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## COVER

BP Exploration's Petrojarl Foinaven FPSO, pictured on its way to take up duties at the Foinaven field, 190 km west of Shetland in the Atlantic Margin. The floating production, storage and offloading vessel will work in 500 m of water; some three times greater than the deepest North Sea sites. To survive the much rougher weather in the Atlantic, the main turret near the front of the vessel will be anchored to the sea bed but the vessel allowed to rotate around this to remain head-on to the wind at all times. (photograph courtesy of British Petroleum)

See page 2 for UKOOA's view on oil exploration in the Atlantic.

Viewpoint

## Control energy demand, not oil exploration, to reduce CO<sub>2</sub>

James May, Director General, UK Offshore Operators Association

This summer, Greenpeace has been running another of its high profile, direct action campaigns. The oil and gas industry has been the centre of the activists' attention once again.

Greenpeace has argued that the industry is wrong to invest in searching for new reserves in the Atlantic. The world has already identified a level oil and gas reserves the use of which would cause profound change to the climate of the earth - so Peter Melchett Executive Director of Greenpeace argued in this very Viewpoint column (*Energy World* July/August).

Of course, in the year of Kyoto, this is an extremely relevant and topical issue. There is widespread debate, not least among the scientists, about the extent of climate change and about how we, as a global family, should

respond to the questions raised by the whole greenhouse issue.

But one thing is clear. This issue is highly complex. From the extent of the problem, through how to measure it, how to tackle it, and the likely ramifications of all the solutions being offered, this is a debate ill-served by the kind of soundbite simplification we have seen this summer.

Of course, no one would argue about Greenpeace's right to draw attention to the issues it feels so strongly about (although they may wish to do so about its direct tactics this summer, which have been dangerous in the extreme and have put lives at risk). But the key to addressing this issue must be calm and logical reasoning.

Logic, I am afraid, which is missing from Greenpeace's current campaign.

The UK Continental Shelf contains an estimated 0.4% of the world's known reserves of oil and gas, the Atlantic Margin just a fraction of that. In other words, stopping production from this area alone would have little material impact.

Nor is this a new area. The first major discovery, BP's Clair field, was made in 1977. However, geological and logistical challenges have prevented effective development until now. The Atlantic Margin discoveries are in some of the deepest waters worked anywhere in the world.

But successfully developing discoveries in the area is economically vital. Over 10,000 jobs are directly supported already by developments in the Atlantic Margin, a number that will increase markedly as new



finds are made. An industry which is not only crucial to the economy of Scotland, but also that of the UK and the European Union, has effectively prolonged its own life by developing the technology to tackle these more challenging fields.

The fact that the world, mainly through Middle East reserves, has excess supplies would be no consolation to those who lost their jobs or to the politicians who had to deal with the reality of relying on that part of the world for security of supply. But that would be the outcome if Greenpeace was successful in its current campaign.

Peter Melchett asserts this is necessary because the world's carbon budget will be exhausted in around 30 years. But he does not choose to address the issue of coal, which produces twice as

much  $CO_2$  when used in electricity generation as gas. And his main suggestion for subsequently meeting energy demand seems to be for the UK to install solar power in 50,000 homes by 2010 - ie 0.2% of the total - but what about shops, offices, etc?

The crucial factors to address in the short to medium term are control of demand and, from the industry's standpoint, control of free venting. We have taken considerable steps to put our own house in order by massively reducing flaring, and tackling methane emissions to such an extent that, though production has risen by around 50% since 1990, 15% less methane is being lost.

We can also, all of us, take steps to reduce the level of  $CO_2$  in the atmosphere. We need to look carefully at energy efficiency to reduce overall use, and at developing technologies to prevent release of  $CO_2$  from power stations. And even when it has been released, increased forest planting can actively reduce the level of  $CO_2$  in the atmosphere.

But demand management is much more difficult. If the UK industry stopped production from the Atlantic Margin, would Mrs Smith in Peterborough make one less car journey? And will she surrender the many other benefits of fossil fuels - pharmaceuticals, plastics, domestic heat and power - without tried and tested alternatives?

Explaining that to a sceptical end consumer - now that is a real challenge. One that would benefit from Greenpeace's headline-catching ability. But one that is considerably more difficult than the simple 'bash the oil industry' campaign we have witnessed this summer.



## HVDC power link between Sweden and Poland

ABB has received an order to supply a 600 MW highvoltage direct current submarine power transmission system, named the 'SwePol Link', to interconnect the power networks of Sweden and Poland. The 230 km link is planned to run under the Baltic Sea from Sweden's south coast to Poland. The Link will operate at 450 kV DC and is scheduled to come into operation towards the end of 1999.

