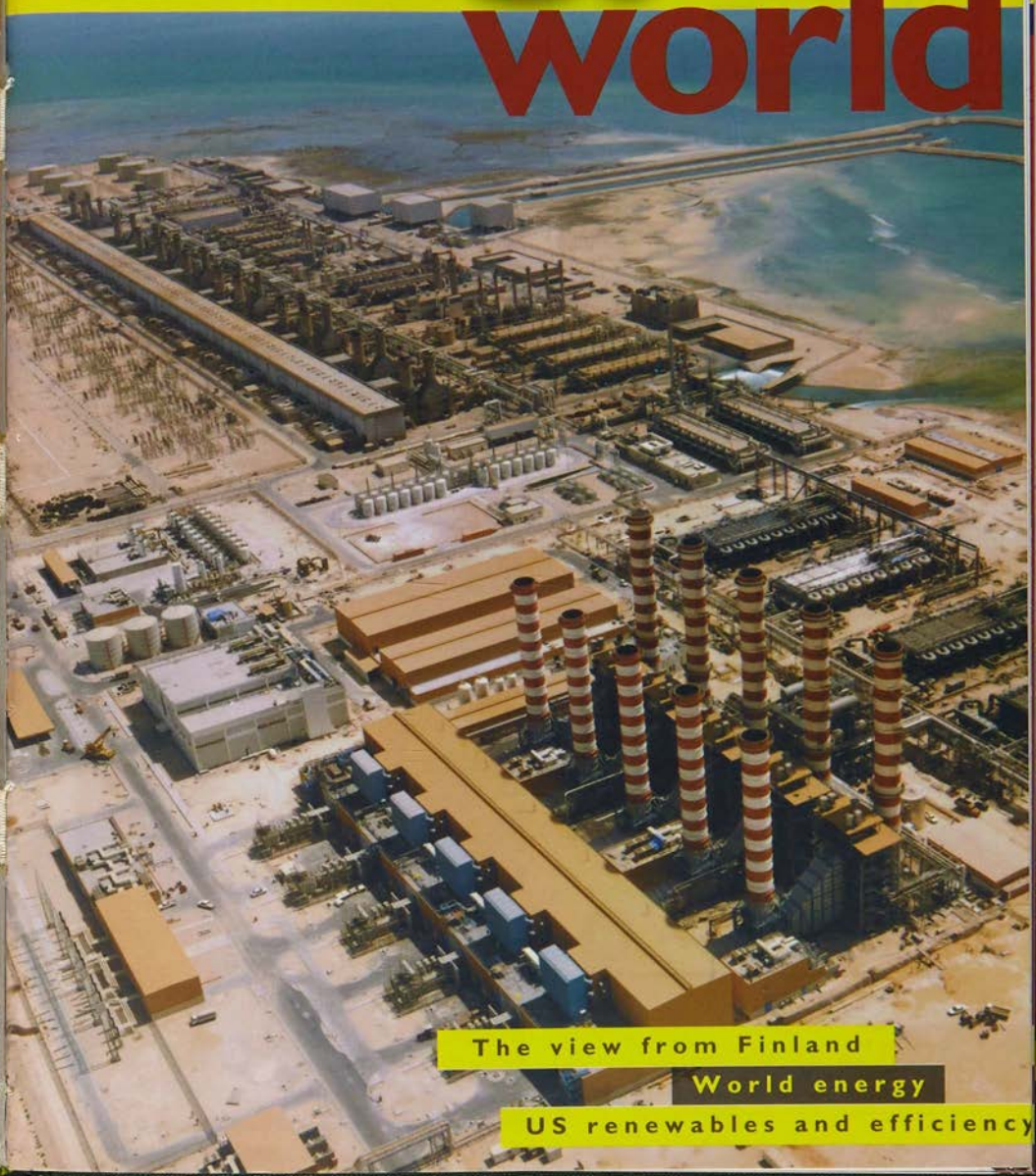
THE MAGAZINE OF THE INSTITUTE OF ENERGY

energy world

the institute of energy

No.270 June1999



The view from Finland

World energy

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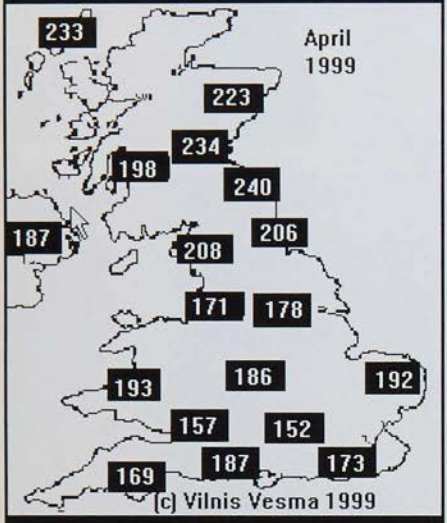

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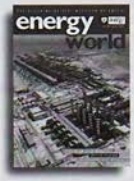

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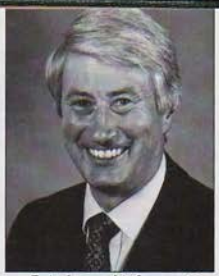
COVER

Energy around the world – the Ras Abu Fontas B power and water station shown under construction last year in Qatar. Ras Abu Fontas A is also shown (top left). Now completed, the 5-turbine, 608 MW B plant produces 150,000 m^3/day of desalinated water as well as power, by supplying steam to five multi-stage flash distillers. The station is owned and operated by QEWC.

The Brighton-based Mott MacDonald was consultant on both projects, undertaking feasibility and conceptual design studies, preparing specifications and managing contract administration, site work and commissioning.

Gain, pain and stepping up investment



Eoin Lees, chief executive, The Energy Saving Trust

The problems resulting from climate change effect everyone. Similarly, working to resolve the problems caused by emissions harmful to the environment are the responsibility of us all. At recent conferences in Kyoto and Buenos Aires, the world's Governments committed themselves to meeting targets for the reduction of greenhouse gases. For its part, the British Government has a legally binding target of a 12.5% reduction (on 1990 levels) of greenhouse gas emissions by between 2008 and 2012. But this is only a start, for it has also set itself the more ambitious target of reducing CO_2 emissions by 20% over the same period. Achieving this will prove a considerable challenge. Nevertheless not only is the target a clearly worthwhile objective, it is one that with the right drive and determination is eminently achievable. The Energy Saving Trust was set up in 1993 initially to help the UK achieve its Rio carbon reduction target. We are proud of what we have achieved with our partners to date, and of the economic, environmental and social benefits which have resulted. But despite such successes, now is the time to start escalating energy efficiency initiatives. We therefore welcome the Deputy Prime Minister John Prescott's emphasis on "gain not pain" as a focal point for achieving reduction in emissions. For we believe that there are policy options which provide clear social and economic benefits and which at the same time can reduce greenhouse gas emissions.

Household energy efficiency

The Trust maintains that an energy efficiency-led approach would provide such benefits, particularly in the domestic sector. This belief is based on firm foundations as our programmes have consistently demonstrated the many benefits of energy efficiency. However, more can be done. Over the past 18 months we have looked at the huge potential for carbon dioxide savings that could be achieved in the future through energy efficiency. To this end the Trust, with input from a range of partners, has produced research papers looking at a range of areas including building fabric measures, heating, lighting, appliances and new residential buildings. The results demonstrate that a realistic programme of home energy efficiency measures could reduce annual emissions by 7.6 MtC by 2010. In arriving at our figures we used a 'bottom-up' approach based on the current energy efficiency market, in each case realistically projecting how the respective sectors could grow and how regulations and manufacturer/customer attitudes might change in the future.

The need for investment

We estimate that around 2 MtC per year of reductions is likely to happen without policy changes, but in order to achieve the remainder of the reduction, additional programmes and money will be required. Our calculations are that investment (from a range of sources) rising to £1 billion annually will be required for household energy efficiency to meet this target. In total, a conservative estimate of the total investment costs required to deliver all of the measures in a realistic programme is approximately £10 billion. Some of this money could be leveraged from households and this will require incentives rather than subsidy, and therefore the Trust believes that a sum rising to a £250 million annual programme would be required. This works out at less than £400 per household over the period to 2010, but nevertheless, it is, of course, a considerable investment. But it need not be insurmountable if the right decisions are taken. The new regulator has the power to provide funding through a revised electricity and gas Energy Efficiency Standards of Performance (EESoP) initiative; this, combined with existing Government support, could stimulate spending from other parties to raise the requisite money. In the medium term statutory support for energy efficiency could improve the situation still further.

Energy companies' obligations

Experience with existing EESoP programmes has shown that a programme of obligations on energy companies are a cost-effective approach. The necessary investment could be secured through an increased obligation rising to about £5-£6 per gas and electricity customer per year. However other initiatives will also be needed. These include improved energy efficiency standards for new housing and renovations, and energy labelling and minimum performance standards for all the major energy using appliances. But these can only be achieved if all the many players that will be needed to realise it co-operate together. Without such investment and supporting initiatives, in the Trust's view it will not be possible to attain the 20% CO_2 reduction target in the domestic sector. The potential savings that can be achieved through increased energy efficiency are enormous. We have calculated that the annual benefits to customers of the realistic energy efficiency programme will be some £2.7 billion by 2010, equivalent to an average reduction of about £100 per household on fuel bills of about £600. To provide the framework for the future, the Trust is facilitating a new Energy Efficiency Partnership which will provide a framework for co-ordinated planning and marketing under our existing and now well-established 'Energy Efficiency' brand.

The challenge is huge – to help the Government achieve its carbon emission reduction targets. But the signs are encouraging. The Government's commitment to energy efficiency is impressive, and is matched by the expertise and experience gained by the Trust and its partners across the board. With so many players working towards a common goal, we can help consumers save money and lead healthier lives – in other words achieve 'gain, not pain'.

PV-powered petrol pumps around the world

BP Amoco is to incorporate solar power into around 200 of its service stations worldwide – the largest single project of its kind ever undertaken, according to the company.

Solar electricity will help meet the power needs of all new service stations to be built in the UK, Australia, Germany, Austria, Switzerland, the Netherlands, Japan, Portugal and Spain and solar installations will also be incorporated into prototype sites in France and the US as part of an extended pilot programme.

The first phase of the two-year programme will see up to 400 solar panels installed on each canopy at some 200 service stations across eleven countries in a $50 million, 3.5 MW project, saving around 3,500 tonnes of carbon dioxide emissions every year. As a result, BP Amoco will become one of the world's largest users of solar power - it is already one of the world's largest manufacturers of solar cells and modules.

The level of power generated will vary from site to site. But at each, the solar panels on the canopy above the pumps will generate more clean energy than is consumed by the site's lighting needs and the power requirements of the pumps below, says the company. The installations, which will be connected to the local electricity networks, will allow any excess electricity to be exported during the day and the shortfall imported at night. The announcement follows a successful pilot programme at 19 sites in Europe, Australia, Malaysia and the US.

BP Amoco has also stepped up investment in its growing solar energy business with an announcement that it is to buy the 50% stake it did not already own in Solarex, one of the world's leading solar companies in the US, for $45 million. The buyout of what was previously a 50:50 joint venture between Amoco and Enron will create the largest solar company in the world.

