

THE MAGAZINE OF THE INSTITUTE OF ENERGY

energy



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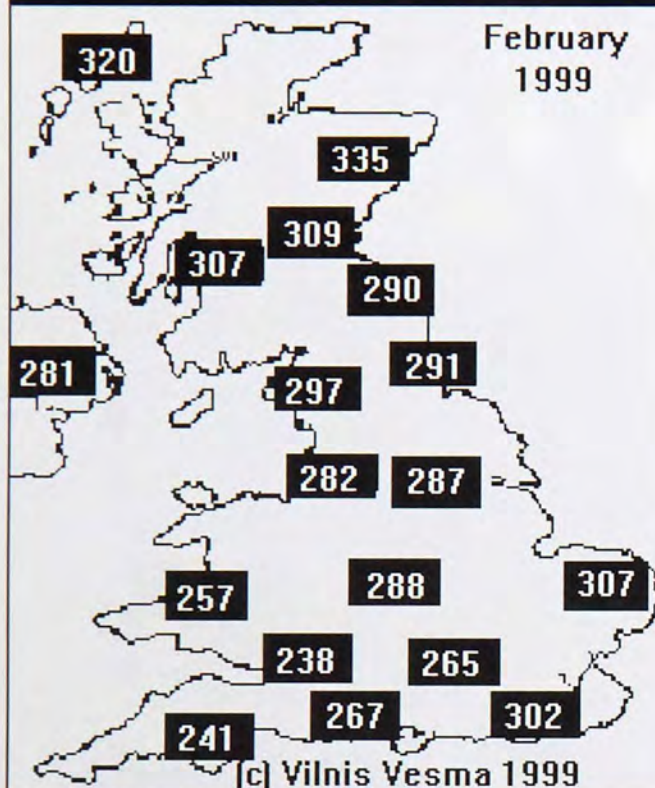
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If you would like to receive a copy of this leaflet shown above, email Narelle Bethune on "education@ioe.org.uk" or tel: 0171 580 0077

THE MAGAZINE OF THE
INSTITUTE OF ENERGY

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COVER

While polluting emissions from many sectors of the economy are falling, those from road transport continue to spiral upwards - and kill people. Some 24,000 premature deaths a year are attributable to poor air quality in Britain's cities, says the Department of Health.

This issue features energy used in transport and focuses particularly on a series of initiatives aimed at turning those emissions graphs around. Turn to page 8 for the start of the feature, and to page 10 for the start of an article on the Powershift programme, which aims to increase the number of vehicles running on natural gas, LPG and electricity on Britain's roads.

Never mind AD2K, what about the next millennium?

Dave Hampton, Head of the Environment Group, ABS Consulting

"Vision without action is dreaming; action without vision is a nightmare."



Millie woke up with a slight headache. She'd overslept. It was 2 hours past GMT (Global Mean Time - the global time system introduced in the 23rd century to optimise the availability of daylight energy during waking and business hours; managed by the eco-engineers and their solar reflectors). Being what people used to call 'winter' there weren't many 'natural' daylight hours left. Although it didn't really matter as it was a Global Holiday. And Millie hadn't had much downtime. Back to 'bed'.

The millennium celebrations had been fantastic, and had lasted most of the night. Millie's favourite (and still GMO-free) cocktails were affectionately known as 'Gargleblasters' almost a 1,000 years after the eco-visionary 20th century 'book' by Douglas Adams: "The Hitchhiker's Guide to the Galaxy," now considered a classic work. The light show had started at 5 hours past GMN (Global Mean Nightfall) and had kicked off with a slow and cumbersome, but rather extraordinary dance of the many giant solar umbrella reflectors orbiting the earth. These ancient relics of engineering from the early 25th century were still working remarkably well, serving to redirect significant quantities of solar energy towards the earth in a controlled way, so as not to exacerbate the global warming that had materialised so catastrophically centuries ago.

The global light show had reached a crescendo, with the beams of light flitting from city to city in a pattern that was relayed to virtual reality (VR) headsets around the world. Millie had still not got used to the idea that the eco engineering coalition (EEC) could effectively turn the lights on for a whole city, just by redirecting the satellites.

Five minutes before the turn of the fourth millennium, the giant umbrellas slowly turned away their 'heads', looked away from the planet earth, and darkness resumed. Just as peoples' eyes adjusted to the darkness, on the dot, the reflectors lit up the dark side of the moon. And the Gargleblasters were drained.

Millie woke again later that day. Her sleep chamber had removed the now relatively rare symptoms of a hang-over. Thank goodness. She'd dreamt about what it must all have been like 1,000 years ago. Today was a holiday; time to have some fun. Brilliant!. The mass transport network was to run free of charge that day, so it was time to really enjoy it. Millie adored exploring the other side of town in person, rather than the other side of the planet in cyberspace, but it was so expensive.

The party atmosphere on the 'truck' as they called them, after the 4-wheeled petrol (a carbon based energy source?) powered vehicles they'd read about, was incredible. How anyone had ever acquired any social skills always driving around like funfair dodgems

arguing over rights of way and crashing into each other totally perplexed the third millennium generation. It was hardly surprising that sealing people off in small, increasingly protective, yet random-moving metal boxes had led to some fairly antisocial habits and attitudes, as well as a deeply ingrained adversarial culture.

Anyway, the truck delivered its load of 1,000 explorers right to the centre of the park and ride 'bike' rack on the other side of town 100 miles away. These bikes really were the business. With rain shelter, autopilot and VR headset it was almost like the leisure clubs of old, except that pedalling the 'bike' actually got you somewhere. For short journeys Millie always programmed the autopilot for random excursion, so she wouldn't arrive too early before she had completed her 30-minute workout. Often the biggest pleasure was to travel, rather than to arrive.

She had a fantastic day exploring and meeting all her close friends - some for the first time in person. But the best was yet to come. She wouldn't sleep well that night either because in just two days time she was due to travel with her family to live in another city. On average, people only had the opportunity, and the 'money', to travel long distances every four or five years. When they did, they usually swapped communities and re-settled somewhere else.

The 'aeroplane' they used was quite different from the old ones. And it was far more exciting, seeing as most people used it very infrequently. Millie puzzled at the stories she'd heard about tired business executives commuting trans-Atlantic every day! Why did they ever do that? But that was some time ago, long before people had realised that the party was nigh over, that energy use was an issue for everyone and not just the engineers, and that they'd used all the fuel in 1,000 years that was now generated (renewably) in a million.

As she lay awake that night, Millie felt lucky to be an engineer - it was so competitive to get a job when there was such a strong campaign to entice boys into the profession. Engineering skills were now recognised as having the capability to deliver the imaginative and ingenious solutions so badly needed globally to restore a sustainable global balance. Although this recognition did not happen until as late as the 23rd century - the first time that there was an equal number of women in the global Heads of State Coalition. Millie thought the eco engineering coalition was a pretty neat idea.

If you enjoyed the above, please respond to Dave Hampton, Head of the Environment Group at ABS Consulting, at drhampton@absconsulting.uk.com.

North Dakota raises temperature for combustion

High temperature electricity generation technology could produce electricity far more cleanly and efficiently than current technologies and significantly reduce emissions of carbon dioxide - according to the University of North Dakota Energy & Environmental Research Center (EERC).

While operating a high-temperature advanced furnace, researchers at the Center believe a world record was set for coal-fired power systems

when pressurised air heated to 2,000°F was produced. In an operating power plant, the hot air would have been used to spin a turbine and electrical generator.

A team led by United Technologies Research Center (UTRC) has designed a high-performance power system (HIPPS) that could provide up to a 60% increase in energy efficiency and be 90% cleaner than today's coal-fired power plants. The high-temperature

advanced furnace, a component integral to HIPPS, is undergoing tests at the EERC. The project is funded through the US Department of Energy Combustion 2000 Program and managed through the DOE Federal Energy Technology Center.

"I don't know of any other coal combustion technology that heats air to the temperature we're using," says Dan Seery, senior program manager at UTRC: "The fact

that we got up to 2,000°F exceeds UTRC's and DOE's expectations. It shows that we could potentially increase power plant efficiencies from around 35% into the upper 50% range."

The substantial increase in efficiency of a high-temperature furnace means that a coal-fired power plant using HIPPS technology would use less coal, resulting in a one-third reduction in carbon dioxide emissions.

US windpower industry moves forward

Texas-based Reliant Energy HL&P has signed a contract with American National Wind Power to purchase power from 22 MW of wind generation capacity - enough to power more than 4,000 homes on a typical hot summer day. Construction has begun on the wind project,

located in the Delaware Mountains in far west Texas, and it should start producing power by late June.

Minnesota-based Northern States Power Company has signed agreements for purchasing power from 25 MW of wind energy capacity to be

developed at 17 sites. Turbines ranging in size from 500 kW to just under 2 MW will be built on farmland in a broad distribution of sites, mainly in south western Minnesota. Minneapolis-based Northern Alternative Energy (NAE) will develop the sites.

• Meanwhile, the University

Students' Cooperative Association (UCSA) in Berkeley, California, has chosen to purchase 100 percent renewable electricity from Green Mountain Energy Resources. UCSA has 17 houses and three apartment buildings, housing a total of 1,300 students.

'The end' for conventional thermal power in Europe

European orders for conventional thermal power generation equipment have been on a downward spiral since 1993 as utilities turn to other power plant types - principally gas-fired combined cycle - for lower emissions, higher efficiencies and shorter construction times. Orders from the EU's major utilities all but dried up in 1998, and according to a new report from Datamonitor, the market will not recover over the next five years.

Conventional thermal remains the largest sector of the EU's installed base but is also the fastest falling. With over 15% of the EU's conventional thermal

installed based over 30 years old, and order volumes at rock bottom, it is inevitable that capacity will fall further until it is arrested by new orders or large levels of refurbishment work - a situation that looks some way off.

According to the report:

- over 10 GW of capacity has been wiped off the conventional thermal installed base in the EU over the last six years,
- order volumes of conventional thermal plant have been insignificant since 1996,
- CCGT plant will continue to be the technology of choice for EU utilities over the next five years.



The new order - Holland's Eemscentrale power plant contains five ALSTOM 9FA gas turbines. The company has sold 5,000 gas turbines in over 100 countries worldwide

China establishes energy efficiency programme

The Chinese government has recognised the threat its growing, coal-fired industry is posing to the global environment and has turned to experience gained from other parts of the world to help reduce the damaging emissions of carbon dioxide and other pollutants. It has selected AEA Technology Environment to assist them with this work.

China has set up its own Energy Conservation Information Dissemination Centre, which will benefit from

the lessons learned by ETSU, part of AEA Technology Environment, which runs the Best Practice Programme for industry on behalf of the Government. In Britain

Staff from AEA Technology Environment will work with the new centre in Beijing to help it reproduce the success enjoyed by its British counterpart. Around 580 million tonnes of carbon are currently emitted by Chinese industry every year. The AEA Technology team, working with

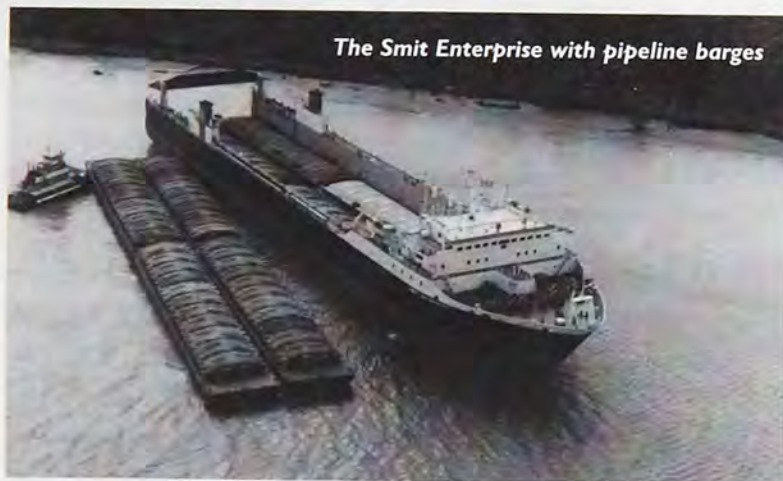
the Chinese authorities, are aiming to reduce this by 18 million tonnes.

