THE MAGAZINE OF THE INSTITUTE OF ENERGY

energy world

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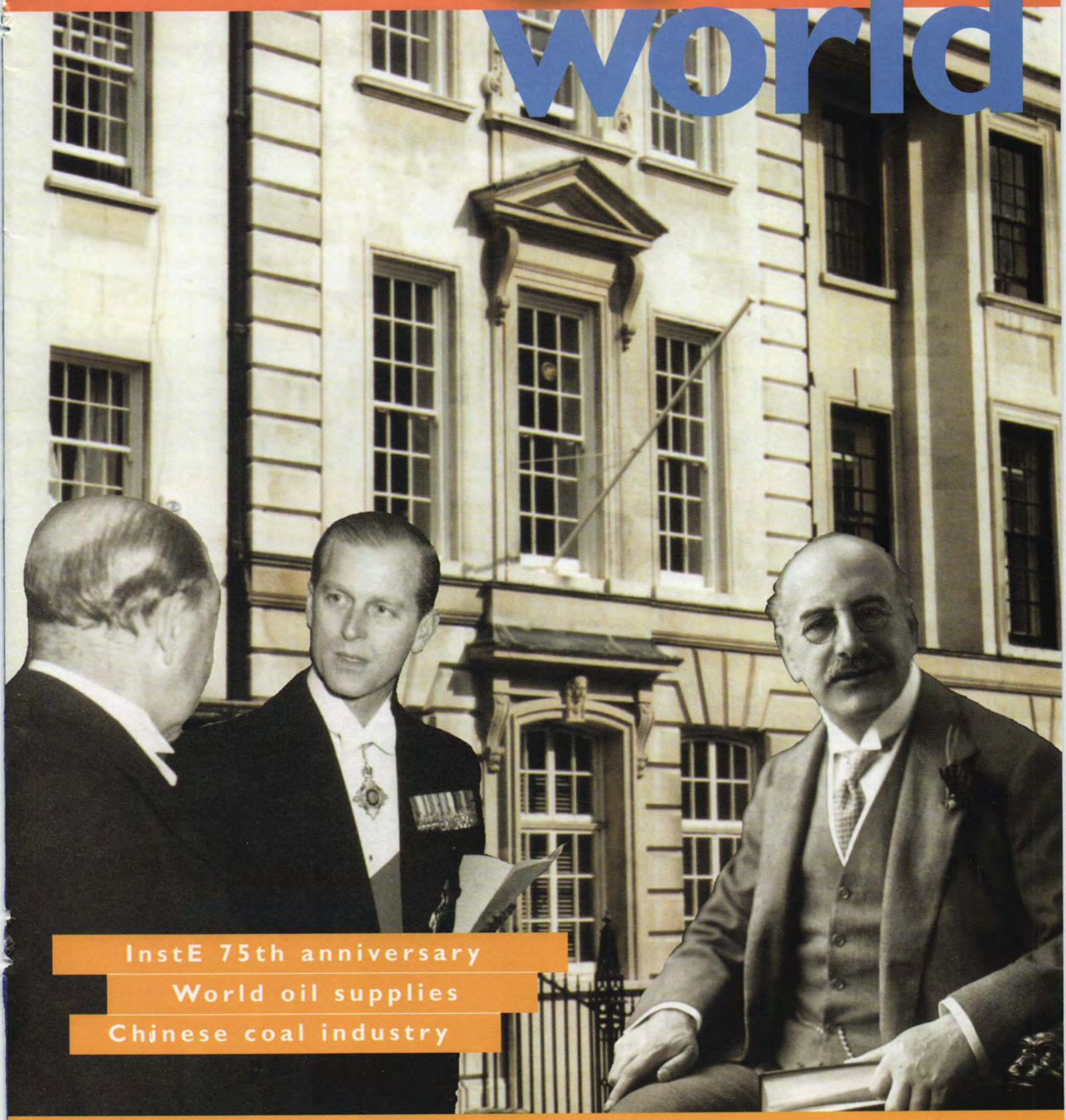
No.301 July/August 2002



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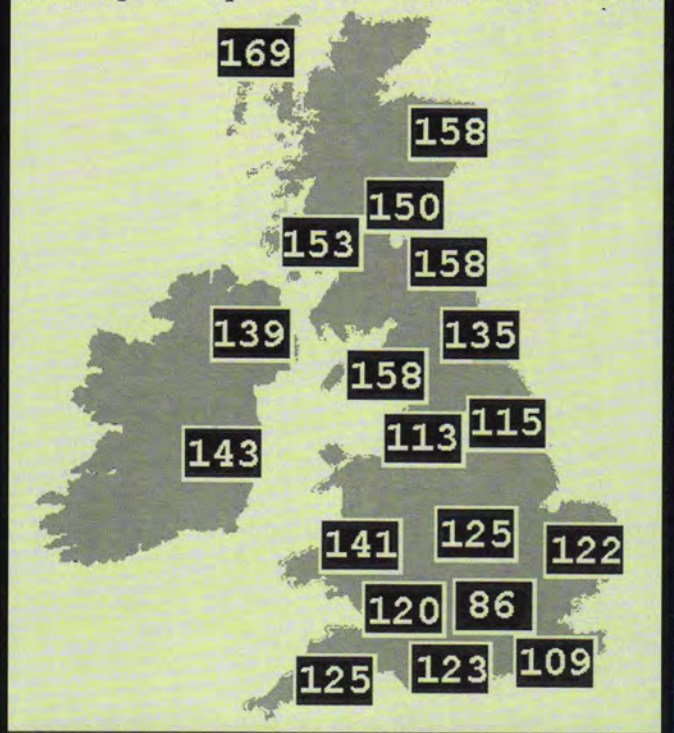

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- A layman's guide to understanding National Standards;
- A directory of training providers for managing energy;
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  assess your learning style and choose the style and CPD activities for you.
- An explanation of what's involved in achieving NVQ certification in Managing Energy;
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- A complete set of National Standards for Managing Energy;
- Understanding the National Standards;
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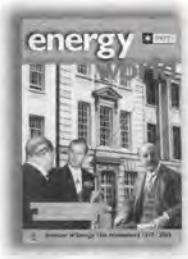

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COVER

This month marks the 75th anniversary of the Institute of Energy - an event which we celebrate inside with articles on the history of the Institute, including a round-up of Past Presidents and a look at the history of the headquarters building, and the future for both the Institute and the energy industry.

Fuel poverty - a bigger role for InstE Members?

Michael Roberts OBE FInstE, Past President of the InstE and Chairman of Eaga Partnership Ltd

Fuel poverty can be a deadly boring subject that by-passes most members of the Institute. It can also be an interesting and rewarding subject to address, particularly as it impacts upon 8 million out of 22 million UK homes, housing 36% of our population. Members of the Institute are probably the best equipped to address the subject, as is now happening.

This viewpoint aims to define the subject, show how it arose, and highlight the action now well underway towards elimination of the problem by 2010.

Fuel poverty has its origins in the massive expansion of the housing stock following the industrial revolution. For over 200 years, up to about 1970, houses were cheaply built, uninsulated, poorly windowed, draughty and relied upon plentiful supplies of cheap coal for their warmth.

Almost overnight, in the early 1970's when more convenient fuels such as gas and oil were displacing coal, fuel prices quadrupled. The UK then was faced with around 8 million households, whose occupants simply did not have sufficient funds to maintain an acceptable standard of comfort, even in one room in some cases.

Not surprisingly, health suffered, hypothermia increased, and there were many horror stories before more positive action commenced. The action was catalysed by a group of students at Newcastle University raising funds to purchase insulating and draught proofing materials which they installed themselves in the homes of the needy.

Neighbourhood Energy Action

That voluntary activity became formalised by establishing a charity, Neighbourhood Energy Action, whose growth and significant support from the utilities, led to the formation of the Energy Action Grants Agency, to deliver the Home Energy Efficiency Scheme. By 1993 as action on fuel poverty accelerated, the Agency became a dedicated project management organisation, Eaga Limited. This acquisition has now addressed fuel poverty in some 3 million households and through much expansion has formed itself into a 500 person partnership. The profits of the partnership are used solely for the needs of the business, and to support a charity whose objectives are to research and advise on the many wider aspects of the fuel poverty scene.

Today fuel poverty is defined as any situation where more than 10% of household income is spent on fuel. In most cases this applies to low income families, single parent occupations, pensioners, the unemployed, and families with children under 16. Understandably, most of these also have a greater need for warmth than the average household where typically fuel accounts for around 3% of household income.

The Eaga Partnership continue to work actively on the UK Fuel Poverty programme in three-quarters of England, Scotland, Wales and Northern Ireland, with another organisation handling the fourth quarter. Roles involve marketing the scheme and receiving referrals from individuals, local authorities, health authorities, social landlords, care agencies and others. Referrals are evaluated to confirm entitlement, the properties surveyed, the improvements defined, contractors appointed, the work carried out, inspected, handed over to the householder and the contractor paid.

Besides the obvious benefits to the householder, the scale of the ongoing operation, at around 1,000 properties improved per day, provides support to the insulation and draughtproofing industries, plus much extra employment for the installation contractors and others such as Eaga who alone have created employment for more than 500 of their own people and around 4000 amongst their sub-contractors. Furthermore the skills developed and expertise acquired now are being extended into the cost effective project management of other large volume repetitive projects.

Recently the fuel poverty programme has been expanded by Government to include boiler replacements and limited central heating.

Exceeding targets

Have there been problems with such a mammoth programme? Inevitably there have been some. The two over-riding concerns have been those associated with success and desire. Success shows in completions exceeding the targets and demand exceeding both, leading to waiting lists which all dislike, even though the overall programme is ahead of schedule. However funds are limited, and this makes it impossible also to meet the desire of many to move from next to nothing to a Rolls Royce installation in one step.

Looking towards the future, members of the Institute of Energy have a bigger role to play in all of this. Fuel poverty is unlikely ever to be totally eliminated, because fuel prices tend to inflate faster than incomes, resulting in the nearly fuel poor becoming the next generation of fuel poor; a situation that is further exacerbated by an ageing population.

The one and only answer for the future must be to substantially improve the thermal integrity of new and refurbished housing stock. Therefore we should all be pressing for even higher thermal integrity in the building regulations. This also means educating the building sector, whose opposition in the UK is considerable. Thus with 150,000 new build and 350,000 domestic refurbishments per annum it should be possible to just about eliminate all forms of fuel poverty in the next 44 years, or by 2050 at the latest. Further, that would dovetail in nicely with the agenda to reduce carbon dioxide emissions by half between now and then.

New 'Sector Skills Council' for energy industry?

Three distinct energy industries - electricity, nuclear and renewable/sustainable energy - have come together to bid for Sector Skills Council status.

The Government announced last year that a new network of sector-level skills organisations, Sector Skills Councils, would replace the existing national training organisations and lead the drive to boost productivity, skills and workforce development in their sectors.

The proposed Energy Sector Skills Council is backed by the Electricity Association (EA) and the British Nuclear Industry Forum (BNIF), as well as the Association of Electricity Producers, the Institute of Energy, the CHPA, the Renewable Power Association and the British Wind Energy Association. All parties to the bid feel that this is a timely response to the skills issues raised in the recent Government Energy Review.

Speaking on the announcement, Jenny Kirkpatrick, Chief Executive of the EA said: "The provision of demand-led, strategic leadership is essential if we are to ensure the adequate supply of skilled staff for our industry. The recent Employment and Skills Study by Electricity Training Association highlighted the skills shortages faced by the sector and reinforces the need for industry groups to work together to tackle skills gaps, recruitment difficulties and deficiencies in learning. Through an Energy Sector Skills Council we can bring together three industry groups which share similar business contexts and challenges, with common employment and skills issues."

Britain inches towards new energy policy

The Government has taken the next step towards a new energy policy for Britain, by launching a major consultation on policy following publication in February this year of the Energy Review by the Performance and Innovation Unit (PIU) of the Cabinet Office. Responses to the consultation will help to shape an Energy White Paper, to be published around the turn of the year, according to the DTI.

The deadline for consultation responses is 13 September.

Coherent and laudable as the PIU report was felt to be, only publication of the White Paper will reveal how much of its content is to be taken on-board and legislated for by the Government. The White Paper will, according to the DTI, be the culmination of Government consultation and a whole series of recent reports, including the Royal Commission on Environmental Pollution's 2000 report: *Energy - the changing climate*, which first proposed very considerable cuts in carbon dioxide emissions by 2050.