Oil companies taking the lead - solar-powered petrol pumps are here to stay

The integrated company, to be called BP Solarex, will have annual revenues of more than $150 million, representing a 20% share of the global market. It will have manufacturing operations in four countries – the USA, Spain, Australia and India, producing around 30 MW of solar products each year.

- Meanwhile, Shell has opened its first solar service stations – two in Germany and two in the Netherlands. At the German solar service stations, in Hamburg, drivers of electric vehicles will be able to charge them with solar electricity in return for a contribution to the costs. The rest of the solar power generated will go to the local grid.

BASF negotiates new power deal

Four companies in Belgium and Germany have reached an agreement, unique within Europe, for long-term power supplies to BASF's giant chemicals, plastics and fertiliser manufacturing site at Antwerp, Belgium.

The partners involved are BASF Antwerpen NV in Antwerp (Belgium), the German power supply company RWE Energie AG, Essen, the Belgium power supply company Electrabel, Brussels, and BASF's subsidiary WINGAS GmbH, Kassel (Germany). Recent liberalisation of the European power supply markets has allowed the four companies to reach a comprehensive supply and consumption agreement, which will come into effect in January 2001, and run for 15 years.

Until now, Belgium power company Electrabel has supplied electricity to the site which, with an annual consumption of about 2.4 billion kWh, is the company's largest industrial customer. The existing agreement expires at the end of 2000.

According to the agreement, Electrabel and RWE Energie will set up a 50:50 joint production venture to build an 800 MW combined cycle gas and turbine (CCGT) power station at the site. Surplus electricity will be fed into the Belgian high-voltage grid, so that half will be available to each partner for further marketing. A portion of the natural gas required to operate the power station will be provided by BASF's subsidiary WINGAS.

Vietnam oil refinery

Vietnam's first oil refinery is under construction at Dung Quat, in the central province of Quang Ngai. Foster Wheeler Energy Limited has commenced work on the contract, valued at $15 million, with VietRoss, a Vietnamese/Russian joint venture, providing front end engineering design.

The refinery, owned by VietRoss, will process 6.5 million tons of Bach Ho crude oil per year (about 130,000 barrels a day).

Third US nuclear plant to change hands

AmerGen Energy – the Pennsylvania-based 50/50 joint venture between British Energy and PECO Energy – has reached interim agreement with Illinois Power to purchase and operate the Clinton nuclear power station. Clinton is a 930 MW boiling water reactor (BWR) commissioned in 1987, situated about 190 miles south of Chicago.

The proposed purchase price is $20 million payable in cash, of which British Energy's share would be $10 million, payable upon completion of the final agreement, expected near the end of the year.

The plant is currently shut down, but PECO are managing it under a restart contract which commenced in January 1998.

Under the proposed deal, Illinois Power – the current owners of the plant – would buy at least 75% of the plant's output through to December 2004. Illinois Power would transfer to AmerGen the existing decommissioning fund for the station – expected to be some $95 million – and will make six further annual payments of $30 million into the fund.

Clinton is the third potential AmerGen US nuclear acquisition to be announced. The others are Three Mile Island 1 and Vermont Yankee, both of which are progressing.

Generator sets powered by Caterpillar 3516 diesel engines are providing a reliable source of standby and peak shaving electrical power to a new shopping complex in Madrid, Spain. El Corte Ingles draws its base load of 2 MW from the local grid, supplementing its additional power requirements with the Caterpillar power plant. Operating at 1,500 rpm, 50 Hz and 400 volts, the two Caterpillar 3516B engines each develop 1,460 kW.

Power from the Cat engines is used to provide much of the complex's lighting and electrical requirements while hot water from the engines' exhaust and cooling jacket is used as part of a CHP and absorption chiller system.

Upgrading Stockholm's district heating system

Stockholm's city-wide district heating system is to have its controls upgraded. Schlumberger Resource Management Services has been awarded a contract by Swedish energy utility, Birka Energi, for the installation and management of an advanced heat metering system.

The new system, due to be fully implemented by January 2000, will provide Birka Energi with the advanced energy data management technology it requires to offer enhanced customer service with maximum cost efficiency in the newly deregulated marketplace.

The contract, valued at 7.8 million euros, will see Schlumberger supply, install and operate an on-line meter reading system for approximately 370,000 users across Stockholm. Birka Energi distributes approximately 70% of the city's heating, in addition to providing electricity services. Once the system is installed, Schlumberger will also be responsible for the collection, consolidation and delivery of energy consumption data to Birka Energi.

Schlumberger will replace the existing temperature sensors in each of Birka Energi's 8000 district heating substations, located at strategic points around the city and responsible for the delivery of hot water to 350,000 residential apartments and 20,000 commercial and industrial operations. The substations will then be equipped with Schlumberger advanced CF50 electronic heat energy calculator units which will use high frequency power line carrier technology for on-line meter reading.

Gas pipeline from Cote d'Ivoire to Ghana?

The Governments of Cote d'Ivoire and Ghana have signed an agreement with the UK government and Penspen Limited for a feasibility study into the construction of a gas pipeline between the two countries. The DTI have offered to share the cost of the study, estimated at £200,000, with Penspen.

This agreement is an indication of the UK's desire to be involved from the early stages in this and similar projects in west Africa, says the DTI.

The study will explore the economic feasibility of exporting gas from Cote d'Ivoire to Ghana. Recent discoveries of gas both onshore and offshore have the potential to play a significant role in developing Cote d'Ivoire's economy.

Ghana would like to source more gas for power generation and has shown interest in the recent discoveries.

Baglan Bay power station beats government ban

Its potential for saving existing and creating new jobs, together with its possible future use as a CHP plant has allowed a proposed 500 MW gas-fired CCGT power plant to be granted construction approval by the Government. Secretary of State for Trade and Industry, Stephen Byers, has said that he will not raise energy policy objections to a proposal by Baglan Cogeneration Company to construct the power station at Baglan Bay, near Port Talbot in South Wales.

Mr Byers said: "The potential benefits of this proposal to build a new 500 MW gas-fired power station at Baglan Bay, South Wales, particularly in terms of local employment and economic regeneration, are such that I have decided not to use my powers, under section 14(3) of the Energy Act 1976, to defer or halt this project."

Proposed new gas-fired power stations are being refused government approval, unless they operate as CHP plants, until reform of the electricity industry is complete. However, Baglan Energy Park is designed partly to attract industry back to the region by offering cheaper heat and power from the proposed new power station.

- Meanwhile, Energy Minister John Battle has issued a direction prohibiting ScottishPower from building a gas-fired power station at Alton, Hampshire. The proposal was turned down as it was not in accordance with the Government's stricter power station consents policy.

Off-grid renewables could reach 6 MW

IT Power has completed a study for the DTI which aimed to identify new market opportunities for stand-alone renewable energy systems in the UK. The focus of the study was on small systems, probably charging a battery, and generally less than a few kW installed capacity. While a number of products have succeeded in specific markets (eg lighthouses, buoys, mobile homes, leisure boats), numerous further opportunities exist in the UK across the transport, leisure, communications, environment, security and agriculture, says the company.

Recent emphasis in the UK on subsidised, grid-connected renewable energy technologies (eg under NFFO) has drawn attention away from the fact that it is off-grid renewable energy systems that can offer immediate commercial markets for the renewables industry at home adds IT Power.

The study concluded that the UK is behind many other European countries in the implementation of off-grid applications – for example Holland is installing 450 kWp of off-grid PV very year, and exporting a similar amount. A strong domestic market would help to strengthen the renewables industry, so enhancing their ability to service the much larger off-grid markets in the developing world and future grid-connected markets in industrialised countries.

With targeted efforts to stimulate the market, it is believed that a UK potential of over 6000 kW (primarily wind and PV) can be achieved and exceeded by 2010, with a business potential of £60 million for manufacture and installation. With no action, the industry will continue to a position between 1000 kW and 3000 kW by 2010.

Copies of New UK Markets for Off-Grid Renewable Energy Systems are available from the ETSU Enquiries Bureau, tel: 01235 432450, fax: 01235 433066.

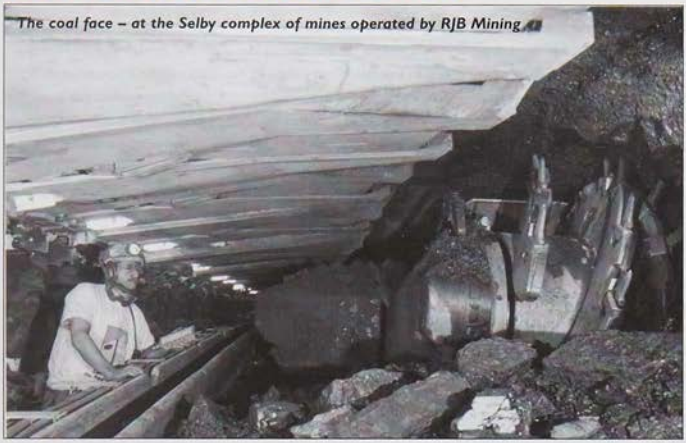
Smit Maritime Contractors has completed the installation of the North Sea's latest floating production, storage and off-loading (FPSO) vessel, Bluewater Engineering's Bleo Holm – now on location in the Ross/Parry Field, some 60 miles off Aberdeen.

After its construction in Japan and fitting out on the Clyde, the vessels' towout from UIE Clydebank began in February. Harbour tugs took the Bleo Holm downriver to Greenoch, where it was moored adjacent to the Hunterston ore terminal. The FPSO was then bunkered and its flare tower erected - this could not be done until the Bleo Holm had passed the Erskine Bridge. Two tugs then commenced the ocean tow around the Orkneys, to location in the Ross/Parry Field.

RJB signs coal deal with National Power

RJB Mining has agreed new arrangements with National Power that could involve the supply of up to 46 million tonnes of coal over a five-year period. Under the new agreement, National Power could buy up to 28 million tonnes from RJB Mining over the four years to 2003. This is in addition to the existing three-year agreement to purchase 18 million tonnes, which began in April 1998.

The coal supplies will mainly be for the 4,000 MW Drax power station, North Yorkshire, which National Power is in the process of divesting, and for the 2,000 MW plants at Eggborough, East Yorkshire and Didcot, Oxfordshire.



The coal face – at the Selby complex of mines operated by RJB Mining

The total consideration value of the new contract, which includes options and other arrangements associated with the anticipated divestment of Drax, is approximately £800 million. The total value of the five-year supply arrangement, subject to the options being exercised, is approximately £1,300 million.

New curbs on opencast mining

Tough new planning guidance on opencast coal mining in England came into effect in April. The new guidance: *Mineral Planning Guidance on Coal Mining and Colliery Spoil Disposal* (MPG3), published by the DETR, will ensure that planning permission for new opencast coal mining is only given where the development is environmentally acceptable or provides over-riding local community benefits.

Environment Minister, Richard Caborn, said: "The guidance will ensure that planning permission for opencast coal mining is only given where the development is environmentally acceptable or provides over-riding local or community benefits. If neither of these requirements is met, there should be a presumption against opencast coal."

Wind power for Scottish islands and Devon

Eastern Group has joined forces with Arnish Electric Ltd of Stornoway, and Devon-based consultants Farm Energy, to develop two wind energy projects on the Isle of Lewis and another on Stronsay in the Orkney Isles.