A team of six energy efficiency experts from AEA Technology Environment will be based in Britain and Beijing during the project. They will help the new Centre to produce 100 case studies detailing the experiences of Chinese industry. The team will also produce 20 technical reports giving information to help industry save money by using energy efficiently. The

Centre will hold publicity events and training days to persuade industry to be more energy efficient.

The plan to improve energy efficiency in China is being funded by the Global Environment Facility, a body created by the developed nations to limit the effect of climate change. The World Bank, UN Development Programme and UN Environment Programme are all involved in implementing the plan.

South America's largest gas infrastructure project



The Smit Enterprise with pipeline barges

The Presidents of Brazil and Bolivia have inaugurated the \$2 billion Bolivia to Brazil gas pipeline developed by Petrobras with the BG, El Paso and BHP Power international consortium, BTB. The ceremony took place in Corumba, Brazil.

The 3,200 km pipeline has a design capacity of 30 million cubic metres of gas per day. First commercial supplies reached Sao Paulo in March, bringing much needed natural

gas to the Brazilian market. Completion of the second stage of the pipeline, taking gas to Port Alegre in southern Brazil, is expected in the fourth quarter of this year.

The development of the pipeline will facilitate the monetisation of BG's recently discovered gas reserves in Bolivia, and is the first investment in implementing the company's gas chain strategy in Bolivia and Brazil. BG's future

plans include downstream projects in Brazil and connecting the pipeline to an extension of the proposed Argentina to Uruguay pipeline. • Meanwhile Smit Transport & Heavy Lift has just completed its major contract from Bechtel Corporation to transport pipe required for the 700 km natural gas

pipeline that will supply Merida III, Mexico's first private power plant. The line will transport gas from the Ciudad Pemex facility in Tabasco State to Merida III and other plants in Yucatan. Pipe for the new venture was fabricated and coated at Baton Rouge. The Smit contract was undertaken by the self-propelled heavy transport vessel Smit Enterprise, which delivered some 70,000 tonnes of pipe.

Bosnia rebuilds

Japan's Overseas Economic Cooperation Fund (OECF) has provided Bosnia-Herzegovina with a loan amounting to \$36 million for the Emergency Electric Power Improvement Project.

The overall project, which is co-financed by the World Bank, will rehabilitate four thermal power plants, four coal mines, five hydroelectric plants and transmission and distribution lines. The OECF loan will fund the rehabilitation of Kakanj Thermal Power Plant and four coal mines, restoring the electricity supply as well as preventing local deforestation by using steam to heat buildings.

Electricity is essential for economic activities to resume. Nearly half of Bosnia-Herzegovina's electricity is produced by plants using coal from neighbouring coal mines and the country's power plant facilities and coal mines are obsolete.

Louise Evans is the new Secretary & Chief Executive



New Secretary & Chief Executive Louise Evans

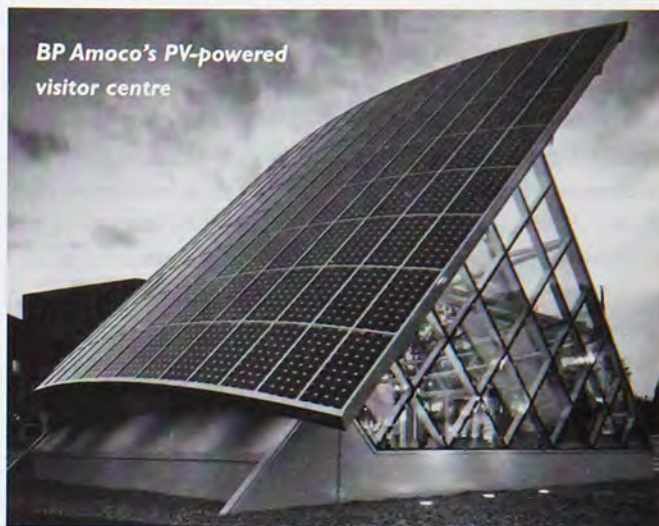
The Council of the Institute has appointed Ms Louise Evans as the new Secretary & Chief Executive. Louise Evans has worked for the Institute for six years in various roles and has been Deputy Secretary & Chief Executive since 1996. In taking

up the appointment Louise Evans said: "I look forward eagerly to serving the Institute's members and the wider energy profession in this new role, facing the challenges and opportunities that lie ahead for the Institute in an ever changing energy world."

Mark Baker CBE, President of the Institute, said: "Louise has been an outstanding servant of the Institute. We are lucky to have her and I am confident that she will prove to be an excellent Secretary & Chief Executive."

Louise will lay out her vision for the future of the Institute in the May issue of *Energy World*.

PV centre moves to Baglan Energy Park



BP Amoco's PV-powered visitor centre

The UK's largest single investment site, Baglan Energy Park in South Wales, has been given a double boost with the announcement of £2.7million of investment. An innovative new solar powered visitor centre has been revealed for the park by BP Amoco at a cost of £500,000 and will become a centre-piece attraction for potential investors.

The park in Baglan Bay, Port Talbot has also been awarded £2.25 million of Welsh Office support to allow Neath Port Talbot County Borough Council to build a 50,000 sq ft business unit at its entrance.

The high specification factory is expected to create

250 new jobs and to attract an additional £20 million of private sector investment. The goal is an energy efficient, prestigious development which meets the 'excellent' standard of the British Research Establishment's Environmental Assessment Method or 'BREEAM'.

BP's futuristic solar powered building was originally built in Birmingham as a showcase of solar technology presented to world leaders at the G8 Summit last summer (see *Energy World* July/August 98). It is currently being re-engineered in advance of its journey to Baglan Energy Park's high profile site alongside the M4 motorway.



Reflecting on a new CHP deal - ScottishPower has signed an agreement with glass manufacturer Pilkington to build and operate 9 MW CHP plants at three of the company's sites in St Helens, Merseyside. The 20 year agreement is expected to reduce carbon dioxide emissions by some 30,000 tonnes a year, cut site energy bills and enable Pilkington to plan for the future on a stable energy base. The three plants will each deliver 7 tonnes/hour of steam and 6 MW of heat in the form of water, as well as power. Any surplus electricity will be used by the company's headquarters or exported to the national electricity grid.

Whitehall switches on to CHP

Environment Minister

Michael Meacher has inaugurated the refurbished Whitehall District Energy Scheme, which will deliver heat and power to the offices of Government ministers, including the Prime Minister and Chancellor.

The refurbished scheme - which now includes a 5 MW gas turbine - supplies heat and electricity to 23 Whitehall buildings including Downing Street, the Treasury, the Cabinet Office and the Ministries of Defence and Agriculture.

The scheme is expected to cut well over £½ million a year from the Government's energy bill, as well as reducing annual carbon dioxide emissions by some 5,000 tonnes.

The Whitehall District Heating scheme was originally conceived in the 1930s to

replace open coal fires. It has been refurbished several times since then, this last time to include CHP. The new turbine was supplied by Alstom Gas Turbines Ltd and the engineering consultant was PB Kennedy & Donkin.

The modernisation process began with a decision that a complete overhaul of the system - including new boilers, a gas turbine, staged refurbishment of the distribution system and new controls and heat meters at each of the buildings served - was the most cost-effective way forward with the then ageing boiler plant.

Refurbishment was carried out without any disruption to heat supplies by replacing boilers in stages. Access to the boilerhouse - located 17 m underground - was challenging,

New plant destined for the underground boilerhouse at Whitehall



with plant items having to be craned into position via holes in the various floors.

Each of the user buildings is now metered at the point of supply, and readings are transmitted to the central plant room for processing. Energy supply contracts are written to ensure the highest standards of system efficiency and reliability.

• Trade and Industry Secretary Stephen Byers has turned

down an application by Fleetwood Power to build a 1,000 MW combined cycle gas turbine power plant in Lancashire, citing the moratorium on new gas-fired generation schemes. Meanwhile Energy Minister John Battle has granted consent to a 70 MW CHP scheme proposed at the British Sugar factory in York, citing the exemption which gas-fired CHP plants have.

Industry welcomes DTI initiatives on PV power

BP Solar has welcomed three initiatives to encourage the development of photovoltaics in the UK, announced by Energy Minister John Battle in Manchester.

The initiatives - a field trial to install photovoltaic systems at 100 homes across the country; funds for a programme to develop PV components and systems; and the call for proposals for schemes to demonstrate photovoltaics in large-scale building applications - could have a total value of £15 million over three years, with Government support of £5 million, said John Battle.

Commenting on the

announcement, BP Solar chief executive, Chris Hedley, said: "Taken together, these initiatives are an encouraging first step in the development of a photovoltaics market in the UK and we look forward to playing our part in ensuring their success.

We particularly welcome the opportunity to demonstrate the benefits of solar power on homes. Working on real applications is the most effective way to build partnerships between all those who have a stake in this exciting industry - from installers to regional electricity companies, customers to local government."

PV power for West Bromwich tower block

A pioneering scheme to capture free electricity from the sun for tenants at a West Bromwich tower block is poised to take a new step forward. Photovoltaic cells have been installed in cladding on one side of Bowater House as part of its £2 million transformation into the flats of the future. The cells will generate electricity to power lifts, communal lighting and ventilation systems in the nine-storey block.

Bowater House is run by Sandwell Council, and will become the first social housing tower block in the country to generate power from the sun. Tenants from there are currently

in temporary homes while the block gets a £2 million facelift, itself part of a £40 million project to breathe new life into the Lyng Estate near West Bromwich town centre.

Local Councillor Bob Badham MBE said: "This is an exciting milestone in the regeneration of Bowater House and the whole Lyng estate. Photovoltaic cells are the logical extension of many year's work in the housing department to promote sustainability and reduce fossil fuel consumption. They will be part of a battery of measures at the block to reduce the cost of energy to our tenants.

OFFER tries to end Pool price manipulation

OFFER has published a consultation document on the manipulation of Pool prices alleged to have been carried out by electricity generators in recent months and ahead of the abolition of the Pool itself. The OFFER document also addresses the steps announced by the Pool intended to stop the abuses and the possible need for further action should the Pool's response not prove effective.

Callum McCarthy, Director General of Electricity and Gas Supply, said: "The Pool's response to OFFER's demand for quick and effective action to deal with price manipulation is welcome. We need to be sure that it is effective, and that new techniques of gaming Pool Rules are not devised. If they are, we will wish to bring forward more fundamental changes to meet the underlying

shortcomings of the Pool which lead to price manipulation. OFFER is therefore seeking views on two further measures: simplified bidding; and the removal of some or all inflexibility markers. Unless it is clear that the Pool's proposed changes have eradicated Pool price manipulation, we shall wish to proceed with these changes."

OFFER's paper states that:

- It is important that the electricity Pool, in its last months of existence, operates as an orderly market, and is not subject to manipulation. There is strong evidence that manipulation of the Pool prices has been occurring; that participants in the Pool have been operating within the existing Pool Rules to take advantage of those

rules for their commercial interests; and that higher wholesale prices have been established which will result in higher prices for customers.

- The scale of manipulation has grown rapidly this year. In particular, in 1999 there was a very large rise in price 'spikes' - that is, system marginal prices of over £60/MWh. There were 11 such price spikes in the last quarter of 1996, 178 in the last quarter of 1997 and 234 in the last quarter of 1998. In January 1999 alone there were 180.
- The challenge presented by these problems is both important and urgent. It is important because it affects industrial competitiveness and consumer welfare - that is, jobs and living

standards. It is urgent because Pool prices are an important reference point for negotiations between generators and their customers, now in progress on long term contracts. It is central to OFFER's objectives of protecting customers and promoting competition in the electricity industry.

Energy Minister John Battle welcomed OFFER's action: "We are determined that customers should not suffer as a result of the ability of generators to manipulate Pool prices. What is now clear is that it is not only the large generators that have been able to influence Pool prices. OFFER figures show substantial increases in the number of price spikes, some attributable to single plant operators."

