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Join us at the BP Warehouse Facility, Wenlock Road, London NI on Thursday 5 July 2001

for the 67th annual Melchett Lecture

given by

Sir John Browne FREng Group Chief Executive BP plc

The Institute of Energy is pleased to announce Sir John Browne as the recipient of the 67th Melchett Medal, the Institute's most prestigious annual award.

This free event is a unique opportunity to hear Sir John's personal views on how a global energy company is tackling the challenges of climate change, competition and environmental leadership. Learn how Sir John is driving forward a new set of values and corporate objectives to overcome these challenges.

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Attendance is Free

To register on the event, please complete the registration form overleaf.

Please note that pre-registration is essential and attendance is by ticket only.



Map for BP Warehouse Facility, Wenlock Road.

Nearest tube stations: Liverpool Street and Old Street Wenlock Road is a short distance from Old Street Station. Limited transport, courtesy of BP plc, will be available from Britannic House.

Registration Form.

I wish to attend the Melchett Lecture on 5 July 2001. (Please copy this form to register additional guests as necessary). Please complete in BLOCK CAPITALS.

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Detai	Is of travel arrangments and tickets will be issued as confirmation of your booking.

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COVER

Nuclear power in Finland - the cover shows the image of a new, third nuclear reactor (right) superimposed onto a photograph of the existing twin-reactor facility at Loviisa, in the south-east of the country.

Finland is currently debating a proposal to expand its nuclear power capacity to meet projected growth in electricity consumption, particularly by industry. The nuclear option is the only environmentally-acceptable choice, say Finland's energy industries and major users, apart from the risky option of increasing the amount of gas imported from Russia to fuel CHP and CCGT stations.

With rumours that BNFL may be planning a new generation of MOX-fuelled reactors for the UK, the subject is topical. See the full story on page 16.

Viewpoint

Making the fuel poverty strategy work

The Government has just published its draft Fuel Poverty Strategy. This is a time for celebration and sober reflection. Everyone deplores the extent of fuel poverty in this country (it does not exist in the EU outside the UK and Ireland) and will be delighted that plans are now afoot to eradicate the problem. However, beyond social justice, there are additional reasons why it is important that the strategy is robust. The furore over the imposition of VAT on domestic fuels in 1993 clearly demonstrated the political reality for the UK - that the price of domestic fuel cannot be raised until "the scourge of fuel poverty" has been eliminated.

Many analysts, meanwhile, are pressing for the price of fuel, whether domestic or otherwise, to be increased. The expectation is that this would lead to reduced energy consumption, which is badly needed as a contribution to Europe's Kyoto target of lower carbon emissions. The required drop of 8% in carbon dioxide emissions is currently unobtainable, as energy growth is expected to result in a 6% increase in carbon dioxide by 2010. As the years pass, and if energy consumption continues to grow, then the clamour for strong carbon taxes in Europe will increase. The hope for the UK Government is that the worst of fuel poverty will have been treated by then, so that it is in a position to support the calls for a tax on fuel in the domestic sector should it wish to.

The Fuel Poverty Strategy does indeed have a strong target for 2010: "to eradicate fuel poverty for the vulnerable" (DTI Energy Minister Peter Hain). The vulnerable: the elderly, families with children under 16, the disabled and the long term sick; represent two-thirds of all the fuel poor. The Government already has a legal obligation under the Warm Homes and Energy Conservation Act 2000 to eradicate fuel poverty for everyone by 2016, so dealing with two-thirds of the households in two-thirds of the time is the right rate of progress.

Eradicating fuel poverty is an expensive business. A large number of suffering households need a great deal of money spent on them. However, there is controversy over the numbers of households and very little information on the sums that need to be spent.

The definition of fuel poverty is that someone should not have to spend more than 10% of household income on fuel, in order to have a satisfactory level of energy services, particularly warmth. There is no dispute on the generality of the definition, but there is a problem in defining 'income', and whether some, all or no housing costs should be included. The different treatment of housing costs over time is one of the main reasons why the Government has shown such a substantial decline in fuel poverty. Many lobbyists are now asking for the definition to be disposable income, excluding all housing costs, in order to understand the scale of the problem correctly.

There are other uncertainties about the purported decline in fuel poverty over the period 1991-2000, particularly as it is known that between 1991-96 the energy efficiency of the English housing stock improved by only 2% (from 42 to 44 SAP points out of 100). Any decline in the numbers of fuel poor, therefore, came in practice from a combination of higher incomes and lower fuel

prices. The extent to which these have provided real benefits to the poorest 30% of households is unclear and the DETR's modelling looks optimistic, to say the least. For instance, the poorest households have benefited from the liberalisation of the energy market, but not by as much as other, richer families. At the same time, the utilities have been installing ever more prepayment meters -



Brenda Boardman FInstE, Environmental Change Institute, University of Oxford

the highest tariff – which offset any other reductions achieved in the poorest homes.

The Home Energy Efficiency Scheme (HEES), and its derivatives in the devolved countries, is expected to be the main source of assistance to the fuel poor, through improvements to insulation and boiler efficiency. However, the first pilot study showed that HEES upgrades a property by about 17 SAP points, whereas the evidence provided in the Fuel Poverty Strategy indicates that many homes have, at present, a SAP of below 20 and need to be improved to above a SAP of 50 to provide affordable warmth for the occupants. In these cases, HEES will only provide half the physical upgrade needed.

There are other contributory schemes: the Single Regeneration Budget, discretionary Private Sector Renewal Grants, etc., but there is no indication of what will be their contribution either to energy efficiency or to those on the lowest incomes. It is reported that there are now 43 separate schemes to benefit the fuel poor, many of which have been initiated by the utilities in the form of new tariffs, advice programmes and direct investment. The components of the strategy may all be present, but the evidence provided does not indicate how, or whether, they all contribute sufficiently, which is of concern.

Indeed we may need double the amount of money per house for nearly double the number of households.

But celebrations are still in order: it is wonderful to have the problem of fuel poverty officially recognised and with both a legal requirement and a political wish to deal with it. However, the Government would be wise to make sure the strategy will really deliver, for the benefit of both today's poor and for climate change policy and future generations.

Contact Brenda Boardman on brenda.boardman@eci.ox.ac.uk



PV, geothermal energy and electric cars for New York

Two sustainable energy

initiatives were highlighted in a speech by New York Governor George E Pataki on 'Earth Day' in April.

First, that the Fala Direct DM Group, is to install 1.5 MW of solar power this summer at its facilities in Farmingdale and Melville. The governor claims that the project will be the largest application of solar power technology by a single commercial enterprise in the world. The systems will cut the direct marketing company's energy bill by about 19%, at a total cost of \$9.3 million. To help underwrite the cost of the systems, the Long Island Power Authority will provide a research grant of \$4.5 million to the company.

highlighted the potential for geothermal energy to heat and cool buildings in New York state. The New York State Energy Research and Development Authority is currently working with 25 schools, health care facilities, churches and business to install geothermal heat pump systems. Among these is Westchester Country Club, which is installing a geothermal heat pump system as part of a \$7 million project to reduce energy consumption by 775,000 kWh, saving \$130,000 annually on energy costs.

Meanwhile, the Toyota Motor Corporation announced that the city and state of New York have bought a total of 289 of its Prius hybrid-electric cars. In the largest fleet transaction yet for the Prius, the City of New York will buy 231 hybrids for use by a variety of municipal agencies, and New York City Transit - part of the state's Metropolitan Transportation Authority will buy 56 Priuses. In addition, the State of New Jersey will purchase 33 vehicles for use by the State Central Motor Pool and the Port Authority.

 Elsewhere in the US, the city of Cedar Rapids, Iowa, has put into service 60 city buses that run on a mixture of biodiesel from soybeans and conventional petroleum diesel. The Cedar Rapids bus fleet joins more than 50 other major fleets in the United States using biodiesel.



The first of the "world's largest" wind turbine, the 2.5 MW Nordex N-80 situated near Grevenbroich in Germany, includes a gear unit and generator from the UK's Flender Power Transmission.

The N-80 comprises a Flender PZAS 3415 planetary gear unit and generator. The gear unit weighs 18,000 kg and has a transmission ratio of 1:67.9, with a 290 litre oil tank. The generator produces 2.5 MW at speeds of 700 to 1300 rpm, with 690 volts. The double-fed asynchronous, liquid-cooled generator weighs 12,000 kg and its efficiency is more than 96% under full load.

The turbine works at full capacity with a wind speed of 14 m/s. To start the plant, a wind speed of at least 3 m/s is required – not usually a problem 100 m off the ground – whilst the plant automatically shuts down if wind speeds exceed 25 m/s for safety reasons.

ROBTET live power line maintenance

A new, semi-automatic telerobotic system for live electricity line maintenance carrying up to 46 kV has been developed in Spain through the initial support of the EUsponsored EUREKA project.

The governor also

ROBTET allows work to be carried out on live power lines without having to cut off supplies to users. The system reduces the risks of injuries for maintenance operators caused by electrical shock or falls, says EUREKA, and work in difficult climatic conditions is also made easier.

The ROBTET system comprises two robots, an auxiliary jib and several stereo video cameras, all mounted on a platform located at the top of the boom. These components are operated from a control site on a truck. Innovative features include voice-activated control, a collision control facility, a stereoscopic video camera and a force reflection. A prototype has already been used to perform maintenance work.

Launched in 1985, EUREKA is an initiative through which industry and research institutes from 29 European countries and the European Union develop and exploit new technologies. Partners in the ROBTET project are the Spanish Iberdrola power utility, the Madrid Polytechnical University (Department of Automation System Studies) and Cobra.





EU is 'halfway to Kyoto greenhouse gas target'

The 15 European Union countries recorded a 4.0% reduction in their combined emissions of the six greenhouse gases between 1990 and 1999, according to the latest emissions inventory produced by the European Environment Agency.

The cut takes the EU half way towards achieving the Kyoto target of reducing its emissions of these gases to 8% below their 1990 level by the years 2008-2012. The EU is responsible for 24% of industrialised countries' manmade emissions of the six gases.

The EU reduction contrasts with an 11% increase in



greenhouse gas emissions over the same period in the United States, which accounts for 40% of the industrialised world's manmade emissions, says the Agency.

The EU's progress was helped by a 2.0% fall in greenhouse gas emissions in 1999, which came despite economic growth of 2.5%. The emissions drop was due to a combination of favourable factors, some of which will not be repeated.

However, despite these positive trends the EEA sees no room for complacency and warns that further major efforts to reduce emissions are needed to achieve the Kyoto targets.