The projects promise to give Lewis a secure and locally-generated electricity supply for the first time. Seventeen turbines, split between two sites, will generate over 50 million units of electricity each year – enough to supply the entire domestic needs of Lewis and Harris. Most of the islands' electricity currently comes from the mainland via a sub-sea cable.

The largest of the two schemes is a 14-turbine wind farm, with a 10.5 MW capacity in the Barvas Hills; the other is a three-turbine cluster at Arnish Moor, south-west of Stornoway with a 2.25 MW capacity. A similar three-turbine cluster at Rothlesholm Head on Stronsay will supply power to the tiny island population of 379, with surplus electricity being exported to the rest of the Orkneys.

Planning consent will be sought at the end of the year following environmental assessments and consultation with local people.

Meanwhile, Eastern Group is also planning a series of small community-scale projects – all based in North Devon. Eastern has joined forces with Barnstaple-based company, Farm Energy, to generate electricity from three wind clusters – the first of which will be a single turbine at Clawton near Holsworthy. Applications for two more small wind clusters at Bratton Down near Bratton Fleming and at Hore Down near Ilfracombe will be made shortly.

Nuclear plants output and load factors up

Annual performance figures for British Energy's nuclear power stations show a total output of 69.13 TWh to March this year, an increase of 3.7% over the previous year. The improvement resulted, says the company, from a combination of fewer statutory reactor outages (one reactor outage is equivalent to 0.6 TWh approximately), fewer unplanned losses and upgrading of plant.

Average load factor across the eight stations was up from 78 to 81%.

Three stations - Hunterston B, Heysham 2 and Sizewell B - achieved their best output performances to date, and Sizewell B achieved its best period of continuous operation since commissioning, with 429 consecutive days' operation prior to the shutdown for its statutory and refuelling outage. The station achieved a load factor of 95% during the last fuel cycle (ie since the last statutory and refuelling outage in 1997).

Output sold to customers from British Energy's power stations

Station	1997/98 TWh	1998/99 TWh
Hinkley Point B	8.32	9.84
Hunterston B	8.73	9.17
Dungeness B	4.71	5.21
Heysham 1	8.86	7.88
Hartlepool	8.88	8.39
Torness	9.27	9.48
Heysham 2	9.43	9.78
Sizewell B	8.46	9.38
Total sales	**66.66**	**69.13**

North Sea oil and gas boost

Energy Minister John Battle has announced a package of measures to boost UK offshore oil and gas exploration and development activity. The measures were drawn up within the joint Government and Industry Oil and Gas Task Force, which Mr Battle chairs.

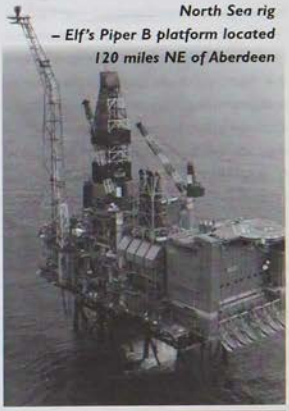
Changes in licensing and regulation of exploration and production will, says the DTI, help to sustain the UK industry at a time of low global oil prices (see Energy World March 1999).

Modifications to the Government's licensing and consents procedures include:

- an annual programme of licensing rounds with each round covering half of available unlicensed acreage,
- more transparent published criteria for licence awards,
- extensions for certain work obligations,
- establishment of a pre-qualification register for licensees,
- longer production consents,
- slim-line development plans, and
- fast-track (typically one month) approval of most development plans.

Speaking after the third meeting of the Task Force, Mr Battle said: "These early changes are expected to cut red tape and streamline the regulatory process, so as to lower costs, provide encouragement for new exploration, and help to maintain production in fields already developed, while retaining our full commitment to the environment."

- The British offshore oil and gas industry is to be the focus of a new All Party Group launched in April by Bob Blizzard, Labour MP for Waveney and Conservative Peer, Lord Fraser of Carmyllie QC. The Group will provide a dedicated parliamentary forum for issues relating to and impacting on the British offshore oil and gas industry and the 380,000 UK jobs that depend on the sector.



North Sea rig – Elf's Piper B platform located 120 miles NE of Aberdeen

Wave power for Scotland

All 53 of the projects recommended by the Scottish Office to supply electricity to Scotland's two electricity companies under the third Order of the Scottish Renewables Obligation (SRO) have now finalised their contracts. The 53 include three wave power projects alongside the more commonplace wind, hydro, waste-to-energy; and one biomass scheme. Two of the wave power schemes , totalling 0.5 MW capacity, are located on the island of Islay off Scotland's west coast; the third, 1.5 MW scheme, will be in Shetland.

At best, the projects could together create up to 680 jobs, many in rural areas, according to the Scottish Office.

Subject to obtaining all necessary consents, the new projects will provide almost 150 MW of new renewable electricity capacity for sale.

Idris Jones Lecture

Electricity liberalisation

by John Deane, managing director, IVO Energy Limited

Working in London for a Finnish company, John Deane is in an ideal position to compare the state of energy liberalisation in Britain, Scandinavia and Europe as a whole. This edited version of his Idris Jones Memorial lecture – originally delivered to the South Wales and West of England Branch of the Institute in Cardiff in February - contains his thoughts on Finland, Scandinavia and Europe.

I have said that the two electricity markets, Nordic and UK are well ahead in Europe. From mid-February this year, the EU requires every member state to allow trading of power on the European grid. There is a European directive in place and Britain is well ahead of the minimum requirement. Some of the European countries have not started in practice, but will get there in due course.

In parallel, there is a gas directive which requires a similar liberalisation of the gas market. The building of the Interconnector between Britain and Zeebrugge was an inspired piece of investment in relation to pan-European trading. It is large and, to illustrate its capacity, it could carry sufficient gas to supply about 20 GW of power stations. So this capacity, I believe, is going to be a very powerful influence in establishing cross-border gas trade in Europe.

The EU has laid down a minimum requirement that within four years, 35% of the electricity market will be open. The utilities are required to allow third party access, putting their power lines under separate management and allowing a transparent transportation system. In the Nordic, Dutch and UK markets we are several years into that process, so we are open for business. Germany and other mainland European countries are about to begin but others remain only at the starting point.

What does all this mean for energy users in Europe? There are many reasons for cross border differences in pricing. Some countries, for example raise local taxes from energy, especially through municipal ownership. Some include a fuel cost element that, in effect, provides for payment of local fuel supplies. Others, going through the liberalisation process, have built in pricing and other mechanisms to avoid 'stranded assets'. In the Nordic region, rainfall levels have a strong influence on pricing. Norway produces only hydro-power, from old assets, and so is a source of very low cost power. By cross-linking it to Sweden and Finland through the formation of Nord Pool, we are seeing a rapid fall in electricity prices, to almost half of earlier levels: the Pool is effectively benchmarked to hydro.

If you extend that concept to a pan-European spread, we could see a levelisation across the continent. This could pool all the best aspects, such low-cost hydro, cheaper coal-based pricing in certain regions, cheaper gas in others, and so on. Such a pan-European pool could optimise across the entire continent, with the best features coming together in a single market, bearing down on prices. This is not a fantasy.

Figure 1
Nordic Power Flows on August 5th 1998

Year	Share of the market opening (average)	Customer size threshold
1997/99	23%	40 GWh/year
2000	28%	20 GWh/year
2003	33%	9 GWh/year

Table 1 *Europe's internal electricity market directive*

There are companies in Oslo, in Amsterdam and elsewhere developing such systems to form the nodes of this kind of network.

Liberalisation across Europe

Table 1 shows the modest timetable and targets set by the EU. Provided a third of your market is open by 2003 to those who use 9 GWh pa, you meet the criteria. Although such a soft target may have been a political expedient, we believe that in practice the competition will accelerate the process much more quickly.

The electricity industry in Europe has often been a regulated, monopolistic type of business. In Finland, market efficiency has been much improved by maximising competition and minimising regulation. This has enabled the business to stabilise quickly, and to work more effectively. Legislation is in place, as it is in England and Wales. I would say that the Nordic and British markets are some years ahead of the rest of Europe and should use this capability to promote cross-border trading.

Indeed Finland, Sweden and Norway, have gone straight to fully open markets. Just as in Britain, any user can buy from any producer. Denmark is running to a slower agenda.

– the view from Finland

The 'Baltic ring' has been talked about for some time both in the gas and electricity industries. So a pan-European theme is not new. You have only to observe the major reserves of gas in the Norwegian and Russian areas to understand why those production centres view central Europe as a strong market and view the European ring as a powerful route to it. The Interconnector with Britain is a part of that, forming a connection with the North Sea gas fields.

Power trading in Scandinavia

Figure 1 illustrates the strong development of a liberalised market in the Nordic area. Observe the west-to-east power flows, and the north-to-south flows, into Denmark and potentially Germany. The Nordic market is not huge but could be an important step in the development of a European market. Several countries are intending to adapt the NordPool system into their own markets.

Within Finland, the pooling system is similar to the UK Pool. Figure 2 shows how producers sell to retailers, who sell to end users and so on; note the outlet into the Nord Pool exchange. This recent development is the important import/export link with the cross-border market.

This Nordic power exchange is actually the world's first multi-national exchange. Established in 1996, it creates a common power market, between Norway and Sweden originally, with Finland and Denmark now coming in more fully. Its main purpose is to organise trade in physical and financial contracts. Not all of the cross-border trade is simply physical. In the analogy of UK petrol retailing, for example, petrol from northern refineries is not transported to the south, or vice-versa. The distributors have swapping arrangements to optimise production and transportation.

We believe gas and power are amenable to the same arrangements. Even though the physical export line capacities between Britain are limited, the volume of paper trade and swaps will be far higher. A producer in Germany, say, could swap with a producer in the UK, the full physical amount does not need to flow, but could simply be used in the region of production by customers of the other producer. A much larger volume of paper trade may thus be done than might be implied from simple physical export capacity. The oil markets employ such techniques routinely and they will surely appear soon in the electricity markets.

Nord Pool also comprises elements of a spot market and a futures market for up to three years ahead. Nord Pool presently handles around one third of Nordic physical production (the rest is traded through contracts). Half of that goes through on a 0-3 year basis and the rest trades at spot. A snapshot of the Nordic market shows Sweden being the largest at 142 TWh, Norway at 116 TWh, Finland at 74 TWh, and Denmark at 34 TWh.

Change continues in the Nordic market, just as in the UK. Structural changes, customers changing brands, foreign power companies entering and the electricity exchange becoming more liquid. These market forces are controlling investments, so there is little power generation investment in the Nordic area at present. In an analogy of how it is difficult for coal to compete economically with gas in the UK, in the Nordic context, gas cannot compete with hydro. So we expect that non-competitive investment will disappear rapidly wherever the market is freed. Market forces in some regions might tend to push investment towards, say, refurbishment.

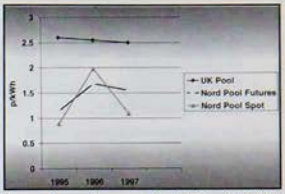


Figure 3 Average Unit Price (p/kWh)

Figure 3 shows how Nord Pool electricity price levels are about half those in UK , largely due to the hydro-power influence; the different spot and forward prices reflecting the volatilities of spot and forward volumes. Table 2 illustrates some differences in the UK and Nordic Pools.

Future trends in trading

Turning now to future trends in power trading. I have been concentrating on power but I think much of what has been said could equally apply to gas, when the EU Directive opens up the markets. Harmonisation of electricity and fuel taxation may evolve.