Energy Minister Brian Wilson, who chaired the PIU review, said: "Everyone has a stake in this. We all use electricity and transport. We are all users of gas, either directly or through its use in electricity generation. And we, and generations to follow, all have a clear stake in the environment. I am determined to make the consultation process as open and inclusive as possible."

In the consultation review document: *Key issues for consultation*, the Government has made clear those areas in which it particularly seeks to gather more information and opinion. However, the review document has attracted criticism from environmentalists, with Friends of the Earth (FoE) calling it an attempt by the DTI to "undermine the best parts of the PIU report". According to FoE, the consultation paper "tiptoes away from targets for renewables, worries about security of supply, and re-opens the possibility of public subsidy for nuclear power."

Key issues for consultation ***is available at: www.dti.government.uk/industries_energy.html***

Boost for wave energy, and the Western Isles

The Government is to support the development and demonstration of a series of new wave energy devices off the Western Isles with funding of up to £2.3 million

The funding offer, to be made after finalisation of the project's technical assessment by the DTI, will be based on three devices, located in shallow waters and based on an extension of the oscillating water column principles already demonstrated onshore. The award will be made to Wavegen, based in Inverness,.

If successful, the project would have several spin-off benefits to the people of the Western Isles, including the re-opening of a major manufacturing yard at Arnish on Lewis, should Wavegen choose this option.

Energy Minister Brian Wilson said it was essential that communities should see direct, tangible benefits from renewable energy developments in return for accepting and promoting them: "If crofting law did not exist in the Highlands and Islands then it would have to be invented for this purpose. Crofting communities are entitled by law to half the development value of projects which take place on their land. That is a principle which could usefully be applied throughout the UK if we are serious about winning acceptance for renewable projects.

"Developers will have noted the strong public support for renewables projects in crofting areas. This is clearly related to the perceived benefits in terms of both jobs and royalties. It is a message which should not be lost on the industry, or indeed on landowners elsewhere in the country. If they want support for their projects, they should offer something in return."

Waste plant 'would discourage recycling'

Plans for a major extension of the 55 MW Edmonton waste-to-energy plant in North London have been turned-down by the Government on environmental grounds. The expansion would have turned the plant into the biggest household waste incinerator in Europe and one of the largest in the world.

Energy Minister Brian Wilson said that granting consent would be contrary to the Government's waste strategy policy, as an expanded incinerator would act as a disincentive to waste recycling beyond the statutory minimum - the existing incinerator is already large enough to process the North London Waste Authority's (NLWA's) post-recycling municipal waste. The Government was also concerned that any shortfall in waste delivered to Edmonton due to increased recycling would lead to waste being imported into the north London, contrary to the 'proximity principle', whereby waste should be treated as near to its origin as possible.

An expanded incinerator would have an annual throughput of waste of around 285,000 tonnes over and above the existing capacity of 550,000 tonnes per annum.

Wilson added further reasons: "I have also considered the measures the applicant has undertaken to incorporate at the Edmonton site to encourage recycling, composting and using heat for local district heating schemes. While these measures are to be welcomed I am aware that previous ones of a similar type on the site have been closed or not utilised."

But he also stressed that the Government: "is not against energy-from-waste stations where they are clearly required and properly sized. The requirement of our policy is that statutory recycling targets must be met and that no incineration proposal shall be permitted which will pre-empt recycling or reduce the option for recycling for the future."

The average rate of composting and recycling for London is very low at about 12%, according to environmental campaigning group Greenpeace, which welcomed the decision.

Government launches CHP strategy - at last

The Government has finally launched a consultation draft of its *Strategy for Combined Heat and Power to 2010*, fully five years after it was first mooted. The document lists the various measures in place - some of these very recent - to support the expansion of CHP in the UK.

The Government has set a target of least 10,000 MWe of good quality CHP capacity for the UK by 2010. Economic modelling work contained in the draft Strategy suggest that the measures are sufficient to meet this target, although many insiders disagree.

The public and interested parties have until 7 August to comment on the new Strategy.

Launching the draft strategy, Environment Minister Michael Meacher said that it would: "play a significant role in the Government's sustainable energy policy, which brings together economic, social and environmental objectives within a competitive market framework."

Key measures include the now complete exemption for 'good quality' CHP from the Climate Change Levy (subject to State Aids clearance) - see *Energy World* June 2002 for details. This should be worth £15 million per year now, rising to £25 million by 2010.

"This, coupled with wider eligibility for Enhanced Capital Allowances, the £50 million Community Energy programme, a reduction in VAT for grant funded domestic CHP installations, and a range of other measures, confirm the Government's commitment to CHP," added Meacher.

The CHPA welcomed the long-awaited launch, while repeating its claim of the depressed state that the industry is in: "In 1997 the Government committed to creating a new CHP strategy and launched a major campaign to convince more companies to put CHP to work. Five years on and orders have dried up, redundancies have set in and all the major CHP suppliers have disbanded their CHP development teams. We hope that today will mark the start of a new approach from Government that seeks to turn the rhetoric of yesterday into the CHP schemes that are vital to deliver the Government's climate change commitments."

Marine civil engineering contractor Seacore has completed the installation of a 50 mm high offshore meteorological mast on Gunfleet Sands, 8 km off the Essex coast. The lattice tower, complete with anemometry, temperature probes and electronic recording and transmitting equipment, will be used by GE Wind Energy to remotely monitor wind speed and weather conditions to determine if the 2 by 18 km sandbank is suitable for a proposed offshore wind farm.

Seacore used a jack-up barge, which was towed to the location and raised to cope with the sea levels varying from zero to 5.5 m. The monopile foundation for the mast was then lifted from the deck of the jack-up and driven nearly 21 m into the seabed. The prefabricated mast was bolted on to a working platform installed at the top of the pile. The monitoring equipment and warning beacon are powered by photovoltaic panels and a wind generator also installed on the mast.

Universities improve their purchasing power

The Energy Consortium, formed in 1990 to combine the purchasing power of 130 universities, has signed a five year agreement to use a web-based energy procurement system from Utilyx for all its over 100 kW site electricity purchasing.

The Consortium used Utilyx's system to buy electricity in the October 2001 contract round, achieving savings of more than 2.7%, (compared with the previous year's prices) in a market that rose, overall, by around 2%.

For the electricity tender, Utilyx gathered, 'cleansed' and consolidated consumption data for sites at 15 universities. The data was then made available for suppliers to download from the Utilyx site in a form that was easy for their pricing systems to handle. This made it simpler for suppliers to formulate complex bids based on multiple tariffs. They could also re-bid quickly as the system fed back information about the ranking of their current bids.

Eight suppliers participated, making up to four bids each. Between six and eight suppliers bid for each of the 15 individual contracts. To view the bids after the tender closing date, buyers at the universities were each given an access code and password. In this way, they could use a PC and standard browser to view the area of Utilyx's site designated for details of all offers for their own contract.

In future contract rounds, David Thomas, Chief Executive Officer of the Consortium, intends to aggregate groups of Universities' requirements to gain economies of scale and make contracts more attractive to suppliers, and to consider including sub 100 kW sites.

Renewables Obligation 'not enough' to deliver

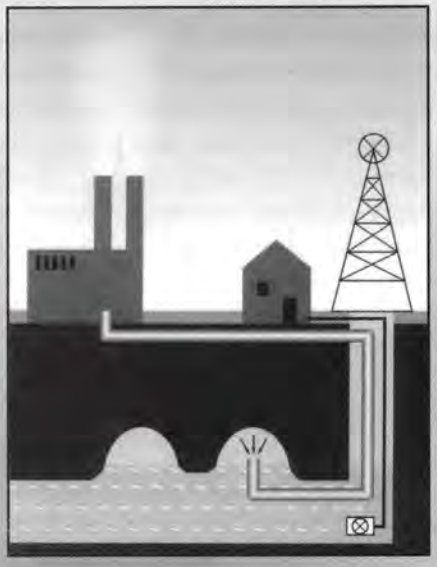
Government plans to generate 10% of Britain's electricity by 2010 are fatally flawed and will do little to reduce our dependence on fossil fuels, according to researchers at the University of Sussex.

In a new report, Dr Jim Watson and Dr Adrian Smith of SPRU - Science and Technology Policy Research at the University of Sussex - suggest that, while on the surface renewable energy seems profitable, it is being held back by a variety of factors. In particular, Dr Watson is unsure whether the potential revenue boost for renewables will be sufficient to overcome the hurdles of planning, network access and electricity trading rules that are currently holding renewable back.

One of the main obstacles, according to Dr Watson, is the new electricity trading arrangements (NETA), which dictate how electricity is generated and bought for supply. This rewards companies that can predict exactly how much energy they will supply and penalises those that fail. With fossil fuels this is a simple task. With wind power, however, the amount of electricity supplied can vary according to the weather. This uncertainty could lead to fines for wind energy companies, making its generation more expensive.

Another stumbling block is the difficulty in obtaining planning permission for renewable energy projects. For example, in the entire south-east of England, currently only one wind farm exists.

Dr Watson's findings are that NETA will have to be changed to accommodate non-fossil fuels and that, while the sentiment of the Renewables Obligation is welcome, in practice much more needs to be done to stimulate innovation in the field of renewable energy.



Variable speed drive experts TM Automation have helped design and install a control system to ensure that naturally-occurring methane is safely recovered from the old Steetley Works coal mine, outside Worksop in Nottinghamshire, and burnt as fuel in the nearby power station. Inverter drives supplied by TM Automation to Crowch controls are critical for protecting the sensitive and expensive water pumping equipment.

At Steetley Works, sufficient water is pumped out of the now flooded mine to allow free passage for gas to reach the collection points. The control panels and variable speed drive system at the heart of the project ensure that the pump, a large submersible located in one of the galleries 360 m below ground, never runs dry.

A transducer measures the water pressure and feeds a signal up the shaft to the 55 kW variable speed drive at the surface. The drive feeds this into an on-board algorithm to determine the optimum current speed, and adjusts the pump's motor accordingly. TM Automation recommended using a Toshiba drive set up in PI (proportional, integral) control mode. An additional wall-mounted unit constantly checks the water's pH, conductivity, flow rate and temperature, to ensure that environmental standards are met before disposal into the local waste water system.

Fuel cell projects across US

Fuel cell companies are charging ahead with new fuel cell installations at homes, businesses, and municipal facilities throughout the US; with new fuel cell systems recently installed or planned in Colorado, Illinois, Michigan, Missouri, New Jersey, New York and Virginia.

In New Jersey, FuelCell Energy Inc is to provide 250 kW fuel cell power plants for installation at two hotels owned by Starwood Hotels & Resorts Worldwide Inc. The fuel cell systems will provide a quarter of the power and hot water heating needs for the Sheraton Parsippany Hotel and Sheraton Edison Raritan Center.

FuelCell Energy was also recently awarded a patent for its high-efficiency system that combines a fuel cell with a gas turbine.

In New York, the first of two 5 kW fuel cell installations in residential homes has been completed. The systems will be operated for one year and then returned to the manufacturer, Plug Power Inc, for testing. Meanwhile, the Long Island Power Authority (LIPA) announced plans to install 17 Plug Power fuel cell systems at commercial and municipal customer locations across Long Island this summer. LIPA also plans to install three 5 kW backup power systems by year-end and to expand the fuel cell operations at its West Babylon substation, where 75 fuel cell systems were installed last year.

Plug Power also provided two 5 kW fuel cell systems that DTE Energy Technologies installed at a Detroit Edison power station in Commerce Township, Michigan. The fuel cells will be tested while providing power to the electrical grid over the next year.

In Colorado, Illinois, Missouri and Virginia, four rural electric cooperatives are now each operating one 4.5 kW fuel cell system from H Power Corporation as a beta test of the company's newest product. The company will install more systems at other cooperatives that are members of Energy Co-Opportunity, Inc, an energy services cooperative.

Kyoto moves closer to reality as EU, Japan ratify Protocol

The European Union (31 May) and Japan (5 June) have both formally ratified the Kyoto agreement on global warming, improving the chances of the Protocol - first agreed in December 1998 - eventually coming into force. However, Australian Prime Minister John Howard has indicated that Australia will not be following suit. "For us to ratify the Protocol would cost us jobs and damage our industry," he said. The United States has no intention of signing the accord, citing similar concerns.

