored.

Site energy managers are embracing the scheme with varying degrees of enthusiasm. The rate of uptake is influenced by several factors, including relative priorities, availability of resources and the point in the market cycle where the project is initiated. Generally speaking, businesses that are in boom markets tend to be less interested than those under cost pressures. In addition, Morrin says that it can be hard to establish accurate baseline data at the beginning, because once managers can see how quickly and easily some savings can be made, they are so keen that they start straight away. So savings are already being made while the baseline data is being established. As a result, by the time the systems are fully operational, some of the 'low hanging fruit' has already been picked.

Transport energy use is a major part of RMC's total bill

The costs of implementation have not been great, and Morrin is pleased to confirm paybacks typically in the region of only 8-12 months, based on analysis from the original pilot studies and early stage implementation in the field. RMC is now expanding operations within each country, including the UK. In two years time there should be a complete uptake on priority aggregate sites. By then, Morrin expects the individual companies in the RMC Group to be collectively saving as much as £5 million a year.

Morrin is very pleased with the campaign. He says, "I feel that we are definitely in a win-win situation but the effort to get the topic sufficiently high on local business agendas should not be under estimated. When a local unit becomes an advocate, not only are we reaping the rewards of improved efficiency, but we will also be well ahead in terms of our environmental reporting. We are able to track our energy use in a very accurate way, and we can also use the systems to help with tracking our carbon dioxide emissions, as each type of fuel is logged individually by site."

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Can industry still cut 20% from its energy consumption?

Industrial energy use could be cut by 20% – energy efficiency experts have been saying this for as long as most of us can remember. But, given progress made over the last few years, is it still true?

For the UK, the answer is a resounding yes, at least according to the Environment Agency, which has released a new R&D study: *Potential for Energy Efficiency in Industry*, so long as the Government continues to encourage energy efficiency. The study, carried out for the Agency by AEA Technology, concludes that industry could indeed cut its energy consumption by one-fifth by 2020.

But this will only be achieved if recent Government policy initiatives which encourage industry to take stock of energy use are supplemented with more legislation, as expected to be included within the forthcoming Energy White Paper, says the report.

Existing Government measures; primarily the Climate Change Levy, the Emissions Trading Scheme and the regulated energy efficiency requirements of integrated pollution prevention and control (IPPC), are achieving positive results, says the Agency (but see also *Few friends for the Climate Change Levy*, opposite). But the Government must build upon these if the potential for improvements to energy efficiency is to be reached. Without new measures in the White Paper, the achievement would be around half the 20% possible.

The Environment Agency suggests that development of the Climate Change Levy and the introduction of an EU-wide emissions trading scheme – expected in the latter half of this decade – would help industry to reach the 20% target.

Energy purchasing is never simple. In the last issue, we reported on the 'crisis' said by many to be affecting the electricity generation industry in the UK. This month, we include a couple of views from the consumer's side.

'Few friends' for the Climate Change Levy

After 18 months in operation, the Climate Change Levy seems to have few friends. Even though it follows the polluter pays principal, of putting the price up on 'bad things' like fuel consumption, and down on 'good things' like National Insurance costs for employers, *writes Andrew Warren, Director of the Association for the Conservation of Energy.*

From day one, the Engineering Employers Federation has castigated the entire concept of taxing energy use, as deliberately favouring service industries over manufacturing. Following a survey of their members, they now state that this sector is losing £143 million per year. In contrast, they claim that the service industries are benefiting by £62 million, owing to the "flawed design" of the tax.

Manufacturers have paid an extra £328 million for energy as a result of the Levy, and recouped only £185 million from the cuts in National Insurance. Companies involved in services, however, have paid an extra £356 million for their fuel, but banked £418 million in reduced contributions.

The Confederation of British Industry is warning that, from this April, even the service sector will be out of pocket. CBI Director Digby Jones points out that National Insurance rates, reduced when the CCL was first introduced, are due to increase again – whilst the Levy remains.

The Government argues that the Levy is encouraging companies to reduce energy wastage. But a new survey reveals that only one third of businesses are taking energy efficiency measures in response to the Levy, and only one in four businesses believe that emissions trading encourages energy efficiency improvements.

The survey, published by London Electricity, was based on interviews with delegates attending a utilities event for energy managers – by definition likely to be amongst those most aware of any impact being made.

Only 28% felt that emissions trading would increase energy savings investments. Some 36% of those questioned said that the Levy had prompted new energy management initiatives. There was still no majority saying that the Levy had altered the company's attitude towards energy efficiency: just 46% responded positively.

In contrast, and despite the introduction of the Levy, those who had enjoyed lower fuel prices over the past 12 months outnumbered those who had seen prices rise by three to one. Few thought that the 0.3% drop in National Insurance contributions had balanced the introduction of the Levy. Just 25% of companies felt that the Treasury's claim of overall revenue neutrality – which will be irrelevant after April 2003 – had never benefited them.

The Engineering Employers Federation said that practically all the actions to save energy prompted by the CCL have been in sectors paying 20% of the full rate. This is because sectors receiving the discount have been forced to enter into Climate Change Agreements, in order to qualify. These agreements mandate energy consumption reductions as a quid pro quo for lower tax rates.

Electricity market 'is working fine'

The electricity market is working well for consumers from the industrial and commercial sectors of the market, says Chris Bowden, CEO of Utilyx, provider of an e-tendering service for consumers. But, despite currently very competitive prices, the pace of change in the market means that the need for buyers to keep-up with developments has never been greater.

As a result, Utilyx says it is moving away from simply providing a platform through which consumers can purchase energy, to a role where it adds market knowledge to its ability to execute deals. The company now employs team of people to monitor the state of the market and advise consumers accordingly.

According to Bowden, large well-informed buyers are benefiting from the rock-bottom wholesale electricity prices reported last issue (see *Energy World* November/December 2002) by concluding deals very close to the wholesale price. This is as much due to competitive forces as it is to NETA, says Bowden. Market fundamentals – oversupply – mean that electricity prices have been oscillating around a minimum close to the average cost of production.

It's a complicated picture, but forward prices for next summer have crept up a little in the last few months, from last summertime lows of around £13/MW, to around £15-£16/MW, quotes Bowden, and there is no immediate sign of change in the short-term.

There has been speculation that recent generation plant closures and mothballing could lead to an erosion of the oversupply margin to the point where prices would have to rise again. But Bowden says no. First, there would have to be considerably more in the way of closures than there have been to have any real effect on the market. And second, the first hint of this happening would bring new entrants into the market, he adds, ready to capitalise on returning margins.

Perhaps more likely, says Bowden, are some temporary price 'spikes' in response to, say, several plants being taken off the system for maintenance during a period of high demand.

So should NETA be reformed to aid the generators reported to be suffering from low wholesale prices? No, says Bowden: it would be a shame if problems with British Energy – a rather special case – caused the Government to re-interfere in market which is working.

Contact Utilyx at: www.utilyx.com

Efficient refrigeration

by David Harris, ACS Group Services Ltd

David Harris offers some simple and practical advice for the energy management of refrigerated and air-conditioned environments.