Ofgas puts competition into gas storage

Ofgas and BG Storage have reached agreement on gas storage which is expected to lead to lower gas prices in winter. Under the agreement, Ofgas will cease to regulate the prices charged by BG Storage at its Rough and Hornsea gas storage facilities. Instead the company will auction its underground gas storage on the competitive market. The change is expected to increase competition and bring down prices for gas at times of peak demand.

The new arrangements will encourage more shippers to buy gas at summer prices and store it to supplement supplies

in winter. Under existing arrangements, only part of the capacity in Rough and Hornsea was sold in the tenders for the 1997/98 and 1998/99 storage years. Ofgas intends that under the new arrangements all capacity is made available to the market in a way that ensures it is effectively used.

Rough is a partly depleted gas field about three kilometres under the North Sea just offshore of Easington, Yorkshire, which has been converted into a storage facility. Natural gas is stored there at a pressure of 205 bar. When Rough is full it takes 67 days to empty at a high withdrawal rate - enough gas to

provide 10% of national demand on a cold winter day. It is mainly used for seasonal storage.

Hornsea is in east Yorkshire, where nine large cavities have been created 1.8 km below ground by dissolving layers of salt. The capacity of Hornsea is much less than Rough, although it is greater than an individual LNG facility. Gas can be withdrawn at shorter notice than at Rough, and Hornsea gas is mainly used for short term balancing of supply and demand.

Ofgas has also imposed an enforcement order on Transco to tighten up the way it operates its connections

activities. The enforcement order will require Transco to:

- obtain ISO 9001 certification for its connection quotation activities,
- introduce a compensation scheme for persons given late or wrong quotations, and
- arrange an independent audit of its performance in providing quotations for connections.

Ofgas has taken this action after its investigation of Transco's connections business found serious shortcomings in the way Transco had conducted its connections operations.

Auto-Oil - cutting transport

A long-term programme - aimed at drawing-up legislation to improve urban air quality in Europe by cutting emissions from road vehicles - is reaching its conclusion.

The European Parliament has said that legislation agreed with Member State governments last year will impose the tightest vehicle emission requirements outside California.

In September, the Parliament endorsed three new Directives; on emissions from cars and light vans, and on fuel quality. In December last year, Environment Ministers in Brussels agreed a fourth Directive on emissions from trucks.

UK Environment Minister Michael Meacher said then that Europe's air will be cleaner and a significant number of premature deaths due to particulate air pollution will be avoided, following the ground-breaking agreement to cut pollution from lorries and buses by 60%. The DETR says it will mean that new heavy duty vehicles will cut their emissions of:

- particulates by 30% by 2000 and then by a further 80% cut on these standards by 2005, through the use of particulate traps which will remove even the smallest particles, which pose the greatest health risk;
- oxides of nitrogen (NOx) by 30% by 2000, and on confirmation of the technical feasibility of state-of-the-art technology to be reviewed in 2002, a further 60% by 2008; and
- hydrocarbons and carbon monoxide by 30% by 2000 and a further 30% by 2005.

The Directive on heavy duty engines forms the fourth element of measures to emerge from 'Auto-Oil', the collaborative research programme jointly undertaken by the European Commission, European vehicle manufacturers and European oil companies.

Earlier last year (see *Energy World* October 98), the first three Directives were agreed for cars and light vans, and for fuel quality. The DETR then said the Directives would, by January 2000:

- cut emissions from petrol-engined cars and light vans by 30-40%

- cut emissions from diesel-engined cars by up to 50%;
- slash the harmful sulphur content of petrol by 70% and diesel by 30%;
- slash the harmful benzene content of petrol by 80%.

From January 2005, emission standards will be cut by a further 50% on top of the previous reductions.

The agreements, which conclude more than two years of tough negotiations between EU member states and the European Parliament (although one more Directive, on vehicle maintenance is still being negotiated), follow on directly from the joint industry/Commission Auto-Oil study.

AUTO-OIL COLLABORATION

The Auto-Oil study was a unique, three-year collaborative effort by the Commission, the European motor manufacturers and the European oil industry to develop proposals to reduce pollution from road traffic.

It began by modelling air quality across Europe to assess the reductions in emissions necessary to reach new air quality standards based on World Health Organisation figures.

began over whether a two-stage process would be necessary.

The oil lobby says that the cheapest way to reduce emissions is through better maintenance of vehicles, the next cheapest is to build cleaner cars; and that cleaner fuels come an expensive third. But it takes a decade or more to replace vehicles with new, cleaner versions and cleaner fuels would deliver benefits more quickly, argued the car industry, adding that it was already making cleaner cars anyway. According to Friends of the Earth, environmentalists took advantage of the infighting between the two giant industry lobbies to side with the car industry to force the oil industry into further concessions.

The results were the Directives on emissions standards for new cars, light vans and heavy goods vehicles (covering carbon monoxide, hydrocarbons, nitrogen oxides, particulates and smoke) and fuels (covering sulphur, benzene and aromatics). In addition European car manufacturers agreed to a voluntary agreement by to cut carbon dioxide emissions from new vehicles by 2008 - by around 25% on 1995 figures.

The cars Directive also lays down rules

	2000		2005	
	Petrol	Diesel	Petrol	Diesel
Maximum sulphur content (mg/kg)	150	350	50	50
Maximum benzene content (v/v)	1%	-	-	-
Maximum aromatics content (v/v)	42%	-	35%	-

Table 1 European fuel quality standards

There are three obvious ways to reduce emissions - develop cleaner fuels, manufacture cleaner-running vehicles and maintain them to higher standards - and it was realised from the start that a mixture of all three would be required.

It was one of the last jobs of Auto-Oil to identify the most cost-effective mixture to deliver better air quality by 2010. At this point, things got complicated, as the powerful car, truck and oil lobbies argued with the Commission as to the cost of the measures they might be forced to take. The European Parliament introduced its own political slant to the figures and arguments

to ensure that emissions control equipment sold in cars continues to function for at least five years or 80,000 km, and that on-board diagnostic equipment is fitted to petrol cars from 2000 and diesel cars by 2003.

The fuel quality Directive (Table 1) also bans the sale of leaded petrol in the European Union from 1st January 2000.

There is no doubt of the significance of the achievements of the Auto-Oil process. None of the parties got exactly what they wanted, but Europe's towns and cities will (eventually) gain very significant benefits in terms of air quality.

emissions across Europe



Renewable energy company, B9 Energy has demonstrated true zero emission transport for the first time in Northern Ireland with delivery of three Citroen Berlingo electric vans. B9 Energy's vans are 100% emission free because they avoid greenhouse gases at the power station as well as pollution on the road. They run either on EcoEnergy, renewable electricity available to Northern Ireland Electricity customers since November or, power from B9 Energy's own 6 kW office wind turbine. Two vans will be driven by B9 Energy engineers for wind farm operation and maintenance. The third will be loaned to local authorities or businesses.

The Berlingo Electrique has a maximum range of 60 miles and a top speed of 60 mph. They can be fully recharged in 9 hours from a normal 240 v 13 A socket or partially recharged in 60 minutes to give a range of 12 miles. Regenerative braking conserves energy when slowing down and driving is made easier by the absence of clutch and gears. They look identical to the diesel Berlingo except for the lack of an exhaust pipe and the addition of an electric socket.

Each vehicle costs £55 more than her diesel sister at £9,120. The batteries are leased and cost £74 per month. B9 Energy bought the three vehicles through the Powershift Programme (see page 10), an Energy Savings Trust grant to businesses, which pays half the battery rent for the first 3 years

Royal Mail trials ultra low sulphur diesel

Royal Mail, operator of one of Britain's largest vehicle fleets, is testing a cleaner-burning fuel in its trucks and vans in Swansea as part of its continuing drive to care for the environment.

The aim of the four-month trial of ultra low sulphur diesel is to enable Royal Mail to monitor the effects on engine performance and fuel consumption, and to compare the results with those obtained by using ordinary diesel.

Mike Horlor, Head of Road Transport Strategy, says: "With improvements being made at the refineries, there is now a real prospect of continuity of supply for this new fuel. Should we wish to make a complete switch to low sulphur diesel for the entire Royal Mail fleet, having the fuel in sufficient quantities is vital for a commercial operation."

But such a decision must await a thorough evaluation of the fuel. There have been some concerns about its effects on engine lubrication as well as the possibility of damaging seals in the

fuel system. Anything which could cause reduced vehicle reliability and could put quality of service at risk has to be tested thoroughly.

The Swansea project will also assess how the new diesel performs in the stop-start driving conditions common to Royal Mail vans and trucks.

Elsewhere the use of ultra low sulphur diesel (ULSD) has been shown to produce lower levels of exhaust emissions. The most significant benefit to the environment, and to people breathing city air, is the reduction in airborne particles. The new cleaner fuel also opens the way for vans and trucks to be fitted with both a new type of catalyst to reduce harmful fumes still further.

In Scandinavia, ULSD accounts for 95% of the market, but in Britain it has been available only in limited quantities on filling station forecourts, particularly on those sites owned by supermarkets. The situation, however, has been changing steadily as the Government has reduced

the tax to bring the price of greener fuels in line with ordinary diesel, something which should encourage more ultra low sulphur diesel to be refined and sold at the pumps. In March 1998, the duty on ultra low sulphur diesel was 42.9p, 2 pence less than for standard diesel. The Government recognises the need for a further increase in the differential to encourage greener fuels.

Laboratory emissions tests commissioned by Royal Mail have shown a promising 25% reduction in airborne particles, compared with ordinary diesel, and a 4% reduction in carbon dioxide. The cut back in particulates is particularly encouraging as this airborne pollutant is of major concern to diesel fuel users.

"We shall gradually be adopting low sulphur diesel for all the Swansea vehicles as new supplies come in," says Mr Horlor. "The great advantage of the new diesel should be that trucks and vans can simply be refuelled without any need for costly conversion."

Clean fuel vehicles are Powershift in action

By Jonathan Murray, Manager Transport Projects, Energy Saving Trust

Vehicles powered on gas and electricity are not a 'fad' or experimental, they are viable, efficient, environmentally sound, and here to stay. Energy Efficiency Powershift, is a government funded programme managed by the Energy Saving Trust, which has brought the reality of Clean Fuel Vehicles (CFVs) closer, and has gone a long way down the road towards achieving a self-sustaining market for them.



BOC long goods vehicle powered by natural gas

Powershift aims to encourage demand and establish a viable market for those vehicles that run on natural gas (NG), liquefied petroleum gas (LPG) or electricity. By providing information and part funding to public and private sector organisations who want to convert their fleets to CFVs, and by gaining commitment from fuel companies and manufacturers, we aim to make a real difference to the UK's air pollution problems.

The importance of the Powershift programme is clear when one considers the fact that the vast majority of the regulated, health-damaging urban pollutants, as well as 25% of total UK carbon dioxide emissions, are attributable to road transport. While the industrial sector is reducing its pollution levels, road transport is increasing its share all the time.

The proper integration of transport policy, including the encouragement of public transport, will help to reduce pollution, but a number of other moves to encourage road transport to reduce its overall emission levels are also required. The use of emissions control technologies like catalytic converters and improved fuel monitoring systems have a contribution to make, as does the increased adoption of clean fuel vehicles.

On a personal level, I believe that engines using traditional fuels are now reaching their peak in development. It was relatively easy to get improvements early on in the development of the petrol engine but we are

now nearing end of the 'technology envelope'. Many of the CFV engines coming onto the market now, which Powershift has been actively encouraging, are producing emissions which already comply with the proposed 2005 standard for Europe, or – in the case of electric vehicles – no emissions at the point of use. This has been achieved with very little investment in engine technology.

POWERSHIFT ACHIEVEMENTS

After just three years, Powershift has surpassed its target and succeeded in securing around £40 million worth of orders for over 1,000 CFVs. The number of vehicles accepted for funding under the scheme has trebled year-on-year: from 130 in 1996, when Powershift was established, to 351 in 1997, and up to 900 in the last year. What was initially seen as a feasibility study, is now a growing market concern.