ABB will supply the submarine high-voltage direct current cable as well as the converter station equipment at both ends of the link which convert between the alternating current systems of the power grids in both countries and the direct current system of the submarine cable link.

The SwePol Link will provide a further step towards the integration of the power systems of the Baltic Sea countries. This will permit the exchange of power across borders to smooth differing electricity demands in the countries concerned and to utilise the overall power generation capacity of the region more efficiently. Seen here being loaded into Air Foyle/Antonov's AN124 air freighter is a 60 tonne diesel engine power unit, being transported from the Peruvian coastal town of Piura to lquitos, located along the Amazon lowlands of Eastern Peru. The unit was being moved on behalf of Electro Peru - the country's government owned electricity provider, who required the replacement engine to restore full power to its station in lquitos. The power station, the town's only source of electricity, was running on twothirds power and well below the needs of the lquitos inhabitants.

Transmission of the Finnish manufactured engine, which had been shipped from Europe to Peru by sea, came to an abrupt halt once it arrived at Piura on the Pacific coast due to poor road infrastructure, extremely difficult terrain and the densely forested nature of the region.

## Coal demand up in US and Asia, down in Europe

In its just-published edition of Coal Information, the International Energy Agency says that, while coal's share in total energy demand fell slightly, total coal demand in the OECD rose 2.7% in 1996 over 1995. The United States registered a 1.7% increase in demand in 1996, Japanese demand increased by 2.5%, but demand dropped by 2.5% in OECD Europe. Most of the European decline occurred in the UK, where coal demand fell by about 5%, and in Germany.

Overall, coal demand in the region has fallen by about 22% since 1990. The UK registered the sharpest decline, with a drop of 29% over the past 6 years. France decreased its demand for coal by 21% over the same period. China, which remains the world's largest coal consumer, marked a 7% increase in 1995, while demand in India grew by 4%.

Meanwhile, world natural

gas consumption in 1995 showed a 3.2% increase. according to the IEA. OECD countries' consumption was up 4.9% and non-OECD consumption rose by 1.3%. Gas consumption grew in almost all regions except the Former Soviet Union (FSU) where gas use continued to decline from its peak in 1991. Gas consumption in the FSU declined by 3.4% in 1995, compared with 1994. In Asia, gas demand increased by 13.4%, with Indonesian and Thai consumption up 22% and 19%, respectively.

OECD natural gas consumption in 1996 continued to grow strongly (5.1%), particularly in Europe, where the growth rate exceeded 10% in some countries. Noteworthy growth rates occurred in the UK (21%), France (12%), the Netherlands (9.5%), Germany (8.3%) and Italy (3.2%). In the Pacific, consumption rose by 5.8%; in North America by 2.1%.



Monodraught's new 'SunPipe' natural daylight system works on the principal of 'piping' daylight directly into any building's interior. Described as a tubular skylight, the SunPipe consists of a super-reflective cylindrical conduit that can incorporate bends and offsets (extending 10 m or more) to position the SunPipe precisely where required. An acrylic dome at roof level collects available light and then, rather like a giant fibre-optic, the SunPipe reflects light downwards and evenly throughout the interior space.

So efficient is the device, that it produces the equivalent of approximately 1,200 W under full sun conditions and 200-300 W on an overcast day, according to Monodraught.

## Sun powered air conditioning?

The Department of the Environment is supporting a Partners in Technology project with GAIA Research, Edinburgh to examine the technical and economic feasibility of solar powered air conditioning in UK climates. Project leader Sandy Halliday says:"I have always wanted to look at this technology at a scale suitable for buildings. People tend to overlook the enormous contribution that servicing buildings makes to global warming and this technology offers an exciting opportunity to make a major impact on this problem."

The research will determine whether desiccant cooling technology, using solar thermal heating for regeneration, might offer a reliable and cost effective alternative to air conditioning systems in the UK in the near future.

"A huge increase in computing equipment, inefficient lighting and architects' addiction to glass has made overheating the predominant design consideration for new offices in the UK. Solar air conditioning potentially offers a benign solution in new as well as refurbishment situations", says Halliday. There are many other applications where mechanical cooling is necessary and solar air conditioning may probe to be an elegant exemplar of a clean, sustainable technology which is consistent with government commitment to sustainable development. A step, says Halliday, "towards learning to apply natural systems rather than fight them."

## LNG refuse vehicle brings a breath of fresh air to Edinburgh

## The City of Edinburgh

Council has taken delivery of its first liquefied natural gas powered refuse vehicle; the first of six which will take part in a staged pilot project between the Council and The Leasing Group, part of BG plc. During the first, year long phase there will be regular checks to measure the efficiency, operation and emissions from the vehicles.