Refrigeration is the main use and cost of energy in many catering outlets, supermarkets and food storage and distribution warehouses, accounting for up to 60 or 70% of total energy consumption. Walk-in refrigeration store units, display freezers/cabinets and freestanding units are expensive to run. Therefore care should be taken not to exceed the legal minimum storage temperatures beyond the practical margins, as any excessive cooling will inevitably increase electricity consumption.

Most chilled display units have night blinds; you need to ensure that all are operational. It is recommended that the necessary action is taken to ensure that these and the covers to the chest freezers are shut as soon as possible after the store has closed. Where possible, you should try to retrofit open chest freezers with sliding transparent doors thereby substantially reducing the losses whilst the shop is open.

Rather than using the electric defrost routines in the chilled display cabinets, defrosting should be allowed to occur naturally, relying on the ambient temperature of the forced air. There is a high degree of uncertainty as to the practicality of this measure – clearly the condition of the produce cannot be placed at risk, therefore trials will be required. If you have an electricity contract which gives you a lower rate in the evening, try to take advantage of this and carry out as much of the defrosting during this period as is practical.

If your refrigeration plant employs conventional thermostatic expansion valves, it is recommended that these valves, which are self-acting, be replaced with electronic expansion valves. Electronic expansion valves are widely known to improve energy efficiency by optimising expansion of refrigerant in accordance with fluctuating evaporator and condenser temperatures. A detailed survey should be carried out to determine where they can be fitted, starting with the largest units.

Power optimisers should be fitted to any freestanding display cabinets and refrigerators to improve the operational efficiency under low load conditions. It would also be wise to fit a seven-day time switch to stand alone chilled drinks display units so it automatically turns off when the store is closed.

Regular maintenance

Spending time on the proper maintenance and repair of refrigeration units can help to resolve any problems before they occur. For example, a unit running with a blocked condenser will increase the daily running load of the unit and therefore the energy usage. Even a partially blocked condenser can increase run times by 30%. Simple, but regular preventative maintenance can have a major effect on energy costs.

By performing some minor lubrications, replenishing refrigerants and conducting small soldering operations, you will save yourself time, effort and money in the long run.

Another major contributor to wastage which often goes undetected, is the ambient temperature that the condensing units operate in. In the UK, refrigeration systems are generally designed to operate in up to a 32°C ambient; once this temperature is exceeded, the unit will be working harder and longer to reject heat from the condenser. A 10°C differential is normally required between the ambient and the condensing temperature (usually 45°C), as the ambient temperature increases, the unit will struggle to reject heat fast enough. Once ambient reaches 40°C or more, it would be unlikely that any significant refrigeration would be occurring, although the unit would continue to run, without stopping until the problem is resolved.

It is essential therefore to ensure plant rooms are properly ventilated, that is, air volumes are matched to those of the condenser fans, and that equipment installed outside is correctly sited to ensure free movement of air.

Air conditioning

In new air conditioning installations, incorrect or non existing commissioning is a potential source of wasted energy, if controls are not tested and set correctly, the condensing unit or packaged unit could run outside of its design parameters. Although this may not be apparent, as the unit may still function, it can have the serious effect on power consumption and shorten the life expectancy of the equipment.

With new air conditioning equipment, compressor technology has been introduced in the form of VRV systems. Effectively, through electronic control, the compressor, which is main source of energy usage in any system, actually slows down during operation when the electronic sensors indicate that less duty is required, for example, when area 'a' is at the required temperature, the unit slows down to adjust for the smaller duty, still required for area 'b'.

Unfortunately, with refrigeration units, no such technology exists, with the compressors utilised being more or less the same design over the last 20 years. Although recently there has been a trend towards the use of scroll type compressors; these are not themselves particularly energy efficient but, by careful design, they are being built into multi compressor packs to allow a form of capacity control. On a four compressor unit, all will run to start with, and as the capacity required reduces, each compressor will stop in turn, ensuring that the system is not running unnecessarily.

These systems are being used more and more by the large supermarket chains due to their energy control ability and the fast track installation possible.

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Danish and UK energy policies compared

by John Amos MInstE

Denmark is at the same latitude as Edinburgh, but Danish winters are colder and shorter than UK winters, and summers are hotter and longer. Danish and UK energy needs are roughly similar, but Danish and UK energy policies are very different. Over the past 30 years the Danes have made strenuous efforts to reduce energy consumption and to use energy more efficiently. An important factor has been the use of district heating to make use of the waste heat from power stations. As a result of this and other measures the Danes use less primary energy per capita than we do now, and they plan to use even less in future, whilst we expect to use more.

Danish energy policies

Before North Sea oil and gas became available, Denmark depended on imported oil and was vulnerable both to supply interruptions and to large price increases. The 1970s oil supply crises caused the Danish Government to intervene in energy matters, and the first Danish Energy Policy paper was published in 1976. The main aims were to economise, and to develop domestic energy resources, including North Sea oil and gas.

Long before the 1970s oil crises the Danes appreciated that combined heat and power/district heating (CHP/DH) schemes were one of the few ways of making use of the immense amounts of heat wasted in electricity-only power stations, and that DH reduces the need to burn fossil fuels in boilers for heating buildings. DH schemes were already installed in many urban areas, with large CHP stations supplying six major cities with both electricity and heat.

Since 1976, the Danish Government has enacted a number of national energy plans, including the 1979 Heat Supply Act, which required each municipality to prepare heat supply plans within its own area. Energy supply for space heating in Denmark was divided into areas for district heating, natural gas and individual heating.

Electricity inter-connectors to Norway and Sweden allow Denmark to import or export electricity when advantageous to do so, depending on the availability of surplus Norwegian and Swedish hydro power, and on Danish wind power production.

In the early 1980s production of North Sea oil and gas began, and it has since expanded considerably. Gas is now widely available and DH systems have been extended to serve most urban areas. After 1986 it was decided that all electricity generation should be by CHP systems, and DH systems should be supplied with heat from CHP systems wherever reasonably possible. The plan included building 450 MW of distributed, small-scale CHP systems based on indigenous fuels (natural gas, waste, biogas or biomass). The power utilities were required to purchase the electricity generated by the small-scale CHP systems. Extended heat transmission networks have been installed to connect urban DH schemes to remote, large-scale waste heat sources.

To ensure the continuing expansion of district heating, the Danish Government has had to use various economic instruments to ensure that, despite fluctuations in the prices of oil and gas, district heating is generally cheaper than other forms of heating. At present, this is not always the case with smaller schemes, resulting from liberalisation of the energy market, high natural gas prices and declining electricity prices. Nevertheless, by 1997, 50% of the electricity market and 80% of district heating was supplied from CHP systems.

Besides electricity production by CHP systems, wind power generation continues to be developed and is expected to provide up to one third of Danish electricity consumption by 2005. Energy from biomass is now also exploited, for example, by burning wood chips and selected municipal refuse in CHP power stations.

The latest Danish energy plan published in 1999 and reviewed in 2001 recognised that world supplies of oil and gas are not expected to last many decades longer. Targets were set for development of renewable energy sources. Energy research and development is to be intensified. The energy efficiency of buildings and electrical equipment is to be further improved to reduce energy consumption. CHP/DH is to be further extended and the present coal-fired power stations are to be phased-out to reduce carbon emissions.