There are strong echoes here of the introduction of the Euro and the harmonisation of interest rates and the financial systems. The energy 'currency' may quickly shadow the financial currency. European presence will be felt, reducing the recent trend of US-led initiatives.

Power companies must aim to really make a difference, learning how to market productsand run active trading businesses. Risk management will be extremely important, just as in the finance sector. Perhaps we may see cross-border trading of emissions quotas.

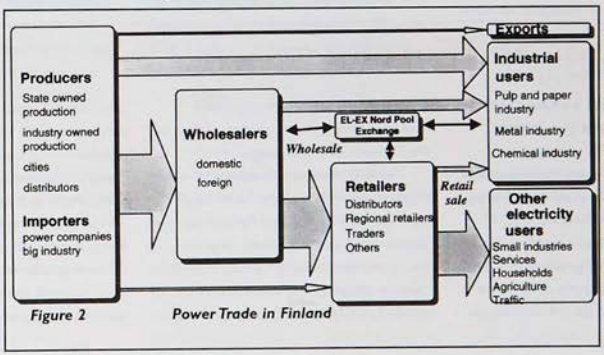


Figure 2 Power Trade in Finland

The Pool in England and Wales	The Nordic Power Exchange Nord Pool	EL-EX Electricity Exchange (Finland)
• all bulk power traded physically through the Pool • Pool price set by production offers and an uplift for LOLP • demand side offering very limited	• daily spot trade only minor part of physical power trade • transmission bottle-necks handled by areal price division • financial futures trade by electronic continuous trading	• real-time continuous electronic trading • physical delivery of both spot trade and forwards

Table 2 Differences between power market places

Cross-border trading is already a reality in electricity, certainly in the Nordic Region. Electricite de France and others in Europe have a degree of cross-border sales already. The gas market will follow soon, with convergence of gas prices and electricity prices in Europe, the UK Interconnector having an increasingly big influence.

So what are the challenges ahead?

Integrity of the system – balancing the pan-European grid

How do we maintain stability? How to stop such factors as industrial action in one country affecting their energy exports. How to avoid system technical failures? (Remember the early days of the Channel Tunnel trains, which crosses several different rail systems?!)

Security of supply – leave to market forces?

Countries historically have wished to be totally self-reliant on indigenous fuel sources; yet here we are talking about connecting to a system whereby German coal, Polish coal, Nordic hydro – a real mixture of physical and political forces, all have technical and commercial influence.

Third party access – how to determine fair prices

How do we achieve this fairly? The Common Agricultural Policy has yet not managed to achieve harmony in Europe on farm products. We must do a lot better in energy products.

Stranded assets – who bears the costs?

A problem in some countries; how do we deal with that fairly?

Future fuel balance – gas, coal, nuclear?

If we move the argument to a European level, has Europe got the right blend of nuclear, coal, gas, oil? And what determines what is 'right' or not, in the European context?

Conclusion

The European market is certainly opening. The fact that I am here in Wales, representing a Finnish company, is proof that there are opportunities. There is opportunity to import and export, energy and also expertise. Britain, Amsterdam and the Nordic markets have currently some of the best experience in the World. British and Nordic companies must utilise that experience in developing their markets into Europe.

The UK financial institutions are very embedded into the UK electricity industry now. They have lent £10 billion to it and now understand merchant risk. Ten years ago, lenders required long-term contracts, upstream and downstream, so independent power producers got locked into long-term fuel obligations. It was nothing to do with locking out coal, it had to be done to secure finance. However, banks are no longer insisting on this and are more willing to consider loans to utilities with flexibility on fuel and power. That has to be good news.

The UK and Nordic regions are ahead of the pack. I believe that liberalisation has brought a lot of benefits. Yes, there have been casualties, but a lot of benefits too.

I do hope that Dr Idris Jones would regard it as a fitting testament to his lifetime's work, that one outstanding feature of today is: " you can extract a lot more power from a pound of fuel today, than ever before" and that has got to be a good thing.

Contact John Deane at IVO Energy Ltd in London, tel: 0171 616 1500, fax: 0171 616 1515.

IVO, Neste and Fortum

IVO until last year was a single entity, being the largest power generator in Finland. It owns power and heat production facilities that use a wide range of fuels, nuclear, coal, oil, gas and even peat (an indigenous fuel in Finland).

Neste last year was a separate oil and gas company, comprising refineries, a chain of petrol stations, oil trade, gas pipeline operations etc. Last year IVO and Neste merged into a single company called Fortum which is now a company listed on the Helsinki Stock Exchange.

The IVO division (now Fortum Power & Heat) has about 10,000 staff world-wide, with most in Finland and Sweden. Here in the UK we have only about 200 staff although we do actually operate about 2 GW of electricity plant, of which we own about one third. We don't always invest alone, sometimes we joint venture. In Humberside, for example, we are with an investment consortium from England, Japan, France, Switzerland and Sweden; in Scotland we are investing with Mitsubishi. Neste are active in London, trading mainly in offshore products, eg oil and LPG, but I hope you will see us emerging more here on the gas scene too.

Presidential Review 1998

As **John Chesshire** passed the baton to me as incoming President, I confess that I did not fully appreciate the realities behind the famous Chinese curse he quoted in his Presidential Review in 1997, "May you live in interesting times". "And we most certainly have!" I would reply. We have confronted a number of challenges, some anticipated and others unexpected. This has certainly been a most "interesting" Presidential Year in which I think real progress has been made.

The year began on a positive note with Diane Davy arriving as Secretary & Chief Executive of the Institute to undertake a tough agenda of priorities. In October Diane left to pursue other interests. Louise Evans, Deputy Secretary, took over as Acting Secretary to progress our priority work to the end of the year. To her great credit, and that of the other staff, a threatened loss of momentum has been averted. Preparing our submission to the Engineering Council to become a Licensed and Certificated body (a reaccreditation of our current nominated status with some additional criteria to meet) has emerged as the top priority. Senior members and staff began a process of regular liaison with the Engineering Council to prepare documentation for an audit in mid 1999.

A further priority in 1998 was the development and acceptance of a strategic plan, based on market research, which would focus our direction for the next three to five years and underpin operational plans to take the Institute forward. By mid 1999 I expect that the operational plans and supporting financial programme will be accepted by Council and that its implementation by members and staff will begin.

As the Chairman of Magnox Electric, I have previously been involved in the changes taking place in the energy field as most sectors have moved from domination by supply orientated state enterprises to privatisation and competitive customer orientated market place. As President, one of my aims has been to assist the Institute to respond to these vast changes in its immediate operating environment, and we have made some significant progress. The membership applicant profile is showing a clear diversification of new applicants to the Institute, especially from those employed on the demand side. Our bedrock will continue to be energy engineers but our value as a professional body will be enhanced if membership reflects developments in the sector it represents and supports; this is now increasingly the case for the Institute. In response, the Institute's publications, events, projects and other services are becoming more focused to address members' current interests.

We have increased our dialogue with Government, communicating with both the Department of Trade and Industry and the Department of Environment, Transport and the Regions who both have responsibilities in the energy world. Through individual meetings with senior staff and the co-ordination of members' responses to nation-wide consultations we have been able to represent the profession's views on several key topics including the Business Use of Energy and the Climate Change debate. We have worked hard to prepare for our major conference on energy policy held in Spring 1999, co-sponsored by the CBI and chaired by Anna Walker, Director General for Energy at the Department of Trade and Industry.

A major internal reorganisation of the committee structure was approved by Council following consultation with members of the committees, in order to focus particular specialised activities in smaller flexible working groups, and enable the roles of all groups to be more clearly defined in preparation for the implementation of the business plan in 1999. This has been successful and I believe members are pleased with the more flexible ways of working which still allow high professional standards to be maintained, while reducing the burden of meetings on individuals who are keen to contribute to the Institute's activities. We are working to strengthen links between central activities and those of dedicated members in the branches. I have been fortunate to attend events in most of the branches and I encourage all members to participate locally, meet your peers and use these opportunities to exchange views, share solutions and continue to broaden your professional skills.

I would like to offer warm thanks to all the members I have worked with during my Presidential year. We are well endowed with the skills and expertise required to operate a modern forward-looking organisation as we now are. My special thanks are extended to members of the Executive Committee and Honorary Officers for their invaluable contributions as we addressed the key issues of the Year and to Louise Evans (confirmed in post as Secretary and Chief Executive since the year end) and her staff for their hard work and good humoured response to the demands put on them. Finally, I sincerely hope that you will take advantage of your membership. We value our members; the Institute is at your service and now would be a timely opportunity to make best use of it as it prepares to exploit its own motto and "find strength in moving forward".

Mark Baker

Mark Baker

Statement of the Trustees

The summarised financial statements for the year ended 31 December 1998 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, W1N 2AU.

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 these accounts and the trustees' annual report should be consulted.

The annual accounts were approved on 29th April 1999, will in due course be submitted to the Charity Commission and have been audited by Messrs Lawford Kernon & Co.

Signed on behalf of the Trustees

John E Ingham Honorary Treasurer

Statement of Financial Activities

		year ended 31 December 1998					year ended 31 December 1997				
			Restricted					Restricted			
		Unrestricted Funds	Income Funds	Endowment Funds	Total Funds		Unrestricted Funds	Income Funds	Endowment Funds	Total Funds	
INCOME AND EXPENDITURE	**Notes**	£	£	£	£	£	£	£	£	£	£
Incoming resources											
Subscriptions		298,816				255,309					
Less: receivable in advance		(58,944)				(12,600)					
			239,872			239,872		242,709			242,709
Project and training event management	1		116,533			116,533		242,329			242,329
Conferences	2		27,929			27,929		5,730			5,730
Journal and other publications		77,956				86,583					
Less: receivable in advance		(25,869)				(30,839)					
			52,087			52,087		55,744			55,744
Branch income - local activities	3		31,426			31,426		19,958			19,958
Investment income	4		16,320		1,837	18,157		18,832		2,038	20,870
Rental income			12,800			12,800		11,667			11,667
Royalties - FACTS			5,265			5,265		4,996			4,996
Educational income			2,614			2,614		2,915			2,915
Room Hire			4,357			4,357		1,065			1,065
Donations	13			1,000	125	1,125			500	125	625
Annual Lunch						-		4,910			4,910
Melchett Lecture						-		4,000			4,000
Miscellaneous income			2,859			2,859		2,132			2,132
TOTAL INCOMING RESOURCES			512,063	1,000	1,962	515,025		616,987	500	2,163	619,650
Direct Charitable Expenditure											
Project and training event management	1		97,058			97,058		131,654	5,865		137,519
Conferences	2		13,424			13,424		14,752			14,752
Journal and other publications			83,389			83,389		94,248			94,248
Branch expenditure	3		37,113			37,113		32,512			32,512
Educational			20,829			20,829		1,955			1,955
Annual lunch			-			-		7,436			7,436
Melchett Lecture			3,712			3,712		2,309			2,309
Awards	13		1,652	1,000	5,855	8,507		56	553	6,264	6,873
			257,177	1,000	5,855	264,032		284,922	6,418	6,264	297,604
Other Expenditure											
Publicity			8,116			8,116		8,179			8,179
Administration											
Salaries and related staff costs	5		160,961			160,961		258,723			258,723
General communications	6		52,768			52,768		58,889			58,889
Accommodation and related costs	7		24,968			24,968		24,117			24,117
Professional	8		15,788			15,788		11,604			11,604
Other	9		29,730			29,730		17,330			17,330
			292,332			292,332		378,842			378,842
TOTAL RESOURCES USED			549,509	1,000	5,855	556,364		663,764	6,418	6,264	667,446
NET INCOMING/(OUTGOING) RESOURCES			(37,446)	-	(3,893)	(41,339)		(46,777)	(5,918)	(4,101)	(56,796)
OTHER RECOGNISED GAINS AND LOSSES	14										
Investments											
Realised gain			10,534			10,534		7,817			7,817
Unrealised gain			45,647			45,647		59,308			59,308
Release of Development Fund								(11,500)			(11,500)
			56,181	-	-	56,181		55,625	-	-	55,625
NET MOVEMENT IN FUNDS			18,735	-	(3,893)	14,842		8,847	(5,918)	(4,101)	1,172
Total funds at 1 January 1998	15		473,334	3,990	37,496	514,820		464,487	9,908	41,597	515,992
TOTAL FUNDS AT 31 DECEMBER 1998	15		492,069	3,990	33,603	529,662		473,334	3,990	37,496	514,820

No operations were acquired, commenced or discontinued during the above two financial years

Statement by the Auditors

In our opinion the summarised financial statements of The Institute of Energy for the year ended 31 December 1998 on pages 12 to 13 are consistent with the full annaul accounts on which we gave an unqualified opinion on 29 April 1999.
Lawford Kernon & Co
Chartered Accountants and Registered Auditor

Accounting Policies

1. 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 2.

