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the institute of energy

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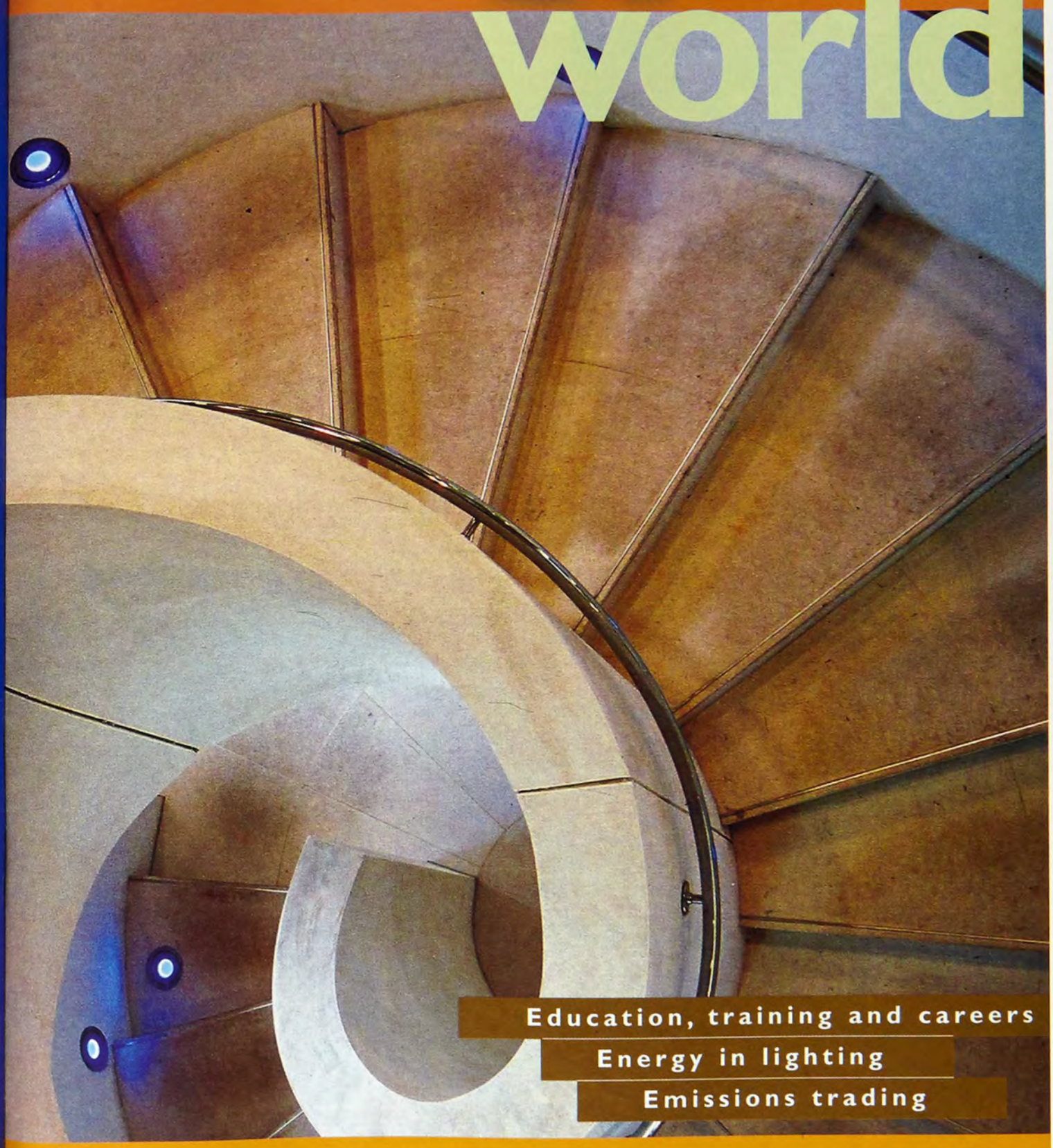

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Energy in lighting

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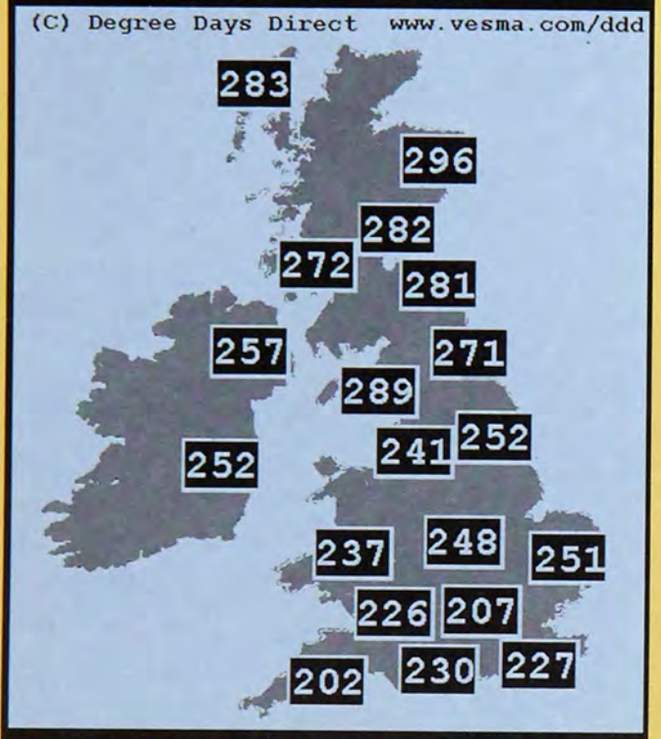

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COVER

Light emitting diode (LED) lighting modules from Osram - used here to illuminate the staircase at a health club in the City of London - have exceptionally low running costs. Operating at 24 V, the modules consume just 3.8 W and last up to 100,000 hours. See page 14 onwards for more stories on energy used by lighting.

Another 'security of supply' issue - skills

Louise Kingham MInstE, Secretary and Chief Executive, Institute of Energy

Concern felt within the UK education system about decreasing standards is now mirrored by businesses and others who warn of skills shortages and the growing problems they experience in finding the 'right' people to join their workforces. Now, quite some time after large parts of the energy industry were liberalised, this problem would appear to be a trend affecting the energy community.

In recent years we have looked to encourage more women into the energy community. Now we are concerned with the more fundamental issue of encouraging people with the right skills to join the community as the next generation of energy professionals. Although employment opportunities in some sectors are scarce, some employers within the energy sector, and particularly those operating demand side management businesses, are struggling to find a plentiful supply of sound new recruits to nurture.

Universities and educational institutions struggle to fight for air amid claims that they are drowning in a sea of bureaucracy. Undergraduate students are thin on the ground, particularly engineering- based students, but at the same time, the postgraduate student community is booming - at least for environmentally-based study.

From another perspective, society is becoming a more litigious place in which to live and work. It would appear that insurance companies and financiers agree, and this is reflected by higher premiums and tougher criteria to secure project finance. The search to define and recognise competent investment, be it in people or projects, has increased both in complexity and difficulty, although it is still a case of more 'art than science' being applied.

However, the science is improving as new systems, often built upon those developed by professional bodies, assess and sometimes validate individuals' abilities - ultimately regulating operators on the basis of their assessed competence to practice, be it within statutory, recommended or voluntary schemes or registers. Suppliers, customers and others are being channelled towards such 'registers' to seek reassurance about the quality and capability of the skills they seek.

So what is the InstE doing to support the energy community and you as an energy professional?

Since 1999, year on year the InstE has seen an increase in total membership, with particularly strong growth in Student and Graduate grades. Also, the average age of the membership has reduced, which bucks two trends which afflict a number of organisations within the InstE's peer group. However, the InstE is a small organisation, representing a relatively small but extremely diverse energy community. So, these positive recent trends cannot change the wider picture described above. The energy community needs more expertise to underwrite the needs of future society as far as maintaining and developing the energy system is concerned; it needs more investment from employers and more encouragement to flourish from Government.

The InstE, as the UK standards setting body for those practising within the energy community, needs to facilitate all agencies to work together to the benefit of you as individual practitioners and, where necessary, review, develop and maintain professional standards.

The InstE has recently offered its support to a proposal to the Department for Education and Skills (DFES) for the development of an 'Energy Sector Skills Council' supported by trade associations and employers. Such a body would work with the InstE and others to ensure the necessary provision was available to enhance and encourage the take up of energy-related skills development, and to strengthen and increase the energy community. We await the DfES's decision on this proposal to develop fuller plans to bring this important entity into being.

The InstE supports educationalists by facilitating industrial relationships and accrediting and approving courses of study, providing professional recognition to Students and Graduates.

Employers use the InstE to source new recruits and validate their internal training schemes to ensure employees are developing themselves to their benefit and to that of the employer simultaneously.

By affording professional recognition to individuals within the energy community, the InstE provides a quality kite-mark or statement of achievement that recognises that an individual has achieved a specified standard. Customers, suppliers and others use this as a benchmark in seeking out the expertise they require.

Presumably your insurer recognises professional competence? For many of our engineering based members in particular, premiums can be reduced as a result of maintaining your professional commitment.

As an employer, have you used the InstE as a source of recruitment? Is your academic, short or industrial training course approved by the InstE and promoted by it on your behalf? Are your trainees professionally recognised as a result? If not, they could be - indeed, they should be.

There is an enormous value in professional recognition whether you possess it or seek it. This viewpoint only permits me to scratch the surface of the debate and the issues that surround it. But be assured, the demand for recognised competent energy professionals is set to increase.

BP meets emissions target eight years early

BP has announced that it has reduced its greenhouse gas emissions by over nine million tonnes eight years ahead of its 2010 target, and said it will peg net future emissions at this new, lower level despite plans to grow its oil and gas production by 5.5% a year.

Chief Executive Lord Browne said that BP's pledge, made four years ago, to cut emissions from its own operations by 10% from 1990 levels by 2010 had already been achieved - and at no net cost to the company.

Speaking at Stanford University in California, Browne said BP's target now was to contain net emissions at current levels through the next decade. This would be done partly through a mix of internal actions, principally the more efficient use of energy across the company's operations. It would also entail the use of carbon credits resulting from the company's accelerated shift to natural gas and other lower-carbon products, as well as cleaner transport fuels and lubricants essential to the development of lower-emission engines.

BP plans to grow its oil and gas output by some 5.5% annually to 2005, with further increases beyond that, and to expand its volume of refined products. "On that basis, if we take no further action, the emissions from our operations will increase by something like 50 million tonnes - from 80 million tonnes now to 130 million tonnes by 2012," Browne said.

"How then can we contribute to the objective of stabilisation? By applying existing knowledge across the span of our operations, and selective new capital investment in areas such as cogeneration, we believe we can achieve a 10-12% improvement in the efficiency of our energy use. In total, we think we can deliver around half the reductions necessary to sustain our internal emissions at 10% below 1990 levels through efficiency gains."

Delivering the remaining half depends significantly on a continued reduction in the carbon content of the products BP makes and sells, including natural gas in its various forms which represents over 40% of the company's production and will increasingly substitute for higher-carbon fuels in emerging economies such as China.

"We will offer refined products that are designed to enable improved efficiency, or greater emissions reductions, to occur when they are used by others," Browne said.

"For example, we believe that if every car driver in Europe used the best lubricant we have available today, carbon dioxide emissions would fall by 30 million tonnes a year."

Hungarian district heating utilities start electricity generation

Several Hungarian district heating utilities are expanding their commercial activities into electricity production, following recent Hungarian legislation which enables a district heating company to sell electricity below 20 MW to the national grid.

The Finnish Wärtsilä has been awarded three of the resulting power plant contracts from Hungarian district heating companies, the first significant power plant projects for the company in Hungary. The contract awards were based on the high overall efficiency of the engines, says Wärtsilä.

In the first two awards, Sinergy Kft, one of the leading investment companies in Hungary, chose Wärtsilä to supply engines for two new power plants in Kazincbarcika and Tiszaújváros. The two plants will use three 18V220SG gas engines at Kazincbarcika and two similar engines at Tiszaújváros with 3.2 MWe power per unit to generate electricity.

In the third contract, Györhö District Heating Company, which supplies heat to the City of Györ, chose Wärtsilä to supply engines for their new power plant. The power plant will use two 18V34SG gas engines to produce a planned output of 10.9 MWth and 12 MWe. The engines will be supplied to the site by summer 2002 and the new power plant should be fully operational in October.