"All the evidence points to vehicles running on liquefied natural gas being much quieter and cleaner than those running on petrol or diesel - reducing smog and pollution and therefore decreasing health risks to the people of Edinburgh as well as cutting down damage to buildings," said Environmental Services

## Convener lan Perry.

"This is a pioneering project for Edinburgh," said Director of Environmental and Consumer Services Mike Drewry, "and one which incurs no extra cost to the Council. If it is as successful as we anticipate, it will lead to more and more of the Council's fleet being run on alternative fuel with undoubted benefits to the city.

"LNG vehicles have significant operational advantages over compressed natural gas vehicles," he added. "There is more room for storing of refuse because the fuel takes up less space and LNG also allows vehicles to travel as far as diesel. Both factors mean more time working and less time being refuelled or emptied."



The 'Collinda' solar-powered boat has become the first such vessel to cross the English Channel. Incorporating 20 PV panels, the 20 ft catamaran completed the crossing from Dover to Calais in a little over 6 hours, at an average speed of 3.4 knots.

Owner Malcolm Moss is convinced that electric boats, which were popular during Victorian times, are about to make a major comeback. PV-powered boats cost nothing to run, he says, compared to 50p a day for mains-charged batteries, £5 a day for diesel and around £10 for petrol-driven boating. They are also silent in operation and give zero emissions.



The Building Research Establishment's new Environment Building is the first in the UK to incorporate thin film photovoltaic panels from the Intersolar Group. A 50 square metre facade of panels is shown to the left of the picture. The British-made panels are more cost-effective to source than cladding materials such as marble or granite, according to the company.

Each panel comprises four plates of thin film silicon material laminated between toughened glass and a Tedlar substrate. Peak output from the panels is around 2 kW, with a projected annual output of 1,500 kWhs. Electricity generated by the panels is converted to AC through an invertor for use within the building.

The building's passive ventilation stacks and shading louvres were previously featured on the cover of Energy World in May.

## BP orders giant new CHP station

**Consent has been** granted to the Saltend CoGeneration Company for the construction and operation of a combined heat and power combined cycle gas turbine generating station with a capacity of about 1,200 MW at the BP Chemicals Salt End Works near Hull.

Announcing the consent Energy Minister John Battle repeated his support for the fuel efficiency benefits of CHP. He also made it clear that the Government's concern in assessing applications made under section 36 of the Electricity Act 1989 is to address local environmental issues and to ensure consistency with the wider objective of secure, diverse and sustainable supplies of energy at competitive prices and the meeting of environmental targets.

Planning permission for the station was also given, subject to the inclusion of 58 planning conditions. These include for the construction of a new access facility; the suppression of dust and dirt during construction; layout and design; access for fire appliances and fire fighting equipment; limits on noise and vibration during construction and operation; the stripping and storing of oil; landscaping provisions; measures to prevent contamination of watercourses; requirements as to air pollution monitoring; fuel delivery and storage; the disposal of contaminated waste; and the restoration of the site after the cessation of electricity generation.

## Gas competition from November, electricity next April

Ofgas has confirmed that the nation-wide roll-out of domestic gas competition will start in Scotland and north east England on 1 November - well before the worst of the winter weather.

Ofgas has also launched a public awareness campaign to inform everyone on mains gas of the benefits of competition, press and radio advertising, factsheets and a leaflet delivered door to door will explain what gas competition means. Ofgas has also set up a Freefone helpline where people can get more information.

Already gas competition has been tested in two trial areas involving 2 million gas customers in south west and south east England. There, domestic customers have seen savings of more than 20% - the equivalent of around £65 off the average annual gas bill.

Meanwhile, Professor Stephen Littlechild, Director General of Electricity Supply, has announced details of the postcodes for the first phase of controlled domestic electricity market start up. The roll-out of domestic electricity competition will begin in April next year in those areas where suppliers have fully tested and robust systems in place and as soon as possible in the remaining areas.

Eastern, SEEBOARD and Yorkshire are expected to open their markets on I April 1998. The first postcodes to open to competition are expected to be Norwich, Canterbury and Hull, giving more than 700,000 customers in those areas access to competition for the first time.

## Magnox scientists win award

Four scientists from Magnox Electric have been awarded the 1997 Royal Society Esso Energy Award for extending the life of the company's nuclear reactors.

The award is presented annually for technology leading to the more efficient use of energy resources. It was made to Mr Stuart Barnes, Mr Guy Williams, Dr Anthony Wickham and Dr Christopher Bolton for the energy savings made by avoiding the construction of new fossil fuel power stations.