The favourable picture to date has been determined largely by considerable emissions falls in Germany and the UK, the EU's two biggest emitters, together contributing around 40% of total EU greenhouse gas emissions. Falls are mainly the result of lower coal consumption due to a shift towards increased use of gas in power generation in both countries, the closure of industrial plant in eastern Germany following German unification and improvements in Germany's energy efficiency.

However, this situation could rapidly change. Initial preliminary estimates indicate that in 2000 the UK's carbon dioxide emissions increased by 2% and Germany's energyrelated carbon dioxide emissions rose by 0.2% from their respective 1999 levels. In both cases, increased use of coal has been identified as the main cause.

Moreover, on present trends, more than half of the other Member States are headed towards substantially exceeding their agreed share of the EU's total allowed emissions under the Kyoto Protocol. This is the case for Austria, Belgium, Denmark, Greece, Ireland, Italy, the Netherlands, Portugal and Spain.

UK-based Sheafpower has won a £110,000 contract to design, build and install a power generation system for an new Elf Petroleum oil and gas producing platform situated 12 miles off the coast of the island of Halul in Qatar in the Middle East. The 800 kVA generator set, which can start either electrically or hydraulically, will provide all the power necessary to sustain the platform in its day to day operation. It incorporates essential services with safety and environmental measures such as gas detection, fire prevention and the control of sand and dust ingress. The generator set will undergo rigorous testing prior to its commission to ensure performance in one of the world's most hostile environments which can see outside temperatures soar to 50°C.

Australia's no-burn waste management technology

Billed as the "world's first non-incineration solid waste and energy recycling facility" a SWERF plant is up and running at Whytes Gully, near Wollongong, in New South Wales, Australia. Its inventors, Brightstar Environmental, now have their eye on the UK market for waste treatment.

The technology, which took ten years to develop, can reduce pollution problems by generating heat and electricity without burning fossil fuels while safely disposing of household waste.

The process receives domestic and business waste in an enclosed building, sterilises and turns the waste to pulp and then takes out recyclables such as glass, steel and aluminium. The pulp, formed from food scraps, non-recyclable packaging and other organic material is subjected to advanced thermal processing and the resulting gas is used to fuel electricity generators. It is not incineration, stresses the company. The SWERF process

consists of three stages. Preprocessing of waste involves taking in waste, sterilisation with steam in an autoclave and mechanical separation. All the steel, aluminium and some rigid plastics are recovered for recycling and a pulp is produced from the organic material. The pulp is then washed to remove sand and glass, and dried.

Then, advanced thermal

conversion, in which the organic pulp is fed into a high temperature gasifier, which uses heat and pressure to convert it to gaseous compounds consisting mainly of carbon, hydrogen and oxygen. These compounds are then reformed to produce a synthetic gas (known as syngas), which is processed to make a clean, dry fuel gas, suitable for use with a variety of power generation equipment or as a chemical feedstock.



Britain's fledgling offshore wind power industry has been given a major boost by the announcement of preliminary licensing of 18 new offshore wind farms to be built around the UK. If all the farms are built, they would together represent between 1000 and 1500 MW of generating capacity – dwarfing the current total onshore capacity of some 400 MW. The farms would become operational between 2003 or 2005.

Crown Estates, which owns the UK territorial seabed, named 18 developers who have successfully pre-qualified to obtain a lease on part of the seabed on which to build a wind farm. Developers have now started to seek the statutory consents required, and to begin public consultations.

The licenses limit each site to a maximum of 30 turbines on each site; these might be rated at between 2 and 3 MVV each.

Most of the proposed wind farms are clustered off the north Wales and Lancashire coasts, and off the shores of East Anglia. Planned to be located between 5 and 10 km offshore, wind farms could be built off Maryport on the English-Scottish border, Walney Island, Cleveleys, Southport, Crosby, Prestatyn, Abergele, Porthcawl, Whitstable, Clacton-on-Sea, Caister, Foulness, Skegness, Ingoldmells and Redcar.

Eighteen different developers have won licenses, many of these consortia involving well-established energy and wind companies such as Mission Energy, Shell Renewables and National Wind Power.

Calculations by the British Wind Energy Association (BWEA) suggest that the combined projects represent the annual electricity needs of more than 1.1 million households, or are equivalent the energy output of Dungeness B and Bradwell nuclear power stations. Projects would involve a private sector investment of £1.6 billion and the creation of 8,000 new jobs, potentially rising to over 35,000, estimates the BVVEA.

The next steps for the industry are to establish the further development of the offshore sector. BWEA is actively involved in discussions with the Crown Estate regarding the release of further sites, including much larger capacity projects.

The UK has the largest wind resource in Europe, with the offshore resource alone sufficient to power the country nearly three times over.

 Meanwhile, three companies with a strong presence in north-east England: Corus, Northern Electric Generation and AMEC Border Wind are to investigate the building of what they call "the world's largest urban wind farm" on an industrial brownfield site on the south bank of the river Tees. The proposed farm, which already has substantial EC backing, could comprise 30 turbines.

UK CO₂ emissions rose by 2% in 2000

NAVIS

Total UK emissions of carbon dioxide *increased* by about 2% between 1999 and 2000, mainly as a result of increased use of coal in power stations during 2000. This in turn was because of maintenance and repair at nuclear and gas-fired stations, and higher gas prices at the end of the year, according to the DETR.

However, carbon dioxide emissions for 2000 (provisionally estimated at 152 million tonnes carbon equivalent) were 7.5% lower than in 1990 and "consistent with the general downward trend in emissions shown in the Climate Change Programme".

Emissions of carbon dioxide had fallen by 9% between 1990 and 1999, before beginning to rise again. The UK aims to move beyond its Kyoto target towards its goal of reducing emissions of carbon dioxide by 20% below 1990 levels by 2010.

Meanwhile, emissions of the basket of six greenhouse gases, weighted by global warming potential, fell by 14.5% between the 1990 baseline and 1999. There was a 6.5% fall between 1998 and 1999 as a result of falls in carbon dioxide, nitrous oxide and HFC emissions, adds the DETR.

To meet its commitment to the Kyoto Protocol, the UK has agreed to reduce emissions of greenhouse gases by 12.5% relative to the 1990 level over the period 2008-2012.

Hydrogen fuel cell buses for London

Transport for London (TfL) – the transport arm of the new Greater London Authority has announced plans to bring three zero emission hydrogen fuel cell (HFC) buses to the UK capital by early 2003, in line with Mayor of London Ken Livingstone's draft Transport and Air Quality Strategies.

The partners in the London HFC Bus Project are:TfL's London Buses; EvoBus (UK) Ltd, manufacturers of the HFC bus; FirstGroup plc – who will operate the buses; BP – developer and supplier of the hydrogen fuel; and the DETR.

London is the largest of nine EU cities taking part in the first passenger trials of the new zero emission HFC buses. The buses to be trialled in London will be HFC powered, low-floor accessible Mercedes-Benz 'Citaro' Citybuses, produced by EvoBus GmbH, part of DaimlerChrysler.

The HFC buses will have an operating range of 200 to 250 km and will be able to accommodate up to 70 passengers, depending on the layout specified by TfL and safety certification. The maximum speed will be approximately 50 mph, thanks to a fuel cell unit output of more than 200 kW.

Why Britain should maximise oil and gas recovery

The sheer scale of the offshore oil and gas industry's contribution to the UK economy underscores the need to maximise recovery of Britain's remaining oil and gas reserves - according to a new economic survey of the UK upstream oil and gas sector published by the UK Offshore **Operators** Association (UKOOA). The Association goes on to suggest that the key to maximum recovery is sustained investment, together with developing new technologies capable of unlocking fields of diminishing size in the increasingly mature North Sea oil and gas province.

The UKOOA 2000 Economic Report argues that there could be up to 36 billion barrels of oil equivalent (boe) still to be recovered from around the British Isles, in addition to the 28 billion boe already produced since the 1960s.

However, the extent to which these possible reserves are captured will depend on a number of factors. Production costs in the UK are high compared with other oil



North Sea oil and gas recovery should be maximised - UKOOA

producing countries, so cost reductions and the application of new technology are vital if the UK is to continue to attract investment and meet the Government/industry production target of three million boe per day for 2010.

The report also reveals the enormous scale of the offshore oil and gas industry's contribution to the UK economy. The report says that:

- Some 270,000 jobs throughout the UK are supported by the industry.
- Treasury receipts from offshore taxes in 1999/2000 were £2.6 billion.

Tighter Building Regulations from 2002

The DETR has published the new 'U-values' which will be included as part of a tightening of Part L Building Regulations which deals with the thermal performance of homes and commercial buildings. The proposed reduction for the Uvalue for walls is from 0.45 to 0.35W/m²K, rather than the more exacting 0.30 W/m²K originally discussed – something that has disappointed energy conservation campaigners.

The proposed draft Approved Document will be published "in the near future", in order to enable the construction industry the maximum time possible to gear up to the changes with regard to energy efficiency, said Construction Minister Nick Raynsford. Regulations could be amended in August of this year and come into force six months after that.

"A key issue in the consultation on Part L was the target U-values" said Raynsford. "We have decided to implement the changes in one stage rather than two to reduce the disruption to the industry. We have also accepted that the U-value of 0.30 W/m²K for walls would cause an undue burden on builders and their materials and component suppliers in circumstances where European standards for declaring thermal insulation performance have yet to settle, and have set it to 0.35 W/m²K. This is still an important improvement on the current standard and we will work towards further reductions at a future date."

Proposed performance standa	Proposed performance standards for the Elemental Method		
Element	U-value (W/m ² K)		
Pitched roof with insulation			
between rafters.	0.20		
Pitched roof with insulation			
between joists.	0.16		
Flat roof	0.25		
Wall	0.35		
Floor	0.25		

Emissions trading moves ever closer

The government has

unveiled draft proposals for an emissions trading scheme - a measure that could cut carbon by at least two million tonnes a year by 2010.

The draft framework includes details of how companies can join the scheme and the incentives on offer, as well as possible penalties for non-compliance. Details of the emerging framework will enable business to plan for entry to the scheme.

Every response to proposals for the scheme, from companies and business associations to environmental experts and green groups, endorsed the government's efforts to establish emissions trading in the UK. Most respondents highlighted the need for simplicity, flexibility, periodic review, and broad participation, and most agreed that all greenhouse gases should be included within the scheme as soon as possible. Many emphasised that taking time to get the scheme right was more important than an early start.

See page 15 for further details of the scheme.

NETA delivers wholesale power price cuts but embedded generators suffer

New electricity trading arrangements (NETA) introduced at the end of March are delivering significant savings in wholesale electricity prices in England and Wales, according to Energy Minister Peter Hain. Yet the new arrangements have been damaging to some renewables and CHP schemes, according to researchers at UMIST and the CHP Association.