As a result of these and other measures, Denmark plans by 2030 to reduce present energy consumption by about 15%. The energy mix is then planned to comprise oil, natural gas and renewable energy in equal parts.

Danish district heating

District heating is relatively costly to install, but is a unique way of making use of the of waste heat energy from thermal electricity production and other waste heat sources. DH systems displace the use of oil, gas or electricity otherwise needed for building space and water heating. DH is now widely employed in most developed countries in the northern hemisphere. Denmark's special contribution has been the development of increasingly efficient and less costly DH systems.

Most of the cost of DH systems lies in the distribution pipe work. Danish pipe work costs are minimised by operating DH distribution with typical flow/return temperatures of 80/40°C. Pipework can then be installed with minimal allowance for expansion. All-plastic pipe work and insulation can be used for final distribution. Properly specified, installed and operated, modern DH pipe work has an expected life of more than 50 years. Distribution heat losses are typically 20%.

The wide flow and return temperature difference means that flow volumes are minimised. Building heating systems are designed so that water is not discharged into the return main until all the useful heat has been extracted from it. By these means pipe sizes are minimised and variable flow water distribution is employed to economise on the pumping

energy required.

Distribution pipework is steel or plastic as appropriate and is pre-insulated with plastic foam. Building heating terminals are generally packaged complete with valves, heat exchangers, pumps and controls.

Heat from CHP

CHP energy efficiencies of more than 85% are possible. Danish CHP/DH systems normally have large hot water heat stores so that maximum electricity can be generated when the price is highest and the heat produced can be stored for use later when the demand for electricity is reduced.

For example, Viborg has a combined cycle CHP plant to serve the eleven local district heating schemes and 10,000 households via a 12 km heat transmission network. The electrical output is 58 MW (electrical) and the heat output is also 58 MW. The plant's overall energy efficiency is 88%. The Viborg heat storage tank holds 19,000 m^3 of water and the heat supply/return temperatures are 95/55°C.

Heat distribution within built-up areas is normally supplied from one or more heat-only substations, often those built when the local district heating system was first installed. The original coal or oil-fired boilers are now generally reserved for use in emergency, or for peak loads. In many areas the local substations take their heat from heat transmission networks served by local CHP power stations, or other major waste heat sources.

Substations are normally unmanned, with all operation controlled automatically, including water flows and temperatures. In addition, unmanned peak load boiler plant may be provided, which can be started and operated by remote control.

UK energy policies

Since the 1960s, nuclear power, oil and natural gas have gradually replaced the use of coal for most purposes, particularly electricity production. The Royal Commission on Environmental Pollution (RCEP) 1976 report predicted large future increases in UK electricity demand, but forecast that nuclear power would take over when oil and gas from the North Sea begins to run out.

Since the 1970s, UK energy consumption has continued to grow with no really effective attempts to control it. We have allowed the great energy utilities to compete for maximum shares of the available markets, with little apparent consideration for future fossil fuel availability. There is now no possibility of nuclear power being expanded to the extent projected in the RCEP 1976 report.

The large scale exploitation of our fossil fuel reserves and control of our major energy utilities is now in the hands of private companies and the liberalised market. Coal-fired electricity production is being phased out earlier than expected under pressure from American companies wishing to build gas-fired power stations instead. Our North Sea gas supplies will soon be exhausted, and we shall need to import large quantities of gas by pipeline from Russia and elsewhere. By 2020, perhaps as much as 125 million tonnes of oil equivalent (mtoe) of gas will be needed annually, at a cost of perhaps £14,000 million or so in foreign exchange.

Some DH was installed in the UK in the 1960s, supported by Property Services Agency research. However, only a few of the original schemes took heat from power stations. The technology employed is now dated. Operating costs have risen through increases in fuel costs and reliability problems. As a consequence some UK DH systems have been removed. DH systems have generally fallen from favour in the UK, though some relatively small group and community heating schemes have been installed in recent years. Sadly, NETA has slowed down the introduction of distributed, small-scale CHP/DH schemes.

Transport uses a high proportion of UK primary energy. The RCEP 2000 Energy Report proposes a number of corrective measures. However, fuel use by road and air transport continues to increase, with no effective means of reducing it in prospect. Rail and bus travel is all in the hands of private companies, and there has been no obvious attempt to improve and co-ordinate services with the object of reducing the need for private cars and road freight transport.

We have chosen not to develop tidal barrages for electricity production. Wind power is not being developed as rapidly as it could be. Combustible municipal refuse is still being buried unsorted in large quantities. Selected fractions could be safely incinerated using the latest clean technology, and the heat used for CHP/DH schemes. We have huge areas of moorland, some of which could be used for growing timber and other energy crops.

Many energy saving techniques have been publicised. End users have all been exhorted to save energy. There have been some subsidies for minor efficiency improvements and encouragement to developing small-scale renewable energy resources. However, energy consumption continues to grow.

Government professional research in

	Denmark	UK
Area	16,600 square miles	93,800 square miles
Population	5.3 million	58.8 million
Population density	320/square mile	620/square mile
Urban population	85.3%	89.5%
Gross domestic product (GDP)	$162 million ($33,100 per capita)	$1,283 million ($24,200 per capita)
Primary energy use (commercial fuels)	18.9 million tonnes of oil equivalent (mtoe)	224.0 million tonnes of oil equivalent (mtoe)
Energy ratio (mtoe/GDP x 100)	11.7	17.5
Energy use per capita	3.6 toe	4.0 toe
Annual average temperature	8°C	9°C
Degree days	3033 (Copenhagen)	2390 (London)

energy matters has been abandoned. As a result, reliable assessment of new policies and technology is difficult to obtain.

UK ENERGY TECHNOLOGIES

UK energy technologies have not developed significantly since the 1960s. In respect of energy use by the domestic and service sector, we are technically backward compared with many of our European neighbours.

About one fifth of our total primary energy resources is lost in our major power stations and associated distribution systems. We have no district heating schemes arranged to use the waste heat from power stations.

The majority of existing UK dwellings and other buildings are draughty, poorly insulated, and heated somewhat inefficiently with electricity or gas. However, the energy efficiency of new buildings is slowly improving through progressive tightening of the UK Building Regulations. Current best practice uses energy relatively efficiently, but its widespread adoption is likely to take considerable time.

CONCLUSIONS

Denmark appears to be well placed to reduce its future energy consumption and carbon emissions as planned. If energy system development continues as intended, including development of new renewable technologies, Denmark should be well placed to minimise oil and gas consumption after 2030 when North Sea supplies begin to run out.

In contrast, the UK is using up its oil and gas resources more quickly than necessary. We seem largely unaware of the urgent need to adopt more efficient energy supply systems, to make greater use of renewable resources, and to use all energy more efficiently. We have more indigenous resources of all kinds than Denmark and, if we adopted similar policies and technologies, there is no reason why we should not be even better placed than Denmark when North Sea oil and gas supplies begin to run out.

However, the UK's undiscriminating acceptance of liberalised market disciplines means that the Government's powers to intervene in energy matters are seemingly constrained, even when our national interest is at stake. We have placed our energy supplies in the hands of private companies, who understandably have their own commercial objectives. It is to be hoped that we wake up to our predicament before the oil and gas begins to run out, and the companies running our affairs retire to distant shores.