Wärtsilä engines bound for Hungarian district heating application

Wind power keeps breaking records

Europe's wind capacity climbed to over 17,000 MW during 2001, an increase of 4,500 MW compared to the previous year, according to the European Wind Energy Association. Germany again lead the way with 2,700 MW installed last year, overtaking even the most optimistic expectations.

Spanish capacity rose by more than a gigawatt to reach 3,300 MW. Other countries with notable increases were Italy, Greece, the UK and Sweden.

Outside Europe, the success story was the US, where 1,700 MW of capacity was installed, double last year's total, to bring the total up to 4,300 MW.

Gas insulated switchgear from ALSTOM is enabling two United Arab Emirates power stations to connect to the national grid. According to ALSTOM, the Dubai Electricity and Water Authority (DEWA) selected the T155 gas insulated switchgear on the basis of its reliability and performance in a demanding environment of high humidity and daytime temperatures commonly above 40°C.

Demand for electricity in the Emirate is increasing at around 10% a year, and DEWA is upgrading its generation capacity in light of this.

The upgraded power station D in Jebel Ali, and the newly built power station K, about 2 km further along the coast, will both be routed through the new T155. The 53 m long and 10 m wide equipment is housed in its own purpose-built building, ventilated by blowers on the roof and without air conditioning. Operation is from a remote control room located in an adjacent building.

Hydropower moves in Turkey, South Africa

Austria's VA Tech Hydro has been awarded, along with consortium partners, contracts to build a new run-of-river hydro plant in Turkey and to modernise a pumped energy storage facility in South Africa.

In Turkey, VA Tech Hydro will work with Austrian and Turkish partners to build the new, 300 MW Ermenek hydro-electric scheme in the Taurus mountains in the south of the country. The project is part of a plan to expand hydropower facilities in Turkey.

Meanwhile, the same company is upgrading an existing 280 MVA motor/generator, part of the Drakenberg pumped storage scheme in Kwa Zulu Natal Province, South Africa.

The scheme already provides a significant contribution to the peaking power and power factor correction requirements for the Southern Africa Grid, and also pumps water from the Tugela River in the lowlands to reservoirs to serve the greater Johannesburg urban area. VA Tech Hydro is to upgrade the existing motor with new stator core and windings.

'60% growth' in world energy use by 2020

World energy use will increase by 60% over the next two decades, according to a new report by the US Department of Energy's Energy Information Administration (EIA). *The International Energy Outlook 2002* expects much of the growth to occur in the developing world, particularly in the developing parts of Asia - China, India and South Korea - and in Central and South America. The growth in world energy use is expected to result in a 59% increase in petroleum production and a near doubling in production of natural gas, says the *Outlook*.

At the same time, energy efficiency is expected to contribute to a steady decline in energy intensity, the amount of energy used per unit of gross domestic product. That, combined with a shift away from carbon-intensive fuels, will lead to a reduction in carbon intensity, the amount of carbon dioxide produced per unit of gross domestic product. But overall world carbon emissions are still expected to increase by 62% by 2020, according to the EIA.

The report also anticipates a 53% growth in renewable energy use by 2020, but even that growth rate would lead to a drop in world market share, from 9% of total energy consumption down to 8%. Much of the anticipated growth is expected to come from large-scale hydropower facilities in Asia.

Wave energy project planned for Canada

British Columbia may become the site of the first wave power facility in North America as BC Hydro, the province's electric utility, has said it will help develop a 3-4 MW ocean wave energy demonstration project on Vancouver Island. BC Hydro has signed a memorandum of understanding with Energetech Australia Pty Ltd for the project.

The Energetech system uses an oscillating water column (OWC) system to produce electricity. OWC systems consist of a large fixed tube that is open to the ocean at the bottom and projects above the ocean surface. Waves cause the water level in the tube, or column, to move up and down. These oscillations push air in and out of the top of the column, past an air-driven turbine that generates electricity.

BC Hydro is currently verifying the wave energy resource at a site near Amphitrite Point off Ucluelet. The project is part of a 20 MW Vancouver Island Green Energy Demonstration project, which will include 10 MW of wind power and 6-8 MW of micro-hydroelectric power by 2004.

BC Hydro may have some competition from down south: a wave energy project is also being planned for the northwest coast of Washington State. AquaEnergy Group Ltd is proposing to build a $2.5 million demonstration plant off Wa'atch Point in Neah Bay. The local utility has agreed to buy 1 MW of power from the project.

Biggest ever district heating order for China

APV Products in Denmark have won a $5 million order - the largest in the history of the company - for a district heating project for the city of Zunhua, 200 km east of Beijing in China. The contract is for the supply of a new 110 MW district heating system, incorporating a CHP plant, to serve a huge new housing sector in the city, which has a total of 3 million inhabitants.

The new system will contain 14 heat exchanger stations of between 3.6 and 15 MW; one pump station including four 500 kW pumps controlled by frequency converters; one main heat meter; preinsulated district heating pipes and an extensive training programme.

APV Products has selected ABB as a sub-supplier of the SCADA system, which will monitor and control the entire system. The system will be equipped with Chinese character sets on images, alarm lists etc. The project is due to be completed by November 2002.

Heat exchanger equipment bound for Zunhua, China

New biodiesel moves for California; New York State

The US-based Southern States Power Company Inc has announced plans to build a biodiesel production factory in Riverside, California, capable of producing 30 million gallons per year of biodiesel fuel. If built as planned, the plant will be the largest in the US.

The company has signed a memorandum of understanding with Lurgi PSI, Inc to develop the facility. The company currently has a 10 million gallon per year facility in Coachella, also in California, about 50 miles east of Riverside.

Meanwhile, biodiesel is getting a boost in New York, where the New York State Energy Research and Development Authority (NYSERDA) is spending nearly $700,000 this year to advance the use of biodiesel in the state. NYSERDA has said that $320,000 will go to NOCO Energy Corporation in Tonawanda, New York, for the company to blend, market, and sell biodiesel in the Buffalo-Niagara area.

A separate award of $62,000 will help the Niagara Frontier Transportation Authority to fuel 140 of its 330 buses with NOCO's biodiesel for at least a year. NOCO will also use biodiesel to fuel its own fleet of trucks and will provide the fuel to the town of Tonawanda for its municipal truck fleet.

IEA commends Russian efforts on energy security

The dramatic turnaround in Russia's economic health over the past two years will be sustainable only if extensive planned reforms are implemented across the Russian economy, and especially in its energy sector. The IEA's *Russia Energy Survey 2002* presents a very different Russia from the one that appeared in the Agency's last in-depth review of the country in 1995.

At the survey's launch in Moscow, IEA Executive Director Robert Priddle said: "Russia is to be commended for setting out ambitious goals for energy sector reform. Reform is critical if the country's energy sector is not to hamper robust economic growth." Mr Priddle agreed with the view expressed in the new Russian energy strategy "that price reform and energy efficiency should be a high priority, in order to maintain energy security in a period of strong economic growth."

From 1995 to 2000, Russia took important steps forward in energy-sector reform, but many of the goals set in 1995 were not achieved, due largely to the poor performance of the overall economy. Mr Priddle emphasised that "reforms are essential to enable Russia's energy sector to keep pace with domestic energy demand growth and also to seize available export opportunities."

The IEA survey also describes the issues affecting Russia's oil, gas, coal, nuclear and electricity sectors. Inadequate investment and maintenance in the past increase the challenge to the energy sector in meeting the needs of a fast-growing economy.

The survey identifies actions necessary to ensure that Russia maximises the economic benefit from its rich endowment of energy resources. To raise the $550 to $700 billion it will need to invest in energy infrastructure by the year 2020, the study suggests, Russia must create a much more stable and competitive investment environment. It must implement energy price reforms, make dramatic improvements in corporate transparency and energy efficiency while ensuring proper safeguards against the adverse environmental effects of increased energy production.

CO_2 emissions rise again in 2001

UK carbon dioxide emissions rose for a second successive year in 2001, from 152 to 154 million tonnes of carbon (mtC), according to provisional data from the DTI - see Table 1. Total emissions fell fairly steadily in the 1990s (apart from an unusually high total for 1996) from 164 mtC in 1990 to a low point of 151 mtC in 1999 before the trend started to reverse two years ago.

However, the trend was reversed with 2000 data, after gas prices caused generators to switch some of their electricity production back to coal. Emissions from other important sectors showed rises over the decade - 11% from the domestic sector and 5% from transport.

Source	Emissions of carbon (million tonnes)			
	1990	1999	2000	2001
Power stations	54	39	42	44
Domestic sector	22	23	23	24
Commercial sector etc	14	13	13	13
Industry	38	38	37	37
Transport	32	34	34	34
Other sources	5	3	3	3
Total	**164**	**151**	**152**	**154**

Table 1 Carbon dioxide emissions from 1990 - 2001
Source: Energy Trends

Carbon dioxide is the key to meeting overall emissions targets, as it accounts for about 85% of the UK's total greenhouse gas output.

The 6% fall in carbon dioxide emissions during the 1990s was mostly due to reductions made by the power generation industry - carbon dioxide emissions from power stations account for 28% of the total. These reductions were split roughly equally between the switch from coal to gas and the effects of efficiency improvements in electricity generation, says the DTI.

Energy Minister Brian Wilson admitted that the UK must now do more to meet its greenhouse gas emission reduction commitments. Commenting on the new figures, he also made the point that Britain had already demonstrated that energy use and emissions do not necessarily have to rise with economic growth "During the 1990s, our economy grew by 29%, our energy use by 9.5%, while our carbon emissions decreased by 6%. Here is clear evidence that carbon emissions and energy consumption can be decoupled from economic growth."

- UK Coal PLC has reported a 10% growth in coal burn in its financial figures for 2001, with a smaller increase in total production, from 19.1 to 19.6 million tonnes. The company made an overall pre-tax loss, though, of £11 million.

Innogy goes to RWE for 'a premium'

Innogy, the demerged UK energy business of the former National Power, has agreed terms of a takeover offer made by a subsidiary of German giant RWE. Innogy has accepted RWE's improved offer of 275 p a share, representing a 30% premium on the last day of trading before RWE's first offer was announced in February.

Innogy, which is a major electricity generator as well as having 4.7 million electricity and 1.9 million gas customers, also includes the brand name 'npower', wind developer National Wind Power and a new energy storage technology called Regenesys.

RWE is already a major international multi-utility, dealing in electricity, gas, water and waste management.

According to Datamonitor, RWE was willing to pay 'a premium' for Innogy as part of its multi-utility ambitions across Europe. Although perhaps more important, adds Datamonitor, is "Innogy's experience in the UK market. Innogy has successfully negotiated a highly competitive market through strong cost cutting, re-branding, innovative marketing, restructuring, and value creation. It has been the most successful UK vertically integrated utility at both maximising the value of its power generation assets and winning high-margin residential customers. RWE wants to do this in Germany.

Goldeneye gets go-ahead

Approval to develop Shell Expro's Goldeneye Field in the Outer Moray Firth has been granted by Energy Minister Brian Wilson. The £300 million project will create 300 local jobs during the construction phase.

Goldeneye has 500 billion cubic feet of gas reserves and 17 million barrels of condensate. First production is expected towards the end of 2004.

Goldeneye's 105 km pipeline will connect a normally unattended wellhead platform offshore to new onshore processing facilities at Shell Expro's St Fergus terminal. All of the field's produced gas, water and condensate will be transported together under reservoir pressure through the pipeline to the onshore terminal for processing. This will be the first time this type of development option applied to a condensate field has been attempted on the UKCS.

- The Government has launched a new 'Progressive Partnership' to help maximise recovery of Britain's remaining oil and gas reserves, estimated at 26-34 billion barrels of oil equivalent. The initiative, which aims to stimulate activity, speed up negotiations and reduce costs, includes a review of licence holding, steps to speed up asset trading, two new codes of and some standardisation of commercial agreements.

Renewables Obligation comes into effect

The Government's new obligation on electricity suppliers to source up to 10% of their power from renewables came into effect on 1 April.

The Renewables Obligation requires UK licensed electricity suppliers to obtain a specified proportion of the electricity they supply from renewable sources. This will rise each year until it reaches 10% by 2010-11. It is expected to be the main driver towards creating a UK wide green energy market worth up to £1 billion by 2010.