The Kyoto Protocol sets targets for industrialised countries to reduce their emissions of greenhouse gases. In order for it to enter into force, it must first be ratified by developed countries that together account for 55% of the total carbon dioxide emissions in 1990. Japan is the 73rd signatory of the Protocol; its ratification means the agreement now has support from nations responsible for 36% of emissions. However, it is uncertain whether the 55% can be met without the US and Australia.

The EU itself is responsible for around 15% of global carbon dioxide emissions and has ratified the Protocol as a single entity, having shared out the carbon dioxide cuts burden between member states. A range of EU-level measures have been prepared to encourage cuts in emissions under the European Climate Change Programme. The EU has also secured voluntary agreements with car manufacturers to improve fuel efficiency by at least 25%

UK Environment Minister Michael Meacher said: "While the Kyoto Protocol is important in itself, it is only a first step. Much more fundamental cuts in emissions will still be needed if we are to avoid the dangerous effects of climate change; perhaps ultimately up to 60%."

New nuclear power plant for Finland?

The Finnish Parliament has ratified, by a vote of 107 to 92, the Government's January decision-in-principle to licence the building of a new, fifth nuclear power plant unit (see *Energy World* March 2002).

Finland's energy industries and major energy users have been lobbying for permission to build a new plant at one of the two existing nuclear sites for some time. The two parties - linked by partial ownership of the major nuclear operator by its industrial customers - say there is very little scope for increasing Finland's power imports from neighbouring countries and that Finland already makes extensive use of renewables (particularly hydro) and biomass-fuelled CHP.

Ratification has opened-up the intriguing possibility of the first new nuclear plant to be built in western Europe for many years; and the Finnish energy industry insists it will be built without financial support from Government.

"This positive decision offers the opportunity to retain a diversified electricity supply architecture in Finland, even in the future," says Juhani Santaholma, President of Finnish Energy Industries Federation, Finergy. "This versatile supply architecture is the very strength of the Finnish power system. Nuclear power, with its proportion of some 40% in the Finnish electricity mix, makes a good cornerstone in our electricity supply."

And additional nuclear power will give Finland time to develop renewable energy sources, such as hydrogen, over a long time span, adds Santaholma.

Swapping emission allowances across borders

The Royal Dutch/Shell Group of Companies and Danish electricity supplier Elsam SA have executed what the two companies describe as the first ever swap of government-backed greenhouse gas emission allowances.

Through the swap transaction, which was brokered by Natsource-Tullett Europe Ltd, Shell sold UK allowances and bought Danish allowances. Elsam sold Danish allowances and bought UK allowances. Denmark and the UK are the only nations that have developed formal greenhouse gas trading programmes to date.

Although there is not yet any regulation providing for the regulatory transfer of these allowances, both parties to this transaction see a compliance value in both national allowances. Elsam has a mandatory cap under the Danish CO_2 allowance system. Shell, which has facilities in the UK and Denmark, has taken on a voluntary cap under the UK Emissions Trading System, as well as a mandatory cap under the Danish system.

Danish allowances have restricted banking rules and the viability of allowances after the trading scheme ends in 2003. UK allowances, on the other hand, are bankable until 2007 and, with some contingencies, also bankable into the first Kyoto compliance period (2008-12). Therefore, by swapping their Danish Allowances for UK Allowances, Elsam is to bank some of its emissions assets into future compliance periods, according to Natsource.

"This transaction represents the future of global emissions trading," says Natsource's Michael Intrator. "The swap demonstrates that trades in government-backed greenhouse gas emission allowances between jurisdictions can make sense even in the absence of clear rules for fungibility (transferability). This is a recognition that companies can utilise the global trading market to achieve economic and environmental objectives."

The Danish and UK trading programmes are the first allowance markets created for the trading of greenhouse gas emissions. In December 2001, Elsam announced its participation in the first trade under the Danish system. The UK market officially launched this April, but forward allowance trades have been conducted since September 2001.

Sulzer Pumps has built a prototype injection pump that generates, says the company, the highest seawater injection pressure ever achieved. For use at the Thunder Horse project, part of the BP deepwater development program in the Gulf of Mexico, water will be injected at a flow rate of 340 m3/hour and at a pressure of 600 bar.

The pump has twelve stages, and will run at 6,000 rpm, driven by a 9,700 kW motor and gearbox. The pump is a development of the existing Sulzer high-pressure barrel casing pump range, type HPcp. Previous landmarks for this pump range include the world's largest onshore, offshore and vertical injection pumps.

The prototype pump was subjected to extensive mechanical testing at the Sulzer facility in Leeds, England. This included testing the pump in its 'end of life' condition, with running clearances that are twice those of a new pump. Following the satisfactory completion of these tests, three complete additional pump units have now been ordered and, in addition, the prototype pump is being converted into an operational pump unit. Delivery of the four units is scheduled for March 2003.

Major new pumped storage power for China

Austria-based supplier of equipment and services for hydropower plants VA TECH HYDRO has signed a contract to build a major new pumped storage project in what is proving to be a significant emerging market, China; and a further contract to renovate two hydroelectric schemes in southern India.

The former, valued at more than £90 million, is to build a pumped storage power plant in Tongbai, China for its customer the Zhejiang Provincial Electric Power Co on behalf of end user the Tongbai Pumped Storage Power Co Ltd (TOBA).

Manufacture has already started on the offshore work and construction will take 60 months, with full commissioning due at the end of 2006. Tongbai is located in Zhejiang Province near the city of Tiantai, about 400 km south of Shanghai. This new plant is one of the largest pumped storage power plants in the world, and will provide peak load energy. It will have a total installed capacity of more than 1,300 MW accommodated in a large cavern.

Work at the project includes four sets of Francis pump turbines, spherical valves and auxiliaries, four motorgenerators and associated protection, supervisory and control systems.

Meanwhile, the company has been awarded two contracts by the Tamil Nadu Electricity Board for the renovation, modernisation and uprating work at two hydropower plants.

Forecasts point to 2010 for the

Roger W Bentley, The Oil Depletion Analysis Centre

The era of cheap oil is nearly over, with world production set to peak as soon as five years from now. Having passed the peak, the world will never be quite the same again, This is the well-argued but little-acknowledged conclusion of Roger Bentley of the Oil Depletion Analysis Centre.

One of the reasons that people are disinclined to believe current global oil depletion calculations is their impression that past oil forecasts have been wrong, particularly those made in the 1970s. This view sees the present calculations as just another example of 'crying wolf'.

This article, an edited version of a paper presented at the International Workshop on Oil Depletion in Sweden in May, summarises a range of forecasts, of global oil production, made between 1972 and the present day. On examination, most reputable oil forecasts made in the 1970s look like they will be substantially correct. This paper also discusses the forecasts in the Club of Rome's report: The Limits to Growth.

There have been premature warnings of oil's exhaustion from as early as the nineteenth century. Many of these, including some of those enumerated by the US Department of Energy, correctly indicated that production from a particular region or country would soon decline, but overlooked the scope for new discoveries elsewhere.

The 1970s and early 1980s produced its own crop of erroneous forecasts. Some of these predicted oil exhaustion based only on *proved* reserves (ie ignoring the existence of the probable and possible reserves, and oil yet to be discovered); while others assumed a continuation of the high demand growth rates of the 1950s and 60s. Other erroneous forecasts included one from the CIA that assumed structural decline in the Soviet Union; and from the UK's UKOOA that forecast UK production based only on areas then licensed.

1970s FORECASTS

In terms of viewpoint, oil forecasts made in the 1970s largely fit into one of four categories:

- general, non-quantitative, fears of global supply scarcity, based on the experience of shortages that occurred during the oil shocks;
- predictions that global oil would run out (ie reach exhaustion) in 30 years or so, based on the then-proved oil reserves of about 30 years' worth of current production;
- predictions of oil global exhaustion on a shorter timescale, based on the then proved oil reserves (or some larger amount), but with growth assumed to rise at a fast exponential rate; and
- predictions that global oil production would rise substantially, until reaching a resource-limited *maximum production rate* (very different to oil running out) around the year 2000, with production declining thereafter.

Nearly all reputable organisations of the

Cheap oil is coming to an end very soon

The world's production of conventional hydrocarbons will soon decline. Hydrocarbon shortages are inevitable unless radical changes occur in demand, and in the supply of non-conventional hydrocarbons.

Global conventional oil supply is currently at political risk. This is because the sum of conventional oil production from all countries in the world, except the five main Middle-East suppliers, is near the maximum set by physical resource limits. Should Middle East suppliers decide to substantially curtail supply, the shortfall cannot be replaced by conventional oil from other sources.

World conventional oil supply will soon be at physical risk. The Middle-East countries have only little spare operational capacity, and this will be increasingly called upon as oil production declines elsewhere. Large investments in Middle-East production, if they occur, could raise output, but only to a limited extent. (A partial exception is Iraq, but even here there would be significant delays before prospects are confirmed, and infrastructure in place.) If demand is maintained, and if large investments in Middle East capacity are not made, the world faces the prospect of oil shortages in the near term.

Even with large investments, resource limits will force Middle East production to decline fairly soon, and hence also global conventional oil production. The date of this resource-limited global peak depends on the size of Middle East reserves, which are poorly known, and unreliably reported. Best estimates put the physical peak of global conventional oil production between five and ten years from now.

The world contains large quantities of non-conventional oil, and various oil substitutes. But the rapidity of the decline in the production of conventional oil makes it probable that these non-conventional sources cannot come on-stream fast enough to fully compensate. The result will be a sustained global oil shortage.

For conventional gas, the world's original endowment is probably about the same, in energy terms, as its endowment of conventional oil. Since less gas has been used so far, compared to oil, the world will turn increasingly to gas as oil declines. But the global peak in conventional gas production is already in sight, in perhaps 20 years, and hence the global peak of all-hydrocarbons (oil plus gas) is likely to be in about 10 or so years.

For more information, see Energy Policy, Vol. 30, No. 3, Elsevier, February 2002

global oil production peak

time took this fourth view; that world oil production would continue to grow fairly rapidly until reaching its resource-limited physical peak some time around the turn of the century. This view was also reflected in many textbooks and energy monographs of the day - see Table 1.

This fourth, 'production peaking', view was based on:

- the then well-accepted estimate for the world's original endowment of recoverable oil (the conventional oil 'ultimate') being roughly 2000 billion barrels;
- the knowledge that the global production peak would not occur until something like half of this, 1000 billion barrels, had been used;
- the knowledge that only about 300 billion barrels had been consumed at that date (ie it would need the consumption of another 700 billion barrels before the mid-point was reached);
- the assumption that production would follow an 'unconstrained' logistic (Hubbert) production profile.

On this basis, the global mid-point, ie the point at which global oil production would reach its maximum, was calculated to lie around the year 2000, (a precise calculation by Hubbert gave the date as 1996).

In the event, global demand was substantially curtailed by the price rises of the 1970s oil shocks, and the unconstrained logistic profile was not followed. This pushed the global conventional oil production peak out to around 2010 - see Figure 1.