2. Depreciation of Tangible Fixed Assets

Tangible fixed assets are stated at cost less depreciation. The 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 straight-line basis over their estimated useful lives at the following rates:

Fixtures and fittings 10%
Electrical Equipment 25%

3. Quoted Investments

Quoted investments are included at market value, calculated on a portfolio basis. Gains and losses on realisation are recognised in the year they arise. Proceeds from sales of investments are reinvested by Singer and Freidlander Investment Management Limited on behalf of the Benevolent Fund and are included in the portfolio of investments.

4. Branches

The accounts incorporate branch transactions including those arising in respect of funds generated by the branches themselves.

5. Development Fund

This is funded by transfers from the Accumulated Fund, either directly or by allocation of a proportion of Project Income, and expenditure of a developmental nature is, where so authorised by Council, supported from this fund.

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

An amount equal to the eventual liability for dilapidations as estimated at each year end, less amounts specifically provided and available free reserves, 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 meet this liability when it falls due. Council is currently taking professional advice on this matter and presently estimates that the maximum yet to be retained from future operations at today's prices will not exceed £209,000. Accordingly £19,000 has been allocated in 1998 to the Dilapidations Fund (1997: £8,125).

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 £48,798 of which £8,870 was collected in advance at 31 December. Fees paid over to the Council were £46,134, after adjusting for £1,936 of fees in respect of 1997. 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.

9. Allocation of Salaries and Related Costs

For the year ended 31 December 1998 these costs have been allocated between administration and the major direct activities as shown in note 5 to the accounts on the basis of estimates made by the management team. In view of the exceptional circumstances which occurred in the preceding year, due to the illness of a former Secretary, the Institute considers that a similar exercise in respect of the 1997 figures would not provide meaningful comparatives and the allocation for 1997 has thus not been changed from that shown in the 1997 accounts.

The Institute of Energy Balance Sheet at 31 December 1998

	notes	1998 £	1998 £	1997 £	1997 £
Fixed Assets					
Tangible fixed assets	10	59,781		62,178	
Quoted investments	11	475,164		453,384	
			534,945		515,562
Current Assets					
Stocks of Ties, Shields & Medals		1,995		2,940	
Debtors	12	65,387		49,987	
Bank balances and cash		75,542		77,923	
		142,924		130,850	
Liabilities falling due within one year					
Income received in advance		105,683		65,075	
Creditors and accrued expenditure		37,871		62,249	
Institute of Energy Benevolent Fund		4,653		4,269	
		148,207		131,593	
Net current assets (liabilities)			(5,283)		(743)
Total assets less current liabilities			529,662		514,819
Representing:					
Capital funds - Endowments	13		33,603		37,495
Income funds - Restricted	13		3,990		3,990
- Unrestricted					
- Designated funds	14	52,640		35,292	
- Revaluation reserve	14	137,774		119,836	
- Accumulated fund	14	301,665		318,206	
			492,069		473,334
Total funds	15		529,662		514,819

Approved By:

President Mark Boden

Honorary Treasurer [signature] Dated 29/4/1999

The Institute of Energy Benevolent Fund

ACCOUNTING POLICIES

1. Accounting convention

The accounts are prepared under the historical cost convention, modified by the inclusion 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 2.

2. Investments

Quoted investments are included at market value, calculated on a portfolio basis. Gains and losses on realisation are recognised in the year they arise. Proceeds from sales of investments are reinvested by Singer and Friedlander Investment Management Limited on behalf of the Benevolent Fund and are included in the portfolio of investments.

Statement of Financial Activities

	note	Year ended 31st December 1998 Unrestricted Funds	1997 Unrestricted Funds
INCOME AND EXPENDITURE		£	£
Incoming resources			
Donations and bequests		1,162	815
Ties and shields	1	-	167
Investment income		2,177	1,629
TOTAL INCOMING RESOURCES		3,339	2,612
Direct Charitable Expenditure			
Assistance to members		890	2,105
Other Expenditure - Administration			
Investment managers' fees		511	546
TOTAL RESOURCES USED		1,401	2,651
NET INCOMING/(OUTGOING) RESOURCES		1,938	(39)
OTHER RECOGNISED GAINS AND LOSSES			
Investments			
Realised gain		502	(1,166)
Unrealised gain		2,379	11,017
		2,881	9,851
NET MOVEMENT IN FUNDS		4,819	9,812
Total funds at 1 January 1998		85,377	75,565
TOTAL FUNDS AT 31 DECEMBER 1998		90,196	85,377

No operations were acquired commenced or discontinued during the above two financial years

The Institute of Energy Benevolent Fund Balance Sheet at 31 December 1998

	note	1998 £	£	1997 £	£
Fixed Assets					
National Savings deposit bonds		9,464		8,890	
Quoted investments	2	72,207		66,446	
			81,670		75,336
Current Assets					
Debtor - The Institute of Energy		4,653		4,269	
Cash on deposit		2,605		4,099	
Cash in bank current account		1,267		1,673	
Net current assets			8,525		10,041
Total net assets			90,196		85,377
Representing:					
Unrestricted funds					
- Accumulated fund			73,127		66,992
- Revaluation reserve			17,069		18,385
			90,196		85,377

Approved on behalf of the Trustees

Honorary Treasurer Dated 29 April 1999

Statement by the Trustees

The summarised financial statements for the year ended 31 December 1998 set out on page 14 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, W1N 2AU.

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 these accounts and the trustees' annual report should be consulted.

The annual accounts were approved on 29 April 1999, will in due course be submitted to the Charity Commission and have been audited by Messrs Lawford Kernon & Co.

Signed on behalf of the Trustees

JE Ingham Honorary Treasurer

Statement by the Auditors

In our opinion the summarised financial statements of The Institute of Energy Benevolent Fund for the year ended 31 December 1998 on page 14 are consistent with the full annual accounts on which we gave an unqualified opinion on 29 April 1999.

Lawford Kernon & Co
Chartered Accountants and Registered Auditor

Cutting energy use industry

Two examples of UK manufacturing companies reducing their energy spend and their liability for the climate change levy due to be collected from business energy users from April 2001

ICI Paints adopts strategy for cutting costs

Energy savings worth over £100,000 per year have been attained by ICI Paints in Slough. Equivalent to an overall reduction in energy consumption of 16%, these savings have been achieved during a two-year period of increased production levels.

The adoption of a systematic energy management strategy has produced significant bottom line benefits for ICI Paints, whilst reducing carbon dioxide emissions. These are detailed in anew case study: *Effective energy management at ICI Paints, Slough* from the DETR's Energy Efficiency Best Practice programme. The case study describes how the company has implemented an effective five-step energy management strategy:

- *Get commitment* from senior management. ICI Paints committed to improving energy efficiency at their site by a 50% higher target than that set by the ICI Group for its sites world-wide.
- *Understand* where energy is being used and the barriers to improving efficiency. An energy team was set up to monitor energy use, recommend energy efficiency measures and increase staff awareness.
- *Plan and organise* targets and action plans for improvements. A list of energy efficiency investment opportunities was drawn up together with promotional material to motivate staff.
- *Implement* staff awareness training and investment in energy efficiency measures.
- *Control and monitor* progress and seek continuous improvement. Monthly graphs were displayed on notice boards and individual operating units were alerted when they needed to improve energy performance in order to meet targets.

Commenting on the company's success, Kevin Docherty, site service engineer for ICI Paints, said: "Efficient use of energy not only supports our environmental policy but also has a direct impact on the bottom line. Every penny saved through energy-reducing initiatives is transformed directly into profit. The amount of energy used to produce each litre of paint has fallen by nearly 35% - a significant achievement. Our five-step approach has not only contributed to our Slough site achieving both the company targets for energy reductions but also the Chemical Industries Association targets for 2005."

Good Practice Case Study 375: Effective energy management at ICI Paints, Slough is available free of charge (UK only) from the BRECSU Enquiries Bureau, tel: 01923 664258, fax: 01923 664787, e-mail: brecsuenq@bre.co.uk

Sock company's feat of energy efficiency

East Midlands Electricity's business energy advice was behind a new steam raising and heat recovery system installed at Roy Lowe & Sons Ltd, a Mansfield manufacturer of socks. The founders of the company approached East Midlands Electricity in 1996 with a list of aims focused on energy efficiency . Tim and Martin Lowe wanted their new venture to be cost-effective and energy efficient in order to compete with overseas producers.

One of the key areas looked at was the heat energy balance between the manufacturing processes and the factory's environmental requirements. When dealing with yarns, for example, it is important that temperature and humidity in the production area is maintained and controlled as precisely as possible. Air conditioning is also important because it provides and environment in which the machines operate to their maximum reliability.

Some machines also emit a significant amount of heat, as one of the finishing processes, known as boarding, requires a steam supply to impart shape to the socks. In traditional factories, this heat is normally wasted although, potentially, it can be recycled to reduce energy costs.

Roy Lowe & Sons use electric steam raising plant which is also linked to the air conditioning system. Specifically, a thermal steam lance in the air conditioning ducting is operated by a hygrometric temperature controller to introduce steam when required and maintain a temperature of 21°C and 62% relative humidity. Any air cooling requirement is provided by a 208 kW chiller unit.

The heat emitting machines were fitted with ducted canopies so that it is now possible to recover the heat by passing it through a heat exchanger. Recovered heat is used to supply the knitting area, when required. If the temperature in the main production area falls below 16°C, dampers in the canopies operate automatically to re-route some of the warm air to supplement the air conditioning system.

In addition, waste steam is passed through a 'flash tank', where it is condensed to water, which is then passed through a heat exchanger within the cold water storage feed tank for the boiler. Recycling heat from steam raises the water temperature from its mains supply temperature of 10°C to around 95°C providing energy savings in the order of £4000 per annum.