In the past three years, we have concentrated on preparing a framework for a sustainable market in the three clean fuels currently considered viable for mass use – NG, LPG and electricity. Emphasis has been placed on raising the profile of CFVs in the public domain, establishing industry-recognised standards, and increasing acceptability of the three clean fuels.

Powershift has been actively working with fuel suppliers, converters and vehicle manufacturers to ensure that CFVs, and

the infrastructure which supports these vehicles, is available to a wider market.

We have also undertaken many activities to raise the profile and demand for CFVs including holding a series of regional workshops around the UK, and hosting a national conference at which the Minister of Transport was the keynote speaker.

THE REGISTER

An important development in the programme was the launch of the Powershift Register, published in Autumn 1998, which is the UK's first ever buyers guide to CFVs, engine suppliers and converters. The Register is essential in ensuring that the CFV market develops in a consistent and sustainable way, setting recognised industry standards for vehicle quality and emission performance.

The Powershift Register allows a potential purchaser to identify which CFVs are available on the UK market and what their performance values are in terms of emissions, payload and fuel consumption. Powershift then offers grants ranging from 25 to 75% of the cost difference between the listed vehicle or conversion and its petrol/diesel equivalent. The exact level of grant is determined according to its emissions performance.

There is already a wide range of vehicles on the Register, including passenger cars, vans, large commercial

here to stay -

vehicles, and buses, and more vehicles continue to be evaluated and added.

Car manufacturers/suppliers/converters who apply for inclusion in the Powershift Register are graded on three selection criteria:

- financial security,
- level of experience of the company in supplying CFVs,
- specific information on safety and emissions for each CFV model.

If these criteria are satisfied then they are awarded the Powershift Clean Seal of Approval and the vehicle is graded as either group 0, 1, 2 or 3, depending on the vehicle emissions, which are compared against the Euro 2 standards. The aim of having a banding system is to encourage the development of cleaner vehicles - the lower the emissions the higher percentage of funding procurers can receive.

THE FUTURE FOR POWERSHIFT

The Government recently reasserted its confidence in Powershift and announced that the programme would continue to receive funding. Transport Minister, Dr John Reid, said: "The Powershift programme will continue to nurture the move to gas-fuelled vehicles. In addition it will explore more fully the potential environmental and energy efficiency benefits offered by other technologies such as electric, hybrid and fuel cell vehicles."

Now that the programme is established, the principle objective for the future is to realise 10,000 Powershift funded CFVs by the end of 2001. Powershift will continue to examine the viability of alternative fuels.

In the medium to long term, I believe that the fuels Powershift is currently promoting will become self-sustaining in the market. In order to service the increasing demand for clean fuels, and to ensure CFV use is viable for mass markets, Powershift has been working, and will continue to work, to establish a more complete refuelling infrastructure.

Powershift is looking forward to helping to meet the challenge of further 'greening' transport in future years, and we aim to build on our current success so that CFVs are seen all over the UK.

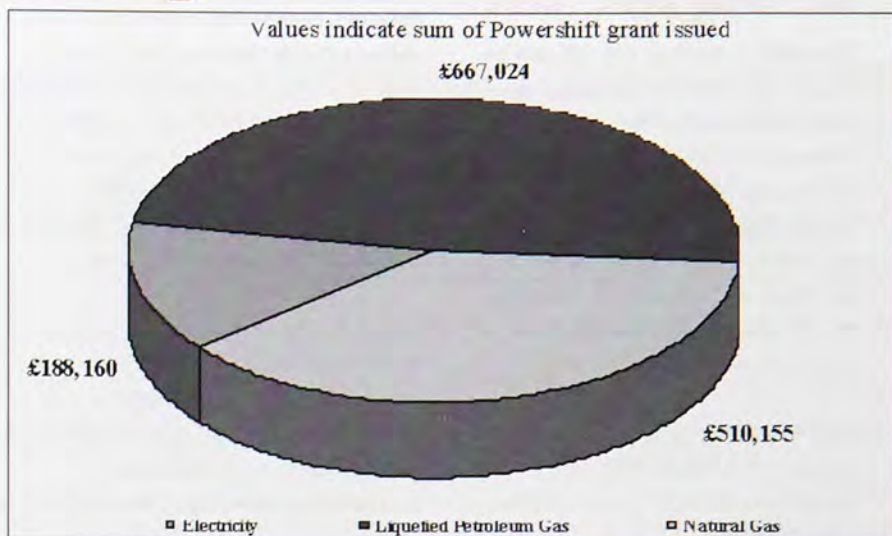


Fig. 1 Powershift grants by fuel type

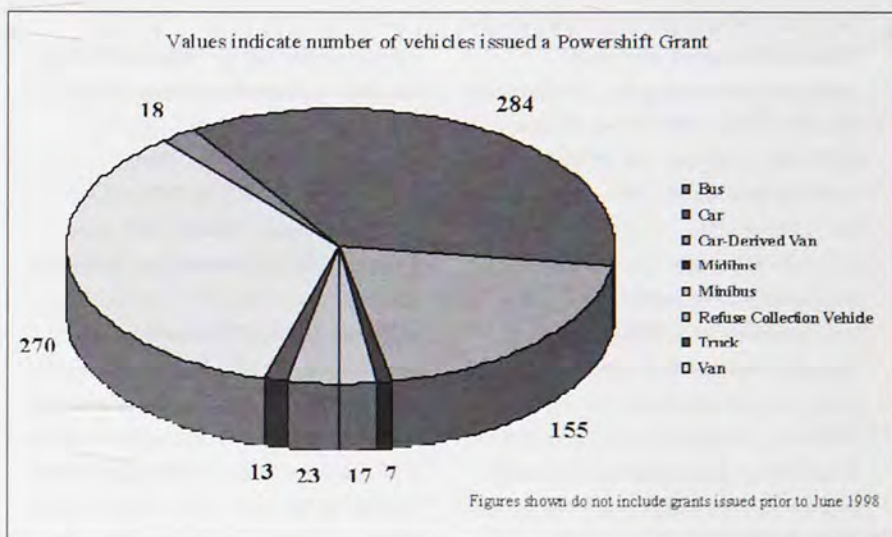


Fig. 2 Powershift grants by vehicle type

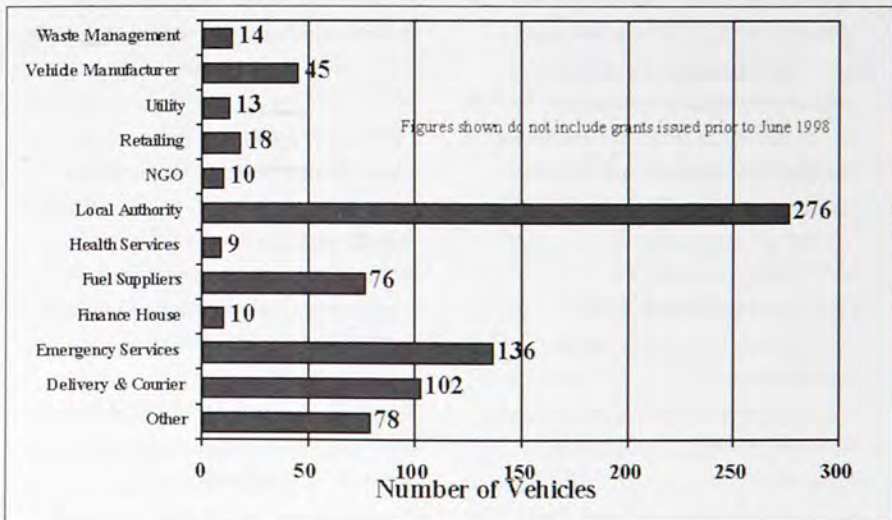


Fig. 3 Powershift grants by operator type

Success stories across the UK

Powershift's reach in the UK can be seen by the number and range of organisations who have received Powershift funding. Companies such as Safeway, Royal Mail, Securicor Vehicle Management, Marks & Spencer and many travel operators and local authorities have benefited from grants towards the purchase of clean fuel vehicles.

SECURICOR

Launch of Fleet: May 1998

Size of Fleet: 17 Ford Transit HiCubes

Fuel: LPG/Petrol

Project Partners: Calor Autogas, Ford

Background

Securicor Omega Express, were awarded Powershift's biggest ever, single application for funding for 170 clean fuel vehicles in May 1998. If the scheme is successful, Securicor will consider replacing their entire city-based fleet with LPG vehicles.

Financial implications

Over a 12 month period Securicor will have experienced a 22% saving on fuel costs for their vehicles when compared to the diesel equivalent.

Emissions

In an average year, a Securicor Omega Express van in London will travel 10,000 miles. A diesel-powered vehicle travelling this number of miles would produce almost 3 kg of particulates, or soot. The Omega Express LPG vans will reduce particulate emissions to zero. In addition, the vehicles produce up to 70% less of the regulated exhaust emissions than petrol and diesel vehicles and no gas refuelling vapour emissions.

SAFEWAY

Launch of Fleet: March 1998

Size of Fleet: 10 delivery lorries

Fuel: CNG

Project Partners: Safeway, Mobil CNG, ERF using Perkins Eagle Engines

Background

As one of the most advanced fleets of

heavy goods vehicles in the country, Safeway's compressed natural gas (CNG) delivery lorries distribute fresh food to over 50 stores in London and the Home Counties. Working closely with Mobile CNG and ERF to develop the pilot fleet, Safeway received a grant from the Powershift programme to cover 50% of the additional cost of the vehicles.

Financial implications

Safeway initially introduced the vehicles for environmental and good corporate citizenship reasons. However, the financial savings on fuel and maintenance have proven to be of significant commercial benefit. Since March 1998, Safeway has seen a 20% saving on fuel costs for the CNG lorries when compared to the diesel equivalent.

Emissions

Testing carried out by Millbrook Proving Ground, to evaluate emission levels, found the CNG vehicle reduced carbon monoxide (CO) by 97%. Total hydrocarbons (THC) by 81% and reduced particulate matter (PM) by 94% when compared to the diesel engine equivalent.

Operational benefits

Millbrook Proving Ground found the engine in the CNG vehicle was four times quieter than a diesel engine, at low engine speeds. When idling, the engine is 7 dBA quieter than a diesel engine. The benefits of having a quieter engine makes CNG vehicles ideal for delivery at night to stores in residential areas. This increased the times that vehicles can operate which also has a financial benefit.

ROYAL MAIL

Launch of Fleet: April 1997

Size of Fleet: 3 Peugeot 106 car derived vans

Fuel: Electric

Project Partners: Peugeot, Coventry City Council, East Midlands Electricity and PowerGen.

Background

As part of its assessment of clean fuel technology, Royal Mail took part in a one-year pilot of electric vehicles in the Coventry area. The vehicles were used in

the outer suburbs of Coventry for general postal duties, delivery and pick up of post and for car-pool duties. The average mileage of the vehicles, which were data logged, was 30 miles per day operating in suburban traffic, although individual vehicles recorded mileage well in excess of 80 miles per day during busy periods. The Royal Mail vehicles achieved an average range of approximately 24 miles per charge, and when utilised fully achieved a daily working range of 65 miles.

Financial implications

RM Consulting, Royal Mail's internal review body, monitored the fuel usage of the Royal Mail electric vehicles and compared it to the diesel vehicle operating the same duty. Studies showed a cost saving of 4.5 pence per mile excluding battery costs. Based on the average mileage per vehicle over a year. This is a saving of £750 per annum.

Emissions

There are no emissions at point of use.

Operational benefits

Royal Mail conducted an in-depth review of the attitudes of their drivers towards the electric vehicles and found they were all impressed with the Peugeot Electric 106. Subsequently, Royal Mail has expressed interest in large electric vans being introduced into the UK.