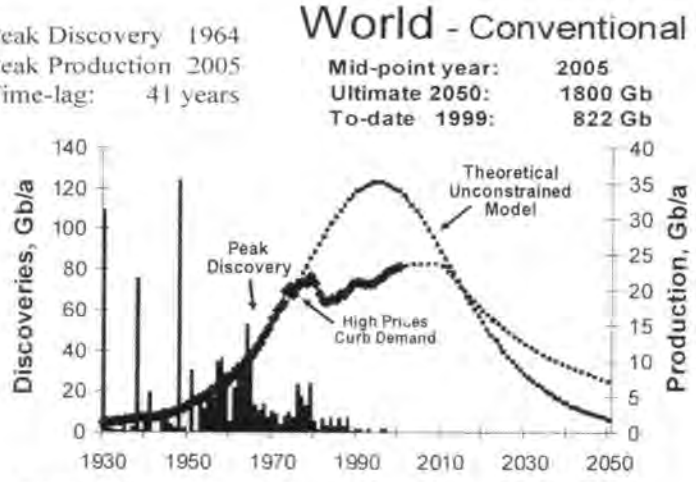


Figure 1 World oil: 'logistic curve' forecast; and actual demand

Notes:

1. This graph is for 'narrowly-defined' conventional oil (ie excludes oil with API < 17.5, oil in waters deeper than 500 m, oil in polar regions, and NGLs).
2. Left-hand scale and vertical bars: global oil discovery by year; finds prior to 1930 shown in 1930. The discovery in 1948 of the world's largest field, Saudi Arabia's Ghawar, is clearly visible.
3. Right-hand scale: An unconstrained logistic (Hubbert) curve with an area of 1800 Gb, actual production up to 1999, and estimated future production. The total area under the combined production curve is also 1800 Gb. The short plateau in production, ~2000 to 2008, is based on the assumption that price will curb demand.
4. As can be seen, the high prices from the oil shocks cut the top off the unconstrained curve, and shifted the date of peak by about 10 years.
5. Source: C.J. Campbell

Current forecasts

Today, there is a wide range of estimates for the world's original endowment of conventional oil (ie recoverable oil, excluding tar sands, etc). These vary from about 2000 giga-barrels (Gb) (including deepwater and polar oil, but excluding NGLs) up to about 4000 Gb. The majority of estimates, however, are close to the 2000 Gb figure (see Table 1). Moreover, detailed analysis shows that oil-producing regions reach their maximum production levels at about the mid-point of the estimates that make up the 2000 Gb number, and at much lower percentages of higher estimates of ultimate.

The conclusion is that the global peak in the production of conventional oil is most realistically forecast by taking the mid-point of an estimate for the original endowment of conventional of about 2000 Gb, ie in agreement with the majority of the reputable forecasts made in the 1970s.

This is illustrated in Table 1, which lists and comments on a range of forecasts up to the present day.

The Club of Rome report: Limits to Growth

Because of its importance in many people's perception of resource limits, it is useful here to also discuss the Club of Rome's 1972 report: *The Limits to Growth*.

This report was a key contributor to the 1970s understanding that resources are finite; that man's use of these could reach limits within comprehensible time spans; and that the complex interactions between resources, population, capital and pollution require *system thinking* if a proper understanding is to result.

Prior to the report, oil use had been growing at around 7% per year, and the calculations of the Club of Rome correctly showed that if this sort of growth rate were to continue, a resource base of almost any feasible size would be exhausted in a surprisingly short time-span. The lesson, still true today, is that unfettered exponential growth is unsustainable if set against a finite resource.

The authors gave a table listing the then-current *proved reserves* of various

minerals, including oil at 455 billion barrels. The authors recognised that the figure they gave for each mineral represented only the resource discovered so far, and suggested that a larger amount, up to perhaps six times as much, might represent the total useful quantity of that mineral. (In oil's case, coincidentally, six times 455 Gb is roughly correct for conventional oil's original endowment, ie ultimate).

But the authors made no use of these then-current resource numbers in their modelling. Instead they assumed, in their 'standard computer run', that all non-renewable resources, lumped together, had a resource base in 1970 of 250 years' supply at 1970 rates. The standard run then showed that society would collapse in less than a hundred years due to resource depletion, itself driven by population growth; compounded by an increasing per capita use of non-renewable resources; and further compounded by the assumption that the material capital to extract the resources increases as the resources themselves are depleted.

Finally, a point is reached where too little capital is left for future growth, as investment cannot keep up with depreciation, and the industrial base collapses, taking food and service production with it. If the authors doubled the resource base, society still collapsed, now primarily due to pollution limits, but also to severe restraints on resource availability.

Interestingly, in the sequel: *Beyond the Limits,* estimates *are* given for oil's ultimately recoverable reserves (as opposed to then-current proved reserves given in the previous book), an acceptable range of 1800 - 2500 billion barrels. But the authors appeared unaware of the implication of applying a logistic curve to these data (ie of applying the Hubbert 'peaking from the mid-point' argument).

Overall, today, many people's perceptions of the Club of Rome's report (unaware of the details of its simulations) are that: since no major resource shortages have appeared, the report was fundamentally flawed; forecasting resource limits is a fool's game; and that man's ingenuity and skill will always overcome the outdated Malthusian nightmares of resource depletion. The report is due for re-consideration.

TABLE 1 SOME FORECASTS OF WORLD OIL SUPPLY

Date of forecast	Source	Forecast date of conventional peak	Ultimate assumed (Gb)
1972	ESSO	"Oil to become increasingly scarce from about the year 2000"	2100
1972	Report for the UN Conference. on Human Environment	"...likely that peak production will have been reached by the year 2000"	2500
1974	SPRU, Sussex University, UK	n/a	1800 – 2480
1976	UK Department. of Energy	Peak: "about ... 2000"	n/a
1977	Hubbert	Peak: 1996	2000 (Nehring)
1977	Ehrlich et al.	Peak: 2000	1900
1979	Shell	"... plateau within the next 25 years"	n/a
1979	BP (Oil crisis ... again?)	Peak (non-communist world): 1985	n/a
1981	World Bank	"... plateau around the turn of the century"	1900
1995	Petroconsultants	Peak: 2005	1800, (excluding. NGLs)
1997	Ivanhoe	Peak: 2010	~ 2000
1997	Edwards	Peak: 2020	2836
1998	IEA: WEO 1998	Peak: 2014	2300 reference case
1999	USGS (Magoon)	Peak: ~2010	~ 2000
1999	Campbell	Peak: ~2010	2000 (including polar and deepwater oil)
2000	Bartlett	Peak: 2004, or 2019	2000, or 3000
2000	IEA: WEO 2000	Peak: "Beyond 2020"	3345 (from USGS)
2000	US EIA	Peak: 2016 - 2037	3003 (from USGS)
2001	Deffeyes	Peak: 2003 - 2008	~ 2000
2002	Smith	Peak: 2011 - 2016	2180
2002	Nemesis	Peak: 2004 - 2011	1950 - 2300 Gb equivalent

CONCLUSIONS

Nearly all the global oil forecasts made by reputable organisations in the 1970s combined 'mid-point peaking' arguments with realistic estimates for the world's original endowment of conventional oil. Hence these forecasts gave, in quantitative terms, *exactly the same* warnings of the 'wolf's' approach as given by today's oil depletion calculations; namely, that global production of conventional oil will peak, and then inexorably decline, when roughly 1000 Gb have been produced.

Past and current forecasts, in combination, constitute a consistent 30-year sequence of warnings that we would be wise to heed.

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North Sea tax may lead to reduced investment

Ernst & Young's ongoing research into inward investment has revealed that the current economic downturn has left the UK as one of the hardest hit in Europe, with the total number of inward investment projects across all sectors down 34%. At a time when investment is waning, the company is also concerned that changes to UK Continental Shelf (UKCS) tax regime proposed in the Budget (see *Energy World* June 2002) may lead investments in this important sector to be withdrawn and invested abroad - where fiscal stability is more certain.

As UKOOA, the Offshore Operators' Association, made clear only the week before the budget, investment in the UK last year was significantly higher than in 2000. £3.5 billion was invested in development by the oil and gas industry in the UK last year - a level of investment which came about in part because, as UKOOA said: "The stable UK fiscal regime helps attract investment."

At the heart of this concern is the proposed supplementary 10% tax rate, taking the rate in the UKCS to 40%. The UKCS Fiscal Regime is highly complex and, depending on the field in question, taxes can be anything from 30% to 69.4% of field income. The Budget changes will alter that range to 40% to 73.75%.

Last year saw the culmination of one of the largest new developments in the UK continental shelf for 20 years, as Elgin/Franklin began production. Operated by TotalFinaElf, the fields are located 240 km east of Aberdeen in the Central Graben Area of the UK North Sea. Their combined production is around 240,000 barrels of oil equivalent a day, accounting for approximately 5% of the UK's oil and gas output.

From the central processing platform (in foreground) liquids are exported via the Forties pipeline system to Kinneil. Commercial quality gas is exported via the SEAL pipeline to Bacton where it is routed to the Transco or Interconnector terminals. The Elgin wellhead platform (far right) is bridge-linked to the central processing platform while the Franklin wellhead platform, 5.5 km south, is linked by a subsea pipeline bundle.

The Chancellor's efforts to show how existing North Sea investors could still benefit from his capital allowance changes, despite an additional 10% supplementary tax, have been offset by the fact that the tax charge has increased across the board, regardless of the level of investment made. While companies investing significant amounts in the UKCS will fair better in the short term - at least in terms of tax payments - the higher tax rate is merely deferred and must still be paid in the future.

In addition the government has announced it will consult on the potential abolition of government royalty, which is levied on some of the older fields. As the Treasury figures depend on revenue for Royalty right up to 2006/2007, it seems likely that if the royalty right is abolished, even higher taxes will fall on the UKCS elsewhere.

Taken as a whole, these changes will be a real blow to the new entrants into the UKCS, who have been acquiring assets which are unattractive for the major companies and by doing so have breathed new life into the North Sea, says Ernst & Young. Some of the more marginal fields will not be economic with 40% tax. The result will be that some fields which would have been developed, or whose life would have been extended, will be mothballed.

Ernst & Young believes this new fiscal regime may also lead to redundancies amongst the workforce serving the UKCS and a hastening decline in production.

How UK oil and gas production is now taxed

Corporation Tax

All company profits in the UK are subject to Corporation Tax (CT) and this also applied to the oil and gas exploration and production industry. In his April Budget the Chancellor proposed with immediate effect, that the industry should pay a supplementary CT charge of 10% in addition to the 30% paid by all UK companies. The Chancellor also proposed a 100% first year allowance for expenditure incurred after Budget day

In addition to Corporation Tax, the industry is subject to two further imposts: Royalty and Petroleum Revenue Tax (PRT). Total Government take from fields ranges from 30% to nearly 74%.

Royalty

12.5% on production from fields which received development consent on or before 31 March 1982. The costs of conveying and treating the product are deductible, but Royalty is not fully profit based. The Chancellor announced his intent to abolish Royalty. Unlike the 10% Supplementary CT impost, Royalty abolition would be 'subject to consultation on appropriate timing'

Petroleum Revenue Tax

50% of profits from fields which received development consent before 16 March 1993. Each field is taxed separately, so that losses incurred in one field cannot be offset against profits of another. There were no changes announced in the Budget in relation to PRT.

Source: UK Offshore Operators' Association (UKOOA)

Chinese coal - an indu

by Dr Andrew W Cox, Energy Intelligence & Marketing Research

The People's Republic of China is the world's most populous country and the second largest energy consumer (after the United States). Over the last fifty years there has been a huge expansion of coal production in China - so that the country is now world's largest producer - with coal making up over 60% of the nation's primary energy consumption.

In the late 1990s, annual coal production reached 1.3 billion tonnes, although subsequent cutbacks and mine closures reduced output to below 1 billion tonnes per annum in 2001. Future increases in coal demand and production are forecast over the next two decades. This high level of output could be sustained throughout this century, as the large coalfields located throughout China contain estimated hard coal reserves in excess of 62 billion tonnes (as well as lignite and sub-bituminous coal reserves of over 52 billion tonnes).

The recent growth in coal output in China has been driven by rapid economic growth (GDP has frequently grown at 8-10% per annum) and corresponding increases in energy demand. But China is now a country in a state of transition and the coal industry is undergoing a period of rapid restructuring. It is increasing export levels and membership of the World Trade Organisation will force it to become internationally competitive. The coal sector also has significant problems with its health and safety standards - plus huge environmental issues to overcome.

Andrew Cox reports.

Several million people are employed in the Chinese coal industry. However, since the early 1990s Government policy has been to reduce the workforce (by around 300,000-400,000 per annum). These reductions in manpower have been achieved by the closure of many thousands of small, inefficient mines. Productivity in these mines was very low by international standards and many mining enterprises have been unprofitable for long periods.

Restructuring of the industry has also involved a reduction in the number of mining companies. Government policy seems to be moving towards the creation of several large mining groups - which could eventually achieve stock market listings.

Poor health and safety record

The Chinese coal mining industry has a very poor health and safety record. Many underground workers are killed by roof falls, flooding, and a high number of underground explosions caused by the build-up of methane in unventilated mines.

The Government reported that nearly 5,400 miners died during 2001. This was down on the same period in 2000 - but is still very high by international standards.

In 2001 the Chinese Government announced that it would shut 12,000 small mines. Output would be concentrated on larger mines, where safety equipment and standards will be upgraded. However, it is regularly reported that officials in some towns are reluctant to close mines, no matter how dangerous they are, because they provide employment and taxes.