In addition, some of the hot water from the flash tank is now piped via a second heat exchanger to a heater battery within the warm air ducting for the packing area. Combined with the warm air provided by the heat diverted from the machine canopies, this has proved so successful that two gas burners, which were previously used in the packing area, have been made redundant. The total heat recovered in the new system is estimated to save a further £2000 per annum in energy costs.

Contact Networks Commercial at East Midlands Electricity at: Woolsthorpe Close, Bilborough, Nottingham NG8 3JP

Energy efficiency and renewables in the US

'Clean energy' initiatives in the US are less well known in the UK than those carried out in mainland Europe. But there is plenty going on, as these examples – gathered by the US Department of Energy's Energy Efficiency and Renewable Energy Network - illustrate.

Solar Two power tower project

The Solar Two power tower, a solar power plant in Barstow, California, has reached the end of its scheduled operational run. For the past three years, the pilot plant has been demonstrating the feasibility of the solar power tower concept.

Power towers use a large field of mirrors to concentrate sunlight onto a fixed point at the top of a tower. A fluid is circulated through the tower to carry the sun's heat to a power plant. Solar Two successfully demonstrated the use of molten salt as the fluid in a power tower. The plant was built by a consortium of electric utilities, industries and energy agencies in partnership with the US Department of Energy (DOE). Data provided by the pilot plant will be used to help commercialise the technology.

The power tower research is coordinated by SunLab, a virtual laboratory that combines the expertise of Sandia National Laboratories and the National Renewable Energy Laboratory.

See the SunLab site on EREN at: www.eren.doe.gov/sunlab

Southern to lease electric vehicles

Southern Company, an Atlanta-based energy company is to lease 400 electric-powered cars and trucks to its employees over the next four years. The new programme will be the largest corporate electric vehicle lease scheme in the United States, and will build on Southern Company's experience with its corporate fleet of 190 electric vehicles. Employees can lease an electric Ford Ranger for $150 per month or a GM EV1 for $200 per month.

See Southern Company's press release at: newsinfo.southernco.com/home.asp?co=southernco

GM delivers hybrid bus to New York City

A 20-tonne, 40-foot hybrid electric bus is now proving itself as part of the New York City transit fleet, thanks to General Motors and the New York Power Authority. With funding of $440,000 from the Power Authority, General Motors refurbished a bus from the fleet to incorporate an electric drive train with a diesel-powered generator for auxiliary power. The company says the system provides a 40% improvement in fuel economy and a 70% reduction in emissions over conventional heavy-duty powertrains. It also announced that it would be launching a fleet of 10 hybrid pick-up trucks in New York and California next year.

See General Motor's press release at: www.gm.com/mo_pr/mo_pr_dt.htm?id=723

Largest private US wind buyer

Fort Collins Utilities, a municipal utility in Colorado, recently announced that New Belgium Brewing Company, Inc is to receive all its electricity from wind power. With its annual usage of about 1.8 million kWh of electricity, the brewery will become not only the largest private purchaser of wind power in the country but also the first wind-powered brewery in the US. To supply the wind power, a new 660 kW wind turbine will be built at the Platte River Power Authority wind site near Medicine Bow, Wyoming. It is expected to become operational in October.

See the press releases at: www.light-power.org/windpress.htm

Massachusetts' solar energy project

Massachusetts Electric Company, the largest electricity supply company in the state, has teamed up with the city of Medford, Massachusetts, to encourage businesses and residents to install solar energy panels on their roofs. Photovoltaic systems installed through the Medford Solar Project will be partially funded by DOE's Utility Photovoltaic Group. The project is part of President Clinton's Million Solar Roofs Initiative, which aims to install one million solar energy systems on US buildings by the year 2010. The solar roofs initiative was made in response to the Kyoto Protocol on climate change which commits developed countries to reduce their overall emissions of greenhouse gases by 5.2% by 2008–2012. Photovoltaic systems have already been installed at Medford City Hall and Medford High School.

See the DOE press release at: home.doe.gov/news/releases99/febpr/pr99009.htm

Geothermal heat pumps for US Navy

DOE has selected five energy service companies to provide geothermal heat pump systems to federal facilities throughout the US. The contracts, coordinated by DOE's Federal Energy Management Program, could provide as much as $500 million in work. The installations are expected to save 20% to 40% of the current energy consumption at each site. Two US Navy buildings near Virginia Beach, Virginia, will be the first to be retrofitted with geothermal heat pumps, which save energy by relying on the relatively stable temperatures found underground.

See the DOE press release at: home.doe.gov/news/releases99/febpr/pr99018.ht

All these and many more clean energy stories are published on the web in the weekly EREN Network News, www.eren.doe.gov

New power stations around the world

Netherlands

Europe's first turnkey power plant from GE Power Systems, located at Delfzijl on the North Sea in the Netherlands, has entered commercial service. Akzo-Delesto 2, the 360 MW plant extension of the existing Delesto facility is the largest cogeneration facility in the Netherlands. Designed to achieve a net thermal efficiency of more than 55%, it is also the first cogeneration project to use the GE MS9001FA gas turbine.

The station will provide process steam and electrical power to the Akzo Nobel chemical complex and surrounding facilities, with the balance of electrical power exported to the Dutch grid.

France

ALSTOM has received an order worth 64 million euros from the Compagnie Parisienne de Chauffage Urbain for a turnkey cogeneration plant to be installed at the Saint Ouen power station north east of Paris. To be based on a Frame 9E gas turbine, the plant will provide electricity and additional (to steam production from four existing coal-fired boilers) steam for district heating. The architecture of the power station has also been especially studied in order to harmonise its appearance with the existing site.

China

Mott MacDonald has been appointed owner's engineer for the development of a 200 MW coal fired power station in Inner Mongolia by the Baotou Tianjiao Power Co Ltd. The new £80 million facility will provide additional power capacity to increase the output of Baotou steelworks to 6 million tonnes per year by 2000.

The power plant will comprise two 103 MW steam turbines fuelled by a mixture of locally mined coals together with supplementary firing using blast furnace gas from the steelworks.

Japan

An ABB joint venture with Japanese industrial conglomerate Kawasaki Heavy Industries and Japan Gas Turbine KK, has won an order to build a 400 MW gas-fired combined-cycle power plant in Japan. The Kawasaki Steel Corporation will own and operate the $100 million plant at Chiba, some 50 km east of Tokyo.

ABB will deliver a GT26 gas turbine, a steam turbine, a generator and a heat recovery boiler, as well as providing the control system for the power plant, which will supply energy to Tokyo Electric Power Corporation.

Portugal

Sweden's ABB Stal, together with ABB Portugal, has received a 38 million euros order to supply a 68 MW combined cycle CHP plant to Portugal. The plant will be built, on a turnkey basis, at a paper mill located in Lavos, Figueira da Foz, 200 km north of Lisbon.

The plant will be the largest CHP plan ever built in Portugal. It will also be the first to use gas turbines fuelled by natural gas, which has only just become available in Portugal.

South Korea

PowerGen has acquired a 49.9% stake in South Korean independent power company, LG Energy Co Limited, which is developing a new, 528 MW gas fired CCGT plant 120 km from Seoul for a total cost of £209 million. The project site has space for up to 4000 MW of generating capacity.

Australia

National Power has won the right to construct, own and operate a 500 MW combined cycle gas turbine plant in South Australia. The CCGT power station is to be constructed at Pelican Point, near Adelaide, at a total cost of around £170 million.

Cote d'Ivoire

Cinergy, jointly owned by ASBB Energy Ventures and Electricite de France International, is building a 288 MW gas-fired power plant near the west African capital, Abidjan. Demand for electricity is forecast to grow at around 10% per annum for the next five years in Cote d'Ivoire.

Saint Ouen cogeneration plant near Paris

Promoting energy technologies across Europe

One way the European Union works to influence energy activities in its member states is via a network of locally-based organisations – OPETs. These organisations act locally to help businesses access better energy technology, and produce a wealth of published information.

OPET stands for Organisation for the Promotion of Energy Technologies. There are 39 OPETs in the EU and associated states of Norway, Iceland and Israel, plus 14 FEMOPETs (Fellow Members of the OPET Network) in the applicant countries of Central and Eastern Europe and Cyprus. The OPETs and FEMOPETs may be public or private sector organisations, but they all have a public mandate to work in the energy field, promoting new technologies in the renewable energy, energy efficiency or fossil fuel sectors.

The OPET initiative was first launched under DGXVII's THERMIE programme, which was itself part of the 3rd Framework Programme for Research and Technological Development (1990–1994). At that time, the role of the OPETs was to help the European Commission disseminate information and promote the uptake of new energy technologies through publications, events, training programmes and other market-orientated initiatives.

In November 1996, the OPET Network was re-launched under the 4th Framework Programme, but this time as a joint initiative between DGXIII (INNOVATION Programme) and DGXVII (JOULE-THERMIE Programme). While the role of the Network continues to be one of technology promotion and information dissemination, it now places much greater emphasis on addressing specific local energy needs. The use of performance indicators as a means of measuring results has also improved the targeting of resources and placed greater emphasis on monitoring.

OPET activities

OPETs and FEMOPETs develop their own annual work programmes in collaboration with local stakeholders and the European Commission. In order to gain the support of local co-financiers (mostly public bodies or trade associations), they must tailor their activities to match national/regional energy policies and/or industry requirements. Their activities must also relate to EU energy policy in terms of improved efficiency and savings, increased diversity of supply, or wider use of renewable energy sources. An important component of OPET activities continues to be the promotion of results from previous EU-supported energy R&D and demonstration programmes, and the encouragement of the participation of local companies and research organisations in EU programmes.

The range of activities carried out by OPETs is extremely broad, but typically includes:

- networking and assistance – linking with local networks, one-to-one meetings with small and medium-sized enterprises and industry, open days and technology transfer days, site visits, training;
- evaluating technology and markets – studies, preparation of technical reports;
- events – seminars, workshops, conferences, exhibitions;
- publications – newsletters, reports, brochures, CD-ROMs.

OPETs may be generalists or specialists. Some work only on the promotion of renewable energy sources (EC BREC-LEI in Poland and Lithuania, for example) or just on new hydrocarbon technologies (CMPT in the UK). However, the majority of OPETs and FEMOPETs work across the different technology fields of renewable energy sources, rational use of energy and fossil fuels.

OPETs in the UK

There are five OPETs in the UK – ETSU, BRECSU, Wales OPET Cymru, NIFES and CMPT. Along with Spain and Italy, the UK has the highest concentration of OPETs in the EU.

ETSU and BRECSU focus predominantly on the English market. ETSU covers energy efficiency (particularly in the chemicals, plastics and brewing industries), renewable energy (particularly biomass) and solid fuels (clean coal), while BRECSU is involved almost exclusively in energy efficiency in buildings. Sometimes they work more widely across the UK. For example ETSU is helping to organise an event on biomass gasification in Northern Ireland in November, while BRECSU is involved in an exhibition on social housing for Scotland in October.

Wales OPET Cymru, hosted by Dulas Ltd, promotes renewable energy and energy efficiency in Wales. Activities have focused on working with community groups and local authorities to draw up and implement plans for renewable energy schemes. For example, one success has been to support and advise on the Dyfi-Eco Valley Parc which aims to produce power for the town of Machynlleth, entirely from renewable sources.