## Alcan Smelting adds more hydro power

Alcan Smelting and Power have installed a new 10 MW Francis turbine and generator from Gilkes Ltd. The smelter at Kinlochleven is scheduled for closure at some time in the future and Alcan are utilising existing infrastructure investment as a basis for dedicated electricity generation.

The Kinlochleven scheme first produced aluminium in 1907, since when eleven Pelton turbines each drove two 250V DC generators to provide power for the smelting process.

The new plant is installed in place of some of the



existing motor generator sets and generates 10 MW of electrical power from a head of 278 m at 100 rpm. Gilkes' previous experience of low specific speed Francis turbines was used to provide this effective power generation solution.

Gilkes' contract included the design, manufacture, supply, installation, commissioning and performance testing of the turbine, generator, main inlet valve, hydraulic controls, turbine controller, lub oil system, and special inlet pipework. In addition, a full hydraulic analysis of the existing penstock system was undertaken to ensure penstock pressure rises remained below the permissible design limitations under all operational conditions. As a result a substantial flywheel was incorporated to limit rate of speed rise and corresponding flow reduction in the penstock system.

## **B9** to develop woodchip-fuelled CHP

**B9 Energy Biomass Ltd**, in partnership with Armagh City and District Council and Blackwater Valley Museum, have won planning for Northern Ireland's first commercial wood fuelled CHP generator. To be sited at the museum, the 200 kW renewable energy project will provide enough electricity to supply approximately 400 homes while 200 kW of waste heat will be used to warm the museum buildings.

B9 Energy won a generating contract with Northern Ireland Electricity under the 1996 Renewables Order to provide 200 kW of environmentally positive electricity from wood fuel. Planning permission has now come through and fabrication of the CHP unit is starting. The project will be the first demonstration of a continuous feed downdraft CHP unit operating on wood chips in the world. The unit will generate electricity at 415 V to be transformed up to 11 kW to join the NIE grid. The life expectancy of the plant is expected to be similar to that of a conventional steam plant.

Fuel for the generator will come from forestry residue and short rotation coppice willow. B9 Energy have won a 15 year contract with the Department of Agriculture for supplies of forest residues from counties Tyrone, Fermanagh and Londonderry. Research carried out on willow growing in Northern Ireland since the 1970s is now at the stage where willow for fuel crops can be integrated with local farming practices. B9 Energy is therefore working in partnership with

several companies to develop willow as a fuel.

B9 has won contracts to operate and maintain two new wind farms in Northern Ireland; Owenreagh in Strabane and Barnesmore in County Donegal, a total of 20 MW of green electricity.

The company now manages five out of six of the Province's wind projects, a portfolio of 75 turbines or 40 MW of installed power. B9 is also developing two new wind projects under the latest round of the Northern Ireland Renewables Order.

The article: "Transforming electricity" in last month's Energy World is copyright Walt Patterson

## Underground for a better view

**Bird watchers** visiting Trimley Marshes bird reserve will soon be able to enjoy a view uninterrupted by overhead power lines. Eastern Electricity is set to remove poles in a £25,000 scheme to underground the local electricity supply.

Trimley Marshes has been developed by Suffolk Wildlife Trust following the expansion of Felixstowe Port. With funds from the dock, the Trust has developed over 200 acres of arable land beside the new dock into one of the best wetland nature reserves in East Anglia. The undergrounding work began in July after the nesting season and before winter migration begins. Approximately 900 metres of 11,000 volt lines is being buried.

## Controls cut prefabricated heating bills



Yorkshire Electricity and Kirklees Council have joined forces to spend nearly £45,000 on a special energy saving project that will cut school heating bills by tens of thousands of pounds. Schools in Huddersfield, Dewsbury, Mirfield, Batley, Bradford, Cleckheaton, Heckmondwike and Liversedge will all benefit from the project.

The scheme involves fitting heating controls to 85 prefabricated temporary classrooms heated with peak electricity. The controls will cut heating bills by more than  $\pounds 10,000$  a year and cut electricity usage by 30%. The heating controls use room thermostats and occupancy sensors to regulate the temperature and the times heating goes on and off in the temporary classrooms. A single classroom should cost an average £120 less a year to heat and a double classroom £250 less a year. Monitors are being fitted in each selected classroom to accurately calculate savings that are made.

Local headteachers have welcomed the project, which will free money to be spent on better books and equipment for pupils.

## UK 'has the cheapest unleaded petrol'

The price of unleaded petrol in the UK is the lowest in the European Union, with a litre costing the consumer an average of \$0.82, compared with the average EU price of \$1.04, according to a new report from MarketLine International.