The DTI has said that, along with other market reforms, NETA could help to reduce wholesale electricity costs by some 30% in real terms compared with 1998, worth some £2 billion a year to consumers. Speaking on the day NETA went live, Peter Hain said that St Thomas' Hospital in London had negotiated a cut of 13% - £174,000 a year - in its electricity bill in advance of NETA coming into operation.

NETA represent a new wholesale market for electricity in England and Wales which will operate in much the same way as commodity markets. It is designed to increase competition in the electricity market and so put pressure on prices for customers.

Already in England and Wales, contracts signed by industrial customers are down 10-15% on last year and representatives of major energy users estimate the prices have fallen by 35% during the last two years. These reductions have been driven by the impending introduction of NETA, according to electricity regulator Ofgem.

Hain was scathing about NETA's predecessor system: "The previous Pool

arrangement was deeply flawed - it was effectively a means of generators setting a wholesale price which suppliers and large consumers had little choice but to accept. It was no better than a generators' club. In contrast, NETA is a genuine market in which, for the first time, generators have to seek out customers, giving the electricity suppliers and large customers real choice."

However, operators of embedded, or distributed, generation plant have long been critical of NETA, saying that the new system does not treat smaller, greener generators fairly and thus damages their economic viability. NETA requires suppliers to forecast the amount of energy they will supply 3.5 hours ahead of delivery and forces them to pay market prices for any shortfall in what was actually delivered. The output from embedded plant is necessarily less predictable.

A research team at Manchester's UMIST have suggested that an average wind farm operating in the first week of NETA would have made a loss selling electricity to the grid. Meanwhile the CHPA has



reported dramatic falls in the price paid by electricity companies for power exported from some CHP schemes. The CHPA is now calling for early reform of NETA to prevent further damage to distributed generation schemes.

Ofgem is now taking steps to extend NETA to Scotland by introducing the 'British electricity transmission and trading arrangements' (BETTA).

New management for energy efficiency programme

The DETR's Energy Efficiency Best Practice programme is under new management. Quantum Partnership Ltd (QP) – part of the Foundation for the Built Environment, which runs the Building Research Establishment – has taken over management of the programme from the Government and will run the programme on behalf of the Carbon Trust.

The new structure for the programme will draw on the expertise of a wide range of subcontractors and consultants which QP is currently recruiting. Current operators ETSU and BRECSU will continue to manage the industrial and buildings sides of the programme until September, and could continue beyond then if they win new contracts.

QP Managing Director, Don Fairley, said:"The Energy Efficiency Best Practice programme is expected to have achieved its target of stimulating £800 million of energy savings in 2000. Building on these strengths, we are bringing in new subcontractors and consultants to help business meet the challenges of the Government's Climate Change Programme. We are seeking organisations which have experience relevant for running on-site advice, marketing and IT contracts as well as those with technical expertise in buildings, industrial processes and transport".

The aim is to have the

majority of the programme's new contracts in place by September.

Quantum Partnership Ltd was created in January specifically to act as lead managing contractor for the programme. Its non-executive directors include Professor Martin Fry FInstE, who is also chairman of the Institute's Technical & Economic committee, and Chairman of the Energy Systems Trade Association.

Southampton's 'trigeneration' - dis

The front cover of last month's Energy World featured the central energy station of a new 'district energy' or 'trigeneration' scheme which supplies heat, power and cooling to public and commercial sector buildings in the centre of Woking. The UK has only two other large-scale trigeneration schemes; in the City of London and in Southampton, where geothermal energy adds an extra dimension. Here, Simon Woodward, Chief Executive of Utilicom, reports on the Southampton scheme.

Can community heating work on a large scale? Is it a commercially and financially viable option for anyone except captive customers such as local authority housing? Recent history in the UK might suggest that we have not managed to drag this concept into the new millennium, unlike our partners in Scandinavia and mainland Europe.

However, Southampton has confounded critics of this technology by being awarded a Queens Award for Industry in the sustainable development category. It was awarded because the scheme has expanded its customer base continuously over its 13 year history. It has delivered sustainability to the heart of a City, almost without the end users being aware of their contribution to the environment.

The Southampton Geothermal and CHP District Energy Scheme, to give it its full title, scheme is privately owned by UK. energy management group Utilicom, themselves a subsidiary of the French energy management company IDEX, and supported by a joint cooperation agreement with Southampton City Council which predates PFI. It is jointly promoted by the partners, with Utilicom financing, operating and maintaining and the Council receiving a profit share of energy sales. It is also one of the largest district heating schemes in the UK with over 11 km of buried pipework and over 70 GWh of heat and coolth sales each year to over 20 major consumers.

The scheme is best known for its unique geothermal well, which was the original catalyst for the scheme in 1980, although it has consistently featured CHP as an essential part of its overall energy mix. Indeed two oil-fired 0.45 MWe CHP engines were originally installed in the late 1980s.

However, the prime mover is now a Wartsila 5.7 MW CHP engine generator. The overall scheme, including the CHP units and the input from the geothermal well is calculated to save over 10,000 tonnes of carbon emissions per year.

The scheme has been recognised by Government as being of special significance in the UK and many of its consumers were awarded a commemorative plaque in October last year, by Lord Whitty from the DETR.

CONNECTING WITHOUT GREEN PREMIUMS

Connections for hot water for heating and domestic hot water use, or chilled water, for air conditioning are offered to customers in a very straightforward manner. The connection is priced against the offset cost of boilers and/or chilling plant required for the premises in question. Whilst the pre-insulated underground mains used to provide supplies are not inexpensive themselves, the scheme can usually offer a capital cost saving of between 25–50%. Ongoing charges for energy units (MWh) are also calculated against utility prices and maintenance costs and provide savings of between 10 and 15%.

Consequently, a connection makes commercial and financial sense first and the environmental and sustainability benefits are delivered free of charge, so there is no 'green premium', unlike so many other alternative energy sources.

CHP IN SOUTHAMPTON

The Wartsila CHP engine was specified by Utilicom to meet the criteria for successful CHP operation; namely it is sized to meet the base thermal load and runs for a sufficient numbers of hours a year to repay its capital costs in a reasonable time. It provides up to a third of the scheme's heat demand, with the electricity generated sold to PowerGen under a 10 year agreement. The heat recovery has been configured to enable the engine's high temperature heat output (turbos and exhaust) to be utilised in the scheme's absorption chiller, thereby prolonging the CHP unit's summer operational hours.

Utilicom worked with the Bank of Scotland to facilitate the \pounds 3.2 million of external funding for this development. The Bank was able to finance this development based on the proven success of Utilicom's energy sales and long term contracts with consumers in the city. This forward thinking, combined with the surety of the initial 10 year electricity export to PowerGen, helps the innovation and expansion to continue.

Southampton's 5.7 MWe CHP unit is supported by the EC Thermie grant programme for the demonstration of new high efficiency dual fuel technology. It has a net efficiency of over 40% and switches instantaneously, via the computer controlled engine management system, between LFO and gas operation in the event of a gas interruption.

The two original 0.45 MWe oil fired CHP units have now been replaced with new gas-fired 0.4 MWe engines, and together with a 110 kWe CHP unit installed at the Holyrood housing estate, this brings the City's community heating CHP total to over 6.6 MWe.

TRIGENERATION - COOLING

The conundrum facing anyone considering CHP installation is how to usefully use the high levels of heat rejected during the summer months. Southampton is achieving this by developing an absorption chilling based district cooling scheme to run in parallel with the heating network. The De Vere Grand Harbour Hotel was the scheme's first customer for both hot and chilled water (for air conditioning) in 1994. The hotel management has demonstrated its confidence in community heating and cooling by building the hotel without any energy plant (or space-wasting plant rooms) of its own.

The scheme's overall cooling load has

trict energy scheme

subsequently increased substantially, to around 8 MW, with the connection of the Southampton City Council Swimming and Diving Complex in June 2000 and the opening of the West Quay Shopping Centre (including John Lewis, Marks and Spencer and the Landlord Hammersons), in September 2000. Again it is the organic growth of the scheme that has lead the use of large-scale absorption chilling.

Southampton's district chilling is supplied with chilled water from both absorption (waste heat from CHP) and vapour compression (with electricity from CHP) chillers. A 1.8 MW Carrier absorption chiller requires 2.6 MW of high temperature heat and the Wartsila engine is sized to provide this. The absorption chiller also uniquely operates as a heat pump during the winter months in conjunction with the geothermal well.

WEST QUAY SHOPPING CENTRE

A key feature of a district energy scheme is that consumers can develop new premises without the need to give up valuable space for heating and cooling plant. Many new premises have been designed with no plant rooms of their own, including the 53 acre West Quay development.

To meet air conditioning requirements a chilled water ring main was run around the shopping centre service corridors so that every retailer could choose to connect. This saved time and money in the fit out for many consumers.

Resistance to change in the building services industry is notoriously high and Utilicom found this especially true in shopping centres. Centralised plant has a bad reputation because it is often installed primarily as a revenue source for the landlord, then badly maintained; resulting in consumer dissatisfaction. So consumers at West the opportunity

to understand that the scheme supplies many other high profile consumers across the City, such as the BBC TV and radio studios and therefore it is maintained rigorously. Supply agreements are also direct with the Southampton Geothermal Heating services company) and these are indexed to a basket of prices such as gas prices and RPI. As a result the West Quay centre now has approximately 70% of its floor area's energy demands met by the scheme.

OTHER MAJOR CONSUMERS

A major shopping centre adjacent to your generating facility is obviously a bonus and indeed the heat station was built to meet this need back in 1987. Economic events however, did not keep pace with plans. Hence, the scheme diverted across the city, picking up more diverse and useful loads, which it might not otherwise have done. Four hotels and the Royal South Hants Hospital are key consumers for the scheme. Their year round heat demand helps to balance the scheme's summer heat load and allow the utilisation of large-scale CHP.

Another major development for the scheme last year was the large-scale connection of non local authority housing; something that is almost unheard of in the recent history of district energy projects in the UK. Prominent nationwide house builder Barratt was redeveloping the Polygon Hotel site into 108 luxury flats. A new mains gas connection to the site was more expensive than a district heating connection and this, combined with the offset cost of installing boilers in each flat, led Barratt to take the leap of faith. Each flat is individually metered and these are read by the managing agent, who simply adds these charges to other monthly invoices in a very straightforward manner

Utilicom is a leading proponent of connecting private sector housing to district energy schemes, but realises that these connections must be, first and foremost, cost-effective for the client; with the environmental benefits coming free of charge, as previously outlined.

Housing must also be sufficiently dense in development; it is simply too expensive to link together normal semi and detached residences with expensive pre-insulated pipework on a large scale, unless your objective is environment first and cost second.