NIFES Consulting Ltd focuses on the energy market in Scotland and Northern Ireland. Not surprisingly, one of its key projects has been to promote energy savings in the whisky industry. Also in Scotland, CMPT specialises in the hydrocarbons sector. Its OPET strategy is to identify areas of greatest technological need in the international oil and gas industry and to help set up joint industry projects to address those needs. Funding has already been secured for a joint project on new drilling techniques.

Network achievements

Since adopting performance indicators, the OPET Network has been able to measure its impact on the local market in terms of real commitments. After its first two years of operation under the 4th Framework Programme, the Network has:

- organised over 200 events,
- handled over 5,000 specific queries or requests for further information,
- advised on the preparation of around 300 proposals for EU funding,
- identified almost 2,000 potential energy savings projects,
- carried out over 250 detailed energy audits or feasibility studies.

DGXVII has recently produced a brochure of 13 OPET Network success stories.

Future developments

The current OPET Network completes its work programmes towards the end of this year, but the Network will continue working within the energy, environment and sustainable development component of the new 5th Framework Programme (1998–2002). The first call for proposals under this Programme was launched in March, and included a call for organisations wishing to become OPETs; the deadline for submission is 15 June and the new OPETs are expected to start work by 1 January 2000

Within the 5th Framework Programme, the OPET Network is expecting to build on the changes that have taken place over the last three years, with the use of performance indicators and an emphasis on results-oriented activities continuing to feature strongly. More effective transnational collaboration on specific themes is also likely to be encouraged, reinforcing initiatives such as the technical discussion forums which have been developed over the last year. There are also plans to increase the impact of the OPET Network. One of these is the use of 'market associates' in countries outside the Network – these will identify local needs and also help to promote relevant European technologies into the markets that they cover.

Visit the OPET web site for more information:
www.cordis.lu/opet/home.html

More information on energy under the 5th Framework Programme is available at:
www.cordis.lu/fp5/src/t-4.htm

New hydro-electric plants in Chile and Thailand

Part of the Gilkes turbine assembly under test prior to being shipped out to Thailand

While just about all the sites with potential for large-scale hydro-electric schemes in the UK have already been developed, large new hydro schemes continue to be built overseas.

For example, ALSTOM has been awarded a 52 million euro contract by Chilean utility ENDESA for a 570 MW turnkey hydro-electric power plant in Chile. The dam will be built on the river Bio-Bio at Ralco, situated 600 km south of Santiago.

ALSTOM will supply all the equipment, including two Francis turbine generator sets, for the project, as well as designing and building the plant. Equipment will come from ALSTOM's factories in France, Canada and Brazil, and the contract will be supported by financing from these three countries. Delivery of equipment is due to begin a year from now and the project is scheduled for completion in 46 months.

The order follows the successful completion of the Pehuenche hydro plant by ALSTOM for ENDESA Chile.

Meanwhile, Kendal-based Gilkes Ltd has supplied three Turgo Impulse turbines for two projects, Nam Man and Nam San, in Northern Thailand. The projects were designed and managed by Balfour Beatty Projects & Engineering Ltd for the Provincial Electricity Authority of Thailand. Gilkes were turbine subcontractors to Peebles Electric Machines, Edinburgh, the turbine generator contractor for the project.

The Nam San Station has two 3 MW turbine generating sets operating on a net head of 85 m (at a 375 rpm) and the Nam Man Station has one 5 MW set operating on a net head of 119 m (at 429 rpm).

Gilkes turbines were selected because of their proven capability in handling floodwater containing abrasive particles without causing wear and detriment to performance, says the company.

The generating sets will normally operate in parallel with a large grid network, but the turbines are fitted with speed governors allowing operation in island mode to supply the local area when required. The schemes are 'run of river', with intake water level controlled by a monitoring system at the penstock intake to ensure that the turbine generator sets produce maximum power from available river water.

A vertical hydrogenerator similar to those being supplied to Ralco in Chile.

Designing a better steam trap

Every responsible factory manager recognises the value of saving energy. And yet, claims Tim Gardner, British industry still contrives to waste an astonishing £3 billion a year purely through steam loss. What can done about it? Gardner, who owns Gardner Energy Management (GEM), of Bristol, believes his invention - a sophisticated new steam trap - can go a long way to providing a solution.

The GEM creation is very different from traditional mechanical devices. Old-style traps come in all shapes and sizes, some with a bucket arrangement going up and down in a casing and others with a ball float arrangement in an enclosure. Their reliability varies considerably.

Gardner's ingenious and far more compact venturi orifice trap is made of stainless steel, with no moving parts and requiring no maintenance apart from occasional cleaning.

In simple terms, explains Gardner, condensate that naturally forms in pipes needs to be drained out. And when old-style traps are not well maintained - a common problem - steam escapes and energy is lost.

"The GEM trap's specially configured venturi orifice uses the slow-moving condensate to hold back the steam. That is why it is possible to dispense with any mechanical parts. And, because nothing moves, you have nothing to go wrong. It is simplicity itself - a highly efficient way of overcoming the problem of costly energy just vanishing into thin air. Instead, steam can be used in an efficient and controllable way to deliver heat at high temperatures around a factory."

BAA Glasgow was one of Gardner's first major customers in 1996, when 33 traps were installed in a plant room. "Previously, with mechanical float traps, we were experiencing regular failure - a major maintenance headache," said senior engineer Robert Currie. "Initially, we inspected our strainers and GEM traps every month. After having no failures, the period was extended to every three months and now, due to GEM reliability, we only inspect annually during our summer shutdown. In future, we intend progressively to change over the whole system to GEM traps."

At Rosyth Royal Dockyard, independent tests indicated spectacular average energy savings of up to 55% in one GEM-fitted shop. Other high profile customers include the Plymouth factory of Wrigley's, the chewing gum manufacturer; sweet manufacturer Trebor Bassett; Glaxo Wellcome; SmithKline Beecham, Devonport Dockyard; ICI; Bass and Courage.

At the historic Wadworth Brewery, Devizes, Wiltshire, 30 traps were introduced with great success. GEM guaranteed Wadworth an 11% improvement on previous performance with mechanical traps. "After four months, that level has been comfortably achieved, although admittedly results vary quite a lot," said the brewery's chief engineer Mike Nicholls. "I think we will be better able to assess the real impact after a full year. But the situation looks extremely promising. And, of course, we are not just conserving energy. It means savings on maintenance kits for the old conventional traps, plus all the labour which that involved."

Accolades for Tim Gardner's invention continue to pour in - he was a prizewinner at the Engineering Council's 1998 Environmental Award for Engineers for the achievement of the GEM Trap in cutting fuel wastage.

Before setting up Gardner Energy Management about three years ago, Tim Gardner designed industrial steam systems - work that repeatedly highlighted the major problem of energy wastage.

The idea for the GEM trap was sparked by a friend who told him of a steam trap used in US nuclear submarines. That simple design - effectively, a metal plate with a hole - couldn't work under a varying load. "So the key was to develop the optimum configuration to work throughout industry," Gardner explained. He was so convinced he could solve the problem that he suspended consultancy work and headed for the 'laboratory' - a woodshed in the back garden of his father's home in Devon.

He invested in a second-hand laundry boiler weighing almost two tons and set up a test rig at a cost of £8,000. It was connected by a series of pipes to a heat exchanger in the family's outdoor swimming pool. During the experiments, plumes of escaping steam and loud whistles occasionally caused local alarm - and the pool acquired a summer warmth in mid-winter.

The standard C series GEM trap (left) and the new F series

But the hard work paid off. Even before the prototype was complete, British Airports Authority at Glasgow provided his very first order.

Since then, sales have continued to expand. The challenge now is to spread the energy message to new areas of British industry. "One of the problems is that many companies don't realise what they are losing," Gardner declared. "At the lower end of the range, it can be 15-20% to as much as 40 or 55% in a more exceptional case like Rosyth.

Contact Gardner Energy Management on tel: 0117 9077377, fax: 01179077378

June 99

Environmental technology '99
Conference and exhibition, 8-10 June, NEC Birmingham
Tickets from tel: 01203 426435

Systems integration in the utilities
Conference, 10 June, London, £999 + VAT
Details from Euroforum, tel: 0171 878 6886, fax: 0171 878 6885

Energy efficiency prepares for the millennium
Conference, 10 June, Derby
Details from the Council for Energy Efficiency Development, tel: 01428 654011, fax: 01428 651401, e-mail: theceed@compuserve.com

Planning for daylight and sunlight
Workshop, 15 June, Watford, £300
Details from BRE, tel: 01923 664644, e-mail: cpd@bre.co.uk

Fire hazard management in the oil, gas and chemical industries
Conference and exhibition, 15-17 June, Gloucestershire
Details from Publishing & Exhibition Services, tel: 01622 850312, fax: 01622 850009

Baltic energy
Conference, 16-17 June, Tallin, Estonia
Details from SMi, tel: 0171 252 2222, fax: 0171 252 2272

Safe LPG operations
Conference, 16-17 June, Solihull
Details from the LP Gas Association, fax: 01425 471131, e-mail: lpga@btinternet.com

European oil refining
Conference and exhibition, 17-18 June, Sicily, £975 + VAT
Details from WEFA, tel: 0171 631 0757, fax: 0171 631 0754

Customer segmentation in the utilities
Conference, 21 June, London, £745 + VAT
Details from IQPC, tel: 0171 430 7300, fax: 0171 430 7301, e-mail: cs@iqpc.co.uk

Applied combustion technology
Course, 21-24 June, Amsterdam,
Details from The Center for Professional Development, tel: +31 20 638 2806, fax: +31 20 620 2136

Portable fuel cells
Conference, 21-24 June, Lucerne, Switzerland
Details from the European Fuel Cell Forum, POB 99, CH-5452 Oberrohrdorf, Switzerland

Boilerhouse management
Course, 22-23 June, Nottingham
Details from NIFES Consulting Group, tel: 0115 984 4944, fax: 0115 984 4933

Moscow International Oil & Gas
Conference and exhibition, 22-23 June, Moscow
Details from MIOGE 99, tel: 0171 286 9720, fax: 0171 266 1606

Petroleum Science Engineering Technology
Conference and exhibition, 23-24 June, London
Details from Jane Kennedy at CMPT, tel: 0870 608 3440, fax: 0870 608 3480, e-mail: j.kennedy@cmpt.com

Utilities billing
Conference, 24-25 June, London, £995 + VAT
Details from IQPC, tel: 0171 430 7300, fax: 0171 430 7301, e-mail: cs@iqpc.co.uk

Worldwide deepwater technologies
Conference, 24-25 June, London
Details from IBC Global Conferences, fax: 0171 453 2058

UK ESI outlook
Workshop, 28-30 June, Brighton, £1395 + VAT
Details from Power Ink Ltd, tel: 01273 202920, fax: 01273 203720

Thermal storage – where next?
CIBSE workshop, 29 June, London, £130 + VAT
Details from Events at CIBSE, tel: 0181 675 5211, fax: 0181 675 6554, e-mail: msd@cibse.org

Emissions trading
Conference, 29-30 June, Hamburg, Germany, £795 + VAT
Details from DMG Business Conferences, tel: 01737 855188, fax: 01737 855283