"This Obligation is a cornerstone of our policy to unlock the door to green energy in this country," said Energy Minister Brian Wilson. "We are pursuing a market-led approach to encourage competition amongst the different technologies. This will keep costs down, making it a good deal for industry as well as the environment."

Speaking at an international conference on wind energy, Wilson added "The UK model is proving influential in both Europe and beyond. I shall be exploring the possibility of bilateral agreements with countries developing arrangements similar to our own. This could lead to trading of internationally agreed green energy certificates across borders."

"The Obligation will also help create massive new opportunities for investment and employment in the manufacturing sector. There are strong parallels with the position of the UK's oil and gas industry some thirty years ago and where we are now with the new renewables industry. If the same concerted, strategic approach is applied to the renewables sector as was applied to oil and gas we can reap very substantial benefits for this country by capturing a proportion on the world market."

- Wilson has published first draft figures for regional targets for renewables; targets which are intended to help achieve the overall 10% by 2010 aspiration. The initial assessments will eventually lead to agreed regional targets. Provisional targets, published in a report by Oxera Environmental and Arup Economics and Planning, were co-ordinated by the Government Offices in England and the Devolved Administrations and provide estimates of the renewable resource in each region. Targets range from 0.7-1.9% for London, to13.3% for eastern England.

EST operates 'major' PV demonstration scheme

The DTI has launched a £20 million programme to support the installation of solar photovoltaic technology at homes and offices across the UK. The programme is expected to lead to a tenfold increase in domestic PV installations by 2005.

The money is being made available through the DTI's Major Photovoltaics Demonstration Programme (PV MDP). Grants will be offered to the private and public sector to install solar systems on new or existing buildings.

The money will not only contribute to the UK achieving its environmental goals, but also help the UK photovoltaic industry develop the technology to allow us to compete for this massive global market, said Trade and Industry Secretary Patricia Hewitt.

A consortium led by the Energy Saving Trust and including Halcrow and Novacroft, has been appointed as the programme management contractor.

The new programme builds on two previous initiatives: £4 million of funding for the installation of solar systems on public buildings including schools, galleries, church halls and sports centres; and £4 million for sun-powered social and private housing developments across the UK, representing 380 houses, flats and bungalows.

Eighteen projects are to be supported by the former initiative, including PV installations at an arts centre in Cambridgeshire and the National Botanic Garden of Wales.

Energy consumers given more protection

New, more exacting guaranteed standards of performance for gas transporters and electricity distributors came into effect on 1 April.

Operated by Ofgem, the new standards include revised compensation arrangements for occasions when standards are not met:

- If a domestic consumer's supply is not restored within 24 hours of an unplanned interruption, they will be eligible to receive £30, a £10 increase on the current level.
- Vulnerable customers must receive alternative cooking and heating facilities within four hours of any interruption, otherwise they will receive £24. Under previous standards, the gas transporter was only obliged to provide such facilities in an emergency.
- Companies that do not make or keep appointments without informing the consumer will have to pay £20. This now applies to all transporters, not just Transco.

Meanwhile, Ofgem has declared the first 12 month's operation of New Electricity Trading Arrangements (NETA) a success, in that Britain now has a fully competitive wholesale electricity market. Price falls in the industrial and commercial markets are due to be followed soon by similar cuts to domestic charges, says the regulator.

SARTOR 3 – how it affects you

by Sarah Beacock, Membership and Education Manager, Institute of Energy

Those members looking to become recognised as either a CEng or an IEng will no doubt have heard about the Engineering Council UK's Standards and Routes to Registration 3rd Edition (SARTOR 3). It has affected the educational requirements for registration at IEng and CEng level as well as changes to the professional development sections of the registration process. Sarah Beacock reports.

The professional review process will be characterised by a more thorough assessment of a candidate's professional competence by measuring evidence against specified criteria. The candidate will also be required to demonstrate their commitment to CPD as well as to professional codes of conduct and relevant Codes of Practice.

It is the educational base that has seen the most change however and those already on engineering courses need to be clear how the changes affect them. The current requirement for CEng registration is now an accredited academic course of study of four years' duration, resulting in MEng, or a three year accredited BEng (Hons) plus a 'Matching Section'. For IEng registration the requirement is a three year accredited IEng degree or a two year HND plus a Matching Section.

There has been considerable debate amongst academic institutions and professional bodies as to precisely what constitutes a Matching Section. The official guidance from the Engineering Council is that a BEng (Hons) or HND needs to be topped up with learning equivalent to a further year's academic study. How and where this further year's study takes place is largely left to the discretion of the learner.

Matching Sections – what are they?

There is no such thing as a 'one size fits all' Matching Section. To illustrate how important it is to identify the right Matching Section for you, let's look at some basic characteristics.

A Matching Section may be accredited or approved by a nominated body of the Engineering Council UK which has been granted a licence for approving Matching Sections. The InstE is one of a handful of these professional bodies.

An accredited Matching Section will match a specific BEng (Hons) or HND course or courses precisely. An approved Matching Section will be of the appropriate standard but may not suit the particular course you studied. In such cases an element of individual case assessment is required to match your knowledge and skills against those that the Matching Section provides. The Institute of Energy is here to provide you with that help but the first thing you need to ask of the provider offering the Matching Section is whether it is approved or accredited and, if it is approved, what course is it approved for.

Matching Section providers can be universities, employers or professional institutions. This acknowledges the fact that the nature of the extra academic study required will be provided through various elements including:

- project work;
- specialist knowledge;
- breadth of education; and
- industrial involvement.

It is expected that most Matching Sections will require some degree of deepening and broadening of knowledge, together with group project work and an element of industrial placement. What do these four elements mean in practice?

Project work – this should comprise a group design project, ideally with a cross-disciplinary or international flavour. The project should be centred on real business and design needs involving industrial and commercial companies.

Specialist knowledge – where the original Honours degree was quite general or multidisciplinary in nature then some technical aspects will need to be studied in greater depth. For all courses some additional specialist knowledge will be required within a Matching Section.

Breadth of education – the benchmark MEng provides a broader range of education to include disciplines outside of engineering. So a Matching Section needs to provide that same broadening of knowledge to encompass both cross-disciplinary technical content and non-technical subjects such as law, languages, management etc.

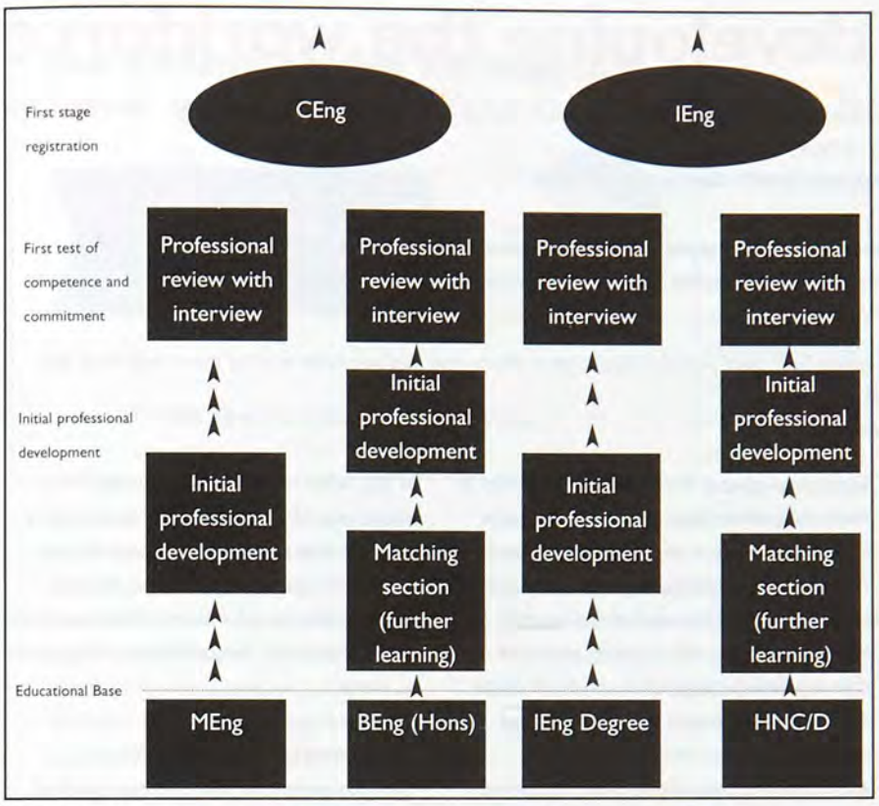
Industrial involvement – again the benchmark MEng requires both intra-mural industrial studies and, where possible, extra-mural involvement with industry. Some of this requirement can be provided within a

Over 35, not over the hill!

If you've been too busy developing your career to gain the benchmark academic qualifications needed for Engineering Council registration then it's not too late to apply now. If you're over 35, working at a senior level as an engineer and able to prove your knowledge through a written submission, you may still be eligible to pursue CEng or IEng registration through the Mature Candidate Route (MCR).

As an MCR applicant, you will be required to undertake a 10,000 word dissertation on a topic of your choice, which is approved by the Institute of Energy. You will be assigned a Mentor who will advise on the academic standard and content of your work. One of the advantages to the MCR is its flexibility in that you can work towards the dissertation whilst still in full-time employment. The whole process can take anything from 1-2 years.

For more details please contact Membership Services, email: services@instenergy.org.uk with a brief outline of your background.



BEng (Hons) course but needs to take place beyond the end of the second academic year to be considered equivalent. Additional provision is likely to be needed through industrial placements in order to achieve the group project work requirements.

The advice to students approaching the end of their courses therefore must be to 'proceed with caution'. Be aware that there are a number of Matching Section courses available now in the form of MSc and other postgraduate programmes. But an approved or even accredited Matching Section may not necessarily be the right choice for you. It is more than likely that you will need some form of analysis of your existing qualification in order to determine the combination of elements that will make up the right Matching Section for your purposes. Members can obtain individually tailored guidance on the most appropriate Matching Sections from the Institute of Energy.

Alternatives to Matching Sections

For those who may be considering Engineering Council registration a little later in life, the thought of returning to study may not appeal. For such people there are already alternative routes which include the Individual Case Procedure (ICP) - for those with non-accredited degrees and qualifications - and the Mature Candidate Route (MCR) - for those over the age of 35 with no qualifications or whose qualifications fall short of the benchmark requirement.

All applicants taking Matching Sections are likely to go through the ICP route in some way. However, the MCR may be more appealing to those over 35 who do not wish to go back to studying for the equivalent of one year on a full-time basis. This may prove a longer route as a written dissertation of approximately 10,000 words is required and can take up to two years to complete. It may be more appropriate to someone who does not have the opportunity to take time out for further academic study and it can prove a more cost-effective option than a full-time course.

As it represents quite a significant academic task on its own, however, all MCR candidates need to have the broad content of their dissertation agreed by the Institute of Energy before they begin work on it. They are also provided with a Mentor to help ensure the appropriate academic standard of the work before it is submitted for formal assessment.

What do I do next?

For many students about to graduate, thoughts of where to go next are probably at the back of your mind. First you'll be concentrating on finals and then thinking about a well-earned break (you hope!), but it is worth taking some time to investigate the next step on your route to a professional career. It is vital to take advice on that next step before embarking on a Matching Section which might prove not to meet the requirements for you to achieve Engineering Council UK registration.

For further information please contact Membership Services, email: services@instenergy.org.uk www.instenergy.org.uk/membership

Approved Matching Sections

The following CEng Matching Sections offered by Academic Affiliates of the Institute of Energy have already been approved:
Cranfield University
MSc Applied Energy
Brunel University
MSc Building Services Engineering
MSc Building Services Engineering Management

The following CEng Matching Sections have also been approved by the Institute of Energy
University of Central Lancashire
PG Diploma in Fire Engineering
PG Diploma in Building Services Engineering
City University, Hong Kong
PG Diploma in Fire Engineering

Other courses currently being considered for CEng Matching Sections are
Heriot-Watt University
MSc Built Environment
MSc Building Services Engineering
MSc Building Services Engineering Management
MSc Environmental Services
MSc Building Services Facilities Management
University of Sheffield
MSc Environmental Energy Engineering

Please contact the universities directly for more information on these courses.