Before tax, the UK has the lowest prices for both unleaded petrol and autodiesel. However, whilst in other EU countries, tax on diesel is low to reflect the environmental advantages of the fuel over gasoline, no such advantages are offered in the UK. After tax, UK diesel is the eighth cheapest, though still priced at 4 cents below the EU average price of \$0.88 per litre. The reasons for the low

UK prices are in part common across all member states, with a surplus of gasoline production, pressure on refining margins, and stagnation of demand affecting the market. However, price pressure has been particularly strong in the UK, as a result of the high presence of hypermarkets in fuel retailing, who enjoy substantially greater volumes per site, and thus increased efficiency and economies of scale. Intense competition with the oil majors, most obviously with Esso, sent margins and prices plummeting in 1996.

## Hams Hall Channel Tunnel freight terminal

Deputy Prime Minister John Prescott has opened a new Midlands railfreight initiative that will take up to one million lorry journeys a year off the motorway network. Mr Prescott flagged away the first train to Europe from the Hams Hall Channel Tunnel Freight Terminal, near Coleshill, Warwickshire, a former power station site owned by PowerGen.

The site is being transformed into a development that will create 5,000 new jobs on-site and 2,000 associated jobs off-site. By early in the next millennium 5.5 million square ft of floor space will have been developed. PowerGen Chairman Ed Wallis said: "Hams Hall is ideally situated for a Midlands Channel Tunnel freight terminal - it is at the heart of the UK's road and rail networks with 80% of the UK population accessible within a four-hour drive time. The development is also good news for the environment in supporting the Government's aims of transferring freight from road to rail."

In the first year of operation alone the terminal will save some 100,000 longdistance lorry journeys and that figure should increase ten-fold when 300,000 container units a year are handled by 2006.

# Information the power

## Printing company cuts costs with boilerhouse automation

Early last year a boilerhouse refurbishment and automation scheme was completed at the largest Rotogravure printing factory in the UK. A prime mover behind the refurbishment was a need to comply with the stringent pollution requirements of the 1996 Environmental Protection Act. By improving the controls and burner technology and switching from heavy oil to an interruptible gas tariff, BPC Purnell Limited has also realised a fall in annual energy costs from £350,000 to £180,000. Automation and improved monitoring have cut the labour requirement for steam raising by a further £132,000 per annum.

Central to the project was the installation of a building management system to control and remotely monitor the steam raising plant. Undertaken by Bristol Management Systems of Nailsea, the new Cylon system allows plant to be supervised from a computer in the engineers' workshop, reducing the need for trained boilerhouse staff.

Rotogravure printing is, in every sense, big business. At BPC Purnell, print runs of a million are considered small and paper is loaded onto the presses in three and a half ton rolls. Six Cerutti gravure presses churn out 200 tons of quality catalogues, magazines every day, seven days a week. Continuous printing is achieved by splicing a new roll onto the old - 'on the fly' at fourteen metres a second. In the Rotogravure process, images are engraved into copper drums and solvents A vital ingredient of energy management is the efficient control of plant and equipment, which in turn requires a good flow of information. The five stories on this and the following three pages each illustrate ways of improving the flow of information on energy consumption, and how this information can be put to work.



are used to precisely control ink viscosity. Under the 1990 Environmental Protection Act such solvents can no longer by pumped to atmosphere, so at BPC Purnell a solvent recovery plant collects and refines a highly volatile hydrocarbon called toluene. BPC sells Toluene back to the ink manufacturers - in all the plant recovers 11 million litres of toluene each year.

The presses at BPC Purnell print four or more colours in series. The production process is so long that it is necessary to control the moisture content of the paper, partly to ensure close registration, and partly to stop it tearing. This is achieved using steam humidifiers, the steam supplied at a pressure of 10 bar from a central boiler house. Here there are 3 boilers capable of delivering up to 90,000 lbs of steam per hour.

However, the main use of steam is for solvent recovery. Vapour and toluene fumes are drawn from the presses to one of two solvent recovery plants. Each has five carbon absorption beds that are closed to atmosphere. The fumes and vapour are passed through the beds and a control loop monitors the exhaust gases to determine when a bed is approaching its saturation threshold. The bed is then closed off and injected with steam. The condensate, a toluene solvent, is drawn off completing the recovery process.

The solvent recovery plants call for steam every 20 minutes. Prior to refurbishment this had become the cause of a serious gives to control

maintenance problem. Every time the solvent recovery plant demanded steam, the boilers would cycle from idling to full load. Repetitive thermal shocks caused by this start-up cycle over many years eventually damaged the boilers to the extent that, in 1995, one boiler failed an NDT safety inspection.