July 99

Incineration and flue gas treatment
IChemE symposium, co-sponsored by the Institute of Energy, 4-6 July, Sheffield
Details from Jennie Black at IchemE, tel: 01788 578214, fax: 01788 577182, e-mail: jblack@icheme.org.uk

European gas 99 – liberalisation and the UG gas directive
Institute of Economic Affairs conference, 6-7 July, Amsterdam, £995
Details from Global Business Conferences, tel: 0171 608 3491, fax: 0171 490 2296

Iranian oil and gas
Conference, 12-15 July, London, £999 + VAT
Details from IBC Global Conferences, tel: 0171 453 5491, fax: 0171 636 6858, e-mail: cust.serv@ibcuk.co.uk

Green energy, local energy
Energy 21 renewable energy fair, 15-17 July, Stroud
Details from Jo Badham, tel: 01453 752277, fax: 01453 752244, e-mail: info@energy21.org.uk

Thai electricity and gas investment briefing
Conference, 19-21 July, Bangkok
Details from AiC Worldwide, tel: +65 322 2700, fax: +65 223 3554

DICK COLDWELL - a biographical note

Dick Coldwell, who takes over as President from Mark Baker this month, is active on a wide range of educational matters, having spent the majority of his working life in the power industry. He is currently Chairman of the Board of Governors of the University of North London, Deputy Chairman of the Committee of University Chairmen and was a member of one of the main working groups of the National Inquiry into Higher Education. He is a member of the CBI's Committee on Education and Training and is also a member of Committees of the Higher and Further Education Funding Councils and of the Council of the new Institute for Learning and Teaching. Dick started work as a University Lecturer and after moving to work for the Central Eletricity Generating Board became Director of the Electricity Consumers' Council. He was until last year Head of Government and Overseas Relations for the National Grid Group, where he worked in particular on a wide range of issues relating to the re-structuring and liberalization of the energy industries, both in the UK and overseas. He served as a member of the CBI's Energy Policy Committee until last year.

Presidential address

I take up my Presidency at a crucial time for the Institute. We have a new Chief Executive, are entering on a most important process of licensing and certification with the Engineering Council, and are about to agree our first comprehensive Business Plan which should give focus and direction for all our work over the next few years.

I am very conscious that the effort underlying all these processes has been underway for a considerable time and that I, and the Institute, owe a particular debt of gratitude to John Chesshire and Mark Baker for all the work they have put in to lead this effort over the last two years. My thanks also go to Louise Evans, our new Secretary and Chief Executive, who has been instrumental in much of this change.

It is also clear that there has been a considerable effort from a large number of others, both officers and members, in facilitating this change process and that this has been helped by an increasingly close working relationship between officers and staff. I see my Presidential year continuing the spirit of these efforts.

The Institute has considerable challenges, especially if it is to reverse the declining membership of recent years. There is some indication that we are slowing and halting this decline but we need to start to increase membership if we are to secure our future in an increasingly competitive environment. The Institute has the benefit of being the only learned Institution dedicated to the whole of the energy world. Others are invloved in sub-sectors but only the Institute of Energy spans the entirety of the energy scene. We need to capitalise on this as companies and other organisations involved in both the supply and demand sides of the equation move towards a world of energy services rather than a single or even a dual fuel concentration. We also need increasingly to span the energy and environment debates - the two are inseparable.

Our new Business Plan will be an opportunity to set out our strategy for achieving these things. It will be the first comprehensive strategy the Institute has had in recent times. It will sit alongside marketing and financial strategies. These plans will allow us to set out in some detail how the Institute, its committees, its branches, its members and its staff will seek to engage in and activate these processes. We will need to operate thoughtfully and energetically in focusing on the key goals set out in these documents - and will all need to pull in the same direction.

One area that is likely to be given somewhat greater focus will be the area of life long learning and continuing professional development. This area is already at the very heart of Government policy and is also very high on the agendas of successful companies. I am engaged in a range of organisations and policy debates designed to take this work forward and am keen the Institute of Energy plays a full role in these developments. There are enormous opportunities for the Institute in assisting in the development of educational provision, whether it be initial education and training, continuous development, full time or part time provision. We have been successful over recent years in seizing some opporutnitites in this area - TEMOL is a good example - but we will need to be active and fleet of foot to capitalise on all the opportunities that will arise from the restructuring of educational provision and of the qualifications frameworks being driven by the Goverment.

Another area of work I would like to give some attention to in my term of office is one that has had remarkable effects on the energy sector, and in which I have been closely involved over the last ten years. That is, the restructuring and liberalization of the main energy providers that have taken place, and continue to develop, in the UK and are now being actively pursued in Europe, the USA and other parts of the world. This sits alongside the other major debate on global warming following the Kyoto summit. The interaction of these two forces for change need analysing and the Institute, with its wide remit, can be a focus for this debate. It is a fascinating time for anyone interested in energy as we enter the next millenium - and there will be many opportunities for the Institute to play an important role.

Dick Coldwell FInstE

1999 Ellis Memorial Lecture - 22nd April 1999

Dr Mary Archer, Chair of the National Energy Foundation presented the 11th Ellis Memorial Lecture to approximately 100 members and guests of the Midland Branch on 22nd April 1999 at the Birmingham Botanical Gardens. Dr. Archer gave a comprehensive presentation on the National and International responsibilities of the UK in reducing greenhouse gas emissions and the timetables and reduction levels that have been set by these bodies. She continued with her analysis of the prospects for non-fossil fuel energy use and their impact on future emissions. She concluded that the targets were achievable, but that more effort (incentive?) would be needed for the renewable energy market to take the market share needed.

Harry Freeman, the Honorary Secretary of the Branch presented Dr. Archer with a commemorative medal. Harry is celebrating his 50th year as a Member of the Institute and members were pleased to see him on his first outing following a spell in hospital.

Dr. Archer's themes were taken up by Mark Baker, the President in his speech after lunch where he warned that the loss of the Magnox power station output in the period after 2010 would put the greatest strain on the programme.

Honorary Secretary Harry Freeman presenting Dr Archer with the Ellis memorial conmemorative medal - Neil Peacock, chairman looking on

Scottish Branch Dinner 1999

This year's Scottish Branch Dinner was held on the 16 April at The Royal Scottish Automobile Club in Glasgow. John Currie, Scottish Branch Chairman, welcomed more than 90 members and guests to the event and introduced the top-table guests who this year included Hamish Brodie (Scottish Branch Chairman, CIBSE), Bill Harley (Scottish Branch Chairman, IHEEM), Alan Mackie (Energy Efficiency Officer for Scotland) and Tracey Fisher (Membership and Education Manager, InstE).

Following dinner, Tracey Fisher kicked off the speeches with an update on the Institute's activities and plans for the coming year as well as enlightening the uninitiated to the benefits of Institute membership! She was followed by the main speaker for the evening Dr Andrew Lyon, Development Manager with Forward Scotland. Dr Lyon gave an entertaining and provocative address on the subject of "*Energy, the Environment, and Sustainable Development in Scotland*" prompting some interesting questions from the floor.

To round off the evening Alan Egner, Commercial Marketing Manager with the Northern Ireland Electricity Board found some humour from within the energy industry. The focus of his observations moved quite dramatically from the industry to personalities and, more specifically, the Scottish Branch Committee; where some behind the scenes digging had revealed enough 'dirt' to leave the audience in stitches and certain members of the committee with a rosy glow! A thoroughly enjoyable evening.

Photo(left to right):Hamish Brodie, Alan Egner, John Currie, Tracey Fisher, Bill Harley

Branch Events

JUNE 1999

SOUTH COAST BRANCH
Friday 11 June, 10.00am
Visit to Ford, Eastleigh.
Numbers limited to 15 maximum.
Contact Mr G Mills,
tel: 01705 842115

SOUTH WALES AND WEST OF ENGLAND BRANCH
Friday 18 June, 9.30am for 10.00am.
Annual Lunchtime Lecture
"Nuclear Engineering - 2000 and beyond"
by Mark Baker, the President of the Institute of Energy at CRE Stoke Orchard, nr Cheltenham.
Contact Dr I Weslake Hill,
tel: 01222 757527

NORTHERN IRELAND BRANCH
(Date and venue to be confirmed)
Committee Meeting.
Contact Dr P Waterfield,
tel:01232 364090
email: p.waterfield@ulst.ac.uk
for more details

SCOTTISH BRANCH
(Date to be confirmed)
Annual Energy Lecture.
Contact C Boyd,
tel: 0141 270 7060

New Members

LONDON & HOME COUNTIES
Mr P Soames, Student
South Bank University

HONG KONG
Mr CK Wong, MInstE
Hong Kong Fire Command Headquarters
Mr KP Wu, MInstE
Notifier Far East

NORTH WEST
Mr C Nash, Associate
BNFL Sellafield
Mr PJ Reeve, MInstE
Celestica Ltd
Mr DH Tong, AMInstE
Rochdale Metropolitan Council

SCOTTISH
Mr SD Cameron, MInstE
Mitsui Babcock Ltd

Deceased Members

Anthony John Alan KEMERY, Associate Member, North West Branch

Victor Charles BROCKWELL, Member, South Wales & West of England Branch

Patrick James McPARTLIN, Fellow, Scottish Branch

Geoffrey Gordon BOGH, Member, Midlands Branch

Company members Did you know?

As a company member of The Institute of Energy you are represented by the Industry's leading professional body. The Institute is aiming to improve services to companies in membership even further, so watch this space.

At present some of the benefits include:

- **marketing opportunities to promote your organisation, raising its profile within the industry.**
- **networking opportunities with suppliers and customers to generate new business and share best practice**
- **bespoke advice to develop your company's training schemes which can be approved by the Institute.**
- **awareness training programmes run by the Institute for your staff with training materials to support their contributions to energy efficiency and waste minimisation**
- **access to the brightest energy graduates and experienced professionals to develop your business.**
- **early opportunities to influence Government and other opinion formers on policy affecting your business.**
- **a quota of individual representatives from your organisation to receive all the publications, discounts to events and involvement in other activities.**

Ensure that you are gaining the maximum benefit from your company's membership.
For more information please contact the Membership Department on
tel: 0171 580 0077, fax: 0171 580 4420, email: membership@ioe.org.uk or make closer contact with your company's Institute representative.

the institute of energy

ENERGY MANAGEMENT

ONE DAY INTENSIVE COURSE

6 October 1999 & 1 December 1999

Are you responsible for managing energy?

Are you in need of a refresher course?

Are you new to energy management?

Professional expertise

The Institute of Energy has access to a wide range of energy practitioners, who have been leading energy management training development in the UK. With their valuable knowledge and experience The Institute of Energy has developed a comprehensive one day course. It will enable you as energy professionals and newcomers alike to keep up to date with recent developments in Energy Management and participate in valuable discussion on topical issues.

Course content:

All aspects of energy management including:

- **Energy policy**
- **Investments for energy efficiency**
- **The national standards for managing energy**
- **The principles of monitoring and targeting**
- **Staff awareness and motivation programme**
- **Energy management structure & accountability**
- **Introduction to site services - lighting, bms etc**

To be held at the Headquarters of The Institute of Energy, London

The cost of the course is £79 for Members and £99 for Non-Members
To register please contact Katie Howe on
Tel: 0171 580 0008, Fax: 0171 580 4420, E-mail: info@ioe.org.uk