Training and developing the workforce
- the key to a united approach to cutting energy waste

by Trevor Floyd AMInstE, Principal Consultant, the TENBY Consultancy Group

Who in an organisation has the most influence over the amount of energy used, and should thus be targeted in any energy management campaign? Members of the workforce are the key people, argues Trevor Floyd, and they should be empowered by management to play their considerable part.

Your most precious possession is not your financial assets. Your most precious possession is the people that you have working there, and what they carry around in their heads, and their ability to work together.
Robert Reich (b1946), American economist and politician

For some time the Institute of Energy (InstE) has been working with Future Energy Solutions and the EEBPp to develop an awareness of energy and environmental issues within organisational workforces.

This has come about due to the fact that it has been finally realised that successful energy management does not come solely from the appointment of an energy and/or environmentally responsible person in a business. Working alone, that poor individual will only end up as the voice in the wilderness which frequently gets subsumed by others promoting issues which are just as relevant and important to organisational success.

As energy efficiency has been seen as a minor priority business issue the resources to make the activity successful have not always been employed. Through this approach managements have developed bad habits which result in energy being regarded as a fixed cost and therefore not worthy of any major effort apart from the occasional tariff negotiation exercise because, after all, 'that reduces the cost of energy and that's all that is important!'

Fortunately, due to environmental issues and pressures there is now a greater awareness and understanding of the environmental impact of all activities, including the consumption of energy resources and water. This is where the penny has started to drop in that there is a growing appreciation of what potentially can be gained through effective management of resource utilisation.

Probably the most significant feature of recent energy efficiency campaigns has been the recognition that everybody has some basic expertise as an energy manager. Every one of us is a consumer of utilities in the home environment so we have some knowledge of how to control consumption rates, usually motivated by a sizeable gas or electricity bill at the end of the quarter. However a gross bill covering about 93 days is not indicative of our style of usage.

When it comes to our own personal modes of transport most drivers will appreciate the cost of petrol and diesel and will usually be aware of which garages provide the best price per litre of fuel. Modern cars fitted with electronic management systems now offer constant updates on fuel consumption rates and this is the extension of the older enthusiast's approach of fitting vacuum gauges to air intake manifolds to monitor throttle openings.

This principle of all of us having some knowledge and understanding is now being applied to staff development and training, especially now that most have noticed the impact of climate change. Training is no longer just orientated to those that manage at corporate level but also at those who manage at the point of use. After all effective energy management can only occur when the person who operates the consuming plant is convinced, and motivated, to operate their equipment with an appreciation of the consequences of their actions and inactions.

Many of us, at all levels, tend to arrive at our place of work and become automatons, due to the repetitive nature of our work. As this can be boring it is not unusual for the mind to wander off on to a different plane – just think about how we perform as individuals when we drive down a long straight motorway. It was Henry Ford who reminded his management staff of this issue when he commented 'How come when I want a pair of hands I get a human being as well?'. Unfortunately we haven't always appreciated this fact; so much of the workforce tends to leave their awareness in the car park when they come to work.

The modern approach

This recognition of the intelligence of *all* members of staff has led to an inclusive approach to introducing change and understanding into an organisation. It is now appreciated that there are a number of components and levels of activity required to change the culture of any organisation. Much of this has been gleaned from the experiences, over the past decade, of implementing management systems such as ISO 9000 (quality management) and ISO 14001 (environmental management).

These systems only work when all employees are involved in the activity. When the independent auditors come around to check on the operation of accredited management systems they make enquiries not only of the quality of the environment manager but also of individual employees at all levels. Non-compliance with the system can be noted if employees are not aware of the basic demands of the relevant system.

The application of this current management style can be applied just as effectively to energy and resource management.

- The senior management (the board etc) creates and indicates the policies and strategies for the effective operation of the organisation through

The Energy Saving Partnership

Hitting the target needs everyone !

published documents. These can appear on all notice boards and be made available to *all* staff and other stakeholders such as sub-contractors and visitors. That sets the style and intent of the organisation.

- Secondly, the middle management will need to use their skills to facilitate the energy related policies and strategies alongside all the other strategies and policies for which they hold responsibility.
- Next there may be the need to employ specialist help to provide technical backup and assistance. This may appear in the form of consultants who gather specific technical information on energy activities, or training specialists who can help to disseminate the word in a user-friendly fashion. In some organisations these specialists and technical experts may be members of staff, in others there may be a need to employ contractors for those specific tasks. In a non-technical organisation it is most likely that these resources will have to be provided from the market place, but only if a shortfall in the necessary operational expertise is noted. However it has been noted that training in certain areas of expertise always has more impact when provided by an external resource. It seems to gain a higher appreciation level because 'an expert' has been employed to sell the idea.
- Lastly, and most importantly, is the workforce itself. These are the people who act and make things happen. They are the people with their hands on the switches and buttons that control the demand on energy supplies. If they can be motivated to turn equipment off as soon as the demand for it is over then they are practising energy efficiency. However if they leave equipment ticking over and continuing to consume in non-productive mode, they are creating pure waste. The only problem is that they do not necessarily identify it or recognise it as waste. If not informed of the impact they will not appreciate that the waste has an impact on both operational costs and the environment.

Information and motivation

Whilst every employee, whatever their duties, will possess expertise it is sometimes difficult to ascertain what they know and what they can do. Therefore a simple policy or strategy statement needs to be in effective in terms of motivating the staff. To put it crudely the basic question may even be 'Why should I, what's in it for me'. Whilst that is a base question it raises the issue of how do we motivate our colleagues to take on what may initially appear to be extra duties. What we are working towards is asking them to 'work smarter, not harder'.

Quite simply we must inform and guide the workforce to understand what specifically is being asked of them and the consequences to the organisation of non-compliance. A well known airline executive once stated: 'Amazing things happen when you make people feel that they are valued as individuals, when you dignify their suggestions and their ideas, when you show your respect for them by allowing them to exercise their own wisdom and judgement and discretion'. This is the fundamental basis of modern energy management – the workforce must be motivated, through the provision of information, to make their own distinctive contribution towards the well being of their employer and the rest of society.

They must be provided with an awareness, understanding and appreciation of both the issues and the solutions. It is insufficient to tell an office occupant to turn off their lights or computer when they go out to lunch if it only saves 2 pence an hour. However when this is multiplied by 48 working weeks of five days that gains the significance of a contribution of about £6 towards the annual profits. In business with a profit margin of 5% this equates to an increase in turnover of nearly £120 of sales.

Likewise, a machine operator may achieve a lunchtime saving of £5 an hour reduction in wasted electricity, but this equates to £1,200 annual profit or £24,000 in increased sales! As if that wasn't enough, every kWh of energy saved means that the organisation reduces its overall environmental impact. This will matter to the staff as they are made aware of the environmental impacts of their potential misuse and thereby wastage of energy resources.

Case studies

Some years ago one major manufacturing organisation in the rubber and tyre sector motivated its workforce when it made them aware of the consequences of their usage of energy resources to produce company products. Simple calculations, based on the amount of energy employed, indicated that if anyone was to ask what they manufactured by weight they would have to respond 'carbon dioxide'. This was simply because the emissions from the power stations that supplied their electricity, plus the emissions from gas burnt on site, weighed in total more than the tonnage of rubber products going out of the factory gates in the same period of time!

This revelation had an immediate impact, as many of the staff were already aware that things were happening to the climate, which are probably caused by our industrial emissions to atmosphere. This meant that they were partially responsible so any effort to start reducing emissions by reducing wasteful usage might have a long-term benefit. The long-term benefit being important, as most of the staff were parents and some were grandparents. The last thing they wished to see was their grandchildren growing up in an unhealthy

world that would also be short of basic resources such as food, air and energy.

Perkins Diesels in Peterborough are another prime case of an empowered workforce with a difference. Two of their shop stewards attended a course (provided by ETSU and the Institute of Energy) that included awareness raising concerning issues of energy usage and environmental impact. They became highly concerned about the issues raised and decided that they needed to start doing something, in their place of work, to reduce costs and impact. They decided to follow the principles mentioned earlier of developing a cross-company and cross-departmental activity. They managed to get training support from staff involved in in-house publishing and Investors in People, plus management representation in the form of the quality manager. For technical support they employed the services one of their colleagues, who was noted as an environmental enthusiast.

Together they identified that the business already had an environmental policy but the majority of the workforce were either not aware of it or had no idea of what was expected of them, or even how and why they should contribute. Knowing the company culture from inside, the team very quickly ascertained that an information campaign could reap positive benefits. This they named Project SuperSavers, which they related to the Perkins 'total quality' strategy.

As the poster shows they had a revelation when they started to identify waste. Firstly, they identified all of the inputs to their activities, which obviously included materials, but which also included time, effort, energy and many others. The next stage was to identify what was wasted. The revelation was that the same drawing could be applied to waste as could be applied to inputs. In other words a percentage of *everything* that came into the business left it as waste, and yes that included energy.

This simple step raised the understanding of the workforce to such an extent that more people became aware of the issues and of the solutions that they could apply. In that first year the company saved over £100,000 and has continued to be more successful, because of that contribution to the bottom line, year after year.

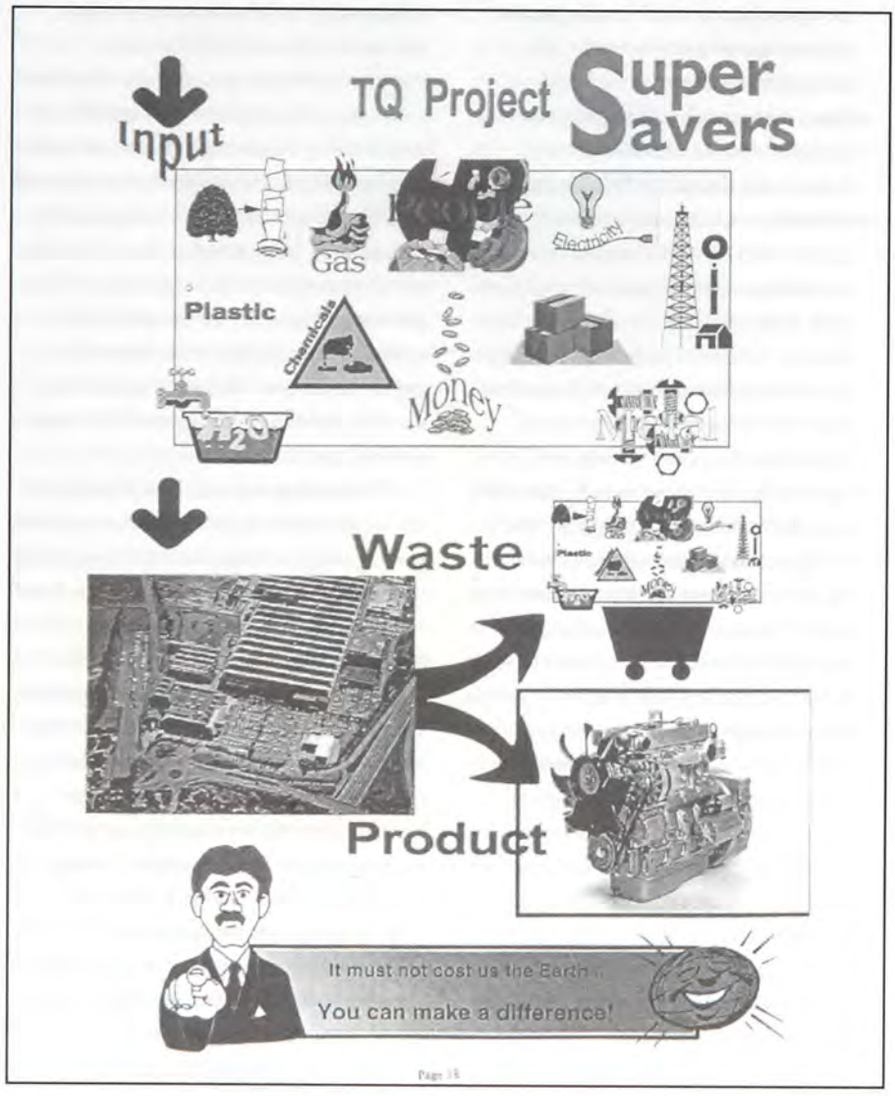
Conclusion

There are many such case histories, some of which have been published by the Energy Efficiency Best Practice Programme (Tel: 0800 585 794), which demonstrate how the power of a united approach has led to reductions in overall wastage, plus improved profitability and performance in business. Also, no longer are the workforce as suspicious of company profits – after all profitability is not a dirty word to the shop floor as it means survival of the business and continued employment. As soon as any business suffers from falling profits or increasing losses the simple knee jerk reaction is to lay off staff to reduce the bills. Usually this just compounds the situation as the workforce are the ones who can best help to increase profits by reducing wastage at all levels.