In July 1995 the boilers were stripped to their shells. Boiler burners, water controls, and electrical circuits were all renewed and a water treatment plant with new hot well and breakwater tanks was installed.

Before refurbishment, the boilers were fired with heavy fuel oil. To comply with the new Environmental Protection Act some expensive additional plant would be required sophisticated particulate arresting equipment, larger chimneys and bigger exhaust fans. BPC Purnell Chief Engineer, Colin Burn, determined that switching to natural gas would solve the emissions problems more easily.A spin-off benefit for the nearby village of Paulton was a new gas line with increased capacity and improved gas regulation.

The refurbishment project was completed in March 1996. A key objective of the project was to reduce stresses on the boilers by improving their control. British Print Company appointed consulting engineer Trevor Murch to develop a specification and manage this part of the project. Ageing existing controls were replaced with a Cylon 'Unitron' building management system (BMS). It was not possible to install a site-wide BMS within the scope of this project so instead the system was structured to be extended later:

Each boiler is controlled by a Unitron UC16 controller, with a UC16DI digital input multiplexer to boost the status monitoring points. These two units and associated switchgear occupy a panel only 600 x 600 mm, small enough to be fitted to the main burner panels. A fourth small control panel was installed for the plant room utilities. In all just six UC16 controllers and six digital input multiplexers were required.

Running across the site is a Cylon high speed Internetwork. This is based on ARCNET, a process industry standard supporting communications at up to 2.5 Mbits per second, making it ideal for fast acting control. Three UCC4 communications controllers, two with local area networks complete the present system - one in the boilerhouse, one in the main print works and one in the engineer's office. Connected to the last is a Unitron WN3000 supervisor. This PC-based software provides audible and visual annunciation of fault alarms. A link to the security system is enabled if any critical alarms from the boiler plant are not acknowledged within five minutes.

An elegant solution was found to the problem of sudden step changes in steam demand. The Cylon system receives preemptive demand signals from the solvent recovery plant before steam is required. This gives the BMS enough time to sequence the boilers so when steam is required, the boilers have already started to supply the main header and are past a point where water carry-over is likely. This eliminates thermal shocks to the system.

A final role for the Cylon system is to collect and collate data. Second tier electricity data in the form of half hourly readings are supplied to BPC Purnell by local electricity company SWEB. These are checked and validated against meter readings collected on the site by the Cylon system. For the Environmental Protection Act, BPC is required to keep toluene emission levels to less than 100 mg per cubic metre (29 ppm), and to be able to supply evidence of this to the local authority on request. The Cylon system has the facility to accept pollution measurements from flame ionisation detectors. These, along with flow rates, temperatures and pressures can be displayed in graph and tabular form on the WN3000 Supervisor and printed off locally.

Contact Cylon Controls UK Ltd, tel: 01628 532626, fax: 01628 532929

## MoD site extends energy savings

Following the successful application of good housekeeping practices at the Ministry of Defence Police Headquarters and Training Centre, York International Controls Group is set to extend energy savings even further with its ISN (Intelligent Systems Network) building control system. When the MoD took command of the 800-acre Wethersfield air base in 1991, it inherited a district heating system with one and a half miles of piping, much of which required immediate remedial work, and 14 boiler houses which had almost no HVAC control.

A few good housekeeping practices, which included replacing dangerously corroded heating pipes, relagging where required, and introducing a simple control regime through time clocks and optimisers by Mowlem Facilities Management Limited, resulted in a 36% reduction in the site's 1994/95 fuel oil bill.

9

Having proven the effectiveness of introducing even a basic form of control, Mowlem was given approval by the MoD Property Manager to upgrade the system to full building management system (BMS) heaters, which are now on-line for 12 hours each day, is 420 kW, providing a saving of 5,040 kWh, or £225 per day.

The next stage is to create cost centres for each building. For example, data network and is using the resulting data to identify possible opportunities for reducing energy costs.

By the beginning of 1998, the use of such meters - which take half-hourly electricity

control. The subsequent installation of a York ISN system followed.

Sixteen intelligent controllers have been installed, using the existing communications network used by the fire alarms and PA system, together with the York ISN Facility Manager for Windows system software. A new main control panel incorporating a

York ISN Field Digital Controller allows the main boiler house to operate on set time for day or night temperature. The district heating system is still the main form of heating supply, but in each of the buildings it serves a mini plantroom has been created allowing the plantroom controller to request or deny supply. Consequently, unoccupied areas are no longer heated which, it is estimated, should reduce energy consumption by a further 10 to 15%.