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The opinions expressed here are those of the author, and do not necessarily reflect those of Hoare Lea and Partners.

Taking a different tack – the IEA view

Danish energy policy has started to show distinct signs of change since the election in November 2001 of a new Government. There has been some back-tracking away from the previously strong focus on encouraging and supporting CHP and renewables, and towards a more market-based system. Indeed steps proposed by the new Government to progress market liberalisation may well involve reduced support payments for electricity generated by wind and the combustion of wastes. Below is the view of the International Energy Agency.

In a new report: *Energy Policies of IEA Countries – Denmark – 2002*, the International Energy Agency (IEA) recommends that the new Government completes the transition to competitive, free markets. Danish energy policy has traditionally focussed on environmental protection and energy security but, in the past four years, greater emphasis has been placed on opening up the gas and power markets to competition. Since April 2001, large electricity customers are allowed to switch suppliers, and by this month (January 2003), all electricity consumers will be able to do so. Since August 2000, 30% of the natural gas market has been open to competition.

But there remain issues to be addressed. Electricity from renewables and CHP is currently given automatic priority, with the result that only 60% of the electricity market is governed by competitive price signals.

Today, Denmark has the highest share in the world of electricity generated in CHP plants, and one of the largest existing district heating systems. In 2000, 12.6% of Danish electricity generation was from wind turbines, also the highest of any nation. Denmark is expected to come very close to meeting its carbon dioxide commitments, if all of its current abatement policies remain in place, particularly a national system of tradable carbon dioxide quotas for power plants.

Denmark is now a net energy exporter. In recent years, high prices have even led to increased exploration and new oil and gas finds in the North Sea. Estimated recoverable reserves of oil now stand at 260 mtoe, which should enable Denmark to sustain the current level of oil production for the next 14 years.

Denmark has liberalised its power market beyond the requirements of the European Union's 1996 Electricity Directive. Since April 2000, customers consuming 10 GWh per year have been free to choose their supplier. On 1 January 2001 the threshold was lowered to 1 GWh. By this month, all end consumers will be able to choose their supplier.

Further adaptation to market conditions will be necessary. Denmark's grid operators currently must purchase power from these sources at fixed and above-market rates despite their higher costs, even if cheaper, fossil-fuel power stations have to be taken off the grid. Electricity prices for residential customers are therefore among the highest in IEA Member countries. The report recommends that support for renewables and CHP be better adapted to the competitive market.

Confidence in markets

by Graham Ward, Chairman, British Energy Association, and Partner, PricewaterhouseCoopers

Corporate scandals in the USA, exemplified by Enron and WorldCom, have caused earthquakes in the world's financial markets. Like physical earthquakes, the effects have been wide-ranging and indiscriminate. They include: loss of confidence in management, lower share prices, higher cost of capital, threats to employment and stifling of innovation. High standards of corporate governance are key to the restoration of confidence in markets. On 4 November 2002, I chaired a British Energy Association workshop which explored these issues. We were addressed by three distinguished speakers: Sir Bryan Nicholson, Chairman of the Financial Reporting Council and a former President of the CBI; Peter Murray, Chief Executive of Railways Pension Trustee Company and a former Chairman of the National Association of Pension Funds; and Judith Hanratty OBE, Company Secretary of BP plc. This article reflects the discussion which took place.

Since the Cadbury report in the early 1990s standards of corporate governance in the UK have been dramatically improved and are now probably the highest in the world. The Combined Code, which resulted from the Cadbury and subsequent reports and requirements of the Turnbull Report, on risk management and internal controls of companies, were given force by the London Stock Exchange making it mandatory for listed companies to explain instances of non-compliance with the Code. The listing rules are now the responsibility of the Financial Services Authority (FSA). Under the Government's Company Law Review White Paper proposals, responsibility for corporate governance will pass to the Financial Reporting Council (FRC). Presumably the FSA will continue to take a role in enforcement.

Clear and honest accounting is vital to market confidence. Both will be boosted by the European Union's requirement for the consolidated accounts of all listed companies in the European Union to be prepared according to International Accounting Standards from 2005. Enforcement depends on both effective audit and independent review. In the UK the Financial Reporting Review Panel (FRRP) takes the latter role. The system works and abuses, effectively, have been eliminated. This should be contrasted with the position in the US where, despite the large resources the SEC has at its disposal, it failed to spot Enron. The US style 'cook book' approach, which can lead to boards abdicating their responsibilities to lawyers, has been seen not to work. In Europe, attempts are being made by securities regulators to deal with the very difficult issue of achieving consistent international enforcement in different countries with different legal systems. It is to be hoped that the Financial Services Authority in the UK will support the effective FRRP system, which is to be commended for wider use.

The UK Government is taking a holistic approach to financial reporting and governance issues, see box A. It is very difficult to define the point at which public opinion has been satisfied in respect of corporate governance but the actions set out in the box do seem to address the critical issues. While not being complacent, in the UK we must hold on to our successful approach of: "principles not law; monitored self-regulation; avoiding putting too much in primary legislation; and unitary boards." This should achieve the right balance of value creation and principled governance.

Box A: UK Government-inspired actions in respect of corporate governance

- The DTI has issued new rules on directors' remuneration disclosure.
- The Higgs review of the role and effectiveness of non executive directors is to report this month.
- The FRC has set up a group to review audit committees, also reporting this month.
- The Company Law Review will: create a new Standards Board to oversee corporate governance; codify director's duties; and provide for a mandatory Operating and Financial Review for the most major companies.

An investor's view

Major investors, such as RAILPEN, are concerned with companies' long-term performance, which in turn requires good corporate governance. RAILPEN has had an active corporate governance and UK voting policy since 1992 and works with others through the Corporate Governance Forum. RAILPEN's definition of corporate governance is "how companies are governed through their boards of directors and how directors are accountable to shareholders and others." Traditionally, shareholder activism in the UK has been low but there is now a growing consciousness of the need for it, for example as promoted in the Myners Report. Other recent developments include activism guidelines issued by the UK Institutional Shareholders Committee, which are a voluntary but persuasive 'code about a code' for fund managers, requiring disclosure by fund managers of their activitism policies; and The Hermes Principles, the first set of principles published by an investor.

Corporate governance is not just an overhead, it is a process that leads to long-term value creation and reduces the likelihood of the occurrence of disasters. Importantly, good governance practices, such as having independent and effective non executive directors, can reduce the cost of capital.

While it is clear that the energy sector needs to follow best practice, the Enron

– corporate governance in the energy sector

difficulties mean that the sector needs to be seen to try harder than the rest. This is particularly true of corporate social responsibility and environmental issues. Companies must demonstrate robust internal controls and risk management and, because of the high risks faced by energy companies, they must focus on transparency and clear communication of risks and risk management. Implementation of new proposals from the Accounting Standards Board and forthcoming proposals from the Company Law Review in respect of an Operating and Financial Review are very important.

Independent audit is an important contributor to market compliance. Both standards of audit practice and standards of independence should be based on principles, not detailed rules. Box B summarises an investor's view.

The corporate view

From the viewpoint of a diligent company, we should not forget that publishing lengthy codes of ethics is not the same as following ethical practice. Corporate governance is a separate and distinct task from management and the two should not be confused.