As always, change is all about us and the ones who can best effect that change are the workforce. They must therefore be effectively informed and motivated so that they can make whatever contribution they feel is within their power and interest.

'Organisations only change when the people in them change, and people will only change when they accept in their hearts that change must occur'
Sir John Harvey-Jones (b1924), former ICI chief and trouble-shooter

Contact Trevor Floyd at the TENBY Consultancy Group, tel: 0121 250 5455, e-mail: trevorfloyd@cs.com



Energy and environmental engineering - one recent graduate's experience

by Emma Fitch Kemp, Environmental Engineer, Millennium Science & Engineering Ltd

Energy World asked Emma Fitch Kemp - a graduate member of the Institute of Energy - to describe her academic and early career experience.

Although my career is not specifically related to the energy industry, the majority of the projects that I work on require that the consumption of energy be considered. Energy efficiency is increasingly becoming a high priority to all industries due to initiatives such as the Climate Change Levy.

I completed my A-Levels in maths, physics and biology in 1996 and then studied for four years at the University of Portsmouth to obtain a 2(i) honours degree in Environmental Engineering which included a year in industry. It was at Portsmouth that I was introduced to the Institute of Energy and I joined soon after graduation. Not only was the Environmental Engineering course accredited by the InstE but many of the lecturers in the Engineering faculty, including my tutor, Professor Mike Purvis, were also members. As such, they promoted the InstE and encouraged students to join.

The Environmental Engineering degree at Portsmouth had a foundation in mechanical engineering and encompassed a broad range of subjects. Many of these were energy related, for example one module, energy systems, incorporated calculations relating to turbines, boilers, engines etc in installations such as nuclear power stations, and also included summer and winter air conditioning calculations. Heat combustion and transfer, and thermodynamics and fluid mechanics are other examples of the modules taught that related specifically to energy.

Many other modules were specifically related to the environment, for example environmental economics, environmental management systems and impact assessment and water and solid waste management. This particular degree gave me a broad range of options when considering what career path I should follow.

A year in industry

My year in industry was taken during the third year of the degree course. This was a very important year as I was able to obtain a great deal of valuable experience which greatly improved my chances in the job market after university. I strongly recommend that anyone who has the opportunity to do so, takes an industrial placement.

My own placement was with a small environmental research and innovation company, called Ionex based in Gloucestershire. The company carried out work for Yorkshire Water and the Environment Agency, designing and building a closed loop de-nitrification plant.

The position at Ionex gave me the opportunity to play a key role in the design, optimisation and construction of an electrolytic cell for the destruction of nitrates in water. I was an active participant on several projects, including negotiations and meetings with Yorkshire Water and the Environment Agency. The project was completed by the end of the industrial year with my final task being the commissioning of a pilot plant.

The final year at university was more focused on the environmental aspects of the degree and my final year project was my first real introduction to the energy industry as I conducted a dissertation on the use of fuel cells within small scale applications.

Working for a consultant

Soon after graduation I was fortunate in finding a job with Millennium Science & Engineering (MSE), an environmental consultancy also based in Gloucestershire. Whilst looking for jobs I decided to target environmental consultancies hoping that the work would then be very broad based and not restrict my continued development. I have luckily found this to be the case with MSE and I have been with the company now for a year and a half, having worked on a huge variety of projects both in the UK and overseas.

The majority of our work is with industrial clients. We do, however also occasionally work with the Government. Working for a small company means that I have had a huge amount of on-the-job training as well as training and support from very experienced colleagues. I have attended conferences that relate to the environment industry and am aiming, this year, to support the knowledge that I gain on the job with more external training. The courses that I attended this year relate to the Climate Change Levy and air dispersion modelling; areas that MSE has a great deal of experience in.

The majority of my internal training has been related to Integrated Pollution Prevention and Control (IPPC). MSE produced the entire application for Hollingsworth & Vose, a speciality paper mill in Gloucestershire as well as the environmental impact sections for Britannia Zinc Ltd in Avonmouth. My training also included air dispersion modelling of stack emissions and odours from landfills.

I have also trained abroad, in Egypt and Morocco, working with a very experienced wastewater engineer from the United States to conduct a feasibility study and design for effluent treatment plants for a confidential pharmaceutical company.

As with most small companies MSE does not have a structured training scheme for graduates, however I have found over the past year I have learnt more about practical environmental engineering than ever before. Now, with the support of the Institute of Energy and its IPD training programme, as well as support from MSE, I believe that a career in the environmental engineering sector is a very interesting, wide ranging and fast moving area for an engineer to be in.

Student accommodation at the University of Bath now benefits from compact fluorescent lighting.

Compact fluorescents and light-emitting diodes cut energy bills

Technology from the German lighting manufacturer, Osram, is helping a university and a major millennium project minimise energy bills.

Compact fluorescent lamps and electronic control gear are helping the University of Bath to reduce its lighting bills and save on maintenance and lamp replacement costs. The University's Eastwood low-rise terraced student accommodation on the north of the campus now includes over 800 Osram Duluxtronic DTP10 pendant lampholders with integral control gear.

The upgraded luminaires are fitted with 13 W Osram Dulux D/E compact fluorescent lamps. This combination of energy-saving lamp with the latest generation electronic control gear is resulting in an 80% reduction in power consumption compared with standard 60 W incandescent lamps, and the expected lamp-life is up to ten times longer, says the company.

Martin Brooks, Energy Manager at the University of Bath, comments "The lights in student accommodation are often on for most of the day and well into the night, so it makes sense to upgrade to energy-efficient ones. We anticipate that this initiative to upgrade to modern energy-saving lamps will pay for itself in approximately three years and from then on it is cost savings all the way. And, because the Osram Duluxtronic lamp holders take special 4-pin compact fluorescents, there is no danger of the bulbs being removed for use elsewhere or of them being retrofitted with non-energy savers."

Meanwhile, specially created interior fascia panels in the atrium of Birmingham's new Millennium Point project feature several hundred Osram light emitting diodes (LEDs) creating the illusion of illuminated rivet heads. The modules produce a stunning visual effect and the advanced energy saving technology is producing a payback in under four months, says Osram.

The £114 million Centre, the largest millennium project outside London, provides a wide range of facilities, including Thinktank, the Birmingham Museum of Science and Discovery, the region's first large format IMAX theatre, the Technology Innovation Centre, the University of the First Age, together with commercial retail, office and leisure space surrounding an impressive public mall.

LB Lighting, working in conjunction with project architects Nicholas Grimshaw and Partners, was responsible for the atrium lighting in the mall and chose the Osram LEDs for their miniature size, low profile, long life and low power consumption.

Although the initial cost of the LED modules is higher than that of conventional low voltage lamps, the energy savings enable the capital cost to be recouped within four months.

One of the features of Osram LEDs is that they can be replaced without disposing of the fittings – but with a service life of up to 100,000 hours (depending on colour and operating temperature) they will rarely need replacing.

Birmingham's Millennium Point project incorporates long-life LED lamps

Piping in daylight ta

Eighteen Monodraught SunPipes are providing energy free natural lighting to a large activity room and the indoor swimming pool at the Children's Centre at White Lodge Centre, Chertsey. The Centre offers therapy services and a day nursery and has particular expertise working with children with cerebral palsy.

SunPipes are ingenious lighting systems, which pipe natural daylight into the heart of a building. They consist of a silverised mirror finish aluminium tube, with a polycarbonate dome at roof level and a clear polycarbonate diffuser at ceiling level. The pipes manufactured in 10 sizes from

takes lighting costs to zero

200mm to 1500mm diameter.

A single 450mm diameter SunPipe can light a room of up to 25 m² to a normal daylight level, even on cloudy days, says the manufacturer. Payback time is estimated at around 5-6 years depending on installation.

Janet Deal, Marketing Manager for the Centre said "Although the main room has windows and electric lighting, it is very large with lots of floor and ceiling space, we wanted it to be as bright as possible with natural daylight for the children. The SunPipes really do work extremely well even on cloudy days and, of course, we are experiencing substantial savings on the lighting bills. The SunPipes servicing the indoor swimming pool makes the atmosphere seem more natural and fresh which is just what we wanted".

Not only do SunPipes cut the cost of the electricity bills, they also eliminate generated heat, so that less demand is placed on air conditioning or ventilation systems during the summer months.

There is virtually no limit to the length of SunPipe that can be used or the number of bends which can be incorporated - the system can even run horizontally.

Interior of the Children's Centre at White Lodge Centre, partially lit for free with SunPipes

Contact Monodraught Limited tel: 01494 897700, email: info@monodraught.com

Lighting refurbishment project for Barnsley bakery

Interior of the Manor Bakeries' Carlton site in Barnsley, where new lamps have increased illumination and cut energy costs

A refurbishment of the lighting system at Manor Bakeries Carlton site should result in considerable energy costs savings, says Parkersell (Lighting & Electrical) who carried out the work. The new lighting system, which incorporates high frequency control gear and 1.5 m Reflex triphosphor lamps, will also more than double lighting levels in critical production areas.

The new lamps replace older halophosphate fluorescent tubes with inefficient switch start control gear. Much of the lighting is switched on seven days a week and 24 hours a day. The number of lamps has been reduced by a third, but with lighting levels increased dramatically. The new triphosphor lamps include an internal reflector to increase downward light output.

Parkersell has also carried out a lighting conversion project at Clatterbridge Hospital, part of the Wirral Hospitals NHS Trust, in which new high frequency ballasts have been fitted to existing light fittings. The project should cut lighting energy bills by 22%, says the company.

Contact Parkersell tel: 01962 871800

New lighting Code launched on CD-ROM

The latest edition of *Code for Lighting 2002*, now published on CD-ROM, provides a clear, concise and accessible guide for anyone involved in designing, installing, commissioning, operating or maintaining lighting systems.

Published by the Society of Light and Lighting and the Chartered Institution of Building Services Engineers (CIBSE) the *Code* includes an updated version of the *Code for Interior Lighting*. This has been published and updated regularly since 1936, most recently in 1994. This revised *Code* takes into account new legislation such as the revision of Part L of the Building Regulations as well as new and forthcoming international and European standards on lighting and ergonomics, and new emphases on energy efficient lighting.

The *Code for Lighting* offers a comprehensive, fully illustrated guide to the lighting requirements for buildings and their environs, including a guide to lighting equipment. It provides recommendations on the design of lighting for some residential buildings, specific industrial uses, for shops, offices, hotels, hospitals, public and educational buildings, as well as sports and recreational areas. It also covers emergency and security lighting as well as lighting for display purposes.

One of the main changes incorporated in this edition of the Code is tightened-up energy recommendations. The 1994 *Code* recommended energy consumptions lower than were incorporated in Part L of the Building regulations; these have been adjusted in the light of increases in the efficiency of lamps and luminaires since 1994.

In addition, with the kind permission of the Lighting Industry Federation, the CD-ROM contains the newly updated *LIF Lamp Guide*.

Copies of the CD-ROM are available at £125 + VAT from CIBSE Publications, tel: 0208 772 3618, email: pubsale@cibse.org

The future's brighter when the lights go out

A recent report: *Flying Blind*, written by Bill Bordass, and published by the Association for the Conservation of Energy (see *Energy World* March 2002), says that massive changes are required in the way commercial buildings are commissioned, designed, built and operated if the UK is to meet its Kyoto target for carbon emissions. The report points its finger directly at the commercial sector, which, its claims, continues to suffer from costly short time horizons where energy conservation is concerned.

But are the merchants of doom really looking in detail at what is happening on the ground.

Take lighting for example, in commercial buildings the world over, the lights seem to be on, even at night. Not only are they on, but they are on at 100% capacity. The reason for this was traditionally that fluorescent lighting, which illuminates most commercial buildings, only came with two settings - 100% on or 100% off.

But as with all traditions, things change, and one small company located in the North West of England, Morgan Hope Industries, is pioneering a revolutionary approach to 'intelligent' lighting which is delivering very significant cost savings to a growing number of more enlightened companies throughout the UK.