Boiler sequencing has been introduced and heating levels are reduced at night as it is more cost efficient to operate the boilers on a 24-hour regime with a reduced supply temperature between the hours of 8 pm to 6 am, than to start them each morning from cold.

The two heating supplies to the calorifiers have been interlocked, the district heating system for winter supply and the immersion element for summer use. In addition, the York system only allows immersion hot water heating at specific times during the day to take advantage of reduced tariffs. The total load of the immersion



become mandatory for all users with a demand in excess of 100 kW. However, like many other companies, Morrisons has decided to take advantage of their potential benefits well in advance of this date.

readings - will

The data from the meters is collected by NORWEB

provided by hours-run meters will establish hot water use during occupancy to ensure that the calorifiers provide sufficient hot water without wasting energy by storing more than is needed.

The first three York ISN controlled buildings were brought on-line in March this year, another four are currently in progress, and additional buildings will be added in a controlled phased installation.

Contact York International Ltd, tel: 01268 287676, fax: 01268 281765

## Morrisons focuses on energy savings

NORWEB Metering Services is playing an important role in the energy management initiative set up by Wm Morrison Supermarkets plc to monitor energy use in stores throughout the country. The specialist data gathering company has installed more than a hundred "Code 5" metering systems in 82 stores throughout the Morrisons Metering and presented in the form of monthly reports which detail the changing patterns of electricity use within individual stores. These reports are then distributed to Morrisons' District Managers who analyse the information and recommend any investigative action as necessary.

The group's Services Manager, Paul Hooper explains: "The majority of our stores are 'concept stores' - all built to the same basic template - so electricity consumption should be in the same range for each store, dependent on the sales floor area. Our managers use the information provided by NORWEB Metering Services to identify energy use in each outlet and compare it both with the previous month's consumption and that of the other stores."

In addition to the targeting of wasteful practices, NORWEB Metering's Data Services programme allows more effective allocation of manpower and energy resources, and the precise apportioning of costs. Easily interpreted energy information reports, tailored to the needs of the customer, are supplied either as hard copy or via a number of formats compatible with Windows, including floppy disk and CD-ROM.

Contact NORWEB Metering Services, tel: 0161 344 4178, fax: 0161 344 4120

## Triplex gathers information to save

At Triplex Glass, a world leader in the manufacture of toughened safety glass for the automotive industry, electricity is the largest energy cost. In order to reduce this cost it is essential that the company knows exactly where and when energy is being used. The company has thus invested in an energy management information system from Faros Limited.

Triplex needed to be able to monitor automatically the energy used by any particular process or production run in the manufacturing process on a real time, and historical basis. The data outputs needed to be organised in the format and frequencies required to enable accurate costing information and maximum efficiency at the lowest cost.

Although a substantial number of primary and sub-meters were already installed throughout the plant, these were the traditional type of basic meter installed by the electricity providers, giving manual readings only. These readings could not be readily assigned to particular processes or production runs, with the consequence that raw glass production and processing costs could not be determined or assigned to a particular product.

The solution was based upon the rearrangement of Triplex's electricity distribution system and existing meters and sub-meters to accord with the various individual manufacturing processes. Faros data loggers were installed on all meters and submeters to gather data on a constant, realtime basis. The reading units relay the data automatically, directly or remotely to a central point. The collected data is capable of being organised as required in terms of tailored and pre-determined displays for real time and historical outputs.

An advantage of the Faros system is the ability to tailor the software to meet particular aspects of data gathering, display and analysis. This flexibility has proven highly advantageous to Triplex as the display and reporting formats allows maximum savings to be extracted from any particular plant and production process.

The Faros system is alarmed so that failure of any part of the system is immediately notified and any data collection failure can quickly be corrected.

The system has also been used to monitor the accuracy of the meters supplied by the local electricity company by crossmatching the sub-meters against the primary meters of the overall supply. A high meter reading discrepancy was discovered - this was tracked down to a substation main meter inaccuracy set up by the REC concerned.

An energy monitoring committee has also been set up by Triplex and an overall target was set of saving 5% of total energy consumption. This saving has been achieved and the next step is to set individual targets to achieve further savings.

## Contact: Faros Limited, tel: 01253 884700, fax: 01253 884404

## DoT use bureau as vehicle for energy management

The Department of Transport (DoT as it was before its amalgamation this year into the Department of Environment, Transport and the Regions) is managing to comply with the government drive to reduce energy consumption by 20%. To do this, it is outsourcing its energy management function to the Energy Auditing Agency's TEAM Bureau Solutions which now accurately monitors and targets energy consumption.