Some experts say that the Government's policy of holding officials responsible for accidents may lead to accidents being concealed. There are even reports that some mines are even operated at night to avoid daylight inspections by Government officials. News reports of some fatalities and disasters are said to be concealed by corrupt local officials or mine operators - who have even used armed gangs to intimidate reporters and the victims' families. Even the Government admits that up to 1,000 fatalities may be unrecorded each year.

The UK's Department of Trade and Industry is currently assisting the Chinese coal industry by co-funding research and technology transfer into methane control technology. The objectives of this 19-month project (which will end in May 2003) include assistance in improving coal mine safety as well as improving the utilisation of methane from underground mines in China.

Chinese coal trade set to grow

After 15 years of negotiations, China has finally joined the World Trade Organisation (WTO). Membership of this international body will lead to the energy industries, including coal mining, undergoing a programme of economic reform and being opened to foreign competition and inward investment by international mining companies (which should lead to improvements in production efficiency and profitability).

WTO membership will allow China greater opportunities for expanding overseas trade, as it has achieved 'most favoured nation' status with the members of the WTO.

Since the 1980s there have been repeated forecasts that China will become a major player in the international coal trade. But many of these forecasts proved to be little more than wishful thinking. However, post-2000 there has been a significant growth in the volume of Chinese coal exports. During 2001 coal exports increased 46% to nearly 86 million tonnes, of which 80% was exported to Japan, Korea and Taiwan.

This growth in exports has been partially assisted by the development of improved rail and port infrastructure. Further growth in exports, mainly steam coal, is anticipated in 2002. So it appears that China could have finally seized a significant portion of the international coal market.

Most Chinese coal exports are steam coal. China only produces a relatively small amount of coking coal for export, the

stry in transition

majority of the coal being required for domestic use. At present coking coal exports are mainly targeted at Japan and South Korea. Market analysts have stressed that there is scope for the level of coking coal exports to grow but, given the increasing demand expected to come from the Chinese steel industry during this decade, export growth could be constrained.

Despite its huge coal production, China also imports several million tonnes per year of steam and coking coals. However, steam coal import volumes are expected to be limited in size - possibly rising to 5 million tonnes per annum by 2010. Importing coal can make sense in the southern part of China and coal has been imported by power stations in Guangdong province. One independent power producer - the 720 MW Meizhou Wan power plant has a long term import contract in place with the Indonesian Kaltim Prima mine to deliver about 1.5 million tonnes of coal for 20 years. Opportunities for future imports into southern China will be determined by whether imports from Australia and Indonesia can undercut the prices of coal from domestic producers. China imports currently small volumes of coking coal from New Zealand, but it is not expected to increase the import of coking coal in the near future.

Energy mix is set for change

Coal's current dominance in the Chinese energy markets is set to be challenged over the next decade and beyond. A significant increase in natural gas consumption is forecast - with the Chinese Government planning to raise gas use to over 6% of total energy consumption by 2010, from less than 3% in 2001.

However, this task is likely to prove a major challenge. Gas is expensive in China, compared with other countries, because of the high transportation costs. Gas reserves are mainly located in the west of the country and are a long way from the main gas markets in the east.

Most coal-fired power plants in China are apparently reluctant to switch to gas, because the Government has capped the price of gas-fired electricity. The Government has also imposed a price ceiling on gas sales - which has deterred some companies from making the necessary investment in the gas sector. Changes to these price restrictions seem inevitable in the near future.

Renewable energy in China is also set to increase over the next decade. Most of this increase will be contributed by large hydro-electric power projects - such as the Three Gorges scheme (which will make a significant contribution to China's electricity demand before the end of this decade).

The development of small-hydro electric schemes has been a considerable success in China. Over 60,000 small schemes were in operation by the end of the 1990s. However in the 1990s the Government greatly reduced its support for these projects and the number being installed declined considerably. Preference was given to larger thermal power plants which were viewed as having greater overall reliability, lower capital costs per MW capacity, and shorter construction times.

Other renewable energy sources (wind, biomass and solar) accounted for less than 0.1% of the total electricity sector output in 1998. They are set for expansion over the next few years - but their contribution to China's energy requirements seems set to be modest.

Environmental problems

Emissions from coal-fired power stations and the large number of other coal-fired boilers have created serious environmental and health problems in China. Huge areas of the country and surrounding regions of the Asian continent have suffered environment degradation due to the consumption of coal.

The populations of many urban areas of the country, particularly Beijing, suffer from severe air pollution (akin to the smogs that occurred in the UK and other western countries in past decades).

For many years the drive to achieve high levels of economic growth led to environmental standards being low on the political agenda. However, the forthcoming Olympic Games in 2008 seems to be acting as a catalyst for the introduction of new combustion and abatement technologies and the greater use of natural gas. Beijing alone consumed an estimated 27 million tonnes of coal in 2000. However, the City authorities currently plan to cut coal consumption to less than 15 million tonnes by 2008. Other cities seem set to follow the lead being taking by Beijing.

Many of the environmental problems caused by coal consumption in China are due to the use of ageing and inefficient plant - which often have no clean-up technologies to reduce the emissions of particulates, sulphur dioxide and nitrogen dioxide.

It is also worth noting that a high proportion of coal mined in China is not washed prior to combustion. So when coal with high levels of impurities (ash and sulphur) are burnt in equipment with no filtration systems, electrostatic precipitators or desulphurisation equipment, huge volumes of pollutants are released into the atmosphere.

A major programme aimed at building new coal washery plants in the Chinese coalfields is now taking place - and by the middle of this decade 65% of coal should receive basic preparation prior to utilisation. However, an enormous programme of investment is required to bring China to the same emission levels of the EU and North American countries.

The drive to mitigate the environmental problems caused by China's coal-fired plant will offer a huge opportunity for equipment suppliers, engineers and consultants.

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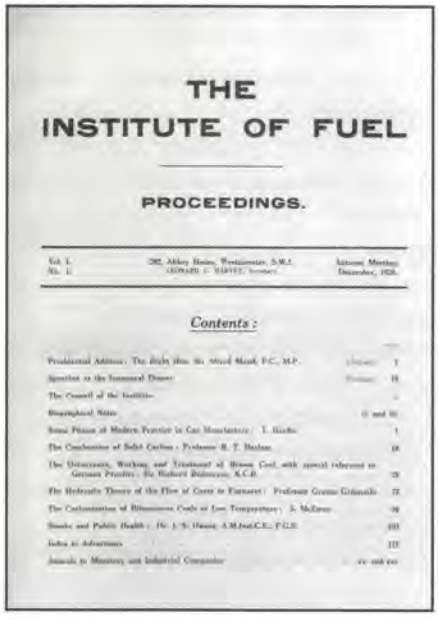
After 75 years of history -

by John Blackhall CEng FInstE, incoming President of The Institute of Energy

The (energy) world is changing faster than ever - surely faster than it was in 1927 when the Institute of Fuel was established. Here, John Blackhall picks out some important issues that will tax energy professionals for the next 10 or 20 years - and previews the possible amalgamation of the InstE with two sister institutions.

This year is the 75th anniversary of the Institute of Energy, (InstE) and, as such, many of the articles in this edition of *Energy World* reflect back upon those years and the very many associated changes in the energy sector. For me it seems appropriate to try and look ahead to some of the energy related challenges that we and the rest of society face and some of the trade-offs and difficult issues that need to be addressed if we are to avert an energy or environmental crisis.

I imagine that 75 years ago the rate of change of society and the supporting technologies was such that the most informed individual with the greatest imagination could have reasonably guessed at some of the changes since 1927 - the ready availability of electrical power to the western world, the sourcing of fossil fuels from very geographically remote areas and even below the sea bed are just some examples. However many of the more recent developments, particularly those technological changes in support of new forms of energy sourcing such as 'renewables and sustainables' probably could never have been predicted. Now the rate of change is such that our imagination has become increasingly short-term, possibly stretching out 10 or 20 years but never 75! Consequently, I will keep my thoughts to the near time horizon and leave it to yours to think beyond that.



THE
INSTITUTE OF FUEL

PROCEEDINGS.

Contents :

First issue of the Journal of the Institute of Fuel, 1926

Security of supply

My belief is that one of the most understated concerns that we face is that of security of energy supply. Following the Second World War, increasing emphasis was placed on security of energy supply - until very recently. Interconnection of low voltage distribution systems, followed by the creation of a well interconnected high voltage transmission system gave us today our well maintained and reliable power transport systems. The same was achieved for natural gas, although over a shorter timescale; again giving us excellent gas transport facilities for the vast majority of consumers in the UK.

> Collectively we have a responsibility as energy professionals to ensure that society can evolve safely in the knowledge that future energy needs will be met

Indeed, the quality of the systems and the competence of the system operators have allowed the unfettered creation of competitive power and gas markets across the UK which, three years after the arrival of full competition in power supply, remain the envy of the world. For customers, whether industrial, commercial or residential, energy prices, for both power and gas, have fallen. Consumers are now, at least very generally, treated as valued and expensive customers .... and we can be assured that the flame always ignites in the gas boiler and the switch invariably delivers power and provides light.

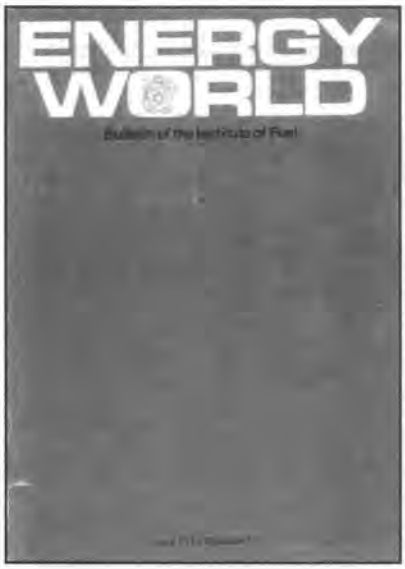
But for how long?

The question being asked by many, as many of our power plants are being prematurely moth-balled, is: are the financial incentives available in current markets sufficient to ensure the future availability of gas and power supplies at all times of the year. Furthermore, going back up the energy supply chains, do we have sufficient commodity in the offshore gas fields to support both the gas and power supply chains, recognising the displacement of the heavier fossil fuels in preference for gas for the generation of power. Increasingly there is a national picture of reduced diversity of supply sources and hence potentially higher supply risk. The nuclear stations are becoming increasingly aged and getting ever closer to decommissioning. Coal has moved from base load to mid-merit. Renewables and alternative technologies sadly have not been sufficiently championed by government to make any significant impact to date. Even the recent consultation paper issued by the DTI on energy policy itself questions whether the 10% target for energy supply from renewable sources is realistic.

Relying on gas

So increasingly we have a reliance on offshore natural gas for both our gas and power supplies. This may be a perfectly natural solution, as it makes economic and environmental sense. However, if so, the right incentives need to be in place to ensure that as current supplies become depleted that alternative sources become available and at the right price. Alternatively

some issues for the future



First issue of Energy World, July 1973

we need to anticipate the need to import from far afield huge quantities of LNG and build the appropriate reception and transport infrastructures.

But it is not just a matter of having the right diversity of energy supply sources and appropriate levels of reserve to ensure continuity of supply. It is also about how we use the energy that we consume. As such, I believe that in the very near future, the Government will recognise that it has to do more then just leave it to market forces to act as the guarantor of sustainable and reliable energy supply - by both encouraging further offshore natural gas development and also supporting the development of renewable power supplies.

How power is supplied and from what point in the network it is generated and transmitted to consumers is another issue close to the supply debate. Distributed generation has been presented in recent years as technologically possible to achieve. Generating our own power in our own backyards is, to many, a significant opportunity, which may even begin to influence our attitudes to energy as consumers.

Clearly the environmental impact of our usage of energy, particularly that derived from hydrocarbons has to, and is now, being significantly addressed particularly via the Kyoto Protocol. To date much of the promotion of carbon reduction has been achieved by the levying of a 'climate' tax on energy users (recognising some of the cost offset arrangements through National Insurance). The question is: does this reduce the amount of energy usage and hence deliver the associated environmental benefits, or does it merely increase the cost to parts of UK industry, particularly energy intensive enterprises, and make us less competitive in respect of our less energy conscious competitor nations?