Stephen Fisher, Morgan Hope's MD, says that adopting a managed lighting policy not only saves money, it enables individuals within a building to have total control over their own specific lighting requirements. "Not everyone wants or needs the same level of lighting," says Fisher. "Equally, not every part of a building needs to be lit at 100% capacity, all of the time. Our design philosophy is based on developing the most energy efficient lighting system for each particular premises, rather than just producing 'one-size-fits-all' lighting systems at the lowest possible cost."

Dimmable baton fluorescent lamp

The savings resulting from this fresh approach are significant. One national retail chain, for example, installed a movement controlled dimmable baton lighting system (MCDB), designed specifically for them by Morgan Hope Industries, in all of its stock areas, and reduced lighting energy costs by 85%.

The principle behind MCDB is to provide lighting for areas with limited occupancy that can be automatically varied depending on the level of light required by the occupants.

So, for example, when the area is occupied, the lights will instantly rise to 100% output. When the individual leaves the area, if no movement has been detected after 5 minutes, the lighting level will drop to 50%, and then to 10% after a further 2.5 minutes of no movement having been detected. The lights will return to 100% as soon as anyone enters the area again.

Using a centralised movement detector to turn the lights on and off is of course not new. What is new is the incorporation of the control unit into individual lights within the complete lighting system. "This means movement is only detected within the locality of the individual light fitting, allowing us to provide 100% lighting where it is required, while still providing an overall minimum level of light for comfort and security in those areas not occupied and in remote corners of the room," explains Fisher.

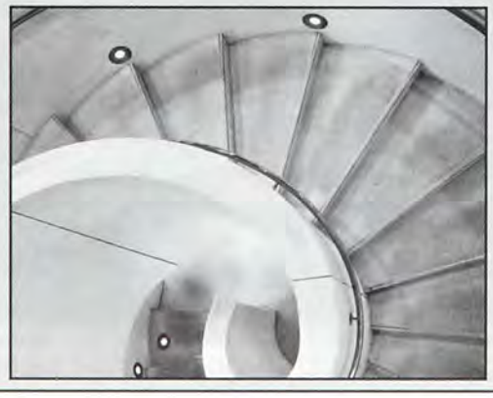
The take up of MCDB systems has been very successful, indicating that there is a serious effort being made by some UK industries towards more efficient energy policies, a trend Stephen Fisher believes will continue to accelerate. "We have done more work recently to develop our lighting systems further in response to growing customer demand," says Fisher. "We are now developing a new range of intelligent 'communicating' lighting systems that allow the light to be controlled using both movement detection and ambient light levels.

This provides very efficient energy consumption through a combination of occupancy switching and continuous monitoring of light levels to maintain preset settings, and allows a facility to provide individual lighting levels as required.

Contact Morgan Hope at tel: 01704 506066, www.morganhope.com

Also featured on the the front cover of this issue, light emitting diode (LED) lighting modules from Osram - used here to illuminate the staircase at a health club in the City of London - have exceptionally low running costs. Operating at 24 V, the modules consume just 3.8 W and last up to 100,000 hours

LEDs are compound semiconductors that convert electricity directly into light. Apart from their energy and maintenance saving qualities, the Osram LEDs are less than 1 mm^2 in size and generate little heat. Their very low current demands means that LED modules can be fitted without the use of heavy cables.



Kyoto – I'm doing my bit

by Miles Seaman MInstE

Condensing boilers are more efficient than others, and save both energy and money. So why are so few people having them installed? Miles Seaman points to the falling price of gas.

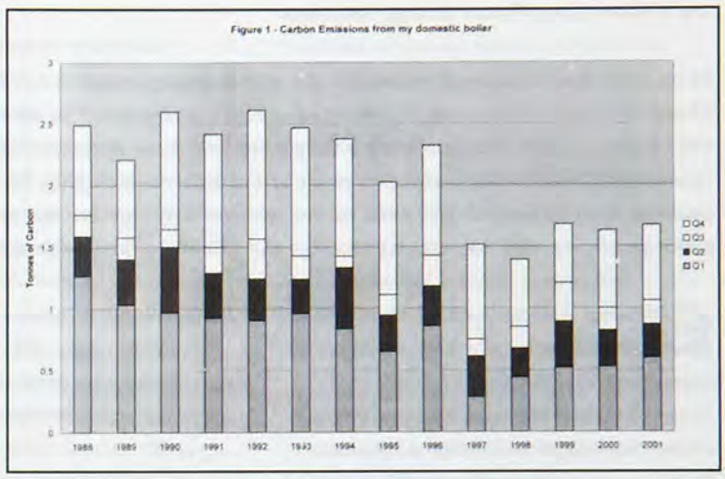


Figure 1 Carbon emissions from a domestic boiler

The aspirations outlined by the recent PIU energy review report persuaded me to update a running analysis of my own use of energy. Dennis Jenkin did much the same thing last year (*Energy World* March 2001). Since the great liberalisation of the energy market I have analysed my household utility bills in order to make sure I did my duty to obtain the best deal. At the end of 1996 I was obliged to make a decision on capital equipment since my central heating and hot water boiler went into terminal decline. Not without difficulty (back to this later) I had a condensing combi boiler fitted.

I live in a typical three bedroom semi-detached house in North London built in 1899. Soon after I bought the house I undertook the usual loft insulation and draft exclusion measures to make the house comfortable and reasonably economic. I used my gas bills directly to plot out figures for costs/prices and consumption levels (in kWh) and noticed that the data (including temperature and pressure correction factors) was available to enable me to make reasonably accurate calculations of the carbon dioxide emission levels.

Since the essential usage of the house has not changed over this period, Figure 1 tells its own story. Seasonal and annual variability are partly due to sporadic reading of the meter. However, it is clear that the average emission level fell from 2.4 tonnes/annum (of carbon) pre 1997 to 1.6 tonnes from that date. Hence, for that source of emissions, my reduction amounted to 33%. And since, on average, emissions from the use of domestic fuels account for one third of total emissions I can claim to have achieved my 10% Kyoto reduction in one swoop.

So why isn't everyone else doing the same as me? Sound information is not the problem. The boiler efficiency database run by BRESCU provides copious information on the efficiency of boilers based on a standard method of calculating the seasonal efficiency (SEDBUK). This clearly shows the large efficiency gains obtainable with condensing boilers. The best condensing boiler has an efficiency of 91.3% compared with the best non-condensing boiler currently available with an efficiency of 82.1%. Evidently my old boiler (fitted in 1973) was significantly worse than this. But members of the Institute of Energy heard from the Energy Savings Trust last year that less than 10% of new or replacement domestic gas boiler installations in the UK in 2000 were of this type. Contrast this with Holland where well over 50% of all households have condensing boilers.

What are the reasons for this apparently irrational behaviour? There seem to be two compounding factors at work. Firstly, lets take the price signals we receive. I have plotted the price I have paid for gas over the years in question adjusted for inflation. So it seems I now pay 42% less for my gas than in 1988. Hence it has been a significantly diminishing proportion of my household budget, unlike nearly every other category of expenditure. As neo-liberal man, why should I concern myself about making savings on a category of expenditure which is diminishing of its own accord? Am I not being invited to consume more of this ever cheaper resource and to spend the money I save, not on improving my energy efficiency but on a larger car or a couple of long haul overseas trips? Perhaps this would have been more rational than spending the time and money required to get my condensing boiler fitted.

I was actually relatively lucky in having sway over the heating engineer who fitted my boiler. My old boiler broke down whilst under a repair or replace maintenance contract with one of the larger national suppliers. However they tried very hard to persuade me not to install a condensing boiler. The usual "They are very complicated and they don't work guv" line was utilised rather insistently but I persisted in spite of a significant price supplement. It turned out that the main reason for their reticence was that they had never fitted one previously and were very badly equipped to deal with this new challenge. Having dealt with many plumbers and heating engineers before and since, I judged this firm to be significantly more competent than average.

So what lessons can be learned from this experience? Firstly, we need to get our thinking straight about the price of energy to the consumer if we are to save the planet. Secondly, to implement available technological solutions (even simple ones) we need to build a support structure capable of making the strategy work. In contrast with other nations we have spent eight to ten years barely scratching the surface of domestic energy efficiency - even though the technology is available. The DTI and its agencies should commit some determined effort to correct this manifest failure to, in their glossary of favoured terms, pick the low hanging fruit. Otherwise what hope is there of harvesting the higher branches.

Emissions trading kicks off - incentives a

by William Blyth, Future Energy Solutions

After more than two years of debate, the wait is finally over. The UK Emissions Trading Scheme (UK-ETS) finally got underway in March when the Government's incentive auction took place. The scheme subsequently went live on 2 April. Some £215 million will be given by the Government to companies that have in return pledged to reduce emissions of greenhouse gases by 4 million tonnes of CO_2 equivalent over five years of the scheme. Now that 34 companies have taken on caps at a price of £53/tCO_2, this could be seen as a successful start to the scheme. But what are the implications for the future of the UK-ETS and other participants entering the scheme through the Climate Change Agreement route? William Blyth explores the issues.

Emissions trading is a mechanism which lets companies meet environmental targets in a more flexible and cost-effective way, by allowing those companies that over-achieve their targets to sell their surpluses to those companies who have missed their targets. In theory, trading allows an economically efficient way of channelling capital to the most cost-effective emissions reductions. Trading is also well suited to control greenhouse gas emissions, because there is no dependence of environmental impact on location of emissions.

The UK-ETS is part of the UK Government's strategy for managing climate change. It is the first of its kind in the world, in that it covers a broad range of sectors. The Government hopes that by introducing such a scheme early in the UK, it will give first mover advantage to UK companies. This recognises that similar schemes are being introduced both at the EU level (expected to be introduced around 2006 onwards) and global emissions trading under the Kyoto Protocol (from 2008 onwards).

Three main categories of companies are eligible for entry to the scheme:

- companies that take on a voluntary emissions cap via the incentive auction (see next page for list of participants);
- companies that have a Climate Change Agreement target; and
- companies who enter through the projects based mechanism (rules to be agreed).

The incentive auction

The incentive auction was a process whereby companies commit to greenhouse gas emissions reductions relative to a baseline period (average emissions over 1998-2000). In return, the Government would agree to pay a fixed price per tonne of CO_2 equivalent reduction.

The price to be paid was set through several rounds of the auction. The first round was set at a high price of £100/tCO_2, and fell in subsequent rounds until the declared budget available for the scheme was sufficient to pay for all the bids made. The value of the bids fell in each successive round until they reached the budget figure of £215 million. This balance was reached in the auction at a price of £53/tCO_2 against a total bid volume of 4 mtCO_2e.

In theory, at a high price per tonne, companies might be expected to bid in more emissions reductions than at lower price. This would reflect the fact that at £100/tCO_2, additional emissions abatement investments would become cost-effective, and also the potential risks and market exposures of taking on a cap on emissions is small. In theory therefore, the emissions bid into the scheme would be expected to drop off as the price fell in successive rounds of the auction.

In practice, the successive rounds of the auction showed very little variation in the volumes bid, with companies apparently ignoring the price signal. There are a number of reasons why this might have occurred.

- Companies may not have had the information required to assess the marginal costs of abatement, so could not reliably follow the price signal in the volumes they bid.
- Due to considerations of risk, companies may only have been willing to bid in the level of emissions reductions they were sure of making under their current business plans.
- In terms of volumes bid, the auction may have been dominated by a few large players who were constrained on the amount they could bid in (see discussion following).

Influence of large players

Under the auction rules, no single company could receive more than 20% of the total auction budget (equating to £43 million or 805 ktCO_2 at the final settlement price). Some of the large players would have been able to offer emissions reductions well in excess of this amount, but it seems that they may have constrained their own bids, reserving some of their planned emissions reductions for sale on the market. This is likely to suppress future market prices.

It has long been expected that the voluntary entry route is likely to attract sellers to the market, as it favours companies that have already made emissions reductions relative to the baseline period. Many commentators have therefore predicted that the market may have an oversupply of allowances, forcing the market price to be low (current predictions are typically in the range £3-5/tCO_2).