THE FUTURE OF THE SCHEME

The beauty of a district energy scheme is that new energy technologies can effectively be 'plugged in' to the network, as and when they become cost effective. Demonstration projects can also be utilised, but a large scheme such as Southampton can readily handle fully operational large-scale implementation, when the time and economics are favourable.

Current options under consideration include biomass technologies such as wood chip boilers and/or a bio-oil developed from biomass, to fuel the CHP engines. Anaerobic digestion is also a goal for the City, whereby household refuse is composted to produce biogas, again for use in CHP units or boilers. Ultimately, technologies such as fuel cells may become economically viable and the scheme is ready and waiting. The distribution scheme (buried mains and consumer connections) are thereby future proof and demonstrate a genuine investment for the future.

Southampton's scheme has proved that public and private partnerships can be successful in providing locally generated and environmentally friendly electricity, heat and chilling, at a viable cost to private sector customers. Furthermore, it is another example showing that CHP and community energy schemes make excellent partners, now and for the future **Contact Simon Woodward MInstE at Utilicom on tel: 01293 549944, e-mail:** mail@utilicom.co.uk

Signing-up for green electricity tariffs

Stroud District Council is reducing its carbon dioxide emissions by 50%, making it one of the most climate-friendly districts in the UK. Almost all the Council's electricity is now derived from sustainable sources supplied by local 'green' electricity company, Ecotricity.

Ecotricity has been supplying the council's offices at Ebley Mill since 1997, when the Council set itself the target of reducing its carbon dioxide emissions by 30% by 2002. In switching another 92 sites to Ecotricity, including sheltered housing facilities and the Brunel shopping mall, the Council will exceed its original target by 20% a year earlier than planned. Ninety-five per cent of the electricity supply for council buildings across the district is now green.

Dale Vince, managing director of

Ecotricity stressed the local angle to the Stroud story: "The introduction of the new electricity trading arrangements (NETA) means that we can now supply all our local customers, including Stroud District Council, with electricity generated locally from our wind turbine."

The Electricity Association suggests that some 13,000 households were connected to green electricity tariffs, offered by 13 suppliers, in 2000, a figure that could rise to 250,000 in the next five years. The Open University has produced a 25 minute video on environmental power tariffs: 'Greening electricity' which looks at how green tariffs work for both domestic and business consumers. Available for £14.95; details from s.j.dougan@open.ac.uk



RAF Lakenheath in Suffolk, the largest operational US Air Force in Europe base in Britain, has reduced its energy consumption by nearly 20% in the last five years. It has awarded a follow-up energy management contract to Heatsave Ltd to extend its operations to catering outlets and food distribution centres, together with five schools located at Lakenheath and Feltwell. Heatsave's first order covered 22 buildings which are monitored via an IT-based planned preventative maintenance scheme developed by the company. Three 4,000 kg/h steam boilers provide heating and hot water for the two main hospital and medical annex buildings. Steam is also used in the sterilisation of surgical equipment as well as being supplied to the kitchens for cooking.

Steam leaks through poorly controlled reducing valves proved a major source of wastage and an inspection identified ten valves that were needlessly blowing steam to atmosphere. Engineers also improved the percentage of condensate return from 65 to 95%.



Automatic energy management in offices

A York building control system at a speculative office development in Finsbury Pavement, near Finsbury Square, London is providing full building control together with energy management using its own energy monitoring software.

The York ISN (Integrated Systems Network) building control system comprises distributed intelligence controlling nearly 1,000 inputs and outputs and a PC running York ISN Facility Manager software. The building is heated and cooled via two gas-fired boilers and two air-cooled chiller plants serving 181 fan coil units over nine floors.

With emphasis on energy management, York has included software that calculates the energy consumption of the boiler and chiller plant. The software forms the basis of an energy totalisation program providing accurate data on energy consumption and related costs, together with boiler and chiller efficiencies. The system incorporates regular monitoring and recording of both electricity and heat meters.

The system produces half-hourly records of maximum demand (using halfhour periods parallel to those of the electricity company meters). Heat meter readings are divided into normal operating hours, pre-heat periods and frost protection. The software converts the metered consumption into GJ and kWh of net energy used. Presidential Review 2000

A President of the Institute I am pleased to bring you the Report and Accounts for 2000. This year was again extremely full of activity, as a result of the proactive efforts of many members and the staff team based in Devonshire Street. These people are all owed our thanks for another positive year in the Institute's development.

I have spent much of my time representing the Institute at a number of important functions organised by the Institute's branches and others. On the majority of occasions I was provided with valuable platforms and opportunities to discuss the work of the Institute and raise its profile among key officials, potential members and, most importantly, you as valued members. My particular thanks to the volunteer members serving on branch committees who organised these events providing a busy regional calendar for all members to benefit from.

Communication with Government, specifically the DETR and the DTI, dominated the start and finish of the year, initially through our contribution to the development of the UK Climate Change Programme and latterly via a workshop with senior DTI officials concerning the Renewables Obligation. Our good relations with colleagues in both departments have established the Institute as an independent and sound platform for such constructive debate.

Focussed on achieving the objectives in our Business Plan, investment was made to increase the number and choice of activities and services made available to members. A strong events programme, highlighted by the annual energy policy conference at the CBI in March and the Melchett Lecture presented by Walt Patterson in June at the London Planetarium, sponsored by Powergen, addressed a diverse set of policy and technical topics. The Yearbook 2001 was distributed freely to members and further improvements in Energy World and the Journal were made. The DTI digest of energy statistics was also freely distributed to members. New project work from the Government and other clients was secured. enhancing the Institute's position as an independent source of expertise on energy research, promotion and education and training issues.

One of the objective measures employed by the Institute's governing Council to track the Institute's development is membership growth. In 2000, total membership increased by 3%; providing a 7% increase in total membership against the current Business Plan launched in 1999. Our committed strategy of organic growth is a challenging one and this increase in membership is a welcome reward. New members some of you will recognise included David Green FInstE of the CHPA, Andrew Warren FInstE of ACE, Phillip Ward



Mr Brian Chamberlain CEng FInstE President of the Institute of Energy

FInstE of DETR and Dr Brenda Boardman MBE FInstE of ECI at Oxford.

I, and you as members, should be both pleased and proud of the progress your Institute has made in recent years, extending your influence each time you use the quality kite mark of membership. You should also be assured that the Institute's future outlook is a bright one. Challenges will always prevail, but our track record now demonstrates that we can innovate in each case to the benefit of you as members, and make an important contribution to society as a whole.

B Chambalai

Mr Brian Chamberlain C Eng FInstE

Statement of the Trustees of the Institute of Energy

The summarised financial statements for the year ended 31 December 2000 set out on pages 12 to 13 are a summary of information extracted from the annual accounts which may be obtained, together with the reports of the Auditors and Trustees, on application in writing to the Secretary and Chief Executive at 18 Devonshire Street, London, W1G 7AU.

These summarised financial statements

may not contain enough information to allow for a full understanding of the financial affairs of the Institute. For further information the full annual accounts, the Auditors' report on those accounts and the Trustees' annual report should be consulted.

The annual accounts were approved on 24 April 2001, will in due course be submitted to the Charity Commission and

have been audited by Messrs Kernon & Co.

Signed on behalf of the Trustees

HonoraryTreasurer 24th April 2001

STATEMENT OF FINANCIAL ACTIVITIES

	year ende	ed 31 Dece	cember 2000		year er	nded 31 De	cember 19	nber 1999	
	in a second second	restricted	income andowment			d income andowmer		t total	
	funds (f)	funds (f)	funds (f)	funds (f)	funds (f)	funde (f)	funds (f)	funds (f)	
INCOMING RESOURCES	Turius (*)	iunus (L)	iunus (L)	iunus (ii)	iunus (L)	Turida (L)	iunus (L)	Turius (L)	
Charitable activities									
Subscriptions	260 552			260 552	265 426			265 426	
Project and training quent management	84 554			84 55A	97 453			93 453	
Conferences	70 339			70 220	90 377			02,033	
	70,238			10,230	55.360			55.320	
journals and other publications	69,328			67,328	55,260			55,260	
Courses and other educational income	63,068			63,068	56,158			56,158	
Other activities to generate funds									
Rental income	10,058			10,058	12,800			12,800	
Royalties	5,101			5,101	5,206			5,206	
Miscellaneous income	10,287			10,287	8,996			8,996	
Investment income	14,993	2,107	1,668	18,768	15,485	2,041	1,647	19,173	
Donations		32,216		32,216		1,454	-	1,454	
Total incoming resources	588,179	34,323	1,668	624,170	582,261	3,495	1,647	587,403	
RESOURCES EXPENDED									
Costs of generating funds									
Investment management	2,868	714		3,582	3,145	603		3,748	
Net incoming resources available for									
charitable application	585,311	33,609	1,668	620,588	579,116	2,892	1,647	583,655	
Charitable expenditure									
Project and training event management	31,218			31,218	23,700			23,700	
Conferences	64.677			64.677	66.127			66.127	
lournals and other publications	83.815			83.815	83.944			83.944	
Courses and other educational expenses	24 084			24 084	20.062			20.062	
Membership and other direct costs	9 704			9 704	2 085			2 085	
Accommodation and related costs	39,009			20.020	21.007			21.007	
Aurorda	50,020		1.500	1 500	31,007	750	1 200	31,007	
Awards			1,500	1,500	3,015	750	1,200	4,705	
Management and administration:									
Publicity Salaries and related staff costs	5,393			5,393	13,062			13,062	
General communications	75.134			75.134	69.030			69.030	
Professional	12,180	534		12,714	11,897			11,897	
Other administration expenses	29,511	54		29,565	26,097			26,097	
Total charitable expenditure	640,086	588	1,500	642,174	606,312	750	1,200	608,262	
Total resources expended	642,954	1,302	1,500	645,756	609,457	1,353	1,200	612,010	
NET INCOMING//OUTCOINC) RESOURCES	(54 775)	22.021	140	(21.504)	(27.104)	2142		(24.007)	
Investment gains/(losses)	(54,775)	33,021	168	(21,586)	(27,196)	2,142	44/	(24,607)	
Realised gains/(losses)	(19,119)	199		(18,920)	(32)	(857)		(889)	
Unrealised gains/(losses)	(31,436)	(6,995)		(38,431)	99,451	24,151		123,602	
	(50,555)	(6,796)		(57,351)	99,419	23,294	•	122,713	
NET MOVEMENT IN FUNDS	_(105,330)	26,225	168	(78,937)	72,223	25,436	447	98,106	
Interfund transfers Fund balances at I January 2000	564,239	119,675	34,050	717,964	(53) 492,069	53 94,186	33,603	619,858	
EUND BALANCES AT 31 DECEMPER 2000	10000	145 000	24.210	(30.030		110 175			
FORD BALANCES AT ST DECEMBER 2000	458,910	145,900	34,218	639,028	564,239	119,675	34,050	/17,964	

All amounts derive from continuing activities. All gains and losses recognised in the year are included in the Statement of Financial Activities.