BP separated the role of the CEO and the Chairman in 1992 and wrote down its goal in a single sentence. This was linked to long-term shareholder value and a focus on the core activities of oil and gas. They also articulated the role of the board, linking the board to being the agent of the shareholders and therefore requiring to know the preferences of the shareholders. The authority delegated to the CEO by the Board was then determined and clearly set out.

BP places a lot of emphasis on effective monitoring. The CEO and the executive directors are monitored by the non executives, on behalf of the shareholders. This means that the non executives must be independent of management, challenging but not adversarial, and must satisfy themselves that there are proper internal controls and that management is being open with them. Nevertheless, the importance of the unitary board remains, with the executives and the non executives bound together in their responsibilities to shareholders.

Effective communication between the company, analysts and shareholders is essential. Clearly the CEO will meet with analysts and there are well-established links between the non executives and the shareholders. The issues, however are complex and debate with investors and market representatives needs to be properly structured as part of a formal process.

Under UK law, there is a concentration on the relationship between the company and the registered shareholder. For governance purposes, however, the board will concentrate on fund managers, whereas political concern tends to focus on the rights of the beneficial holders, that is, the UK fund participants. US law makes matters even more complicated by introducing even more stakeholders into the equation.

It can be very difficult for a conscientious company to satisfy governance demands. BP has a library of some 50 corporate governance principles, with a highly qualified lawyer working full time on dealing with the issues. Some of the codes conflict, some are inappropriate but more are on the way.

Confidence, however, demands that corporate governance is distinct from the management of a company and that there is a clear focus on governance and on transparency between boards and investors.

Box B: an investor's view of governance

- Sound corporate governance fosters prosperity.
- Corporate governance is an evolutionary process.
- Shareholders have a role to play in holding management to account.
- Governance should not be regarded as a bureaucratic process.
- The interaction between corporate governance, corporate social responsibility and cost of capital is particularly important for the energy sector.
- Effective, independent audit is essential.
- The energy sector needs to try harder than the rest.

The way ahead

Restoration of market confidence requires demonstrable and demonstrated integrity in business, the professions, regulators and governments. In particular we require:

- High quality, transparent financial reporting should be based on a robust and stable three legged stool of financial reporting standards, standards of auditing and ethical guidance, founded on a solid bedrock of enforcement.
- Standards and guidance should be based on clear principles, not on detailed rules.
- Standards should be international and should be set by international bodies.
- Company reports should be clear and focus on the main messages.
- Principles of good governance should be established on an international basis by the business community. These should include ensuring that no single individual has unfettered powers of decision making, and requiring an effective Audit Committee, or equivalent, comprised of independent directors.
- Governments, companies and professions must be tough on fraud and tough on the causes of fraud.
- Confidence depends on having high quality directors and auditors. They will only be there if there is a fair liability regime giving a proper balance of risks and rewards.

None of this has any value without high quality enforcement. This requires a regulatory framework giving consistency and co-operation amongst professional bodies, market regulators and governments, necessarily within nations but with open co-operation amongst nations.

Information

Double or Quits? The Global Future of Civil Nuclear Energy *Malcolm C Grimston and Peter Beck*

Published by Earthscan for the Royal Institute of International Affairs (www.earthscan.co.uk) at £18.95

Nuclear power is firmly back on the agenda in many countries, but the debate around its future remains both polarised and emotive. Dispassionate information is hard to come by. This book attempts to – and succeeds in – filling that gap. Predictably, the authors (Grimston has written for *Energy World* in the past) conclude not with an answer to the double or quit question, but set out the actions required by both the nuclear industry and governments which would allow a proper assessment of whether nuclear power should be given a 'second chance'. And there is some sense of urgency. With more than 80% of the world's nuclear power capacity now between ten and 30 years old, and thus due to close before 2030, its replacement – nuclear or otherwise – needs planning now.

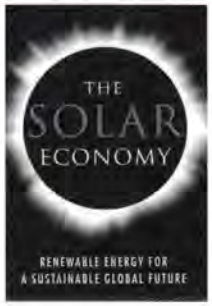
A thorough, thought-provoking and very readable book; although whether it meets the needs of protagonists on either side of the debate is unclear.

Small is Profitable - the Hidden Economic Benefits of Making Electrical Resources the Right Size *Amory B Lovins and others*

Published by the Rocky Mountain Institute (www.rmi.org) at $60, distributed by Earthscan (www.earthscan.co.uk)

An enormous and detailed book, assembled by a hugely well-respected researcher, thinker and author, this work recounts the history of the "extraordinary transition now underway from very large to mainly small power plants" a subject which has been covered many times recently in *Energy World*. Starting with a careful look at the technicalities and economics of existing electricity generation systems, the major part of the book is a lengthy survey of the advantages of distributed resources, followed by a listing of the policy action required to make the change.

The Solar Economy - Renewable Energy for a Sustainable Global Future **Hermann Scheer**



Published by Earthscan for the Royal Institute of International Affairs (www.earthscan.co.uk) at £17.99

Scheer's message is that, not only are fossil fuels threatening massive environmental and social disruption, but they will also run out within decades. Even before then, the conflicts and imbalances they cause in the Middle East and elsewhere in the world's economy will be frighteningly exacerbated. The time is now to adopt the alternative – renewable energy and, above all, solar. Forget Kyoto – all talk and no action – this book shows how technological challenges can be met using indigenous, renewable and universally available resources, and predicts the enormous benefits which will flow from doing so.

Beyond Kyoto: Energy Dynamics and Climate Stabilisation

Published by the International Energy Agency (www.iea.org) at $75

The third in a new series of publications from the IEA which attempt to describe and quantify the progress being made in fighting climate change. This book suggests how negotiators might address longer-term objectives with due regard for both uncertainties and costs. The other two in the series are *CO_2 Emissions from Fuel Combustion: 1971–2001* and *Dealing with Climate Change: Policies and Measures in IEA Member Countries*. "We have to find a way to help all countries adopt commitments, with fewer concerns about unknown costs or constraints on economic development," says the IEA in the third volume.

Communication skills for engineers and scientists *John Venables – editor*

Published by the IChemE (www.icheme.org) at £12.50

A slim, 100-page booklet, given to all first year student members of the IChemE, this work goes along with the common assumption that most engineers and scientists are poor communicators. Pitched at a basic level, yet probably useful for many quite experienced people, its offers guidance on how to write, use the phone, send e-mail, apply for jobs, make meetings work and speak both to groups and to the media. It is enlivened by good cartoons.

Thoughts on a three-way merger

Editor,

When formed in 1927 as the Institute of Fuel, the founders included a fair sprinkling of DScs. We were, indeed, an elite institute. The rapid growth of manufacturing industry in WW2 and the shortage of fuel in the immediate post-war years led to a relaxation of the academic standards required for admission to corporate membership, but those admitted were engineers skilled in the practice of fuel technology, whose contributions towards improved efficiency in fuel utilisation were priceless. This dilution delayed the recognition of the Institute as a licensed member of the Engineering Council and many of us had to seek CEng status via other Institutions. Nevertheless we remained faithful to our favourite professional body.