The obvious solutions would appear to revolve around increasing energy efficiency on the demand side of the meter, both through the much more active support of CHP on industrial sites and also through the incentivisation of energy savings. The vast majority of energy users waste a considerable portion of the energy purchased and delivered to their premises - for industrial users it can be up to, and beyond, 20%; for residential households even more. If appropriate incentives were designed and operated not only would much of the environmental benefits be delivered, but at lower cost to the consumers. Hence it must surely be only a short time before a government minister effectively champions this course, stimulating us all to embrace a whole new set of social behaviours about how we use and appreciate energy.

The obvious solutions would appear to revolve around increasing energy efficiency

First 'picture' cover of Energy World, October 1988

The issues, and their complexity, can be no more than be highlighted here, but the debate is timely - as the Institute of Energy and its members recognise. They will continue to work with government and other stakeholders to identify solutions.

Bringing institutions together?

Not least in this respect is the exciting opportunity we have worked to create in looking to bring together professionals from the petroleum, gas and energy communities in a three-way merger of institutions to create a single home for energy professionals. This development may seem an obvious one, but it takes the vision and creativity of a large number to manage it to a successful conclusion. It also challenges the individual loyalties of members of each body to work together to create a new organisation which can, as the sum of the parts, be stronger and more effective in its task; not only to the service of its members but most importantly in its service to society at large in working to address some of the major energy challenges I have mentioned.

We will work hard to preserve and take forward the best of each institution into the new organisation, but there will also be some tough decisions to make in doing so. We look to members of each organisation to focus on the future and to what we can best create to serve each individual professional, and society at large.

Collectively we have a responsibility as energy professionals to ensure that society can evolve safely in the knowledge that future energy needs will be met and, in doing so, our impact on the environment will be minimised.

Past Presidents of th

The Rt Hon Sir Alfred Mond, The Institute of Energy's first President, 1927-28. Later to become Lord Melchett and Chairman of ICI, Alfred Mond was President of both the Institution of Fuel Technology and the Institution of Fuel Economy Engineers immediately prior to their amalgamation as the Institute of Fuel, to become the Institute of Energy in 1979.

Dr J E Garside, President, 1971-72. A member of the team at Leeds University's Department of Fuel and Combustion Science, and also active in the Yorkshire Branch - he was the Honorary Secretary for 17 years, James Garside was the first professional academic since 1962 to hold the post.

The Institute of Energy has included many distinguished individuals among its Presidents over

1927-28	The Rt Hon Sir Alfred Mond
1928-31	Sir David Milne-Watson
1931-33	Sir Hugo Hirst
1933-34	Sir James Larke KBE
1934-35	Sir Harry Duncan McGowan KBE
1935-36	Sir John Cadman
1936-38	Sir Philip Dawson MP
1938-41	Lt-Col J Greenly CBE
1941-43	W Morrish Selvey (Acting President, 1939-40)
1943-46	E Woodhouse Smith CBE
1946-48	Professor C H Lander CBE
1949-50	Dr D T A Townend CBE
1950-51	J F Ronca OBE
1951-53	G E Foxwell
1953-55	Dr W Idris Jones CBE
1955-56	R H Gummer
1956-57	J R Rylands
1957-58	H McNeil
1958-59	T C Bailey
1959-60	Dr A C Monkhouse CBE
1960-61	Dr W A McFarlane CBE (died August 1960; remaining term of office held by Dr Monkhouse)
1961-62	J Burns
1962-63	Professor M W Thring
1963-64	J C Duckworth
1964-65	Dr H E Crossley
1965-66	G J Gollin
1966-67	G N Critchley
1967-68	R F Hayman MBE
1968-70	C A Roast
1970-71	Dr N M Potter

Prince Philip, Honorary Fellow, with guests at the Institute of Energy's 1965 AGM, as Dr H E Crossley handed over the presidency to J C Duckworth.

e Institute of Energy

the years.

1971-72	Dr J E Garside
1972-73	Dr J H Chesters OBE
1973-74	Dr G Whittingham
1974-75	F E Ireland
1975-76	Dr J Gibson
1976-77	G R Hall
1977-78	J H Flux
1978-79	Professor I Fells CBE
1979-80	Dr W A Simmonds
1980-81	D F Rosborough
1981-82	Sir John Hill FRS
1982-83	Professor A Williams
1983-84	Professor G F I Roberts CBE
1984-85	Dr G G Thurlow
1985-86	P C Warner
1986-87	Professor J Swithenbank
1987-88	Dr E G Masdin
1988-89	C E Pugh
1989-90	Professor B J Brinkworth
1990-91	D M Willis
1991-92	R Evans CBE
1992-93	M C Roberts
1993-94	Professor J S Harrison
1994-96	D G Jefferies CBE
1996-97	P H Johnson
1997-98	Professor J H Chesshire
1998-99	M A W Baker CBE
1999-00	R E D Coldwell
2000-01	B Chamberlain
2001-02	J E Ingham
2002-03	J D Blackhall

Professor I Fells, President, 1978-79. Chairman of the working party which produced the seminal 1973 report: Energy for the Future, Ian Fells is now a highly respected academic (Professor of Energy Conversion at Newcastle University), an advisor to Select Committees of both Houses of Parliament and an occasional contributor to Energy World. It was under his presidency that the Institute of Fuel became the Institute of Energy.

Dr E G Masdin, President, 1987-88. Guy Masdin was Head of Research Planning for the Shell International Petroleum Company at time of his presidency, having been with the company since 1960. Prior to that he studied for a PhD at Sheffield University under Professor M W Thring, himself President of the Institute of Energy in 1962-63.

Professor J H Chesshire, President, 1997-98. Now an independent policy consultant as well as Honorary Professor at Sussex University's Science Policy Research Unit, John Chesshire is an economist. He has advised several House of Commons Select Committees, and overseas governments, on energy policy; he was, until recently chair of the InstE's Executive Committee.

Forward from the past - orig

by Brian Locke FREng FInstE

Brian Locke looks back to the 1927 origins of the Institute of Energy, when 'fuel economy' was the 'energy efficiency' of today, although in a rather more sedate Britain, at least for members of the then Institute of Fuel as it was. History seems to show that the Institute of Energy's early concentration on reducing waste and increasing efficiency has been prophetic, translating into today's emphasis on sustainability.

In 75 years our Institute's membership has grown from a few specialists, led by the founder of ICI, into a worldwide movement of thousands. Development, progress and renewal have been our watchwords, with emphasis on sustainability, regeneration and reducing waste in all industries.

But how did our Institute begin? Seventy-five years ago Sir Alfred Mond (MP, barrister and industrial planner) combined the Institution of Fuel Economy Engineers with the Institution of Fuel Technology and Founded the Institute of Fuel.

1927 was also the year that Baird demonstrated the TV, Lindberg flew the Atlantic, continuous casting began, the iron lung was invented and Heisenberg's uncertainty principle was formulated. Alfred Mond wrote *Industry and Politics*, and formed a committee for employers to meet the TUC.

It is interesting to note how little the concerns of the founders of the Institute differ from those of today. The main problems for fuel technologists, as seen in the first issue of the Institute's *Journal*, were:

- "fuel economy to be obtained from existing plants in actual operation;
- fuel economy resulting from the development of the use of electricity; and
- future development of fuels - such as new uses and treatments of coal, oil and the elements."

There was also a more personal concern. Contrasting the effective domestic heating in Canada with British practice, "In most houses here, a somewhat untrained domestic shovels quite irrelevantly coke or anthracite - it does not matter which - in equal quantities into some kind of appliance, and you rely on someone in the category of odd man as to whether you freeze or boil to death."

The President was "often surprised .... to go to a place where the people cannot tell me what it costs them to raise a pound of steam, and have not the faintest information of what water they are evaporating, and really do not know what efficiency they are getting out of their fuel. They do not know even what the calories of the coal are, and they leave it to some person to buy coal, the cost of which they may think cheaper, but which, on calorific values, is extremely expensive."

The first issue of the *Journal* laid fascinating foundations for the Institute's raft of publishing, now so important in the energy scene. Indeed, it began the professional movement that is today firmly established in industry, government, planning and education. The need is as great as ever, worldwide. Britain, which has provided valuable leadership in energy developments, still has much to contribute to the world, especially in the Third World where so much needs to be done.

The new Institute supported many relevant causes, including the Coal Smoke Abatement Society (now the National Society for Clean Air and Environmental Protection), via the World Power Conference (now the World Energy Council), to the British Coal Utilisation Research Association (BCURA, later to provide two Executive Secretaries for the Institute). It also encouraged books such as the Ministry of Power's *Efficient Use of Energy*, and the College of Fuel Technology's courses for the City & Guilds Boiler Operator's Certificate and also the advanced Furnace Practice and Fuel Plant Technology examinations (which it used for its own corporate membership requirements), and a university students' version of the *Industrial Fuel Efficiency Pocket-book*.

In its early years, it ran special studies on subjects such as thermal insulation, waste heat, peak loads and drying, and helped the Ministry of Fuel and Power's *1946 Fuel and the Future* conference. The Institute could then add to its previous coal, oil, gas, combustion, fuel processing, and pollution-reduction activities the increasingly important nuclear energy, biomass, economics, meteorological implications, energy planning and all their consequences.

The Royal Charter came in 1946, charitable status in 1962, the Coat of Arms in 1967, change in name to the Institute of Energy in 1979, and election as a nominated body of the Engineering Council in 1983. As a qualifying body, educational standards have always been important, particularly as regards university courses and the acceptability of foreign university degrees. However, other aspects are also important and, in 1990 the Institute became a founder member of the Centre for Research, Education and Training in Energy (CREATE); and it launched courses in Training in Energy Management through Open Learning (TEMOL) in 1994. Professional, and career, development is an increasingly important part of the Institute's activities, along with relationships with government and the availability of advice on all energy matters. From 600 members before the Second World War, there are now 4700.

That the (now defunct) Watt Committee on Energy, of which the Institute of Fuel was a founding member, held its twenty-second consultative conference on *The Rational Use of Energy* 60 years after the founding of the Institute of Energy shows how prophetic the founders of the Institute were. Many of the issues today are precisely the same as those that caused concern then, particularly investment, management, technology, marketing and educational decisions - particularly globally.

ins of the Institute of Energy

Food, water and management of people by each other are three main problem areas for the world's increasingly populous, globalised and complicated future. The fourth, energy and its supply, management, use and control, is the business of the Institute of Energy. New sources, new processes, new applications, new environmental knowledge, new energy needs, new efficiencies, new cycles, new economics, new legislation, are all around us - and new British and world problems, just like seventy-five years ago. The Institute of Energy will go on evolving to serve the future, just as it began.

Such are the origins, and some of the history, of the Institute of Energy. We encourage the interplay of the highest and newest sciences with the most important practicalities for developing peoples' lives worldwide.

The early history of 18 Devonshire Street

The Institute of Energy's home for the last 56 years had a history, first of occupation by military men, before it gave way to the medical profession in around 1870. The Institute acquired the building in 1946.

No 18 Devonshire Street stands on part of the site of Marylebone Gardens, which were opened in 1650. Here were held dog fights, cock fights, bear and bull baiting, bowls and boxing matches. Samuel Pepys came here in 1688 and called it "a pretty place". Dick Turpin was a patron in the 1730s and stole a kiss from Mrs Fountayne, the schoolmaster's wife, telling her that thereafter she would be able to boast that she had been kissed by a famous highwayman!

Houses began to go up in 1780 and the street was named after the 5th Duke of Devonshire, a relative of the Harley family, the ground landlords of this part of London. The first known occupant of No 18 was John Manners, "captain in Her Majesty's Navy", resident here in 1792. Manners was an aristocrat, being a member of the family of the Dukes of Rutland. He served with Hood and Nelson in the Mediterranean during the Napoleonic wars; took part in the battle of Copenhagen in 1801 but, for reasons which are not clear, appears to have missed the culmination of the sea campaign at Trafalgar in 1805. He afterwards served in the Adriatic in 1812-13.

Captain Manners was replaced at No 18 before 1796 by a widow named Lushington. Another widow, a Mrs Williams, was in possession of the property in 1807. She disposed of her interest before 1812 - the year of Napoleon's retreat from Moscow - to Charles Littledale, barrister-at-law.