The relationship between the auction settlement price and the expected market price is complex. Firstly, there is a factor of three between the value of auction relative to market price because the auction is only paid out on incremental improvements each

auction establishes the price of carbon

year rather than the total improvement relative to baseline. £51/tCO_2 is equivalent to £12-18/tCO_2 in market value terms depending on the tax treatment.

The link between this auction settlement price and the market price is tenuous, because the value of a tonne of carbon on the market relates to the margin by which companies are either beating or missing their targets. The fact that the bid volumes did not change significantly in response to the price signal suggests that companies are not pushing the boundaries on what they expect to achieve in terms of emissions reductions. This supports the case that the market may be oversupplied keeping the price low.

The future of the UK-ETS

If the above analysis is correct and the market price turns out at to be at the low figure of £3-5/tCO_2, this may be seen as limiting the effectiveness of the carbon market on the way business operates, since investment decisions would not be significantly altered by factoring in the price of carbon. The new carbon market would therefore not stimulate much new investment in emissions abatement.

If this is so, it implies that the level of trading will be limited, at least in the early years of the scheme. It also opens up the scheme to criticism that any environmental benefits are being undermined by flooding the market with allowances generated under 'business as usual' actions.

However, there are some significant successes coming out of the auction, with greater volumes of emissions reduction being bid and a greater number of companies involved than had been expected. It has also proved successful in kick-starting the market mechanisms such as trading and verification services etc that will be necessary as the carbon market develops.

The next big issue to face is how this all affects the Climate Change Agreement (CCA) participants. From October this year, thousands of companies in a wide range of manufacturing sectors will need to be meeting energy and efficiency performance targets. The broad rules for these companies' involvement in the trading scheme have been agreed, but a number of specific points are yet to be resolved, including the verification requirements and arrangements for ring-fencing emissions reductions.

A low carbon price implies that the overall financial risks posed by missing CCA targets are significantly reduced. This is good news for those sectors and companies with tough targets to meet under the CCAs, and points to emissions trading as being an important element of their strategy for dealing with future constraints on greenhouse gas emissions.

Contact William Blyth on tel: 01235 433456, e-mail: william.blyth@aeat.co.uk.

For more information on the UK Emissions Trading Scheme, visit: www.defra.government.uk/environment/climatechange/trading/index.htm

Asda Stores Ltd	First Hydro Company	The Natural History Museum
Barclays Bank plc	Ford Motor Company Ltd	Quantum Gas Management
Battle McCarthy Carbon Club	General Domestic Appliances Ltd	Rhodia Organique Fine Ltd
Blue Circle Industries plc	GKN (U.K.) plc	Rolls-Royce plc
British Airways plc	Imerys Minerals Ltd	Royal Ordnance plc
British Sugar plc	Ineos Fluor Ltd	Shell UK Ltd
BP plc	Kirklees Metropolitan Council	Somerfield Stores Ltd
Budweiser Stag Brewing Company Ltd	Land Securities plc	Tesco Stores Ltd
Dalkia plc	Lend Lease Real Estate Investment Services Ltd	UK Coal Mining Ltd
Dana UK Holdings Ltd	Marks & Spencer plc	Wates Group
Dupont (U.K.) Ltd	Mitsubishi Corporation UK plc	
EGNI (Wales) Ltd	Motorola GTSS	

The 34 participating companies - each has taken on a cap at £53/tCO_2

Critics suggest ETS is seriously flawed

As William Blyth suggests towards the end of his article, there have been suggestions that Britain's emissions trading scheme may not deliver anything like it promises to in terms of new investment in emission abatement.

According to *The ENDS Report*, defects in the design of the scheme mean that half of the planned emission reductions are either not real, or would have been achieved anyway under 'business as usual' scenarios. ENDS suggests that the scheme's voluntary nature has meant that it has attracted participation by companies which expect their emissions to fall anyway, eg simply by losing market share, and not those expecting an increase.

ENDS also suggests that much of the planned emissions reduction falls into the 'hot air' category, in that several major participants have already met their emissions targets, having been forced to cut emissions by pollution control permit requirements. This is denied by DEFRA.

Events

May 2002

Carbon dioxide capture and storage
Seminar and workshop
2 May, London
Contact: Institute of Energy
Tel: 020 7580 0008
Email: events@instenergy.org.uk

UK electricity markets
Workshop, 7-9 May, Brighton
Contact: Power Ink
Tel: 01273 202920
Email: margaret@power-ink.com

InstE Branch Event
Yorkshire Branch AGM and Dinner
10 May, venue TBC
Contact: Yorkshire Branch - Andrew Mallalieu
Tel: 0113 276 8888
Email: info@facultatieve-technologies.co.uk

National engineering recruitment exhibition
Exhibition, 10-11 May, London
Tel: 0870 870 7411
www.engineerjobs.co.uk

Insurance - implications for the oil and gas industry
Conference, 13-16 May, London
Contact: Global Business Network
Tel: 01553 770202
Email: gerber@gbnuk.com

Design in energy
Seminar, 14 May, Birmingham
Contact: ESTA
Tel: 07041 492049
www.esta.org.uk

Gas industry awards luncheon
Lunch, 14 May, London
Contact: SBGI
Tel: 01926 462916
Email: events@sbgi.org.uk

InstE Branch Event
Afternoon tour of Heath Hospital
Visit, 16 May
Contact: South Wales & West of England Branch - Tony Boulton
Tel: 0117 9323322
Email: a.boulton@talk21.com

Design in energy
Seminar, 16 May, Brighton
Contact: ESTA
Tel: 07041 492049
www.esta.org.uk

Coal - eight years on
The Energy Industries Club
21 May, venue TBC
Contact: Chris Maude
Tel: 01622 858762

Design in energy
Seminar, 21 May, Blackpool
Contact: ESTA
Tel: 07041 492049
www.esta.org.uk

ET2002
Conference & Exhibition
21-23 May, Birmingham
Tel: 0870 429 4384
Email: exhibit@fav-house.com

InstE Branch Event
Branch AGM
AGM, 22 May, Hampshire
Contact: South Coast Branch - Chris Wilson
Tel: 01252 673570

Building Regulations Part L
CPD seminar, 23 May, London
Contact: CIBSE
Tel: 01442 866378

Improving electricity efficiency in commerical buildings
Conference, 27-29 May, France
Email: infos@ieecbr15@online.fr

Annual HECA conference
Conference, 27-28 May
Birmingham
Contact: Institute of Energy
Tel: 020 7580 0008
Email: events@instenergy.org.uk

Environmental protection: public perception and the consultative process
Seminar, 27-28 May, venue TBC
Contact: David Jacobi
Tel: 01707 632574
Email: david.jacobi@environment-agency.gov.uk

Energy & power risk management
Conference, 28-29 May
Amsterdam
Tel: 020 7484 9898
Email: conf@riskwaters.com

The future of European utilities
Conference, 28-29 May
Brussels
Tel: 020 7608 0541
Email: admin@confs.co.uk

All energy opportunities 2002
Exhibition, 28-29 May, Aberdeen
Tel: 0208 241 1912
Email: judithpatten@msn.com

How to purchase gas and electricity
Course, 30 May, Bradford
Contact: Energy Information Centre
Tel: 01638 554920
Email: rwilbourn@eic.co.uk
Co-sponsored by the Institute of Energy

Cogeneration and renewable energy
Conference, 30-31 May, Lisbon, Portugal
Contact: IBC Conferences
Tel: 01932 893851
www.ibcenergy.com

June 2002

Sustainable development of energy, water and environment systems
Conference, 2-7 June, Croatia
Tel: +385 1 6168107
Email: dubrovnik2002@fsb hr

InstE Branch Event
North East Branch AGM
5 June, venue TBA
Contact: North East Branch - Andrew Cox
Tel/Fax: 0191 261 5274
Email: awcox@eimr.demon.co.uk

Energy management
Short course, 6 June, London
Contact: Institute of Energy
Tel: 020 7580 0008
Email: events@instenergy.org.uk

How to purchase gas and electricity
Course, 11 June, Coventry
Contact: Energy Information Centre
Tel: 01638 554920
Email: rwilbourn@eic.co.uk
Co-sponsored by the Institute of Energy

Events

UK electricity markets
Workshop, 11-13 June, Brighton
Contact: Power Ink
Tel: 01273 202920
Email: margaret@power-ink.com

Electricity in Europe
Conference, 12-13 June
Brussels
Tel: 020 7915 5103
Email: icbi_registration@icbi.co.uk

Hydrogen energy
Conference, 9-14 June, Canada
Contact: O'Donoughue & Associates
Tel: +1 514 481 7408
Email: info@hydrogen2002.com

InstE Branch Event
Annual EMC lunchtime lecture
14 June, Cheltenham
Contact: South Wales & West of England Branch - Tony Boulton
Tel: 0117 9323322
Email: a.boulton@talk21.com

Biomass for energy and industry
Conference and exhibition
17-21 June, Amsterdam
Tel: +39 055 500 2174
Email: eta.fi@etaflorence.it

How to purchase gas and electricity
Course, 18 June, London
Contact: Energy Information Centre
Tel: 01638 554920
Email: rwilbourn@eic.co.uk
Co-sponsored by the Institute of Energy

Nuclear energy
Workshop, 18 June, London
Contact: Institute of Energy
Tel: 020 7580 0008
Email: events@instenergy.org.uk

WindEnergy 2002
International trade fair
18-21 June, Hamburg
Email: info@windenergy-hamburg.de
www.windenergy-hamburg.de

InstE Branch Event
The energy gap
lecture, 20 June, Glasgow
Contact: Scottish Branch - Renale Powell
Tel: 01866 822 309
Email: renale@powellconsulting.co.uk

Energy security & market opportunities in Europe
Discussion dinner, 20 June
London
Contact: Di Hammet
Tel/Fax: 020 8767 9744
Email: BEAwec@aol.com

Energy liberalisation - building on lessons learned
Conference, 24-25 June, Leipzig, Germany
Contact: Eurelectric
Tel: +32 2 515 1000
www.eurelectric.org

Engine emissions management
Course, 24-28 June, Leeds
University of Leeds
Contact: Alison Whiteley
Tel: 0113 233 2494
Email: cpd.speme@leeds.ac.uk

Melchett Lecture
Lecture, 26 June, London
Contact: Institute of Energy
Tel: 020 7580 0008
Email: events@instenergy.org.uk

World Renewable Energy Congress
Conference and exhibition
29 June - 5 July, Germany
Tel: 0118 961 1364
Email: asayyigh@netcomuk.co.uk

Advanced sensors and instrumentation systems for combustion processes
Call for papers, 30 June
Contact: Professor Yan
Tel: 01634 883732
Email: y.yan@gre.ac.uk
Co-sponsored by the Institute of Energy

Melchett Lecture

The Institute of Energy (InstE) is pleased to announce Dr Mary Archer, President of the National Energy Foundation, as the recipient of the 68th Melchett Medal.

The Melchett Medal is the InstE's most prestigious award, established in the name of its first President, Lord Melchett in 1930 and awarded for outstanding work.

Please join us on Wednesday, 26 June 2002 to hear Dr Archer's lecture on the realistic opportunities for renewables in light of the PIU energy policy review. The lecture will be followed by a drinks reception.

To register for this event please contact Katie Moore at events@instenergy.org.uk or tel: 020 7580 0008

Registering on an event seen here?
If you are registering on an event which you have seen listed here, please don't forget to mention to the organisers that you saw it listed in the *Energy World* Events Diary.

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

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

Council Report

The Institute of Energy's (InstE) Council, chaired by President John Ingham CEng FInstE, met on 19 March. Members approved the nomination of Dr Mary Archer, Companion InstE, as the 2002 Melchett Medallist, the election of a new Companion (soon to be announced), and the 2001 Audited Accounts. The Melchett Lecture is scheduled for 26 June 2002 at Regents College. The subject of the 2002 Melchett Lecture will be, 'Realistic opportunities for renewables in the light of the PIU Energy Review report'.

The President advised members that he would shortly be travelling to Australia and Hong Kong, combining InstE business with a long-awaited family holiday. The President would be meeting with members of the InstE Hong Kong branch, members of the Australian Institute of Energy and senior executives of the Hong Kong Institution of Engineers during his visit.

Members discussed Mr Ingham's article published in April's *Energy World* and were in agreement that the Council to date had struck a sound balance in recent years in electing Presidents to represent the InstE and its very diverse interests. It was suggested that a number of additional attributes could possibly be identified to build on the existing criteria and the Council would review this in due course.