The auditors' statement on summarised financial statements

Auditors' statement to the Trustees of the Institute of Energy

We have examined the summarised financial statements set out on pages 12 to 13.

Respective responsibilities of Trustees and Auditors

You are responsible as Trustees for the preparation of the summary financial statements. We have agreed to report to

Accounting Policies

I.Accounting Convention

The accounts are prepared under the historical cost convention, modified by the revaluation of quoted investments at market value; with the application of the fundamental accounting policies of going concern, accruals, consistency and prudence and in accordance with applicable Accounting Standards and the Statement of Recommended Practice issued in October 2000, and in accordance with the Charities (Accounts and Reports) Regulations 2000.

2. Basis of Inclusion

These accounts include the incoming/outgoing resources for the year and the funds and the net assets representing those funds at the year end of head office and all branches of the Institute, including those of its Benevolent Fund (for which, in addition, a separate audited statement is prepared).

3. Depreciation of Tangible Fixed Assets

Tangible fixed assets are stated at cost less depreciation. The historical costs of leasehold property and improvements thereon are depreciated evenly over the terms of the lease (expiring in 2009) and its carrying value does not necessarily represent the market value. Other tangible fixed assets are depreciated on a straightline basis over their estimated useful lives at the following rates:

> Fixtures and fittings 10% Electrical Equipment 25%

you our opinion on the summarised statements' consistency with the full financial statements, on which we reported to the members on 24 April 2001.

Basis of opinion

We have carried out the procedures we consider necessary to ascertain whether the summarised financial statements are consistent with the full financial statements from which they were prepared.

Opinion

In our opinion the summarised financial statements are consistent with the full financial statements for the year ended 31 December 2000.

Kernon & Co, Chartered Accountants and Registered Auditors, 4 Middle Street, London, ECIA 7NQ

The Institute of Energy Balance Sheet at 31 December 2000

	2000		1999	
	£	££	£	
Fixed Assets				
Tangible fixed assets	75,519	79,90	5	
Unquoted investments	10,443	9,98	5	
Quoted investments	485,707	604.61	2	
	57	1,669	694,502	
Current Assets				
Stocks of Ties, Shields & Medals	2,726	2,77	0	
Debtors	102,448	72,884	4	
Bank balances and cash	62,354	57,51	5	
	167,529	133,169	2	
Liabilities falling due within one year				
Income received in advance	33,905	56,239	9	
Creditors and accrued expenditure	66,266	53,468	В	
	100,171	109,707	7	
Net current assets (liabilities)	6	7,358	23,462	
Total assets less current liabilities	63	9,028	717,964	
Representing:				
Capital funds - Endowments	3	4,218	34,050	
Income funds - Restricted	14	5,900	119,675	
- Unrestricted				
- Designated funds	82,000	63,000)	
- Revaluation reserve	82,351	174,493	3	
- Accumulated fund	294.559	326,746	5	
	4	58,910	564,239	
	17	9 0 28	717.964	

4. Quoted Investments

Quoted investments are included at market value, calculated on a portfolio basis. Unrealised and realised gains and losses are recognised in the year they arise.

5. Income and Expenditure

Income and expenditure are stated net of Value Added Tax (VAT) where applicable, and are recognised in the year to which such income and expenditure relate. Irrecoverable VAT is included in general expenses, as it is not ascertainable with precision on a basis timely enough for inclusion with the specific net expenditure in the financial statements.

6. Liability for dilapidations at expiry of lease in July 2009

An amount equal to the anticipated liability for dilapidations as estimated by Council at each year end, less amounts already set aside, divided by the number of full years remaining on the lease, has for a number of years been set aside annually by transfer to the Dilapidations Fund, in order to ensure that existing free reserves and the eventual Dilapidations Fund will together suffice to meet any eventual liability. Council has taken professional advice on this matter and presently estimates that the maximum to be set aside at anticipated 2009 prices will not exceed £240,000. Accordingly £19,000 has been allocated in 2000 to the Dilapidations Fund (1999: £13,375). Council has adopted the policy that any future liability will be subject to independent professional assessment in 2003 and 2006.

7. Pension Arrangements

The Institute contributed in the year to personal pension plans for eligible employees, funded on a money purchase basis and invested in insurance policies. Contributions are charged as expenditure in the year they fall due. All funds are independently administered.

8. Engineering Council fees

The Institute acts as collecting agent for the Engineering Council in respect of fees, and accounts to it for such fees on the basis of annual estimates, which are subsequently adjusted to actual. Fees collected in the year were £39,112. Fees paid over to the Council were £42,252. Balances between the Institute and the Council and amounts received in advance are included in debtors and liabilities due within the one year as appropriate, but such fees are not otherwise recognised in the financial statments.

9. Operating Leases

Rentals payable are charged on a time basis over the term of the lease.

The Institute of Energy Benevolent Fund Statement of Financial Activities

	year ended 31 December		
	2000	1999	
	restricted income funds	restricted income funds	
INCOMING RESOURCES	£	£	
Charitable activities			
Donations and bequests	32,216	704	
Investment income	2,107	2,041	
Total incoming resources	34,323	2,745	
RESOURCES EXPENDED			
Costs of generating funds			
Investment management	714	603	
Net incoming resources available for			
charitable application	33,609	2,142	
Charitable expenditure - administration			
Professional fees	534		
Bank charges	54		
Total charitable expenditure	588	· · · ·	
Total resources expended	1,302	603	
NET INCOMING/(OUTGOING) RESOURCES	33,021	2,142	
Investment gains/(losses)			
Realised gains/(losses)	199	(857)	
Unrealised gains/(losses)	(6,995)	24,151	
	(6,796)	23,294	
NET MOVEMENT IN FUNDS	26,225	25,436	
Fund balances at 1 January 2000	115,632	90,196	
FUND BALANCES AT 31 DECEMBER 2000	141,857	115,632	
All amounts derive from continuing activities.			

All gains and losses recognised in the year are included in the Statement of Financial Activities.

Statement of the Trustees of the Institute of Energy Benevolent Fund

The summarised financial statements for the year ended 31 December 2000 set out on pages 14 and 15 are a summary of information extracted from the annual accounts which may be obtained, together with the reports of the Auditors and Trustees, on application in writing to the Secretary and Chief Executive at 18 Devonshire Street, London, WIG 7AU.

These summarised financial statements may not contain enough information to allow for a full understanding of the financial affairs of the Fund. For further information the full annual accounts, the Auditors' report on those accounts and the Trustees' annual report should be consulted.

The annual accounts were approved on 24 April 2001 and have been audited by Messrs Kernon & Co

Signed on behalf of the Trustees

Honorary Treasurer 24 April 2001

Benevolent Fund - Balance Sheet as at 31.12.2000

	2000		1999	
	£	£	£	£
Fixed Assets				
Unquoted investments				
- National Savings deposit bond	10,443		9,985	
Quoted investments	116,862		95,301	_
		127,305		105,286
Current Assets				
Debtor - The Institute of Energy	3,181		4,653	
Accrued income	60		-	
Cash on deposit	8,953		4,170	
Cash in bank current account	2,359		1,523	
Net current assets		14,552		1 0,346
Total net assets		141,857		115,632
Representing:				
Restricted income funds				
- Accumulated fund		110,698		74,571
- Revaluation reserve		31,159		41,061
		141,857		115,632
Approved on behalf of the Trustees		-		
6				

The Institute of Energy Benevolent Fund

Accounting Policies

I. Accounting Convention

The accounts are prepared under the historical cost convention, modified by the revaluation of quoted investments at market value; with the application of the fundamental accounting policies of going concern, accruals, consistency and prudence and in accordance with applicable Accounting Standards, the Statement of Recommended Practice issued in October 2000, and in accordance with the Charities (Accounts and Reports) Regulations 2000.

2. Investments

Quoted investments are included at market value, calculated on a portfolio basis. Unrealised and realised gains and losses are recognised in the year they arise.

The auditors' statement on summarised financial statements

Auditors' statement to the Trustees of the Institute of Energy Benevolent Fund

We have examined the summarised financial statements set out on pages 14 to 15.

Respective responsibilities of Trustees and Auditors

You are responsible as Trustees for the preparation of the summary financial statements. We have agreed to report to you our opinion on the summarised statements' consistency with the full financial statements, on which we reported to the you on 24 April 2001.

Basis of opinion

We have carried out the procedures we consider necessary to ascertain whether the summarised financial statements are consistent with the full financial statements from which they were prepared.

Opinion

In our opinion the summarised financial statements are consistent with the full financial statements for the year ended 31 December 2000.

Kernon & Co, Chartered Accountants and Registered Auditors, 4 Middle Street, London, ECIA 7NQ 24 April 2001

Jounal of the Institute of Energy June 2001

Papers to be published:

R WEBER, S ORSINO, A L VERLAAN and N LALLEMANT

Combustion of light and heavy oils in hightemperature air

W DONG and W BLASIAK

CFD modelling and optimisation of a new ecotube air system for clean combustion of coal in a grate fired boiler

V NOVOZHILOV, M KIRKPATRICK, J H KENT, V SAZONOV, L ZHANG, A MANN and T F DIXON

Computational fluid dynamics modelling of tube erosion rates in bagasse fired boilers

S B RIFFAT and Y H SU A novel absorption refrigerati

A novel absorption refrigeration cycle using centrifugal reverse osmosis

For more infomation please contact info@instenergy.org.uk

Reopening the nuclear option?

by Steve Hodgson

Finland may be about to expand its nuclear power industry to meet projected growth in electricity consumption, particularly by industrial users. The nuclear option is the only climatefriendly option, say Finland's energy industries and major users.

At the same time, Finnish politicians are finalising the country's strategy to tackle climate change. This calls for a major effort to increase the already high levels of energy efficiency in Finland, together with one of two options to cut power station emissions of carbon dioxide - more gas-fired plant or a new nuclear station.

Finland is also working on finding a solution to dealing with nuclear waste. The Government is studying plans for a

Finland is different to the UK; half as big again in land area but home to just 5 million people - a fifth of whom live in greater Helsinki. A third of the country lies north of the Arctic Circle and, late in March, the rivers and harbours around Helsinki were still frozen solid. Seen from the road, Finland is a country of birch and coniferous forest.