Other facts

The vehicles used by Royal Mail were charged from normal 13 amp - 240 volt domestic sockets and, when fully charged, have a range of 55 miles. It takes four hours to fully recharge a Peugeot Electric 106 from a 13-amp socket. The vehicles are capable of being fast-charged from a three-phase supply, utilising specialised recharging equipment in 30 minutes.



Peugeot 106 electric car being charged in Coventry city centre

Clean fuel vehicles in context

	Petrol/Diesel	LPG	NG	Electric
Extent of use	UK: 23 million Worldwide: 493 million	UK: 5000 Worldwide: 4 million	UK: 500 Worldwide: 1 million	UK: 100 Worldwide: data not available
Running costs	6.3 p/km (Petrol) 5.3 p/km (Diesel)	4.8 p/km	3.5 p/km	1.0 p/km
Air quality	NO _x , Particulates and CO ₂	50% reduction in NO _x , 80% in particulates 15% reduction in CO ₂	50% reduction in NO _x , 80% in particulates 15% reduction in CO ₂	Zero emissions at point of use
Refuelling outlets (1998)	14,824	150 (400 planned for 2000)	30 (100 planned for 2000)	13 amp socket, some public recharge sites established

Powershift funding - applications made easy

Powershift funding can be applied for through two routes:

1. Powershift Register route: Grants offered to a vehicle operator to reduce the capital cost premium when purchasing or converting a clean fuel vehicle from a Powershift approved manufacturer or converter. This would be the normal procedure for most applicants.

2. Powershift Demonstration Project route - discretionary grants can be offered to a consortium to demonstrate new clean fuel vehicle technology. This procedure should only be used for clean vehicles which are not commercially available or have not been demonstrated in the UK previously. For details of the application procedure for Powershift Demonstration Projects write to: The Powershift Administrator, Energy Saving Trust, 21 Dartmouth Street, London, SW1H 9BP.

Powershift funding levels in the register are linked to the emissions and efficiency of clean fuel vehicle types. Grants range from 25-75% of the

additional cost of the clean fuel vehicle compared to the equivalent conventional fuel vehicle. There are currently no limits on the number of funds that any single organisation can apply for.

HOW TO APPLY FOR FUNDING

Step 1 - application

- Select the vehicles you wish to purchase or convert from the Powershift Register. Only clean fuel vehicles and conversions listed in the Powershift Register are eligible for grants.
- Make arrangements for a clean fuel supply either directly from a clean fuel supplier or through an existing public clean fuel distribution outlet.
- Complete your Powershift application form, including the EST Vehicle ID number, sign the declaration and post to the Energy Saving Trust.

Step 2 - funding approval

- A funding decision will be made within one month of the date your

application being received by the Energy Saving Trust. It is important not to place an order for a vehicle until you receive a written offer of a grant.

Step 3 - vehicle order

- Complete any outstanding commercial negotiation with the nominated vehicle supplier/manufacturer/converter.
- The order must be placed within three months of receiving the offer of grant and proof of order must be sent to the Energy Saving Trust.

Step 4 - vehicle purchase and grant payment

- You will receive payment of the grant once the vehicles have been delivered, by presenting the Energy Saving Trust with the required documentation including the copy of invoice.

To obtain a Powershift Application Pack call the Energy Efficiency Hotline on 0345 277200 and quote: 'Powershift'.

Liverpool pioneers gas

Merseytravel is the lead partner in a European wide consortium of cities which came together in Liverpool in December 1993 to sign up for the JUPITER project - sharing best practise and experience in seeking low emission and energy reducing technologies in the development of new public transport initiatives. Other cities in the group include; Allborg in Denmark, Florence in Italy, Bilbao in Spain, Nantes in France, Heidelberg in Germany and Riga in Latvia.

In November last year the UK's biggest fully-accessible electric-powered bus service rolled into action in Birkenhead, across the River Mersey from Liverpool. The six yellow and green vehicles took to the road to provide an environmentally friendly and free town centre shuttle service.

Merseytravel's £1.7 million SMART-ECO five year project aims to demonstrate real impacts in improving air quality, reducing energy usage, congestion and pollution in Birkenhead.

It will shuttle town centre shoppers, tourists and commuters around the centre of Birkenhead, providing regular links between the Woodside Ferry Terminal, tourist attractions in the Hamilton Quarter, Birkenhead Bus Station and Conway Park Merseyrail Station.

The ground breaking scheme has also been funded by the European Union, under the JUPITER project, the Energy Saving Trust Powershift Programme and Merseytravel,

with support from Wirral Metropolitan Borough Council. The Hamilton Quarter pump-primed the project funding new infrastructure and high quality SMART-ECO shelters. The vehicles will be operated for Merseytravel by Crosville PMT.

The project comprises:

- six zero-emission electric mini vehicles,
- full accessibility for people with mobility problems,
- bright and comfortable green SMART-ECO shelters,
- electronic real-time information displays.

The Italian manufactured Gulliver vehicles has a floor height of just 330 mm and is fully accessible for people in wheelchairs and parents with pushchairs. It has an electric ramp for boarding and the bus has kneeling suspension to take it closer to the kerb.

The bodywork is glass fibre on a steel chassis, to reduce weight, and is only 5 m

long and remarkably manoeuvrable with a turning circle of just 6 m radius. The rear mounted battery pallet is loaded by forklift, allowing minimum fuss in recharging, so the vehicles can just swap pallets and be back on the road in a matter of minutes.

The direct current motor generates 24.8 kW with a maximum speed of 32 km/h, from 36 cells each with 585 Ah capacity running at 72 volts.

The Birkenhead project was followed in February by the launch of the UK's most advanced compressed natural gas (CNG) buses onto Southport's Park and Ride services. The £2 million, four year programme of investment was launched by Merseytravel, with the help of Fred Talbot, Granada TV's eccentric weatherman.

The compressed natural gas powered system comprises:

- four CNG-powered, low-floor SMART quality buses,
- six SMART-ECO shelters,
- real-time electronic information screens,
- 10/15 minute services - two sites - seven days a week,
- most rigorous gas technology safety programme in UK.

The service is funded jointly by Merseytravel, Sefton Metropolitan Borough Council and the European Commission THERMIE programme, with support from the Energy Saving Trust, and is operated by MTL North, who have bought the vehicles.

The four low-floor Plaxton bodied vehicles are powered by Cummins B series CNG 5.9 litre, water cooled, turbo charged engines, fitted with gas oxygen sensors. They have a maximum speed of 88 km/h and a range of 200 miles.

Emissions from a CNG bus can reduce pollutants significantly when compared with a conventional diesel engined bus - carbon monoxide by 85%, nitrogen oxide by 50%, hydrocarbons by 20% and particulates by 70%. And CNG vehicles can achieve a total life-cycle reduction in carbon dioxide emissions of 15-20%.



Two of Southport's new CNG-powered buses - with local weatherman Fred Talbot

and electric buses

Most fleet managers 'ignorant of fuel costs' - AA campaigns on fuel taxes

The results of a recent fuel efficiency survey conducted by the Energy Efficiency Best Practice Programme amongst the managers of 265 commercial vehicle fleets has revealed some alarming statistics. Only 30% knew their total expenditure on fuel and only 20% knew how much fuel their fleet actually consumed. Carried out over the winter of 1997/98, the survey showed that, while a small number of managers are managing their fuel efficiently, the remainder are missing out on opportunities to cut costs.

Those surveyed cited low company priority for fuel efficiency and lack of time as the main barriers to improved efficiency. However, speaking for the Energy Efficiency Best Practice Programme, Dr Marcus Jones said: 'Claiming a lack of time is really a false economy - these firms are missing out on substantial savings opportunities. For a comparatively small investment, they could reap significant savings, which go straight to the bottom line. With fuel duty set to rise annually by 6% above inflation, there has never been a greater need to control fuel costs'.

There is no doubt that commercial vehicle fleet operators have a critical part to play in reducing the UK's fuel usage and improving its environmental performance. Commercial vehicle fleets consume around 11 billion litres of fuel annually - an average of 32,000 litres per vehicle, while carbon dioxide emissions exceed 27 million tonnes, representing nearly a quarter of the UK's yearly transport carbon dioxide emissions.

The activities of the fuel-efficient managers showed that energy-saving

need not be an expensive activity - investing only a little time and care can itself produce rich rewards.

For example, fuel consumption falls by about 5% when drivers are aware that fuel costs are being monitored, while using fuel consumption data to choose new vehicles and managing fuel records effectively can cut fuel usage by another 15%. The survey also showed the value of using the Energy Efficiency Best Practice Programme, with commercial fleet operators using the Programme saving 25% more fuel over the last five years than other operators. In fact, it is estimated that, if all fleet operators achieved these savings, the value could exceed £220 million/year, with annual carbon dioxide emissions reduced by over one million tonnes.

Meanwhile, the AA has targeted fifteen million drivers in a war to combat public ignorance about what it calls the UK's highest-ever fuel taxes. AA research shows that very few drivers know the truth about the amount of money they give to the government every time they fill up - and are outraged when they find out.

The campaign saw fifteen million cards given away with receipts at 10,000 petrol stations across the UK over a fortnight in February, explaining that £8 in every £10 spent on fuel is tax. It is being run in conjunction with the UK petrol Industry Association (UKPIA). The card also encourages drivers to contact the AA with their views.

Only 7% of drivers know the true level of fuel taxes, with the majority believing they are less than 50% of the price of a litre - the true figure is more than 80%.

John Dawson, the AA's Policy Director, says: 'When people find out the truth they become much more indignant about government plans to tax drivers. They then want a fair deal and want the AA to campaign for one. The retail fuel industry is legally obliged to show the full price of fuel and can't show tax separately, so we're showing the public the truth.'

The government is committed to increase fuel prices year on year by at least 6% above inflation, claiming that the policy will combat rising carbon dioxide emissions. The AA believes the environmental argument is bogus, with the taxes simply hitting poorer families, older drivers, and those in rural areas.

Friends of the Earth have called the AA campaign 'shameful', and suggested that the AA has omitted half of the story - the fact that driving a car is cheaper than it was 25 years ago. According to FoE (quoting figures from the Government's Indicators of Sustainable Development), bus fares have risen by 55% and rail fares by 71% in real terms since 1974, but the cost of motoring has fallen by 2%. The environmental group added that annual road tax revenues (at £16 billion in 1996) fail to meet the marginal costs of road transport (including air pollution, global warming, congestion, accidents and road damage) of £46-£53 billion, as calculated by the Government's own economic advisors. **Full details of the survey are contained in a leaflet - Attitudes to fuel efficiency - which can be obtained free by calling the Energy Efficiency Enquiries Bureau on 01235 436747, fax 01235 433066, or email etsuenq@aeat.co.uk.**

SEA change - the case for



Energy efficiency, renewables and CHP - a new sustainable energy agency would promote all three

Britain is awash with good intentions for energy efficiency, CHP and renewables, but will the targets ever be met? Not under current institutional arrangements, says the Green Alliance.

Britain's current institutional set-up is probably inadequate to deliver the growth in sustainable energy required over the next decade to meet the range of Government environmental targets, including those on carbon dioxide emissions. We need a new, independent sustainable energy agency (SEA) to operate at arm's length from government, an increased duty on the energy regulator to promote sustainable energy, and a new Cabinet Office Unit and Cabinet Committee to coordinate policy in government.

These are the conclusions of a new report: *The case for a sustainable energy agency* from the Green Alliance, published with the support of the Pilkington Energy Efficiency Trust. The Green Alliance is an environmental pressure group working to "place sustainable development at the heart of decision-making".

Its report highlights "the incoherence in Government energy policy and the fragmentation of the institutions delivering sustainable energy" and concludes by recommending the establishment of a powerful sustainable energy agency which "would subsume existing institutions and funding, and deliver a more coordinated

and effective approach".

The environment lobby group has seen, on the one hand, a set of highly ambitious environmental targets set by Government over recent years (a 20% reduction in carbon dioxide emissions, 10% of UK electricity to be generated by renewables, at least 10 GW of installed CHP capacity; all by 2010) and, on the other hand, an institutional framework simply not geared up or focused enough to deliver success. That framework includes Government departments which often work against each other.