The decline in manufacturing industry coupled with the increased availability of oil and natural gas resulted in a decreased demand for fuel technologists and so membership of the Institute declined. This decline has been halted to some extent by the relaxation of entry conditions to include a wide range of non-technical professions. Even so, the continued existence of the Institute in its present form will become untenable within the next few years due to the increased financial burden imposed when the existing lease on the Devonshire Street HQ expires in 2009.

I would venture to suggest that an organisation comprising only IGEM, IP and InstE would cater for a minority only of 'energy professionals'. Such a body must include the IChemE, CIBSE, CIWEM and the IOM – and possibly others. Furthermore in my opinion it would not prove attractive to the CEng contingent of our membership.

At HQ there seems to be a dread of us being swallowed up by one of the major institutions. In my opinion our CEng contingent must surely benefit by moving in with Mechanicals. Regrettably, the CEng membership is probably in a minority. Many of them do not take part in Learned Society activities and may not bother to vote on the proposal. Therefore I expect to see this proposal go ahead but it will be a sad day for the old Institute of Fuel members.

Harry Freeman, CEng FInstE

Members' comments on the merger with IP

During the merger discussions both the IP and InstE have worked to develop an open and consultative process to ensure members' views take precedence. Over the last nine months the InstE has received many communications from members, both of a positive and sometimes negative nature. Most recently, we have received feedback from a letter sent to members from the President John Blackhall. We have printed a range of the (abridged) communications received to provide an overview of the opinions received.

"Sorry to hear IGEM pulled out of negotiations, am sure the proposal would have gone through had it been put to the total membership. I am delighted you are going ahead with IP despite the setback."

CEng FInstE

"I would strongly suggest that lines of communications are kept open with IGEM for the next few years. With the groundwork done, they should be offered the chance to partake in a second 'streaming' later."

Graduate member

"From what I know, and from what I see in the InstE Journal, there seems to be a degree of whitewashing occurring as far as information to the members and branches is concerned. If due diligence by IGEM has lead to concerns then InstE should have similar concerns, possibly? I would like to think that InstE puts to its members the alternative of a merger with IGEM."

CEng MInstE

"I strongly support the InstE's intention to address a wide range of topics, including primary fuels and renewables, power generation and distribution and end use efficiency."

CEng MInstE

"Thanks for the continued information regarding the progress in merging with IP. As a member of both institutions I am more than happy with the concept of merging but please, lets retain the benefits of existing professional membership. One area that concerns me is the IP technical committees and publications. These are essential for the industry and for engineers such as myself."

IEng MInstE

"I feel that the institute, in common with many others, has found it somewhat difficult with limited resources to deliver the expected services to members. In recent years the staff of the institute have done sterling work but I am convinced that the merging of similar institutions can only bring benefits. I strongly support the merger with the IP. I think that the main advantage will be a much enhanced voice in the way the UK achieves a better attitude to the efficient use of energy and the protection of the environment for future generations."

CEng FInstE

"Over recent years, I was very pleased to witness a gradual, but significant shift towards renewable energy in the material presented in Energy World and I can only assume and hope that this shift also reflects a change in attitude within InstE. Given the problems associated with fossil and nuclear sources of energy, renewable energy is the only way forward in the medium and long term. I am seriously concerned that recent efforts by InstE in this direction might be seriously undermined, or at the very least diluted, by the proposed merger with IP and I therefore strongly object to such a merger."

MInstE

"I send my good wishes to the Institute and am pleased to support the merger and am disappointed that IGEM have backed out. Energy is so vital to the nation, a single body to represent all players would seem to be the most effective and economical route to pursue."

CEng FInstE Past President

Events

January 2003

InstE Branch Event
Energy briefing for senior engineers
Date and venue tbc
Contact: South Wales and West of England Branch - Geoff Spiller
Email: gspiller@ntlworld.com

InstE Branch Event
Windfarm developments
Seminar, 9 January, Birmingham
Contact: Midlands Branch - Vian Davys
Tel: 07710 008781
Email: vian.davys@pgen.com

InstE Branch Event
Technical visit - Wrights Buses
15 January, Ballymena
Contact: Northern Ireland Branch - Ciaran McGrath
Email: mcgrathc@belfastcity.gov.uk

InstE Branch Event
Energy efficiency and conservation
Conference, 15-17 January
Hong Kong
Contact: Hong Kong Branch - Raymond Fong
Email: rayfong@hkpc.org

Renewable energy
Conference, 20-21 January
London
Contact: SMi
Tel: 0870 9090 711
www.smi-online.co.uk/renewable/asp

InstE Branch Event
Meeting with Institute of Petroleum
23 January, venue tbc
Contact: North West Branch - David Armstrong
Tel: 0161 485 1127
Email: david@armstrong1001.freeserve.co.uk

Private utility
Conference, 24-26 January
Exeter
Contact: Turret West Ltd
Tel: 01409 241166
Email: info@privateutility.co.uk

Environmental technology
Exhibition and conference
30 January - 2 February, Athens
Contact: Helexpo
Email: info@erasmus.gr

February 2003

InstE Branch Event
The Mayor's London energy strategy
Date tbc, London City Hall
Contact: London and Home Counties Branch - Matt Leach
Tel: 020 7594 9328
Email: m.leach@ic.ac.uk

World oil and gas reserves: abundant or scarce?
Conference, 6 February, Paris
Contact: Institut Francais du Petrole
Tel: +33 1 47 52 71 60
Email: benedicte.reverdy@ifp.fr

E-world energy and water
Congress, 11-13 February
Germany
Email: mail@e-world-of-energy.com
www.e-world-of-energy.com

InstE Branch Event
An energy strategy to give our descendants a decent life
12 February
University of Leeds
Contact: Yorkshire Branch - Andrew Mallalieu
Email: barbarab@evansu1.f9.co.uk

Oil reserves and resources - the depletion debate
Debate, 13 February, London
Contact: Institute of Energy
Tel: 020 7580 0008
Email: events@instenergy.org.uk

Energy management
One day course, 13 February
Leeds
Contact: Institute of Energy
Tel: 020 7580 0008
Email: events@instenergy.org.uk

Fuelling the world economy: future risks and opportunities
17 February, London
Contact: Marta Kozlowska
Tel: 020 7467 7100
Email: marta@petroleum.co.uk

What next for nuclear power?
18 February
Contact: Energy Industries Club
Tel/Fax: 01622 858762

Standards in managing energy
Workshop, 19 February, Leeds
Contact: Institute of Energy
Tel: 020 7580 0008
Email: events@instenergy.org.uk

InstE Branch Event
Technical visit - wind turbine manufacturer
19 February, Isle of Wight
Contact: South Coast Branch - Bob Olding
Tel: 01202 456307
Email: bob.olding@bournemouth.gov.uk

InstE Branch Event
Your part in Part L
19 February, Birmingham
Contact: Midlands Branch - Vian Davys
Tel: 01970 617585
Email: vian.davys@pgen.com

InstE Branch Event
Branch AGM - followed by a presentation about Aero-generation
25 February Risley
Contact: North West Branch - David Armstrong
Tel: 0161 485 1127
Email: david@armstrong1001.freeserve.co.uk