Finland has very limited indigenous supplies of energy, with insignificant supplies of oil, gas or coal. The country therefore imports 72% of its total energy requirements, half of this from Russia in the form of gas and electricity. Hard coal is imported, mainly from Poland.

Finland's climate explains why district heating (sometimes known as community heating) is so well-established in Finland, its abundant forests mean that wood is a major fuel. Part two of this report in the next issue of *Energy World* will include articles on Helsinki's district heating plant and the country's biomass-to-energy industry.

But it is the electricity supply situation which is giving cause for concern in Finland right now. Power consumption is projected to grow by around a quarter over the next 15 years, according to the Finnish Energy Industries Federation (Finergy), primarily due to continued growth by industry. The country is said to need nearly 4 GW of new generation capacity by 2015.

The major industry, and dominant energy user, in Finland is the paper and pulp industry, which uses more than half of the total energy used nationally and is a vital source of export earnings. The industry has seen its electricity consumption rise at 4-5% a year in recent times; this is projected to continue at around 2% a year.

Finland's electricity supply is highly diversified: 27% comes from nuclear power, 18% from hydro-electric schemes; 17% from wood and peat, mainly in CHP schemes; and 10% each from coal and gas. A further 15% is imported directly from Sweden and Russia.

So how is the country to fuel its industrial growth?

LIMITED POWER OPTIONS

Not from further power imports, says Finergy, as the growing overall demand for power from the Nordic electricity system has almost reached production capacity and is projected to exceed it in the next few years. The electricity systems of Denmark, Norway, Sweden and Finland already operate as a single integrated unit ñ something which the EU is still many years from achieving.

Another alternative could be new power links to Estonia or further west to Europe but, there is no longer the will or the finance available for huge capitalintensive infrastructure projects like this in liberalised electricity markets, says Finergy.

Nor will the electricity supply gap be closed by improvements to energy efficiency by users - Finnish industry claims that it already operates at efficiencies considerably better than other countries.

final repository for high level nuclear waste to be built at the site of an existing nuclear power plant.

But is the expansion of nuclear power part of the answer to climate change? The question is relevant to the debate in many countries. Studying the Finnish energy scene is a fascinating exercise, as the country starts from such a different base than the UK. The 'CHP capital of the world', Finland also uses a huge amount of biomass energy and has a good record on energy efficiency.

In the first of two reports, Steve Hodgson looks the overall Finnish energy scene, and at the proposal to build a new nuclear power station.

> Measured per tonne of product, emissions of carbon dioxide from the paper industry in Finland are well below US and Canadian levels, and second only to the Swedish paper industry, which is powered by electricity hydro and nuclear plant.

Hydro-electricity cannot be expanded as there are no more sites to develop. Indeed, Finland is already highly dependent on not fully reliable imports of hydrogenerated electricity from Norway - dry summers significantly reduce the amount of hydro electricity generated in Norway and thus the scope for exporting the excess.

And burning more gas would mean importing more gas from, and being more dependent upon, Russia, something that is politically unpopular.

The answer, according to Finergy, is an expansion of the country's nuclear power capacity, which would also deliver a zero CO_2 solution. Coincidentally, the Finnish Government is currently debating a draft strategy on climate change. Finland has a Kyoto target of zero, ie to return its emissions of carbon dioxide to 1990 levels by 2008-12 and proposes to do this by:

- improvements to energy efficiency in industry, including voluntary emissions agreements, and buildings; reducing methane escapes from landfill sites; and tightening-up of building standards, and
- reduced emissions from power production, either by replacing current coal burn with gas and/or expanding nuclear power production.

EXISTING NUCLEAR CAPACITY

Finland's nuclear power programme dates from 1974 and the country currently has four reactors; two 565 MW, pressurised water (PWR) units at Loviisa in the south east of the country and two 840 MW, boiling water (BWR) units at Olkiluoto on the west coast facing Sweden.

Last November, the privately-owned operator of the larger Olkiluoto plant, Teollisuuden Voima Oy (TVO) applied for Government permission to build a new nuclear power plant, to be sited adjacent to either the Olkiluoto or Loviisa plants. The precise design was left open; it could be either a BWR or PWR type with an output of between 1000 and 1600 MWe.

The structure of the Finnish electricity is industry is interesting: TVO, the nuclear operator, is a non-profit making company supplying electricity to its consumer shareholders at cost. The company is owned by its customers: 57% by the paper industry, 27% by energy reseller Fortum Power & Heat, 15% by local municipalities and the remaining 2% by a chemicals company.

So it is major energy users who are seeking an expansion to Finland's nuclear capacity, citing its ability to provide longterm, competitive and stable electricity prices as well as nuclear's ability to help meet environmental targets.

The plant would be built without financial support from the Government, says TVO, at a cost of some 1.7 -2.5 billion Euros, and have a design life of 60 years. The plant would be ready to operate in around 2008 or so, says TVO, after designing the plant, selecting a supplier, gaining a license to build the plant and then a four year construction period.

TVO's CEO Mauno Paavola stressed the suitability of the Olkiluoto site for expansion: an existing harbour for shipping in construction materials and fuel, plenty of room on an isolated coastal site, and waste disposal facilities already in place.

Finnish environmentalists are opposed to expanding the country's nuclear sector, naturally, but nuclear power is not actively opposed by the people, as it is in some European countries. And TVO is keen to stress the carbon dioxide emission advantages of its preferred option, even over gas. It also stresses that the nuclear option would not squeeze out renewables ñ the country already has strong hydro and biomass industries and wind power should be encouraged.

DISPOSAL OF NUCLEAR WASTES

With TVO offering to finance the proposed new nuclear plant itself, opposition will presumably focus principally on the vexed question of dealing with nuclear wastes. Except that Finland is ahead of most countries in finding an acceptable long-term solution to waste disposal. Last November's application to build a new generating plant also extended to a long-



term disposal facility for high-level waste.

Paavola insists that the Finns have always taken decommissioning and waste management seriously - and that there is almost enough money collected already to finance the building of a final repository for all the waste generated at the plant.

Long-term underground repositories for low and intermediate level waste already exist adjacent to the Olkiluoto site, and TVO is undertaking trial drilling for a deeper - 500 m underground - repository for high level waste. Spent fuel is currently stored at the generating plant in cooled ponds.

Construction of the repository for high level waste will not begin before 2010, but the low and intermediate level facility has been operational since 1992. Waste is packed into steel barrels which are then compressed to half their original height; these are packed into concrete boxes before being placed in the main hall, which is carved out bedrock 100 m underground. All the stored waste is etrievable.

DECISION TIME

The Finnish Government is expected to make its recommendation on the new nuclear station sometime this summer, before the Parliament has its chance to make the decision. But the proposal already has strong local support at both sites, says Paavola, and very positive environmental impact assessments.

Finland's existing nuclear power stations are both more than 20 years old. Similarly, no new plants have been built in western Europe for many years, and none are seriously planned (although there are plants under construction in three former eastern bloc countries: the Czech Republic, Slovakia and Romania).

The question now is whether climate change has shifted the basis for the debate in the last 20 years, and whether a new generation of nuclear power plants is about to be seen as, potentially, a major part of the solution to that problem. The UK version of this argument has been aired in previous issues of *Energy World* without conclusion. The national situations are very different, but the Finns may be about to make a decisive move.

Professional indemnity insurance

by Tina Cant, Jardine Lloyd Thompson Professional Risks

Within the field of energy, there are many professionals, whose roles, duties and assignments may involve the provision of service, design or advice for a fee. On entering into any contractual agreement to provide a client with services, a company or individual may be able to sue under contract law if obligations are not satisfactorily fulfilled. Additionally, professionals owe a duty of care to any one who may rely upon this advice or service.

One of the most important and often overlooked factors of Pl cover is that it is written on what is termed 'claims made'. This is a fundamental of all professional indemnity insurance.

If a professional gives advice to a client, but it does not transpire until much later that the advice was negligent, then it is the PI policy in force when the claim is made that will respond. This differs from many other forms of liability insurance which are on a 'losses occurring' basis, where it is the policy in force at the time of any incident actually happening (as opposed to being discovered) which would then respond.

As all Pl insurance operates on a claims made basis, eg due to retirement. An error could subsequently come to light, and you would have no cover unless a current Pl policy was in force at the time the claim was notified.

Similarly, it is equally important that you do not inadvertently over run your renewal date as, for obvious reasons, insurers are not willing to back date cover. Whilst they may offer to reinstate your policy, they may impose a 'retroactive date inception' clause. This means that they are only assuming cover from the date you instructed them to go back on risk and only for work carried out since that date. If, further down the line, a claim is submitted which results from work done during that period, the insurers will, by imposing this clause, be able to avoid liability for the incident.

It is also essential that the insurer be notified as soon as possible of any circumstance or incident that may give subsequent rise to a claim. This avoids any confusion or doubt if the situation develops further.

Other specifics of PI to which you must

give careful attention centre mainly on the basis of cover that you may purchase. These specifics vary greatly from insurer to insurer, so it is important for you to be aware of their implications and look carefully at what you are being offered for your money.

AMOUNT OF COVER

When you purchase cover you will be asked to nominate a limit of indemnity. This is the maximum amount of cover you wish to purchase. This may be led in some part by any contracts you have where a minimum amount of cover is a contractual requirement. This is very common when working for local authorities or on government contracts, which might ask that you have a minimum of, say £1 million or more.

Contractual obligations aside, you should endeavour to purchase a level of cover commensurate with the type of activity you are undertaking. For example, if you are advising domestic clients on energy conservation, it is unlikely that any failure on your part is going to lead to third party losses in the hundreds of thousands of pounds. On the other hand, you may be advising large corporations or similar on matters affecting the very fundamentals of their business (perhaps nuclear waste recycling or oil refining techniques). The potential losses - assuming a worst case scenario, which you must do, when evaluating your exposure - could be enormous. If so, then not only will you require considerably higher limits of indemnity, but you can also, understandably, expect to pay much higher premiums.

It is vital therefore that you take the time to discuss with your insurance broker

In other words, you have a responsibility towards your clients to provide them with appropriate services and advice, formulated by persons who have the requisite skills and qualifications, in response to the clients' specific requirements. This duty extends to those other than the contracting parties who may suffer as a result of negligent advice.

Professional indemnity (PI) insurance covers your business against any negligent or alleged negligent acts, errors or omissions

> the very precise details of the type of contracts you are undertaking. Ultimately, although your insurance broker can provide guidance, the only one who can decide on the correct amount of cover is the policyholder.

BASIS OF COVER

Most PI policies cover the policyholder's legal liability to pay:

- damages awarded against them, arising out of their professional error, resulting in a negligent act, error or omission; and
- the costs and expenses incurred by the claimant as a result of negligence. The policy will also provide cover for other agreed costs and expenses incurred in handling the claim.