While ambitious, the Government's targets are not unrealistic, says the Alliance, as overseas experience proves. Both the Netherlands and Denmark already generate some 40% of their total electricity needs by CHP and, in a relatively short period of time, Germany has installed more than six times the wind power capacity of the UK. While Britain has taken great strides in improving its overall energy efficiency, countries such as the Netherlands and Denmark have improved at twice the rate.

Getting specific, the report suggests that for Britain to bridge the gap between today's 2% of electricity generated from renewables to the target of 10% would require around 500 MW of new projects to be brought on-stream every year for the next decade. This is simply not going to happen with the current support mechanism, the Non Fossil Fuel Obligation, and the currently poor record of

projects winning planning permission.

Similarly, although Britain now has something approaching 4 GW of CHP capacity, low (and falling) electricity prices and remaining institutional barriers to CHP (principally the inability of CHP operators to receive the full value of their 'embedded' generation) make the target of 10 GW or more by 2010 appear unachievable, adds the report.

In addition, the institutions responsible for what could be termed sustainable energy have grown up in an *ad hoc* and uncoordinated way over time, as responses to different imperatives of the day. For example, the vigorous energy conservation programmes of the 1970s were undermined by falling energy prices in the 1980s, and privatisation of the electricity industries led to the disbanding altogether of the Department of Energy in 1992.

There is already a considerable coordination gap and, far from there being less to do following privatisation, there are likely to be more aspects to sustainable energy in the near future. Existing or new agencies might be required to administer:

- potential credits from a Marshall-style energy tax,
- new NFFO-style schemes to support, perhaps energy efficiency and CHP schemes, in order to meet carbon dioxide reduction targets, and
- joint implementation and clean development mechanisms which have

a sustainable energy agency

Energy services for sustainable communities

The Local Government Association has revised its energy strategy in a new publication: *Energy Services for Sustainable Communities: The Local Government Position*. The document is a clear statement of the positive role that local authorities have to help the government reach its CO2 reduction targets. The LGA say that energy policy should be based on renewable energy and combined heat and power on the supply side, and a greater investment in energy efficiency to reduce consumption on the demand side. There is a clear call for the energy services concept to be promoted and this is reflected in the title of the document.

The report acknowledges the wide-ranging role of local government in promoting energy efficiency and sustainable development and does not simply focus on the Home Energy Conservation Act. It calls for further improvements in building regulations to make sure that our homes will be energy efficient in years to come.

The report is the most detailed and comprehensive argument yet by local government for pursuing sustainable energy strategies at the local and national level. It argues for steps which help reconcile the social, economic and

environmental aspects of providing the energy services that we all need - environmental targets must not be at the expense of social justice or quality of life, or the reverse. It asks for the powers and resources to enable local government to play a full part in providing the solutions for more sustainable local communities.

The report is illustrated by examples of action from virtually every service area in local government - demonstrating that creative solutions can and are being developed at the local level, and that English and Welsh local authorities are among those leading the world in sustainable development policy, process and action, despite current barriers. It draws on this experience to offer proposals for how a national energy policy could be implemented, the range of roles local authorities can and should play, and the national policy framework needed to enable them to do so to the full.

The LGA recognises that energy is central to all three strands of sustainable development:

- environmental, through climate change, pollution and ecological impacts,
- social, through contributing to quality of life and maintaining good health, and the eradication of fuel poverty, and
- economic, through (literally) fuelling

the economy and providing jobs.

The lack of a coherent national energy policy means Britain is currently failing to achieve environmental, social or economic aims:

- Current programmes will not meet the 8% greenhouse gas target agreed at Kyoto, let alone the 20% manifesto commitment or the 60% or more required for sustainability.
- Millions of people suffer fuel poverty.
- Huge opportunities to improve competitiveness and create jobs in sustainable energy industries are passing us by.

The current priority of reducing energy prices by increasing supply competition is failing to help the most vulnerable consumers, discouraging conservation, and failing to prepare the economy for a sustainable future - there are currently too many contradictions to reconcile differing objectives: cheaper energy prices mainly help the well off; but people and business fail to invest in more efficient use of resources, and millions still suffer ill health and hardship - sometimes paying more since competition.

The national energy strategy should set quantified national targets for reducing the need for energy, using it more efficiently, and shifting to using renewables.

come from climate change negotiations at Kyoto and Buenos Aires.

The Green Alliance favours the creation of one new super agency to tackle the lot - a non-departmental public body, similar in status to the Environment or Highways Agency. The proposed SEA for England and Wales would be responsible for developing a sustainable energy system in England and Wales and report jointly to the DETR, the DTI and the Welsh Office. Parallel machinery would have to be brought in for Scotland and Northern Ireland.

Alongside, a new Cabinet Committee would improve policy coordination in Whitehall and act as a focus for policy delivery, and the energy regulator would have a key role in working with SEA to implement many of the sustainable energy targets.

The agency could be built around a structure to that of the Energy Saving Trust - with the addition of responsibility for industrial energy efficiency, CHP and renewables. It would administer funds to ETSU, BRECSU and the fuel poverty organisations. It would be funded by

sweeping-up all the existing funding, to the Energy Saving Trust, ETSU, BRECSU, EAGA and R & D bodies, as well as the NFFO levy and new sources such as energy tax revenues.

But would it work? The Alliance points to the successful operation of similar agencies overseas - the Netherlands' Novem, the Danish Energy Agency and the Sustainable Energy Development Agency in Australia - as evidence that it could.

Copies of *The case for a sustainable energy agency* are available for £20 from the Green Alliance, tel: 0171 836 0341.

The millennium bug issue gets more coverage in the press now that we are just a few months away from the most important date. Emphasis has shifted away from how organisations are going to beat the problem, and towards stories of planning for any eventuality. Other reports reveal the impossibility of completing preparatory work in the next 270 days or so. On these pages a building services specialist, ICL and the UK Offshore Operators Association give their views.

Building management systems might start a cascade

by Archie Spence, Director, ABS consulting

ABS have been responsible for undertaking millennium consultancy with respect to building management systems for a number of clients in the UK and internationally. In the following interview ABS' Archie Spence offers his view of the likely effect of the 'bug'.

What do you think will happen at the start of the new millennium?

There is all sorts of conjecture about what might happen. We should set out what the facts are first and set out our areas of doubt. I will do this and then speculate about what will happen.

OK, what are the facts?

At ABS consulting we started by doing what everyone else did, we collected comprehensive asset registers of plant and equipment and started talking to suppliers and manufacturers. We received assurances from some suppliers that their equipment was compliant; many had not thought about it and did not know the status of their equipment.

A parallel process of undertaking tests on-site with manufacturers commenced for systems considered critical to the business - even where positive compliance statements were received. The results of our investigations can be grouped into the following broad categories:

- the majority of systems are compliant, around 95%,
- the majority of tests proved compliance,
- a small number failed,
- a very small number passed but failed if tests were repeated,
- some manufacturers thought they were compliant but had not taken into account some of the third party control

systems incorporated into their plant,

- manufacturers of a small but significant number of systems could not be found, so testing the systems was problematical and speculative.

So this leads us to the areas of uncertainty?

Yes, in many cases suppliers could not commit to undertaking tests or could only test components directly manufactured by themselves. The effect of the global market for purchasing chips, boards and processors has brought about a particularly interesting audit trail!

To give clients advice on the level of compliance we commenced a process of technical inspections of control systems. Originally this was to make a judgement for those systems where the manufacturer could not be contacted or could/would not help. Replacing a system through lack of knowledge is costly and is not always an acceptable solution.

We opened up panels and inspected the chips resident on boards. We then researched the contents and resident programmes on the chips to determine their compliance level. Luckily the number of manufacturers and types of chips used in our industry is relatively small. An assessment of compliance could then be made and advice offered to the client.

This process was soon recognised as offering a fast, low-cost level of understanding. It is now used for all important and critical systems. It has revealed that manufacturers do not always know what is resident in their own panels, and that statements of compliance referring to the absence of intelligent processors can be questioned from a knowledge base.

So what systems are a worry?

Our process has shown that the following

may fail:

- building management systems - vulnerabilities are widely acknowledged but upgrade paths are generally available - at a cost,
- fire alarm systems, particularly the more sophisticated,
- intruder and access security systems.

However, my concern is not with systems we have looked into in detail for our clients. By undertaking these projects our clients have demonstrated their concern for the issues and the process includes the updating of contingency plans.

The problems I foresee will come as a result of ignorance, inaction, inappropriate levels of action or human error. It is not so much a case of system failure but potential business failure as a consequence.

What businesses do you have concerns over?

A lot of ABS's work is in the commercial and banking sectors where the business risk drives investment decisions. I would suggest that these types of organisations will have minimal difficulty due to the calibre of personnel they have sub-contracted to and the investment made.

Many of the public sector industries have other drivers which may take funding priority. Many have extensive in-house engineering departments and significant investment in external specialists may not be politically acceptable.

Universities and hospitals are an example of this where many have committed their own engineering maintenance staff to undertake asset collection, risk assessments, contingency plans, tests, and cataloguing it all with an audit trail. The same staff have been working hard to keep buildings operational with limited budgets for years yet they are expected to undertake this further work, probably with minimal additional funding. It is

ICL calls for 'glasnost' ahead of Y2K

Nobody knows exactly what's going to happen on 1st January next, but most of us think there are going to be problems. Now, a poll from ICL, the IT services company, has found that almost two thirds (62%) of IT decision makers - who perhaps ought to know best - feel that the Year 2000 problem poses a threat to public services, and 49% believe utilities will be affected or may not work.

Only just under half (45%) of all respondents are confident that UK organisations have the problem under control.

The poll, commissioned by ICL, was conducted by MORI during January 1999.

difficult to believe that pressurised staff can perform for any length of time without mistakes. The common method of demonstrating that the issue is being addressed is to seek manufacturers' statements, this reduces pressure on staff time. However, as we have experienced, this is not an infallible approach. This is what concerns me.

You are most concerned about universities and hospitals then?

I am concerned about these as they will have large numbers of occupants in residence over each of the dates when difficulties may occur. Life safety systems will need to have been properly investigated and tested. Fire alarms which fail to operate properly on a campus could cause chaos. The knock on effect of faulty fire alarms will be to cause disruption to the Fire Brigades. Chasing false alarms will inevitably lead to failure to attend real incidents.

The emergency services will suffer then?

Our work in the communications industry and experience of investigating processing chips has brought home to me the extent of technology problems we face. The telecommunications industry has been evolving as quickly as the computer industry, with a similar record of buy outs and company failures. I would be surprised if much of the equipment manufactured over the last ten years had chips which were all compliant or for which statements

Two hundred IT/new media and telecoms specialists in businesses with an annual turnover of £1 million or more, and 600 members of the British public were questioned and their results compared.

There is a general confusion as to what will be effected by the bug, says ICL, with cashpoint machines, telephone networks, traffic lights and the emergency services as well as PCs seen as the most likely to malfunction. ICL is therefore calling for 'Year 2000 Glasnost' where businesses should be encouraged to be open about their levels of Year 2000 preparedness, which in turn would reassure the public and foster an atmosphere of understanding rather than blame.

of compliance could be obtained. Communications are essential to all business - but what happens when you cannot contact the emergency services? In February this year the National Audit Office reported that Parliament had been informed that OFFER, OFWAT and OFTEL were awaiting independent validation of information on the millennium problem. It was reported that many of the public and utility services companies were still to complete rectification and testing programmes. So one might consider that there will be disruption due to non-completion of the works.

And the effect of this?

Localised failure of utility services is perhaps inevitable. Some services will be back on line quicker than others. The switching for public power generation and distribution is fairly basic and robust compared to the sophisticated monitoring and load re-distribution systems. This might mean that if no power outages occur all will be well, but should one part fail there could be a domino effect.

Mass panic is unlikely as the media will be affected and may be as confused through disrupted communications as everyone else. Most people will consider that any problem is a localised thing. Battery powered radio might be the only method of receiving news in some areas and this news will be restricted by the media's inability to gather news.