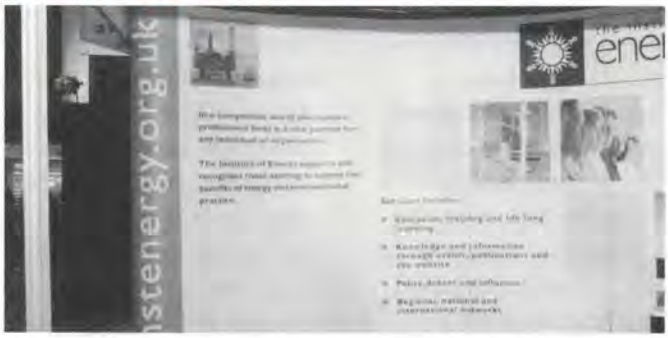
InstE Branch Event
Climate Change
Seminar, 25 February
Contact: Northern Ireland Branch - Ciaran McGrath
Email: mcgrathc@belfastcity.gov.uk

InstE Branch Event
Annual Idris Jones memorial lecture: Emerging industrial scale energy technologies
Lecture, 28 February, Cardiff
Contact: South Wales and West of England Branch - Tony Boulton
Tel: 0117 932 3322
Email: a.boulton@talk21.com

For further information about events, and to view the Institute of Energy's events calender please click on to our website at: www.instenergy.org.uk/events/calendar.htm

InstE Branch events are open to everyone regardless of the branch they are organised by.

Nemex and Energy Manager of the Year



Once again the Institute of Energy exhibited at Nemex in Birmingham. The stand provided a great opportunity for the InstE, including John Ingham and members of the membership, education and marketing teams, to make contact with familiar faces and also meet many new ones, who were interested in membership, future events and energy management training.

Nemex also saw the presentation of the 2002 EIBI Energy Manager of the Year Award, which is accredited by the InstE. The Award went to a very well deserving Don Lack FInstE Team Energy Manager at Leicester City Council. Congratulations to Don and the other finalists for the award.

Each year the InstE also recognises individual excellence with a number of other awards for outstanding contributions to various fields in the energy sector. Please see the list below.

Recognising Individual Excellence

Thring Award

For an outstanding project which demonstrates the likelihood of significant energy savings from recommendations. Preference will be given to candidates who can show that substantial savings have already arisen. Open to students on energy management courses; accredited by the InstE.

Prize: £100

Roscoe Award

For the best paper presented to an InstE branch meeting.

Prize: £250

H K McAndrew Student Award

For the best paper presented by the author to the InstE's Midlands Branch. Candidates should be under 30 years of age and preferably student members of the InstE. *Prize: £100*

John Rayner Shield Competition

For the best student paper presented by the author at the InstE's Scottish Branch annual student's evening. Candidates are normally undergraduate students and the papers often relate to to their work experience during a sandwich course or a final year project.

Prize: Engraved Shield + £50

How to apply

If you would like to apply for one of these awards, or you know an individual who should receive recognition for their work, contact the InstE's secretariat with your nominations.

Email: secretariat@instenergy.org.uk

People

John Ingham

John Ingham CEng FInstE, immediate past President of the InstE, has recently taken up the position of Secretary and Chief Executive of the Institute of Energy. This follows Louise Kingham's appointment as Director General of the Institute of Petroleum and Chief Executive designate of the proposed 'Energy Institute', should members vote for it to proceed.

John is a longstanding member of the Institute of Energy, having joined the Institute of Fuel as a student member whilst at Leeds University and becoming a corporate member in 1974. He has long been associated with the Midlands Branch, and has served on the committee for the past nine years, becoming Branch Chairman in 1996. In this capacity he first became a member of Council and was subsequently invited to become Hon. Treasurer of the Institute of Energy, a position he held for three years before accepting his nomination as President Elect in 2000. More recently he has been very actively involved in the merger proposals as a member of the Merger Steering Group.

Nellie de la Monneraye

Nellie de la Monneraye recently joined the InstE team as Education Services Administrator, replacing Vicky Ratcliffe. To get in touch with Nellie tel: 020 7580 7124 or email: education@instenergy.org.uk.

Don Lack

Don Lack FInstE, Team Energy Manager at Leicester City Council was awarded the EIBI Energy Manager of the Year award - accredited by the Institute of Energy - at the recent Nemex exhibition. Don was congratulated for his significant personal contribution to energy efficiency and his vital contribution to the profession as a whole.

Eion Lees

Dr Eion Lees FInstE is to step down as Chief Executive of the Energy Saving Trust at the end of January after almost 10 years. He is will continue to work with EST in an advisory capacity and will pursue other interests including European environment consultancy.

If you would like to have information included, please send details and a photo to Energy World People, 18 Devonshire Street, London, W1G 7AU or email energyworld@instenergy.org.uk.

Data protection

A number of members have previously ticked the 'data protection box' on their subscription renewal form. This is often out of habit when providing personal details; to avoid receiving a deluge of unwanted glossy brochures. However, the InstE does not sell membership data and is fully registered under the Data Protection Act. Many members are not aware that by ticking the data protection box on their subscription renewal form the InstE is prevented from keeping them informed of future activities.

As we believe it is important to keep members informed of future events, training and education services, branch activities and other promotions that we are running, we would like members to re-evaluate their data protection status.

In the 2003 subscription renewal forms that were mailed to members in December all members have a choice of ticking two boxes. One to be kept informed of future activities and promotions and the other only to receive InstE publications and formal corporate communications.

We hope that many of you will tick the box that allows us to keep you up-to-date. The most cost-effective way for us to do this is to email you, so please provide us with an email address if you have not done so already.

Membership survey

A membership survey was enclosed with your membership subscription renewal notice that you would have received in December. The survey has been commissioned to evaluate the effectiveness of our service to you and identify where improvements can be made. Please take the time to complete the questionnaire and return it with your renewal notice in the reply paid envelope provided.

Yearbook and Directory

In December you would have been mailed your copy of the InstE Yearbook and Directory 2003. We hope the edition serves you well. We always welcome suggestions to continue the development of this publication, so if you have any views or feedback please email Joanna Heke, Marketing and Communications Manager on jheke@instenergy.org.uk.

If you would like information about advertising opportunities in the Yearbook and Directory 2004 or you would like your organisation to be listed in the directory section please email info@instenergy.org.uk.

Membership subscriptions

Just a reminder to all members that your subscription for 2003 is now due. If you pay your subscription in January each year you should have received a subscription notice in December. If you are in the September or November subscription year (that is, elected to membership towards the end of 2001) you will have received your notice in October.

If you have recently paid, thank you for your continuing support. If you haven't, don't forget that your membership services will lapse after three months. We want to keep all our members happy so if there is any aspect of the membership service you would like to talk about before renewing your membership, please don't hesitate to contact Sarah, Sanjeev or Holly on 020 7580 0077.

Members get members

Your endorsement of the InstE is by far the most effective way to recruit new members. More members mean a stronger InstE. This means that our professional standards are promoted to a wider audience, our influence is greater and we can do more for you as a member.