Some points to be aware of here are to establish whether or not costs and expenses are insured in addition to the total limit of indemnity or as part of it. As court costs can be quite high this is an important distinction and insurers do vary in this matter.

WHY DO I NEED PI INSURANCE?

Hopefully, we all conduct our business in a professional and conscientious manner, giving due care to the quality and accuracy of advice we provide to our clients. Unfortunately, we are also all subject to the possibility of human error, whatever our chosen field, no matter how well qualified, regardless of how long we have been established. No business can afford to trade without adequate levels of liability insurance. Here are just a couple of examples of what can go wrong.

A consultant conducts an in-depth analysis of a manufacturing plant's energy

- a liability or a necessity?

usage and consumption. As a result of the consultant's findings and recommendations, the client embarks on a major project to switch fuel sources and suppliers, involving adapting of machinery etc at great cost. Instead of the expected saving, which should have resulted in a considerable net cost benefit, the client's fuel bills rise. Investigation by an independent expert identifies a simple mathematical error, which has thrown all of the original consultant's calculations out by 20%. Out of court settlement is reached at £128,000.

A company is appointed to design a generator, which will be fuelled by waste byproducts. The resultant plans are then passed to a third party to build the machine. The machine then undergoes testing on the manufacturer's premises, before installation at the client's business. A design flaw is identified as the cause of an explosion, resulting in massive damage to the engineering plant and both the engineering company and the contracting client sue for the resultant financial loss. Damages in excess of £170,000 are awarded. The possibilities are many and varied if it happens to you, you need to know (and your clients will often demand) that you are covered for these unfortunate events.

Professional indemnity is a complex class of insurance and there are many more details which you should be aware of and which you should discuss with your insurance broker.

Contact Tina Cant at Jardine Lloyd Thompson Professional Risks, tel: 02380 374900, e-mail: tina_cant@jltgroup.com

The Institute of Energy is always keen to ensure that it provides its members with the opportunity to access relevant and appropriate services and benefits. In a recent membership survey, a significant number of members, mainly employed in the consultancy field, stated their interest in the Institute providing access to professional indemnity insurance services. As a result, the Institute has begun to look into the requirements for professional indemnity insurance and the provision that is available, and has commissioned one of the providers, Jardine Lloyd Thompson Professional Risks, to write the article below. The Institute of Energy has been commissioned by the Government to undertake a study to consider the requirements for energy consultants to be accepted onto a Register of Competence for Energy Professionals. A key recommendation for this study will be for the energy consultant to be in possession of professional indemnity insurance. It is also likely that this will also become a requirement for the Institute's own consultants' register.

INSURANCE SOLUTIONS for ENERGY PROFESSIONALS

In the field of energy, providing service, advice or design is a responsibility that can last far beyond the period of the contract. To ensure that your professional risks are fully covered you need to speak to people that are equally dedicated to providing quality service and advice, day in - day out.

Jardine Lloyd Thompson provide energy specialists with:

- A Prompt & Efficient Service
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- Professional Advisors for Professional People

For more information on how you should be covering your professional liabilities call us now on:

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or email: Tina_Cant@jltgroup.com

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CFT Group was formed to offer specialist advice to professional practices and businesses around the UK and Europe with a particular emphasis on arranging business protection in:

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- · Directors' and Officers' Liability

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Events

JUNE 2001

Institute of Energy Annual Policy Conference: Redefining Energy Policy: Junking the meter? 5 June 2001 CBI Conference Centre, London Details from Suzanne Cooper Tel 020 7580 0077 e-mail: events@instenergy.org.uk

Electricity in Europe

Conference 5-8 June, Amsterdam, £1199 plus VAT Details from ICBI, tel: 020 7915 5103, e-mail: icbi_registration@icbi.co.uk

CHP in buildings

CIBSE workshop, 6 June, London Details from Maggie Procopi, tel: 01442 866378, e-mail: maggie.procopi@btclick.com

et 2001

Exibition and conference 6-7 June, Birmingham Ticket hotline: 0870 429 4384, website: www.et-expo.co.uk

Renewable energy sources in the EU 3rd Inter-parliamentary Meeting, Gotland, Sweden 8-10 June Details from www.eufores.org e-mail: cgutierrez@eufores.org

Solar electric PV on buildings Workshop, I I June, London Details from ABS Consulting Ltd, tel: 020 7378 0006, e-mail: Irowan@absconsulting.uk.com

Electricity and natural gas two converging markets Conference, 11-12 June, Madrid, Euros1450 Details from Eurelectric, tel: +32 2 515 1062, e-mail: rbechor@eurelectric.org

Introduction to NETA world

Workshop, 11-13 June, Brighton, £1195 + VAT Details from Power Ink, tel: 01273 202920, e-mail: steve@power-ink.com

Built Environment Research Network Showcase

12 June, London Details from www.bern.ac.uk tel: 0131 449 5111

Assessing energy use in buildings CIBSE course, 12 June, Bristol Details from Maggie Procopi, tel: 01442 866378, e-mail:

maggie.procopi@btclick.com

Natural gas & power generation strategies Conference, 13-15 June, Tucson, USA, \$1495 Details from Intertech, tel: +207 781 9623, e-mail: bwilkie@interetechusa.com

Inst Energy Scottish Branch event Annual Scottish Energy Lecture 14 June Teachers Building, Enoch Square Details from John Currie, tel: 0131 455 2253 e-mail: j.currie@napier.ac.uk

UK Climate Change Programme and Energy Policy

14 June DTI, London (free) BIEE Parker Seminar Details from British Institute of Energy Economics tel: 020 8997 3707 e-mail: mailbox@biee.demon.co.uk

Inst Energy South Wales & West of England Branch event Annual CRE Lunchtime lecture 15 June 10.30 for 11.00 Contact: John Whitehead e-mail: jwhitehe@uk.packardbell.org

Inst Energy Northern Ireland Branch event Visit to NIE Control Centre and demonstration 16 June, Belfast Details from David McIlveen-Wright e-mail: dmcilveen@aol.com

International coal contracts and transport logistics Course, 18-22 June, Singapore Details from Coaltrans Conferences, 0207 779 8945, e-mail: coaltrans@euromoneyplc.com

Building-integrated renewable energy

BRE conference, 19 June, Watford, £195 + VAT Details from Angela Mondair, tel: 01923 664775, fax: 01923 664790

The Institution of Structural Engineers Gold Medal Address by Sir Duncan Michael 20 June, £5 (£45.83 for dinner) Details from IStructE

tel: 020 7235 4535 Utility convergence for the domestic market Conference, 19-20 June, London, £1099 + VAT Details from IQPC, tel: 020 7368 9300, e-mail:

convergence@iqpc.co.uk

Inst Energy London and Home Counties Branch event **Branch AGM followed by discussion on Carbon Trust** 21 June 17.30pm Institute of Energy, 18 Devonshire Street. Several positions are available on the committee Details from Joanne Wade tel: 020 7359 8000 e-mail: joanne@ukace.org

BP Amoco statistical review of world energy Presentation by Prof Peter Davies 21 June, London Details from British Institute of Energy Economics tel: 020 8997 3707 fax: 020 8566 7674 e-mail: mailbox@biee.demon.co.uk



Africa Energy Forum power and gas 21 Conference, 24-26 June, Lyon, France, £650 + VAT Details from EnergyNet Ltd, tel: 0208 547 0698, e-mail: info@energynet.co.uk

Renewable energy projects

Conference, 27-28 June, London £1099 + VAT Details from IIR Conferences tel: 020 7915 5055 email: registration@iirconferences .com

JULY 2001

Advance your

presentations CPD course, 2 July, London, £395 + VAT Approved by the Institute of Energy Details from Speakfirst Training, tel: 0870 841 4111

How to do an energy survey, monitoring & targeting

Course, 2-3 July, London Details from Mid Career College, tel: 01223 880016, e-mail: course@mid-careercollege.ac.uk

Fuel cell 2001

Conference and exhibition, 2-6 July, Lucerne, Switzerland Details from the European Fuel Cell Forum, tel: +41 56 496 7292, e-mail: info@efcf.com

2001 European wind energy Conference and exhibition, 2-6 July, Copenhagen Details from EWEA, tel: +32 2 546 1940, e-mail: ewea@ewea.org

3rd International Symposium on incineration

and fuel gas treatments IChemE Conference 2-4 July, Brussels Co-sponsored by the Institute of Energy Details from IChemE tel: 01788 578215

Engine emissions and measurements Course 2-6 July, Leeds

Details from University of Leeds, Alison Whitely tel: 0113 2338494 e-mail: cpd.speme@leeds.ac.uk

Assessing energy use in buildings

CIBSE course, 5 July, Bristol Details from Maggie Procopi, tel: 01442 866378, e-mail: maggie.procopi@btclick.com

Wind power technology

Course, 9-13 July, Loughborough, £950 Details from Allison White at Loughborough University, tel: 01509 610031

Renewable Energy Fair

Exhibition and events 12-14 July, Stroud Details from Energy 21 tel: 01453 752277 e-mail: info@energy21.org.uk

Inst Energy North East Branch event Annual Social event I 3 July Details from Emma Wright e-mail: emma_wright@pbeurope.com

Energy efficiency education and training study

The InstE has been commissioned by the Energy Efficiency Best Practice Programme (EEBPP) to undertake a UK-wide study of energy efficiency training. In order to meet its Kyoto commitments to reduce emissions of a basket of six greenhouse gases, the Government is well aware that it must promote understanding of energy use and its environmental consequences. To this end, it intends to produce a national strategy for energy efficiency education and training later in 2001. This will form part of Climate Change Programme.

The results from the current study will provide the EEBPP with the information needed to develop a national education and training strategy. The work will identify areas of overlap in current provision, along with any gaps, and materials that are or should be available to support the training that is on offer.

The project team of Louise Kingham MInstE, Tracey Fisher MInstE and Rob Wall are investigating four main questions:

 What is the nature and content of currently available education and training on energy efficiency?
What is its take up?
Does it meet the specific needs of those who use it?
What does it cost?
In addition, it is hoped to establish how the wealth of material produced by the EEBPP can best be utilised to support energy efficiency education.

With the help of a number

of organisations, questionnaires for four groups have been piloted. They are:

- •training users;
- training users' umbrella organisations;
- •training providers; and
- training providers' umbrella organisations.

By surveying these groups, a detailed picture of public education and training courses dealing with energy efficiency right across the UK will be built up. The project team has also been interviewing representatives from training organisations such as the Scottish Qualifications Authority and the Northern Ireland Training and Employment Agency in order to gain an understanding of training provision in their constituencies. Now that the piloting stage has been completed, work is underway on the full survey, which will go on for the next month or so. After that, data will be collated and conclusions presented to the EEBPP.