The view from offshore

The UK Offshore Operators Association (UKOOA) Year 2000 (Y2K) Task Force was set up mid-1997.

The industry is broadly addressing the Y2K issues in four main phases: inventory, audit, correction, and contingency (business continuity planning).

In line with other industrial sectors, for every 20,000 business and plant systems examined, around 36% (7,200) were identified as warranting further investigation for potential risk of material disruption to business continuity. Of these items, 5% were found to be in the medium to high risk categories, requiring remedial action. The items were found largely in scheduling and hydrocarbon accounting systems.

No safety issues have been identified. Safety critical systems offshore are either hardwired or, where they use computers, are designed to fail safe.

The industry is now nearing completion of the correction phase. Although much of the remedial work was completed by the end of 1998, certain tasks remain to be done and are scheduled to be carried out during the annual summer shut down of operations.

Contingency planning is well underway, with members working closely with operators of pipeline and onshore infrastructure, such as the utility companies, to ensure continuity of supply.

So how does it all get put right?

Many systems have reasonably simple fixes which in many cases is turning the system to manual control. Contingency plans for when it goes wrong will be relied upon, most of these will be common sense approaches. British ingenuity and common sense in a tight spot will also help us out.

Britain's first fuel cell bus by 2001

Energy Minister John Battle has announced that the DTI is to support the design, construction and evaluation of a solid polymer fuel cell (SPFC) bus, reports the DTI's *New Review* magazine. This will be the first methanol-fuelled SPFC bus in the world to be evaluated on commercial routes. The total cost of the project, which will be led by Robert Wright and Sons Ltd, is estimated at nearly £4 million, with the DTI contributing 50% of the industrial research costs.

The bus will take full advantage of the design flexibility and benefits offered by

fuel cell power and electric drive-trains. It is expected that the vehicle will be a full-size 12 m vehicle, which will make use of techniques being developed by Robert Wright and Sons under the DTI's Foresight Vehicle Initiative. The bus's overall power rating will be about 175 kWe, with a fuel cell power rating in the order of 50 kWe.

Johnson Matthey will develop and supply an advanced methanol fuel processor, based on its HotSpot™ reformer and Demonox™ carbon monoxide clean-up technologies. Alstom

Transport SA will design the electric drive-train using its compact Onix™ low-floor motorised axle. The fuel cell stacks will be purchased by competitive tender.

After exhaustive testing, the bus will be evaluated on commercial routes in a UK city. These trials, planned for 2001, will be a valuable opportunity for the public to see, at first hand, fuel cell technology in action. As well as assessing operating costs, reliability and performance, particular attention will be paid to feedback from drivers and passengers, adds the Department.

Government urged to back biodiesel

The British Association for Bio Fuels and Oils has launched a campaign to persuade the Government to remove the excise duty on biodiesel.

Biodiesel can be produced in Britain from oilseed crops and as such provides a completely renewable energy source. It is the

only renewable clean liquid transport fuel that can be used in all diesel vehicles without modification, says the Association. It adds no extra carbon dioxide to the air, and no sulphur, making it an ideal fuel for inner city transport.

The Association points out that biodiesel is currently taxed at the same

rate as DERV, approximately 44p per litre, effectively preventing its use in Britain. BABFO believes that it is wrong to maintain a policy which prevents the development of such an environmentally friendly fuel and which is already being used successfully in other EU countries.

AEA to help remove nuclear fuel from Russian ship

In Murmansk harbour in northern Russia an ageing barge called the LEPSE has more than 600 highly radioactive spent nuclear fuel elements, which came from the Russian nuclear icebreaker fleet, stored in its hold. Some of the fuel elements are damaged, making removal difficult, and the condition of the ship is causing international concern.

AEA Technology, leading a consortium with SGN of France, has won a contract from the European Commission to prepare safety and environmental reports which will form the basis of future plans to remove the fuel.

The project has been developed as part of the TACIS programme, an EU initiative for the New Independent States and Mongolia, to foster the development of economic and political links between the Union and these partner countries.

Construction of the LEPSE began in 1934 but was not completed and the ship was scuttled in 1941. It was salvaged after the war, modified for nuclear service purposes, and was brought into service in

1962. In 1967, fuel elements from the Lenin, which had been damaged during an accident, were transferred to the LEPSE. These elements were swollen and distorted during the accident and some force had to be used to insert them into storage channels.

In 1996, the European Commission agreed to fund a study into the feasibility of defuelling and decommissioning the LEPSE, and awarded a contract to a consortium led by SGN (of France) and including AEA Technology.

The report from that study identified an approach to the problem which it judged to be feasible. The recommended approach has been endorsed by the International Advisory Committee on LEPSE, a body under the chairmanship of the Norwegian Ministry of Foreign Affairs, which is co-ordinating the operation.

The programme will be implemented through the execution of several work packages, consisting of engineering studies, supply of equipment, support to the operator of the ship (the Murmansk

Shipping Company), and training of the crews in charge of the on-site work.



The LEPSE in Murmansk harbour

April 1999

European electricity liberalisation

Workshop, 12-14 April, Brighton, £1395 + VAT
Details from Power Ink Ltd,
tel: 01273 202920,
fax: 01273 203720

Electrochemical processing

Conference, 12-16 April, Chester
Details from EA Technology,
tel: 0151 347 2323,
fax: 0151 347 2178

Preparing for the next era

Conference on Mediterranean gas, 13-14 April, Palermo, Sicily
Details from Overview Conferences,
fax: 0171 650 1431, e-mail: confs@economatters.com

Power plant management, operations and maintenance

Conference, 14-15 April, Frankfurt
Details from IBC UK Conferences,
tel: 0171 453 5491,
fax: 0171 636 6858,
e-mail: cust.serv@ibcuk.co.uk

Enhanced petroleum reservoir management

Conference, 15-16 April, Vienna
Details from Jane Kennedy at CMPT,
tel: 0870 608 3440,
fax: 0870 608 3480,
e-mail: j.kennedy@cmpt.com

Gas turbine technology

Course, 19-21 April, Amsterdam
Details from The Center for Professional Advancement,
tel: +31 20 638 2806,
fax: +31 20 620 2136

Heat exchangers

Course, 19-23 April, Amsterdam
Details from The Center for Professional Advancement,
tel: +31 20 638 2806,
fax: +31 20 620 2136

Boilerhouse management

Course, 20-21 April, Nottingham
Details from NIFES,
tel: 0115 984 4944,
fax: 0115 984 4933,
e-mail: nottingham@nifes.co.uk

Renewable energy in a globally warming world

Institute of Energy Ellis Memorial Lecture, 22 April, Birmingham
Details from Mr H Freeman,
tel: 0121 353 2397

Coal after the Energy Review

Seminar, 23 April, Wakefield, £50
Details from the Coalfield Communities Campaign,
tel: 01226 200768,
fax: 01226 296532

Where are the utilities going next?

Conference, 26-27 April, London
Details from the Strategic Planning Society,
tel: 0171 636 7737,
fax: 0171 323 1692,
e-mail: events@sps.org.uk

Cogeneration in Europe

Conference, 26-28 April, Prague
Details from IBC Global Conferences,
tel: 0171 453 5491,
fax: 0171 636 6858,
e-mail: cust.serv@ibcuk.co.uk

Understanding heat treatment

Course, 27-29 April, Birmingham
Details from the Wolfson Heat Treatment Centre,
tel: 0121 359 3611,
fax: 0121 359 8910,
e-mail: whtc@aston.ac.uk

National HECA Forum

Forum, 28 April, Leeds
Details from Denise Marsdon at NES, tel: 01908 672787,
fax: 01908 662296, e-mail: enquiry@nesltd.demon.co.uk

How to do an energy survey

Course, 28 April, Birmingham
Details from Mid Career College,
tel: 01223 880016,
fax: 01223 881604, e-mail: courses@mid-career-college.ac.uk

May 1999

Power production

Course, 4-6 May, Woking
Details from the Petroleum Economist, tel: 0171 831 5588,
fax: 0171 831 4567

Specifying building management systems

Course, 5 May, London
Details from Mid Career College, tel: 01223 880016,
fax: 01223 881604,
e-mail: courses@mid-career-college.ac.uk

How to BREEAM a building

Course, 6 May, London
Details from Mid Career College, tel: 01223 880016,
fax: 01223 881604,
e-mail: courses@mid-career-college.ac.uk

Developing and managing cogen partnerships

Conference, 6-7 May, London
Details from DMG Power Conferences,
tel: 01737 855380,
fax: 01737 855283

Pipeline rehabilitation and maintenance

Conference and exhibition, 9-12 May, Abu Dhabi
Details from Energy Logistics International,
tel: 01628 671717,
fax: 01628 671720, e-mail: enquiries@energylogistics.co.uk

How to do an energy survey

Course, 10 May, London
Details from Mid Career College, tel: 01223 880016,
fax: 01223 881604,
e-mail: courses@mid-career-college.ac.uk

Irish energy – liberalisation, competition and emerging opportunities

Conference, 10-11 May, Dublin
Details from Smi, tel: 0171 252 222, fax: 0171 252 2272

UK supply

Workshop, 10-12 May, Brighton
Details from Power Ink Ltd,
tel: 01273 202920, fax: 01273 203720

Towards a renewable future

Conference, 13-15 May, Brighton
Details from Ms C Buckle at the Solar Energy Society, tel: 01865 484367, fax: 01865 484263, e-mail: uk-ises@brookes.ac.uk

NEW MEMBERS

EAST MIDLANDS

Mr T Foote, Associate
ABB O&M Services Ltd

LONDON & HOME COUNTIES

Mr D E Parsley, MInstE
Roche Products Ltd
Mr L P Sanson, Associate
Fuel & Combustion Technology Ltd
Mr R E Seoud, MInstE
DERA Pystock Ltd

NORTH EAST

Mr G A Wilson, Graduate
Rolls Royce Industrial Controls

NORTHERN IRELAND

Miss M Treanor, Student
University of Ulster
Mr R A Woodward, Student
University of Ulster

NORTH WEST

Ms N Jones, Student
University of Leeds

SCOTLAND

Mr A Grangeret, Graduate
Laidlaw Drew Ltd

Mr S Kerek, Student
Napier University

SOUTH WALES & WEST OF ENGLAND

Mr J C Joseph, Student
University of Wales, Cardiff
Mr JBR Mellows, Student
University of Wales, Cardiff
Mr E S Roberts, Student
University of Wales, Cardiff

HONG KONG

Mr C M Cheung, MInstE
China Light & Power Co Ltd
Mr CT Jee, MInstE
China Light & Power Co Ltd
Mr SP Leung, MInstE
CLP Power
Mr HWT Tsui, MInstE
Hong Kong Fire Services Dept
Mr HYW Tsui, MInstE
EDS Electronic Data Systems (HK) Ltd
Mr B K Yeung, MInstE
EHS Consultants Ltd

OVERSEAS

Mr M Chimone, Graduate
Zimbabwe Electricity Supply Authority

BRANCH EVENTS

APRIL 1999

NORTHERN IRELAND BRANCH

Wednesday 14 April
University of Ulster Jordanstown
12.30pm: Committee Meeting.
2.00pm: Visit to Northern Ireland Centre for Energy Research & Technology (NICERT).
Contact Dr P Waterfield,
tel: 01232 364090
email: p.waterfield@ulst.ac.uk

SCOTTISH BRANCH

Friday 16 April
AGM and Annual Dinner,
RSAC, Glasgow. Contact
C Boyd, tel: 0141 270 7060

YORKSHIRE BRANCH

Wednesday 21 April
(Venue to be confirmed)
Branch Annual General Meeting.
Contact Mr A Mallalieu,
tel: 0113 276 8888

MIDLAND BRANCH

Thursday 22 April, 11.15 am
The Ellis Memorial Lecture
The Birmingham Botanical Gardens
'Renewable Energy in a Globally Warning World' -
Dr Mary Archer,
Chairman of The National Energy Foundation.
Contact Mr H Freeman,
tel 0121 353 2397

MAY 1999

MIDLAND BRANCH

Thursday 6 May
Transco Operational Centre at Hinckley Works Visit 2.30 pm
Branch Annual General Meeting 5.00 pm. Contact Mr H Freeman, tel: 0121 353 2397

SOUTH COAST BRANCH

Wednesday 19 May
(Venue to be confirmed)
1999 AGM
Contact T Smith,
tel: 01256 768221

SOUTH WALES AND WEST OF ENGLAND BRANCH

Thursday 20 May, 6.00pm.
(Venue to be confirmed)
AGM and lecture on Desulphurisation Technologies by R Holder of EDT Ltd.
Contact Dr I Weslake Hill,
tel: 01222 757527

NORTHERN IRELAND BRANCH

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

DEATHS

Ryszard Karol DUTKIEWICZ FInstE, South Africa
John STREET FInstE, North West Branch
S. Robert CRAXFORD FInstE, London Home Counties Branch

OBITUARY

ARTHUR DARRINGTON CEng FInstE FIGasE

It is with great regret that I report the death of Arthur Darrington. A graduate of Leeds University in 1959, Arthur spent all his working life in the energy industries. Amongst his employers were N.I.F.E.S., Parkray Boilers and the local authorities of Nottinghamshire and Essex. He served the Institute as a member for over 40 years, being a committee member and Chairman of the East Midlands branch before transferring to the Yorkshire branch.