By 1818 Littledale had vacated in favour of Colonel James Alston, a veteran of the Duke of Wellington's Peninsular campaign. He was present at the battle of Waterloo, June 1815, victory at which brought about Napoleon's final downfall.

When Colonel vacated about 1846, No 18 was acquired by Henry Richard Chetwynd-Stapleton, a gentleman of private means. He died in 1859. His son, also called Henry, lived on here for a year or so with his second wife, Ellen, before selling the house to Major Frederick Duffin, who saw action in China in 1857-58. By 1871 the house was in the possession of the surgeon, Alfred Edward Duffin, presumably Frederick's son or brother, who maintained consulting rooms here until 1904. For much of that time he also lived in the building.

For reasons which are not clear, the dwelling seems to then to have stood empty for a year or two, perhaps during a refurbishment. By 1907 it was in the possession of Harold Chapple (1881-1945), Senior Obstetric Surgeon and Gynaecologist to Guy's Hospital and to the London Jewish Hospital. He was replaced in the 1930s by a clutch of dentists, doctors, physicians and consultants who continued work until the Second World War. The most eminent of these was probably Herbert John Paterson CBE (1868-1940), Surgeon Emeritus, National Temperance Hospital, and Hon Surgeon to Edward VII.

Shortly after the cessation of hostilities, No 18 passed to the Institute of Fuel (then operating from two borrowed rooms in a flat in Bramham Gardens, Earls Court), which, as the Institute of Energy, still occupies the building. The lease expires in 2009.

18 Devonshire Street in more recent times

Events

July 2002

Corporate social responsibility and environmental management
Conference, 1-2 July, Leeds
Contact: ERP Environment
Tel: 01274 530408
Email:
elaine@erpenv.demon.co.uk

Renewable energy expo and world renewable energy congress
Conference and exhibition,
1-3 July, Cologne, Germany
Tel: 020 8910 7893
Email:
helen.beckett@reedexpo.co.uk

Combustion in boilers and furnaces
Course, 1-5 July, Leeds
University of Leeds
Alison Whiteley
Tel: 0113 233 2494
Email: cpd.speme@leeds.ac.uk

Radioactive waste management and decommissioning
Summer school, 1-5 July,
Cambridge
IBC Conferences Ltd
Tel: 01932 893851
Website:
www.nuclearevents.com

Changes to Part L, H & J of the Building Regulations
Seminar, 2 July, London, £270
Mid Career College
Tel: 01223 880016
E-mail: courses@
mid-career-college.ac.uk

Wind energy
Conference and exhibition,
2-6 July, Berlin, Germany
Tel: +49 89 720 1235
Website: wip-munich.de

Changes to Part L, H & J of the Building Regulations
Seminar, 4 July, Bristol, £270
Mid Career College
Tel: 01223 880016
E-mail: courses@mid-career-college.ac.uk

InstE 75th Anniversary Dinner
Social, 5 July, London
Contact: Institute of Energy
Tel: 020 7580 0008
Email:
events@instenergy.org.uk

Wind Power Technology
Conference, 8-12 July
Loughborough
Tel: 01509 223466
Email: a.j.white@lboro.ac.uk

Monetising carbon credits in emerging economies
Conference, 8-9 July, London
Contact: Environmental Finance
Tel: 020 7251 9151
Email: info@environmental-finance.com

InstE Branch Event
Technical visit
10 July Wessex Water
Bournemouth
Contact: South Coast Branch - Chris Wilson
Tel: 01252 673570

Control of solar shading
Course, 10 July, Watford
BRE
Tel: 01923 664800

UK electricity markets
Workshop, 16-18 July, Brighton
Power Ink
Tel: 01273 202920
Email: margaret@power-ink.com

The Road to Johannesburg
Summit, 17 July, London
Contact: SERA Conferences
Tel: 020 7263 7389
Email: seraoffice@aol.com

August 2002

Renewable energy education
Symposium, 4-8 August, USA
Contact: Yogi Goswami
Tel: +1 352 392 0812
Email: solar@cimar.me.ufl.edu

Sustainable development
Summit, 26 August - 4
September, Johannesburg
Tel: 020 7839 7171
Email: rgardiner
@earthsummit2002.org

September 2002

Energy 2002
Conference and exhibition,
4-5 September, Birmingham
Western Business Exhibitions
Tel: 01342 314300
Email: admin@western-be.co.uk

World Nuclear Association Symposium
Symposium, 4-6 September
London
Contact: World Nuclear Association
Tel: 020 7225 0303
Email: wna@world-nuclear.org

Spark ignition engine combustion
Course, 9-13 September, Leeds
University of Leeds
Alison Whiteley
Tel: 0113 233 2494
Email: cpd.speme@leeds.ac.uk

MAREC 2002
Conference, 11-12 September
Newcastle
Contact: Eyda Moot
Tel: 020 7382 2620
Email: em@imare.org.uk
Co-sponsored by the Institute of Energy

Emission monitoring
Conference, 11-13 September
Denmark
Tel: +45 39 555 999
Email: cem2002@dk-teknik.dk

Coal research and its applications
Conference, 16-18 September
London
Contact: Dr A W Thompson
Tel: 0115 951 4198
Email: alan.thompson@
nottingham.ac.uk

Business strategy and the environment
Conference, 16-17 September
Manchester
Contact: ERP Environment
Tel: 01274 530408
Email:
elaine@erpenv.demon.co.uk

InstE Branch Event
Aircraft combustion incidents
Lecture, 18 September
Farnborough
Contact: South Coast Branch - Chris Wilson
Tel: 01252 673570

Energy management
Course, 18 September, Sheffield
Contact: Institute of Energy
Tel: 020 7580 0008
Email:
events@instenergy.org.uk

Power EXPO 2002
Conference and exhibition,
18-20 September, Zaragoza
Spain
PowerEXPO
Tel: +34 976 76 47 00
Email: communicacion@
feriazaragoza.com

Incineration of municipal waste
Course, 23-24 September
Leeds
University of Leeds
Alison Whiteley
Tel: 0113 233 2494
Email: cpd.speme@leeds.ac.uk

Creating sustainable urban environments
Symposium, 23-26 September
Oxford
Contact: Oxford Brookes
University
Fax: 01865 483298

Energy trading and risk management
Conference, 24-25 September
Germany
Contact: ICBI
Tel: 020 7915 5103
Email:
icbi_registration@icbi.co.uk

Feedback on Energy World

We are currently evaluating the format and design of *Energy World* to see how we can improve the publication to meet your ongoing needs. If you have any constructive ideas to make it even more useful we'd like to know. Please email your suggestions for design improvements or new features to Joanna Heke at jheke@instenergy.org.uk We look forward to hearing your views.

the institute of energy

SPECIAL GENERAL MEETING NOTICE

Notice is hereby given that a Special General Meeting of the Institute of Energy will be held at the Institute of Energy's offices in London at 3pm on Wednesday 17 July 2002 to transact the following business:

1. To determine a number of bye-law amendments to comply with Charity Commission advice and modern governance best practice (as referenced in the Council report, *Energy World* July issue).

Details of the amendments can be obtained from the Secretary and Chief Executive upon request made in writing. Should you wish to attend the meeting; please write in or email: dbramson@instenergy.org.uk

Energy Policy - importantly, your views are sought once more

Many members will have noted that the DTI, DEFRA and the DTLR recently published a consultation document as the next step following the PIU's Energy Review report to Government, published in February this year.

The document broaches the subject of future energy policy and specifically looks to address what the White Paper should contain under twelve broad headings. The issues are both complex and detailed. As a result we have carefully considered how best to respond and would like to engage interested members in the following activity over the next few weeks, prior to the submission deadline in mid September.

The consultation document is available on the following website: www.dti.gov.uk/energy/developep

We would like to publish a compilation of members' expert opinions, using the 12 topics and the many questions posed within them as a guide to respondents. We would like to reference members' input by citing their name and email contact for reference and we will cover note the document with an explanation about our approach. Managing the process in this way will undoubtedly allow for members' with differing expert opinion to get their views across to the Government departments concerned with the drafting of the White Paper.

The deadline for members submissions to the InstE via email to services@instenergy.org.uk is Friday 9 August 2002. We hope you will make use of this important opportunity and we look forward to receiving your responses.

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.

2002 HECA awards celebrate home energy conservation

On 27th May 2002, John Ingham, President of the Institute of Energy, presented eight regional Home Energy Conservation Awards to individuals and teams across the UK at the 5th annual HECA Fora Group conference in Birmingham.

The Awards, bestowed by the Institute of Energy, recognise and reward those who have made significant contributions towards improving home energy efficiency as a tribute to their professionalism and commitment.

The 2002 winners are:

- Wales HECA Forum - Stuart Davies, Environmental Health Technical Officer for Powys County Council;
- HECA East Network - Bruce Pittingale, Energy Conservation Manager for Fenland District Council;
- South West HECA Forum - Cornwall Sustainable Energy Partnership, represented by Tim German;
- South East HECA Forum - Southern HECA Network, represented by Paul Hemming;
- East Midlands HECA Forum - Northamptonshire Home Energy Efficiency Partnership, represented by David Malone;
- West Midlands HECA Forum - North Staffordshire Healthy Homes Partnership, represented by Amy Shearden of Newcastle Borough Council;
- North West HECA Forum - Sefton Council's Energy Team, represented by Ian Weller;
- North East HECA Forum - KNW LTD, represented by Ken Middlemass, Managing Director.

In addition to receiving their awards, the winners will also be supported through free membership of the Institute of Energy for one year to support their professional commitment to home energy conservation.

Sustainability for Building Professionals

A project designed to look at the training and development requirements for building professionals on sustainability issues is currently looking for input from anyone with an interest in this area. If you would like to voice your opinions about current training provision and future needs then please take five minutes of your time to complete a questionnaire which can be found at www.ols-survey.com/01042. The Institute of Energy is part of the working group looking at how training can be most effectively provided to those in the building industry and your views would help in formulating future plans.


HECA winners

Council elections

The notice of Council elections is traditionally published in one or two issues of *Energy World* at the turn of the year to advise members of the Council's elections and invite nominations from the membership at large. In 2002, additional notices have been published to keep members informed of Council's decisions on an on-going basis, as members have been elected for senior office. In May, the Council unanimously approved two nominations for Presidential office, following an article to members, published earlier in the year. Both members have been long serving and have contributed a great deal both nationally and at branch level to the InstE's work and, should their election be confirmed at the AGM, we intend to publish articles about both individuals in the next issue.

Presidential officers and Honorary Officers 2002/2003

The undermentioned have been elected by the Council to take office following the Annual General Meeting on 5 July 2002.

- Mr J Blackhall CEng FInstE as President
- Eur Ing R I Wilkie CEng FInstE as Honorary Secretary
- Eur Ing D Barber CEng FInstE as Honorary Treasurer
- Professor M R Fry CEng FInstE as President Elect
- Dr J Wade MInstE as Vice President.

Election to Council 2002/2003

Following the AGM, the undermentioned will retire and are not eligible for re-election:

- Mr J Mosley CEng MInstE
- Mr R I Taylor CEng MInstE
- Mr S Wilce CEng MInstE.

In addition, Mr R Coldwell FInstE, past President will also stand down from the Council as the Bye-laws request. Finally, Mr M Dickens retires from the Council having served one term as an IEng member and Mr P Ramsell also retires to take up new commitments outside the energy world. Our sincere thanks and best wishes go to all of these retiring members for their support and contributions as members of the InstE's governing Council.

AGM 5 July 2002 - Notice of any other business

A member has requested that the future development of *Energy World* be addressed under Any Other Business at the InstE AGM on 5 July 2002.

The Institute of Energy Diploma in Energy Management - University of Wales, Newport

The Institute of Energy Diploma in Energy Management is designed for practising engineers and others responsible for energy use who wish to learn more about the management and technology of energy related systems.

Written by Dr Ken Edwards (course tutor) and Dr Tony Roberts, of the University of Wales, and based on an original course by Dr Mike Horsley and Prof Phil Nolan (course moderator), the Diploma was originally approved by the InstE in 1982. Since then it has been modified several times to remain in line with the increasing relevance of energy management in our society and, of course, improvements in technology. It was recently successfully re-approved by the InstE who continue to strongly support the course, and it is expected that discussions about intended modifications to the syllabus will commence in July.