If your organisation falls into one of the above four categories, please do get involved with the survey. The more accurate a picture that can be built up of the current state of energy efficiency education and training, the more effective will be the strategy that it leads to and the greater our chances of effectively revising education and training standards in the UK as part of the Climate Change Programme. For further details, please contact Rob Wall at education@instenergy.org.

NEW MEMBERS

LONDON & HOME COUNTIES

Mr M S Heaton Graduate Dr E Lees FInstE Energy Saving Trust Mr A Sagharchi Student City University Utilyx Group Members

SCOTTISH

Dr R Docherthy AMInstE Strathclyde Fire Brigade Mr R MacDonald CEng MInstE Sempra Energy Solutions International

SOUTH WALES AND WEST OF ENGLAND

Mr J Challenger Graduate Ove Arup and Partners

YORKSHIRE

University of Leeds Academic Affiliate

EAST MIDLANDS

Mr D Lack FInstE Leicester City Council

OVERSEAS NON-

Mr J Balasingam Graduate Keppel Fels Ltd

DECEASED MEMBERS

EMD Mr Eric Edward Bowler CEng MInstE

YOR

Mr Alexander David Gunn CEng SFInstE



Last orders for chartered engineer registration

September 1999 witnessed the beginning of implementing the Engineering Council's Standards & Routes to Registration 3rd Edition (SARTOR 3). In a nutshell, SARTOR 3 revised the academic requirements for Chartered Engineer status. Previously, applicants were required to possess a recognised 3 year B Eng (Hons) qualification. From 2004 applicants will need either a 4 year M Eng degree or a 3 year B Eng (Hons) plus a Matching Section (1 or 2 years' part-time Masters level qualification) to satisfy the new criteria.

In the interim period, recognised B Eng (Hons) qualifications will be acceptable for Chartered Engineer status. However, last orders for non-recognised qualifications have been called. From Ist January 2002 applicants with non-recognised qualifications will require a Matching Section to satisfy the academic criteria for registration at Chartered Engineer level. If this applies to you or your colleagues, the bottom line is simple, you have until the Ist November 2001 to submit your application for membership and registration.

If you are not sure about your eligibility for Chartered Engineer status then contact the Membership Department as soon as possible. If you know of colleagues or friends to whom this might apply please do ensure that they consult the Membership Department for advice and guidance on their route to Chartered Engineer status.

The Membership Department can be contacted by e-mail at membership@instenergy.org.uk or by telephone on 020 7580 0077.

MEMBERSHIP OFFER

The Express by Holiday Inn hotel chain is offering Institute of Energy members special accommodation rates for weekend stays (Friday - Sunday inclusive). Members can stay



in selected Express hotels outside London for £35, which includes breakfast, and for £65 in the capital.

Each Express hotel provides modern, spacious family rooms for up to 2 adults and 2 children at no extra charge.

Express hotels are located in: Scotland - North England - East Midlands - West Midlands -South England & Wales London

For more information on the Express hotels in your locality and for booking details please call **0800 897 121** quoting 'EXPRESS ASSOCIATION OFFER' and the 'INSTITUTE OF ENERGY'



Developing membership services

To enhance the Institute's Membership Services Portfolio, the first in a series of questionnaires was sent to members in February. As well as obtaining feedback about members' perceptions of three existing services - Regional & National Events, Energy World and The Yearbook, members were asked to identify sources (websites and publications) from which they obtained technical information. An encouraging number of responses were received from members reflecting all membership grades, ages and employment sectors.

Regional & National Events

A significant majority of respondents stated a preference for events to be held on weekday evenings whilst 30% preferred daytime events during the week. The most common non-Institute of Energy events attended were organised by ETSU, BRECSU and the DETR. A significant proportion of respondents also attended the annual NEMEX event. 46% of respondents expressed a willingness to pay a fee to attend Institute of Energy national and regional branch events.

Energy World

Members were of the overwhelming opinion that Energy World was a benefit of membership. They expressed satisfaction with its design, editorial, industrial and InstE news items, events pages and the Situations Vacant / Wanted sections. Suggestions for possible developments ranged from greater technical detail of relevant policies and technologies to increasing the size and scope of the events section to incorporate environmental and businessrelated events.

Yearbook

As with Energy World, a significant proportion of members viewed the Yearbook as a benefit of membership. The most popular use of the Yearbook was the identification of the contact details of organisations in the energy and environmental sectors. The next most popular uses were the identification of suppliers of energy and environmental products and services and as a technical reference. The most widely used sections in the Yearbook were, in descending order, the contact details of organisations, producers and suppliers, the technical section, related website links and the events section. Suggestions for possible developments to the Yearbook ranged from increasing the size and scope of the technical section to incorporate more conversion tables and energy policies in the UK and overseas, to details of energy and environmental consultants. Work on enhancing the Yearbook 2002's Technical Section has commenced so please do forward your suggestions to Sanjeev Kumar

by Monday 9th July.

The three most widely referred to technical publications other than the Institute's were, in descending order, Energy in Buildings and Industry, the DETR's Energy and Environmental Management and The Professional Engineer. The three most widely used websites were the DETR, the **Energy Efficiency Best Practice** Programme and the DTI's. would like to take this opportunity to thank all respondents for their invaluable feedback. The second questionnaire, which will focus on members' skills and experiences, is to be circulated shortly. In the meantime, if there are services that you would like to see incorporated into the Membership Services Portfolio then please do forward your suggestions to

Sanjeev Kumar by e-mail at services@instenergy.org.uk or by fax on 020 7580 4420.

Idris Jones Memorial Lecture

Cardiff Castle provided the auspicious surroundings for the Twenty Eighth Idris Jones Memorial Lecture, hosted by the South Wales and West of England branch on the 23rd February.

This year's lecture, sponsored by CPL Industries, was given by Dr Eoin Lees FInstE, Chief Executive of the Energy Saving Trust. The theme, 'Achieving the United Kingdom's commitment to CO₂ emissions reduction by 2010' proved a popular one and the Castle's ornate hall was packed to capacity with over 120 attendees.

A formal lunch followed the lecture and thanks were extended to David Suthers and his wife, Joyce, for their hard work in organising their twelth and final annual Lecture. For further information on the 2002 Idris Jones Memorial Lecture, contact John Whitehead email: jwhitehe@packardbell.org



President Brian Chamberlain presenting Fellowship Centificate to Dr Eoin Lees, Chief Executive of the Energy Saving Trust

Towards emissions trading

The Climate Change Levy is now a concrete reality for business energy users, but many people believe that the trading, by businesses, in emissions of either carbon dioxide or other greenhouse gases might prove a far more significant method of tackling climate change. And the UK is said to be among the world's leaders in designing a national emissions trading scheme - a group of business and industry representatives was established back in 1998 to draw-up a specification. In this context, the Institute of Energy organised a one day conference on the UK scheme, billed as 'the official guide for UK business'. The event was to closely follow a launch by Government of draft rules for the scheme but, with this announcement delayed, speakers concentrated on the laying out the background to the trading scheme, and how it will affect participants. Steve Hodgson reports from the basement auditorium of the RIBA.

The DETR's Henry Derwent opened proceedings by saying that despite US President Bush's refusal to cooperate, the Kyoto Protocol is not "holed below the waterline", although achieving the necessary a quorum for ratification now depends on Russia. Emissions trading will come in with or without the Protocol, added Derwent, and UK thinking has been highly influential among other European countries designing their own schemes.

The chairperson of the UK Emissions Trading Group, Margaret Mogford, had recently returned to her day job overseeing environmental matters at the BG Group – now that the Group had presented its proposals to Government. But she returned to explain the special features of the proposed UK scheme, that:

- entry to the scheme, and acceptance of an emissions 'cap' would be voluntary,
- participants would receive financial incentives from Government to offset the business risk, to the tune of £40 million a year for an initial five year period,
- targets would be both absolute, as well as relative (ie per unit of output).

An 'emissions trading authority' would oversee the scheme and companies will choose from three routes to participation (see diagram). 'Core' participants would operate after voluntary entry into the scheme, others would enter via negotiated energy efficiency agreements (part of Climate Change Levy exemptions), and a third route would be through one-off projects.

Core participants could choose to trade carbon dioxide or all six greenhouse gas, within or outside separate energy efficiency agreements. According to trading rules proposed by the Group, companies would have 'grandfathered' baselines based on a three year average to 2000. Incentives



Outline of the scheme as proposed by the UK Emissions Trading Group

would be calculated per tonne of carbon dioxide (or greenhouse gas) target reduction offered, paid on delivery. Groups would be expected to take caps not just for their worst (dirtiest) sites, but on total emissions across the group. And absolute caps would be just that – fixed despite output changes. Annual certification would lead to payments.

A company exceeding its target would receive the annual incentive payments, plus income gained from selling excess permits, or minus the cost emissions permits bought.

But how would a company make the decision to participate or not? First, this is a business decision like any other, said Mogford, with risks and possible rewards. The steps are to:

- register interest with the DETR,
- prepare a five year emission projection for the company (2002-6),
- assess and cost abatement opportunities,
- if such opportunities exist, instruct a verifier to assemble the baseline data,
- · prepare an abatement schedule,

- · bid into the incentive auction, and
- start trading.

So will the scheme work? It's possible, said Mogford, is that not enough participants will come forward to give the necessary liquidity to the market to make it work. On the other hand: "business people are not stupid – if they can avoid buying an expensive new boiler by instead buying a few, cheaper credits, they will do so".

Mogford's optimism was echoed by William Blyth of AEA Technology, recently returned from studying Japanese plans for emissions trading. Blyth said that Japan is very interested in establishing an emissions market, and that power companies had already make exploratory moves.

Emissions trading will be profitable for some companies, summarised Laurance Smith of The Environment Business, part of Volterra Consulting. A hypothetical example, in which a chemicals company has to compare the cost of meeting an emissions reduction target without trading to a substantially lower cost by trading, showed a clear business case for trading – a profit. See also Home News on page 6.

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Technical Support Assistant (Energy Management) This is a new post that will shortly become available within the Community services Directorate of Bournemouth Borough Council to assist the Energy Manager mainly in the area of utility contracts and data processing. Full training will be available. The post-holder must be able to demonstrate excellent organisational skills with the ability to work to strict deadlines under their own initiative. A flair for accurate figure work and good communication skills are essential as the post will require extensive interpretation of data and the production of reports for building managers, Directors and Councillors. Bob Olding on 01202 456307 or e-mail: bob.olding@bournemouth.gov.uk

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