He was a person of many parts for whom the description 'a character' was most apt. He ended his life on a small holding near Scarborough where he gained great contentment from serving his family and tending his sheep.

To be in the presence of Arthur was to experience something different and he will be greatly missed by his family and all those who knew him.

Don Eastwood, East Midlands Branch

Accreditation & Approval Panel Training Day

On Monday 22 February 1999, Tracey Fisher and Deepti Jayawardena Wilkinson of the Membership and Education Team, facilitated a training session at the Institute for 17 members, from a range of academic and industrial backgrounds, who had expressed an interest in being involved with the work of the new Accreditation and Approval Panel (AAP). The Panel is concerned with the educational, training and professional development functions of the Institute and the profession.

The session opened with an overview of the roles of each of the Institute's re-structured Standing Committees. A brief description of each of the grades of membership of the Institute and their requirements was then provided, including the Engineering Council's requirements for registration at Chartered and Incorporated Engineer levels. A summary of the changes being introduced in the Engineering Council's new

Standards and Routes to Registration (SARTOR), due to take effect on 1 September 1999, was given by Tracey Fisher, detailing the impact that the changes would have on professional bodies and academic institutions.

The revised procedures for the approval and accreditation of academic, training and professional development programmes, using three specialist groups: Academic; Initial Professional Development (IPD) and Continuing Professional

Development (CPD), were also explained.

The day proved to be successful, and at the end of the session, when the members were asked to consider whether they would still like to be involved in the activities of the AAP, 14 of the attendees responded positively. It is anticipated that a second training session will soon be offered for other members expressing an interest in the Panel's work, so if you think you would like to be involved, give us a call!

Partnership Project Saves £100,000

The Institute of Energy is continuing to support companies who recognise the need to encourage the workforce to contribute to an energy and waste saving strategy. Working together with the Energy Efficiency Best Practice Programme recently and the Amalgamated Engineering and Electrical Union, the Institute recently provided a two day residential course, "Saving Energy and Reducing Waste through Partnerships" at the AEEU's Esher Training Centre on 1st and 2nd March. The training partnership was aimed at the "workforce" who are usually the best source of information about inefficient use of energy and waste.

The course comprised presentations on energy efficiency and waste reduction, energy and environmental standards and effective communication strategies. Participants were also guided through the Energy and Environmental Action Workbook, developed by the Institute of Energy, which would enable them to go back to their workplace

and tackle energy and waste issues on a project basis. One of the highlights of the course (apart from the food at Esher Place!) was a live case study presented by Perkins Engines. Two Perkins' employees, Tony Ellingford and Paul O'Hearn had attended

a Union course where they heard a lecture on the elimination of waste and energy conservation through partnership by Dr Uly Ma, Institute of Energy member and Project Manager for the Energy Efficiency Best Practice Programme. Impressed by the savings that could be made while at the same time protecting the environment, they set up a Perkins "Supersavers" project to raise awareness in the work place. The success of this project has led to reductions in the level of carbon monoxide emissions and energy



savings estimated by Perkins to be up to £100,000. Moreover, Perkins' employees no longer walk out of the back of the plant to see oily stagnants ponds. Instead, they can enjoy the pleasant sight of small ponds, ducks and trees!!

Tony and Paul were awarded the MBE on behalf of the team for their efforts in energy saving and environmental protection. This is a real example to us all that you don't need to be a specialist to 'make a difference'.

Licensing & Certification a development process for us all

Members actively involved in Institute affairs will be aware that, in recent months, a priority for senior members and some of the staff team has been the preparation for a forthcoming audit with the Engineering Council. This may at first seem an inward looking administrative task, but it has a much wider scope and far reaching implications for you and the Institute than you may at first assume.

Every 3 to 5 years the engineering institutions are audited by the Engineering Council to ensure that they are fit for purpose to act on the Engineering Council's behalf,

supporting individuals to become registrants and members. This involves dealing with membership applications through a variety of routes; supporting CPD activities; accrediting academic courses and approving industrial training schemes in the main. If the Institute is not acknowledged by the Engineering Council as a licensed and certificated body as an outcome of the audit, the Institute will be unable to carry out these activities to continue to register Chartered and Incorporated engineers.

The senior members and staff team preparing for the audit have genuinely found the process

to be a useful one, ensuring that high standards of service and support continue to be provided to you as members, underpinned by coherent procedures and practices. The Institute's written submission to the Engineering Council has recently been delivered. Now the Engineering Council is reviewing it, and in May, a Panel from the Engineering Council will visit the Institute to receive presentations from senior members to gather further evidence to evaluate. The Panel will then report their findings to a central committee at the Engineering Council and we hope to hear the outcome of the meeting.

In the meantime we will be writing to you individually to update you on services for members and advise you about some of the documentation which has been updated for you, in line with recent publications from the Engineering Council, such as the Code of Conduct for members.

We are pleased with the progress made on this activity and although there is no room for complacency, we are hopeful for a positive outcome for you, the members, and your Institute in a continued and strengthened relationship with the Engineering Council.

Council - a report from 23 February meeting

At the first meeting of the year, Council members came together to discuss a heavy agenda focused on matters relating to the development of the Institute and the forthcoming audit with the Engineering Council..

The Council meeting began with a closed session to discuss the appointment of a Secretary & Chief Executive. After extensive discussion the following resolution was unanimously agreed: "That Louise Evans should be appointed as Secretary & Chief Executive of The Institute of Energy with effect from 1 March 1999 for a five year term (subject to renewal by mutual agreement following review after four years)."

Mr Ingham, Honorary Treasurer, gave a positive report on the Institute's year end unaudited accounts and the performance of the investment

funds. Members will be able to review the Institute's finances in the June when the Summary of Financial Activities is published in advance of the AGM.

After twelve months of detailed investigation, led by a member of Council, the Council agreed to make an investment in implementing a new IT strategy for the Institute, to improve communications with members and the efficiency of central administration. It is hoped that the new system will go 'live' before the autumn of this year.

Three new Council members were nominated by Council to go forward to the AGM in June. These were: Mr Rod Wilkie, former chairman of the Scottish Branch; and Mr T Willox and Mr M Dickens, two Incorporated Engineers who recently joined the Membership Processing Panel. In addition, Mr B Chamberlain CEng FInstE was nominated with the unanimous

support of Council as Vice President, becoming President-Elect in June. Please remember that we always welcome members' involvement in the Institute's activities within the Branch committees or centrally.

Branch reports from members were generally positive, although some were frustrated by the lack of members attending events organised by the committees. Please try to support colleagues in your local branch.

An updated Code of Conduct for Members was approved by Council. The update was necessary to bring the Code in line with a revised Engineering Council edition published in 1998. Members will receive a revised Code of Conduct shortly.

The Membership & Education Development Committee sought approval from Council to reduce

Graduate membership fees to assist Graduates seeking employment to maintain their membership. These revised rates go forward to the AGM for agreement in June.

The Hong Kong branch of the Institute received formal recognition of its establishment by Council following the hard work of local members in setting it up.

Finally, special thanks from the President went to Prof. Jim Harrison for his work in co-ordinating the Institute's activities during the Climate Change Consultation. This had been a great success, providing an opportunity for every member of the Institute to express their view, in addition to a response from Group Affiliates being submitted following an event sponsored by Group Affiliate, Sainsbury's. Our thanks to Mr Ian Talyor for organising this.

Annual General Meeting

Notice is hereby given that the seventy-second Annual General Meeting of The Institute of Energy will be held at The Institute of Energy at 1.30 pm on Tuesday 22 June 1999, to transact the following business:

- 1 To sign the minutes of the 71st Annual General Meeting held on the 23 June 1998.
- 2 To receive the Annual Report and Accounts of The Institute for the year ended 31 December 1998 together with the report of the auditors.
- 3 To receive the Annual Report and Accounts of the Benevolent Fund of the Institute of Energy for the year ended 31 December 1998, together with the report of the auditors.
- 4 To elect Lawford & Co, chartered accountants, to serve as auditors for the ensuing year and to agree that their remuneration be agreed by the Executive Committee.
- 5 To determine the level of annual subscriptions payable by individual grades of membership for 2000.
- 6 To announce the names of new members of Council.

Dated this 23rd day of March 1999. By Order of the Council
L A Evans
Secretary & Chief Executive

The 1999 Melchett Lecture



Prof. Ian Fells' receiving the Melchett Medal from the President, Mr. Mark Baker CBE



The Institute of Energy's highest honour, the Melchett Medal, was awarded to Professor Ian Fells on the evening of 23 February at the Royal Institution. The Institute of Energy's President, Mark Baker CBE, honoured Professor Fells, who in his words "is by common consent one of the most knowledgeable and authoritative commentators on energy policy in the UK, and is in much demand by the

media as a source of wisdom, wit and pithy summary when energy matters are debated."

Professor Fells gave an entertaining and provocative lecture which spurred some interesting questions from the floor. This went to the extent of one member of the audience asking for a show of hands from the audience to seek views on the future of nuclear energy!

The event was well attended by more than 200 members and non-members alike, who had the opportunity to mingle over wine and canapes after the lecture.

The President hosted a dinner at Browns Hotel after the event, made possible by a kind donation from BNFL. Among the guests were Professor and Mrs Fells, Dr

Boardman, last years' Melchett Medallist, Jan Murray from the World Energy Council, Lord Haslam, a companion of the Institute, and sponsor, Neville Chamberlain from BNFL.

We hope that a transcript of Professor Fells' lecture will appear in May's edition of Energy World. Look out for it - it's an entertaining read!



THE 1999 ELLIS MEMORIAL LECTURE

The ready availability of energy is taken for granted in the developed world and growth of energy supply is strongly linked to an improved quality of life in the developing world. Following the Kyoto accord of December 1997, which accepted the need to respond to the threat of global warming, significant blocs of the developed world have bound themselves to reducing their national greenhouse gas emission levels of the six main greenhouse gases by the year 2010, but has additionally committed itself to the more challenging internal targets of reducing CO₂ emissions by 20% from 1990 levels by 2010 and providing 10% of UK electricity supply from renewable sources by the same date, if this can be achieved without damage to competitiveness. Renewables-particularly biomass, offshore wind and photovoltaics- look poised for significant expansion. The technologies and policy implications of and expanded use of renewables in the UK will be examined.

RENEWABLE ENERGY IN A GLOBALLY WARMING WORLD

by **Dr Mary Archer**
Chairman of The National
Energy Foundation

The Birmingham
Botanical Gardens
Thursday 22 April 1999

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WORLD RENEWABLE ENERGY CONGRESS 2000



and
renewable energy 2000
exhibition

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