Flexibility and Long Distance Learning

The course is available through flexible learning that enables you to study at your own pace and at times that suit you. University based tutorials are held each week as two-hour evening sessions for locally based students, though the course is also available through long distance learning (currently 50% of students hoping to progress to the second year of the course in October 2002 are long distance based). There are no formal entry requirements, though relevant qualifications may give you exemption from parts of the course.

Course Structure and Content

Year One - BTEC Continuing Professional Development Certificate

The course involves the subject areas:

- aspects of energy technology
- principles of energy management
- energy audits
- investment appraisal and reporting
- project report on work-based studies of energy usage.

Cost: £170

Year Two - Institute of Energy Diploma in Energy Management

Further studies lead to the award of the Diploma and involve either an industrial option or a commercial option.

Industrial option:

- steam and hot water, generation and use
- furnaces, kilns and ovens
- heat transfer
- electroheating

Commercial option:

- steam and hot water generation and use
- space heating
- lighting
- energy management systems.

Assessment for the BTEC CPD Certificate is made via assignments associated with the study material, together with written and oral presentations of your project. The Diploma is assessed by examination and project presentation.

Cost: £165

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For further information, please contact Vicky Ratcliffe, Education Services Administrator at education@instenergy.org.uk or on 020 7580 7124.

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Student members - have we got your up-to-date details?

One of the main benefits for student members of the Institute of Energy is that membership costs just £15 for the duration of your time as a student. During this period of up to three or four years you can take advantage of the many benefits of membership including subscription to Energy World. Once you graduate, however, we sometimes lose touch with you and it becomes difficult for us to help you with your professional development. For anyone who has recently graduated or is about to and will be changing address from university lodgings, please remember to let us know your change of address.

For anyone who graduated in recent years, don't forget to update us on your changes of address and employment status. At present we have almost 100 students on our database who graduated prior to Christmas 2001 but haven't yet made the move out of Student membership. We will be contacting you individually next month to make sure you don't miss out on achieving Graduate membership status and, for many of you, the chance to begin working towards your final registration with the Engineering Council UK.

If you think you may still be registered as a student but have already finished your studies then please contact us as soon as possible so that we can advise of the best way forward for you.

Please call the Membership and Education Office on 020 7580 0077 or email membership@instenergy.org.uk

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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

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InstE/IP/IGEM Merger — Members Questionnaire

This questionnaire has been prepared in order to provide members of the Institute of Energy, the Institute of Petroleum and the Institution of Gas Engineers and Managers with an additional direct means of giving their views on the proposed merger of the three bodies. Please make use of it. It matters very much to us what you think.

Q1 On balance, do you think that the proposed merger is a good idea?

Yes/No

Q2 Are there any services which your current institute/institution does not provide which you would like to see the new body providing?

Q3 Are there any services or activities which your current institute/institution is involved in which you feel should be discontinued?

Q4 What do you see as the principal advantages and disadvantages of the proposed merger between the Institute of Energy, the Institute of Petroleum and the Institution of Gas Engineers and Managers?

Advantages

Disadvantages

Q5 Are there any issues which you think need special attention to ensure the merger is successful?

Q6 Any other comments

Name:

Address:

Post Code:

Email address:

Phone (Private):

Phone (Business):

Currently, are you a member of InstE, IGEM, IP:

InstE: ☐ IP: ☐ IGEM: ☐

What other professional or industry bodies do you belong to?:

Please return this questionnaire to any of the addresses below:

Louise Kingham, Secretary & Chief Executive, Institute of Energy, 18 Devonshire Street LONDON W1G 7AU Tel: 020 7580 7124 www.instenergy.org.uk

Gordon Davies, Chief Executive Institution of Gas Engineers and Managers 12 York Gate LONDON NW1 4QG Tel: 020 487 0650 www.igem.org.uk

Jeff Pym, Director General Institute of Petroleum 61 New Cavendish Street LONDON W1G 7AR Tel: 020 7467 7100 www.petroleum.co.uk

Merger update

July 2002

Produced jointly by the Institute of Petroleum, the Institute of Energy and the Institution of Gas Engineers & Managers

Merger gathers momentum

Investigations by the Institute of Petroleum (IP) and the Institution of Gas Engineers and Managers (IGEM) into a proposed merger have received a significant boost, with the recent agreement by the Institute of Energy (InstE) to join in the discussions. This represents a substantial endorsement of the merger concept and offers the prospect of an even stronger new organisation, combining the best and most powerful qualities of IP, IGEM and InstE.

Louise Kingham, Secretary and Chief Executive, InstE (centre) joins merger discussions with Jeff Pym (left) and Gordon Davies (right), respectively Director General IP and Chief Executive IGEM

The potential three way merger is a unique opportunity to develop a new organisation which could become the preferred home for energy professionals. The new body would be much wider in scope, covering not only upstream and downstream hydrocarbons, but also solid fuel, power generation, renewables and energy efficiency.

The new organisation for all energy professionals would have a combined membership of around 16,000 and a turnover in excess of £4 million. It will be larger, better resourced and more influential, as well as providing wider opportunities and improved services to members.

Institute of Energy Formed in 1927, originally as the Institute of Fuel, the Institute of Energy is the youngest of the three would-be merger partners. Its remit today is much wider than fuel technologists, now including amongst its membership: business leaders, economists, consultants, energy managers, lawyers, analysts and other people with an interest in energy. It has a Royal Charter and is a licensed member of the Engineering Council (UK).

Key features of the proposed organisation for energy professionals:

- Royal Charter professional body and learned society
- Licensed Member of the Engineering Council
- Registered Charity
- Flexible Membership System
- London based, with local activities throughout the UK
- Strong international membership base, with growing overseas interests

Activities and Benefits

- Strong technical and scientific programmes
- Authority to issue technical standards
- Conferences and events
- Education and training
- Library and information service
- Journals
- Web site

Co-ordinating Merger Preparations

Gearing up two organisations to explore all the issues raised by the proposed merger against an ambitious timetable was challenging. Ensuring convergence of three separate processes at the point of simultaneous extraordinary general meetings later this year is an even greater challenge. But it offers an even more exiting prize.

InstE is fast catching up with IGEM and IP, who have already been working on the merger proposal for several months. InstE has set up a merger support group to mirror those already established by IP and IGEM. All three groups will be working in parallel to ensure that all the issues raised by the proposed merger are thoroughly investigated.

Continued overleaf

Co-ordinating Merger Preparations

Continued from page 1

The detailed work which is needed to bring about a successful merger of three organisations is more than for just two, but the aim is to stick to the original timetable. In certain areas, the similarities between InstE and IGEM/IP may actually make some of the outstanding issues easier to resolve.

Business Case

Work was already under way on the business case to quantify the member and financial benefits of the proposed IP/IGEM merger. The document is currently being developed to ensure that the intuitive benefits implied by the inclusion of InstE can be realised in practice.

Governance

A new set of proposed by-laws is being developed for the new body. These will define the objects and governing apparatus of the successor organisation. The new articles will require approval from the Charity Commission, as all three parties to the proposed merger are registered charities. IGEM and InstE both currently hold a Royal Charter, and both are licensed by the Engineering Council to register practising engineers and technicians. In order to maintain all these benefits, the system of governance of the successor body will need to satisfy the Privy Council and Engineering Council.

Name

Naming the new organisation will also be a sensitive issue for many members. A name needs to be developed for the new body which reflects its future aspirations as well as recognising the proud heritage of IP, IGEM and InstE.

Consultation

The memberships of all three bodies will be consulted and kept informed as preparations for the proposed merger develop. Members of all three organisations will have the opportunity to make the final decision when detailed proposals are put forward at extraordinary/special general meetings later this year.

Institute of Energy Merger Support Group:

Louise Kingham (Secretary & Chief Executive)
John Blackhall
John Ingham
Brian Chamberlain
Don Barber
Roddy Wilkie

** The memberships of the IP and IGEM merger support groups were published in the June edition of Merger Update

Current Membership Categories

the institute of energy	gas	IP THE INSTITUTE OF PETROLEUM
• Honorary Fellow		• Honorary Fellow
• Companion	• Companion	
• Fellow	• Fellow	• Fellow
• Member	• Member	• Member
• Associate Member	• Associate Member	
• Technician Member		
• Graduate	• Graduate	
• Student	• Student	• Student
• Affiliate	• Associate	
• Academic Affiliate		
• Group Member	• Industrial Affiliate	• Corporate Member
		• Oil Industry Liaison Committee Member

Vital Statistics	IGEM	InstE	IP	Combined IP, IGEM & InstE (Projected)
Membership				
- individuals	4,200	4,700	8,000	16,900
- organisations	120	80	350	>500
Annual Turnover (£ million)	1.0	0.7	3.5	>4.0

Q&A Answers to frequently asked Questions

Why wasn't the Institute of Energy involved from the outset?

IGEM and IP independently held exploratory talks with the Institute of Energy when the idea of a merger was first considered. At that time only IP and IGEM were ready and able to proceed.

Won't this development delay the merger?

Preparing to merge three organisations is potentially more complex. But the similarities between two or more of the three organisations make a number of key issues easier to resolve. At present, the aim is to stick roughly to the original timetable, with EGMs in the late summer/early autumn 2002.

Won't the merged organisation be too broad and lacking in focus?

There are many areas of overlap and common interest between IP, IGEM and InstE. Uniting the expertise in these fields within a single body will improve focus and strengthen their authority. But we also have to ensure that existing disciplines have the freedom and support to flourish within the new framework.

Merger Update welcomes readers from the Institute of Energy to the second edition of this publication. The purpose of this bulletin is to keep members of all three organisations informed about preparations for the proposed merger. It is anticipated that regular editions will be distributed with IGEM, IP and InstE journals between now and the simultaneous extraordinary/special general meetings later this year.

the institute of energy — Louise Kingham, Secretary & Chief Executive, Institute of Energy, 18 Devonshire St, LONDON W1G 7AU
Tel: 020 7580 7124 www.instenergy.org.uk

gas — Gordon Davies, Chief Executive, Institution of Gas Engineers and Managers, 12 York Gate, LONDON NW1 4QG
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IP THE INSTITUTE OF PETROLEUM — Jeff Pym, Director General Institute of Petroleum
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July 2002

Dear Member,

InstE/IP/IGEM Merger – Prepare and Decide

As we announced in the last edition of Energy World, detailed investigations have begun into the possibility of merging the Institute of Energy (InstE) with the Institute of Petroleum (IP) and the Institution of Gas Engineers and Managers (IGEM). The result would be a comprehensive new Royal Chartered body for professionals throughout the entire energy community.

This initiative has received favourable initial reactions from the relevant authorities. But the final decision to create this new body lies with InstE, IP and IGEM members at extraordinary general meetings (EGMs) which are likely to take place in late summer/autumn 2002.

In the meantime, InstE, IP and IGEM have each established merger support groups to carefully consider all the issues which must be addressed to bring about a successful marriage of the three organisations. This process will be accompanied by a joint programme of consultation and information between now and the EGMs.

The two-way communication programme has been designed to provide you with information about progress with, and preparations for, the merger decision, and to give you the opportunity to raise any concerns which you may have. The programme is being undertaken jointly by InstE, IP and IGEM, to ensure that members of all three bodies are provided with all the information they need to make an informed decision.

The programme includes a new publication called Merger Update, the latest edition of which is enclosed along with this letter in your Energy World journal. On the back of the letter you will also find a members survey asking for your views about the proposed merger and the future of the new organisation. Meanwhile, we will also be communicating with you through face to face briefings and consultation at national and local meetings.

Together with the InstE Council, we are convinced that the proposal to merge is in the best interests and to the benefit of members of InstE, IP and IGEM. With a combined membership of around 16,000, the new organisation will be much stronger and better resourced. It will therefore be able to provide members with better value and improved services.

We believe the proposed merger is the right way forward. We are committed to making the proposal a success and to keeping you informed about the issues it raises.

Yours faithfully,

John Ingham CEng. FInstE
Outgoing President
Institute of Energy

John Blackhall CEng. FInstE
Incoming President
Institute of Energy

In Association with: American Society of Mechanical Engineers, Australian Institute of Energy, Canadian Institute of Energy Training, l'Institute Français de l'Energie (Paris)
The Japan Institute of Energy, Southern African Institute of Energy, Verein Deutscher Ingenieure (VDI – Gesellschaft Energietechnik)

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