The matter of members' late payment of annual subscription fees was raised with some concern. Although the majority of members pay their subscriptions in readiness for a new subscription year (1st January), a number regularly did not. These members were therefore being subsidised which was felt to be unfair on 'paid-up' members. Various measures to counter this situation were discussed and a number of proposals were agreed for further research prior to the next meeting of the Council on 9 May.

The President reported that he had recently met the InstE's investment managers, together with Professor Chesshire and Mrs Kingham for the annual funds review. In summary, the funds had performed well ahead of stock market indices for 2001 as prudent management had removed the major risks of exposure following the events affecting the Stock Market in 2001.

The main topic of discussion for the meeting was the future governance of the InstE. A wide-ranging consultation exercise had taken place among committee members across the InstE and the consensus was that, for the organisation to run efficiently and effectively, changes were needed to the committee structure and the composition of the Council to reflect current best practice. The Council decided to de-layer the subcommittee structure, passing a number of powers back to it from the Executive Committee, which would cease to exist in the future. In addition, the Development Committee would be replaced by 'top-line' membership and education and training panels, reporting direct to the Council. The overall number of members serving on the Council would be reduced, but representation of various constituencies would be maintained wherever possible and in line with best practice and the InstE's needs. Final proposals are being prepared for review at the Council's next meeting. These will then require approval of members at an SGM and subsequent approval of the Privy Council where bye-law amendments are necessary to implement any approved changes.

Members expressed their appreciation to Professor John Chesshire FInstE for his active leadership of the Executive Committee, and thanked Patrick Waterfield, in his absence, for his chairmanship of the Development Committee.

The Council agreed that the InstE should subscribe to the newly formed Engineering and Technology Board.

NEW MEMBERS

NORTHERN IRELAND

Mr S McKenna, Graduate
Taylor & Fegan

LONDON & HOME COUNTIES

Mr R Freer, FInstE
Independent consultant

Mr K Burns, AMInstE
C J Design Partnership

SCOTLAND

Mr M McArdle, Student
Glasgow Caledonian University

Mr G Hudson, AMInstE
Fife Energy Ltd

SOUTH WALES AND WEST

Mr H E Morgan, Technician Member
Post Office Property Holdings

YORKSHIRE

Dr B Ewan, MInstE
Sheffield University

EAST MIDLANDS

Mr S.Grabham, Graduate
Derbyshire Dales District Council

Deceased Members
Mr. Robert Briggs, FInstE

Notice of Council Nominations

Any ten Corporate Members may nominate in writing any duly qualified person to serve on Council. Any three Corporate or Associate Members may also nominate in writing an Incorporated Engineer to serve on Council. A vote for Associate Members would be by Associate Members only. All nominations, together with the written consent of the nominee to serve, should reach the Secretary & Chief Executive of the Institute of Energy not later than eight weeks before the AGM but preferably earlier. (Members are not, however, permitted to join in the nomination of more than three persons in any one year).

HECA Conference 2002: the new challenges

This year's HECA Conference will take place 27-28 May at the Birmingham Grand Moat House Hotel. Organised by the Institute of Energy (InstE), on behalf of the UK HECA Fora Secretariat, this conference is designed specifically to meet the needs of all those who are involved with the delivery of HECA objectives.

HECA derives from the Home Energy Conservation Act of 1995 and is the drive by Government to ensure that all local authorities provide the most efficient use of energy in their own properties, the houses within their portfolio and the general house owning population.

As the key event in which to meet other HECA Officers, the InstE is delighted to be organising and managing this event, providing the ideal opportunity to discuss the key issues in energy efficiency, energy management and sustainable energy use.

The theme of this year's conference is 'Warm Front'. The administrators of this scheme, TXU and EAGA, will be speaking at the event, discussing the Warm Front initiative, to be followed by a panel discussion including DEFRA. The Energy Saving Trust will also be speaking at the conference. The InstE is also pleased to announce that David Moxon, a behaviour psychologist will be joining the conference to speak to HECA Officers on maintaining changes in behaviour in educating consumers in energy efficiency.

In addition, there will also be four workshops held over the two days looking at the energy efficiency commitment, funding opportunities, energy conservation and fuel poverty, and the revised Building Regulations Part L1. There will also be an exhibition in which to obtain up to date information on key products and services. The conference will also host the annual dinner and annual HECA awards 2002.

Delegate rates for the conference are as follows:

- £250.00 (includes conference attendance on both days, awards dinner and accommodation)
- £125.00 (includes attendance on the first day of the conference and awards dinner only)
- £75.00 (includes attendance at the second day of the conference only)

To register for this two day conference, please send your details to: Katie Moore, Institute of Energy, 18 Devonshire Street, London W1G 7AU, tel: 020 7580 0008, fax: 020 7580 4420 or email: events@instenergy.org.uk

If you are interested in sponsorship packages or exhibiting at this conference, please telephone Simon Whitney on tel: 01344 303165 or email: simon@whitneys.freeserve.co.uk

TEMOL and NVQ Level 4 in Managing Energy

Designed for practising professionals Training in Energy Management through Open Learning (TEMOL) has never been more relevant as a result of the Government's Climate Change Programme and particularly the Climate Change Levy.

If you need a recognised qualification in energy management and would like a flexible course that allows you to study at your own time, in your own home, then call for more information today. The course cost (VAT not applicable) including all materials, tutor and project support is £1550. You can also study for individual elements of TEMOL at £120 each.

One TEMOL graduate made energy savings of £6,500 a year as a result of completing the course. Having worked through the TEMOL course the candidate was able to recommend a wide range of improvements with fully worked technical solutions, costing and financial analysis.

TEMOL is mapped to the National Standards for Managing Energy and has a practical and employment focus covering both technical and managerial aspects of energy management.

The InstE is also a delivery centre for NVQ Level 4 in Managing Energy. If you are looking for direction and recognition that acknowledges your responsibility, look no further than the National Standards for Managing Energy. The National Standards have been used to develop the NVQ Level 4 in Managing Energy.

The NVQ Level 4 in Managing Energy allows you to:

- gain a national qualification recognising your competence and expertise;
- plan your development around work and other commitments;
- build on your current strengths and focus your development;
- reduce the training costs for your organisation;
- set the benchmark for training personnel within your organisation.

NVQ Level 4 in Managing Energy is a competence-based qualification, assessed in your workplace and driven by you providing evidence of what you do daily in your job. The Institute of Energy will provide you with a development adviser and once you have determined your action plan and collected your evidence against the standards, your portfolio for summative assessment will be forwarded for assessment.

The NVQ Level 4 in Managing Energy currently costs £1950 (VAT not applicable).

To find out further information please call Vicky Ratcliffe, Education Services Administrator at the Institute of Energy on 020 7580 7124 or email education@instenergy.org.uk

et2002

et2002, the UK's environmental forum providing solutions for business, will take place from 21 - 23 May 2002 at the NEC, Birmingham. Supported by the Institute of Energy (InstE), et2002 is designed to provide all environmental professionals with solutions for a host of environmental issues from responsible environmental management, to the right technical approach and process change.

Over 130 companies will profile a significant selection of environmental technology and management services at et2002. Covering the impact of current and impending environmental legislation through dedicated Information Zones featuring free advice, specialist seminars and workshops. The event will also feature Talkback - 'The Environment - Does Corporate Britain Really Care?' - a lively debate session with a panel of industry and regulatory experts, plus product demonstrations and launches.

In addition, the 'Climate Change - Our Business' conference will also run alongside et2002. Highlighting both the problems of implementing climate change solutions and the many opportunities and advantages, this conference will provide practical sessions focusing on: The Climate Change Levy, Adaptation and Mitigation; Building Sustainable Solutions; Information Technology Solutions; Energy for the Future; and Transport - Innovation and Integration.

The InstE is committed to providing pertinent information and networking opportunities for all its members and are pleased to invite you to this exhibition.

Pre-register now and gain fast track entry to et2002 by visiting www.et-expo.co.uk or calling 0870 429 4384.

membership offer

Members of the InstE can purchase Jeremy Leggett's new book 'The Carbon War' for the discounted price of £7.99 (including P&P)(RRP £8.99) via our website www.instenergy.org.uk/publications

Interactive Year Planner 2003

The hugely successful and popular 'Institute of Energy Interactive Year Planner 2003' is now in production for distribution towards the end of this year. This is a fabulous opportunity for companies to advertise by means of an advertisement within the programme, promoting products and services and allowing Institute of Energy members access to advertisers' web sites.

Contact the publishers, Digby House Business Guides, on 01206 574674 for advertising rates and full details.

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Hands-on water tube boiler experience.
Must be: self-sufficient, flexible, with demonstrable track record.
Profiles in confidence to Steve Howe.
Email: line9@energy121.com

Robert Gevargiz
MSc CEng MInstE MBA
Available for consulting assignments

Energy surveys – SEAs/SMAs
Energy management
Facilities management
Facilities strategy
Managing facilities change programmes
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To enquire:
Tel: 01525 862 835
Email: robert.gevargiz@adian.co.uk

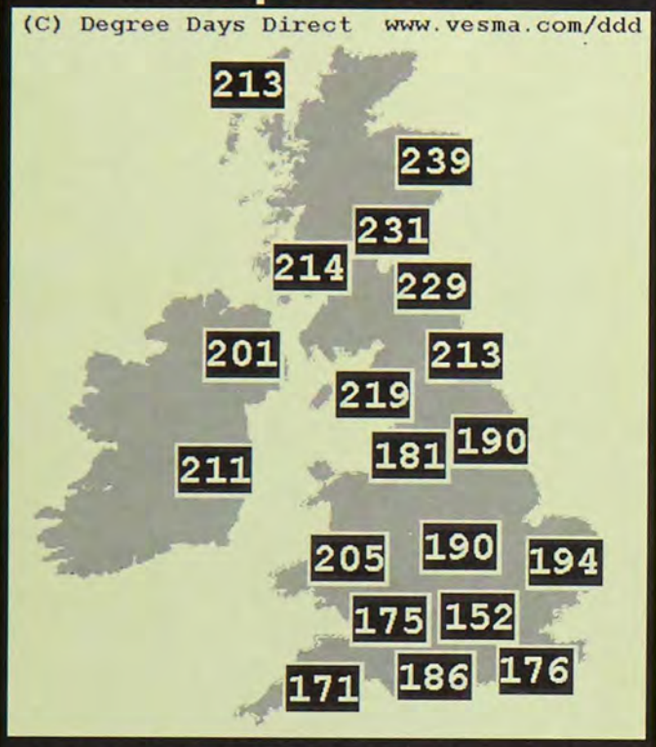
Energy consultant wanted

I am in need of an energy consultant based in York for a series of small projects around the region. Main work will involve energy surveys of superstores, commercial facilities, and institutional buildings. There may be some residential work as well. Please contact me at davidpk@hotmail.com for more infomation.

David Kaufman

This space is available for members to advertise. For more details e-mail: eworld@instenergy.org.uk

Degree Day Figures April 2002



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O AKINYEMI, M A TOQAN, J M BEER, A A SYSKA, J THIJSSEN, C BENSON and D MORLAND
Development of a high air preheat, low NOx burner: experimental studies aided by computational modelling

M J BROWN, M FAIRWEATHER, S M HASKO and C ROBINSON
Prediction of laminar, premixed methane-air flames using a reduced kinetic mechanism

the institute of energy

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IMPORTANT ANNOUNCEMENT

The Institute of Energy aligns with Institute of Petroleum (IP) and Institution of Gas Engineers & Management (IGEM) merger discussions.

Prior to IP and IGEM 'engagement' in merger discussions last year, both organisations had independently identified the Institute of Energy as a potential partner.

The Institute of Energy has recently discussed future strategy with IP and IGEM and an exciting opportunity now exists, which each organisation's Council has undertaken to review to determine the possibility of a three-way merger.

This opportunity could create a combined Royal Chartered Institute, with real technical depth in fuels, covering all aspects of the energy industries. Financially very strong, it could have some 16-17,000 individual members and more than 500 company members – a very influential body of expertise.

Business as usual continues for all three organisations as this work evolves. However, early communications to all members simultaneously has been welcomed in the continuing spirit of the open discussions between IP and IGEM to date. We will work together to bring you more news at every opportunity and seek your views as this exciting development evolves.