You can assist in our ongoing membership campaigns by promoting the InstE to your colleagues and help us to identify new members. If you know of an individual or organisation that would benefit from joining the InstE you can assist in a number of ways:

- Make sure the individual or organisation receives a copy of the InstE membership information brochure, this can be obtained by telephoning the Membership and Education Office on 020 7580 0077;
- Direct interested parties to the InstE website at www.instenergy.org.uk. If they click on the membership section, all the benefits of membership are explained and there is a membership form and guidance notes so they can submit an on-line application;
- Pass on their names and contact details to the Membership and Education Office and we can contact them directly and discuss the benefits of joining the InstE and their application for membership;
- Finally, applicants need sponsors and this can be the hardest part of the application for some, particularly at Technician Member grade where the applicant may not know many members of professional bodies. Recommending attendance at branch meetings is a useful way of attracting new members and helping them meet potential sponsors.

Council Composition 2003

The revised Code of Governance and Bye-Laws were approved at a Special General Meeting of members held at Devonshire Street on 17 July 2002 and subsequently confirmed by The Privy Council. The transitional arrangements were agreed by Council on 22 October 2002 and with effect from 1st January 2003 the new Council, duly elected/appointed in accordance with Council Regulations, will be as follows:

Mr J Blackhall CEng FInstE*
President and Chair of Council
Prof M Fry CEng FInstE**
President-Elect
Dr J Wade MInstE***
Vice-President
Eur Ing R Wilkie CEng MInstE*
Honorary Secretary
Mr D Barber CEng FInstE*
Honorary Treasurer
Mr N Peacock CEng FInstE*
Chair of Branches Panel
Dr B Jenkins CEng FInstE*
Chair of Publications Panel
Mr C Boocock CEng MInstE**
Chair of Membership Panel
Mr T Golesworthy CEng MInstE**
Chair of Events Advisory Panel
Mr A Day CEng MInstE****
Chair of Education and Training Panel
Mr A Willox IEng AMInstE*****
IEng Representative

There is a vacancy for an Eng Tech Representative and nominations in writing are invited to fill this position from any duly qualified member. Any three corporate or Associate Members may nominate in writing an Incorporate Engineer to serve on Council, a vote for Associate Members being by Associate Members only

The following members have been nominated and elected to represent their respective branches on Council:

Mr E Curd CEng MInstE
North West
Dr T Heppenstall CEng MInstE
North East
Dr N Russell MInstE
Yorkshire
Mr K Parker CEng FInstE
Midlands
Prof N Syred CEng FInstE
South Wales and West of England
Dr M Leach CEng MInstE
London and Home Counties
Mr R Olding CEng MInstE
South Coast
Mr H Wright MInstE
Northern Ireland
Dr H Tsui CEng FInstE
Hong Kong
Mr R Dinning FInstE
Scotland
Mr John Parsons CEng MInstE
East Midlands

Branch representatives are nominated and elected by the respective Branch Committee in accordance with Council Regulations to serve on Council for a minimum period of three years.

Mr B Chamberlain CEng FInstE*
Co-opted member

The new Council has provision for two co-opted members to be invited at the discretion of Council and there remains a vacancy for one additional co-opted member, provided that the total number of members of the Council shall not exceed 25.

Notes:

* denotes AGM date to leave Council of 2003. All but Mr R J Blackhall are eligible to stand for a further three year period. Mr B Chamberlain will stand down from Council at the AGM.

** denotes 2004. All but Prof M Fry are eligible to stand for a further three year period.

*** denotes 2005. Both Dr J Wade and Mr A Willox will stand down from Council at the AGM.

**** denotes 2006. All Branch Representatives and other new appointees are eligible to serve up to a maximum of two terms of three years.

Following the review of Council composition the under-mentioned stood down with effect from 31st December 2002:

Dr P Waterfield CEng MInstE
Dr A Minchener CEng FInstE
Dr S Turner CEng FInstE
Mr M Hoggarth CEng FInstE
Mr D Brennan CEng MInstE
Mr C Rigg CEng MInstE
Mr J Scott CEng FInstE

Long service recognition for James MacCarthy

James MacCarthy has now retired from the Membership Committee following a long and industrious service. He served as the Chair of the committee for many years, and his contributions to this committee will be greatly missed.

James has been a Member of the Institute of Energy since 1961 and became a Fellow in 1966 and he has taken an active part in the InstE ever since. At the end of the Membership Processing meeting held on 5 December 2002 the President of the InstE Mr John Blackhall CEng FInstE, presented James MacCarthy with a bottle of wine, an Institute of Energy Plaque and a certificate recognising his service to the committee.

New Members

London and Home Counties

Credit Suisse First Boston Group Member
Dr G Felgate FInstE
The Carbon Trust
Dr W S Kyte FInstE
Powergen UK Plc
Ms K Schuh, Graduate

North Eastern

Mr A D Richardson, Graduate
Irwell Valley Housing Association Ltd

North Western

Mr G M Hillier, Graduate
Invensys SimSci

Scotland

Mr A Al-Temeemi, Graduate
Heriot-Watt University
Mr D F A Hunt, Graduate
Heriot-Watt University
Mr A Lee, Graduate
Mabbett & Associates

Yorkshire

Mr N A Phillips, Student
University of Sheffield

South Wales and West of England

Ms J Hudson, Graduate
Kim Littlewood Associates Ltd
Mr C A Revens, Graduate
Briar Associates

East Midlands

Mr M Berryman, Graduate

Hong Kong

Mr W Y K Leung MInstE
Hip Hing Construction Co Ltd
Mr W W Ng, Graduate
The Hong Kong and China Gas Company Ltd

Overseas

Dr J Norman MInstE
BOC Gases
Mr R J Curran MInstE
Building Design Partnership Ltd

Deceased Members
Mr George Johnson FInstE
Mr Francis Foster FInstE
Mr Edward Cole FInstE
Mr Norman Gaffney MInstE
Mr James Hodgson MInstE
Mr David Bradbury MInstE
Mr William Rhodes MInstE

Membership Offer

Members of the InstE can purchase Jeremy Leggett's book 'The Carbon War' for the discounted price of £7.99 (including P&P) via our website: www.instenergy.org.uk/publications/overview.htm

Situations vacant / Wanted

30th Idris Jones Memorial lecture

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Institute of Energy South Wales and West of England Branch

Cardiff Castle, Friday 28 February 2003

A view from the past – a retrospective vision of the future

Presented by - Howard Metcalfe, Managing Director NIFES Consulting Group

Sponsored by
NIFES CONSULTING GROUP

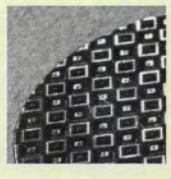
10.00 Coffee, 10.45 Lecture, 12.15 Reception, 13.00 Branch Annual Luncheon

Luncheon Tickets:
Members of Institute of Energy £12, Non-Members £15

Lecture Tickets free (Please apply for tickets – admission only by ticket)

Please apply in writing, enclosing cheques payable to Institute of Energy, to:
Dr John Whitehead, 78 Malleson Road, Gotherington, Cheltenham, GL52 9EX

Preference will be given to Members until 14 January 2002
NUMBERS ARE LIMITED SO BOOK NOW



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13 February, Leeds
8 May, London
11 June, Glasgow
16 September, Leeds
29 October, London

Please contact the Events office on 020 7580 0008 or email: events@instenergy.org.uk to register your interest and receive further information.