The DoT employs over 11,000 people and has up to 1,400 sites that range from the DVLA sites and headquarters to small and remote coastguard huts. Some examples of DoT agencies include Driving Standards Agency, Highways Agency, Vehicle Inspectorate and Vehicles Registration offices.

Its energy bill was in excess of £4 million and consequently, in 1994, the DoT identified a number of organisational responsibilities in terms of monitoring energy, achieving energy saving targets and general green issues.

Ian Harris, Head of Accommodation and Office Services at the DoT, stresses: "We are eager to keep abreast of industry initiatives and are keen to embrace the most up-to-date information services to accomplish our energy objectives." With this in mind, they recognised that in-house resources would not be appropriate to train to this level of expertise. They therefore needed to appoint a specialist agency to address these environmental issues in partnership with them.

EAA was awarded the contract and began to provide the bureau service for the DoT.

Once the database structure was established, one year's historical data was entered into EAA's TEAM Energy Accounting software by their data input team. Ongoing data is obtained via redirected invoices within a three working day turnaround. Ideally, EDI would be used to process the invoices and may be investigated in the future.

As a full five year's historical data was not readily available and the DoT's organisational structure is very complex, monthly status meetings ensured that exchanges of ideas smoothed the path to implementation. Realistic targets were set and achieved through good communication between EAA and the DoT.

Bills are now redirected to EAA for entering into the TEAM Database but photocopies of bills are also used where this is not possible.

The DoT is monitoring gas, electricity, water, oil and propane for which EAA produce in excess of 100 reports each month that vary from monthly site reports to quarterly executive reports. As part of the bureau service, annual tariff analysis for sites is also performed along with invoice validation, targeting and budget setting. The reports generated are jointly agreed between EAA and the DoT and are distributed to the Property Managers at each of the DoT's twelve Agencies.

The DoT benefits from having a copy of TEAM Energy Accounting on their site. The DoT receives a copy of the TEAM Database that contains all their energy information. This means that they have all of their basic needs catered for from the bureau but can also undertake further analyses and investigations if they identify anomalies highlighted in the reports.

EAA also feeds in the tariff structures into the consumption data and provide information on the bills before the bills are received. In this way, they provide accurate bill validation for the DoT.

The relationship between EAA and the DoT demonstrates the Department's commitment to energy management. The system provides building managers with detailed information which enables them to identify changes in energy consumption and take appropriate action. Property managers now have information that allows them to target their energy conservation budget at their most energy inefficient buildings. So far, this has assisted the department in reducing energy consumption by 15.1%.

The expertise of EAA is being used in other ways as well. Ricky Bourne, Accommodation and Office Services Information Controller at the DoT, is responsible for looking at the DoT's estates management information systems including the calculation of overall operating costs of their buildings. He recognises that their existing accommodation management system had far more potential than was currently available. EAA updated the system that can now compare sites, identify terms and conditions for leases, establish refurbishment costs and create benchmarking on a cost per m<sup>2</sup> basis. This system now supports effective estates management.

Due to the success of the bureau service, the DoT is currently expanding its monitoring systems, installing Code 5 meters and looking firstly at a weekly bureau service and then possibly at daily feedback via UKDCS bulletin board.

Contact Energy Auditing Agency Ltd, tel: 01908 690018, fax: 01908 690019

## Energy awareness

'Energy awareness' or the 'people' aspect of energy use can yield very significant cost savings. Here, John Mulholland sets out twelve key principles which will make an energy awareness campaign - run alongside a programme of investment in new plant - a lasting success.

**n November 1994** Southmead Health Services NHS Trust in Bristol launched an energy awareness campaign. The aim was to reduce its £1.2 million per year energy and water bill by £100,000 in 12 months. This was to be achieved by good housekeeping, i.e. no cost measures, and by raising the awareness and motivation of the 4900 staff across the Trust.

This was an ambitious project and, at a cost of £25,000, considered by many in the Trust as a risky investment. Even the man driving the project, Works Manager Phil Purnell, had his doubts: "Would the campaign work? If it did, would it be possible to maintain the savings?"

Twenty months after the launch the results were impressive: total savings of  $\pounds$ 149,000 and savings have continued in the last 12 months because of a culture change by end-use energy users. While not all staff are committed, enough are to make a significant difference.

## ENERGY COSTS IN THE NHS

There are over 500 NHS Trusts in the UK with a combined energy bill of approximately £300 million per year. If savings were made, by campaigns like Southmead's, the potential to the NHS is some £24 million per year. Offset against this is the cost of the campaigns but the payback period is often as low as 8 to 12 weeks. This means that campaigns can be funded from energy revenue budgets.

Although Southmead launched its

campaign in November 1994 the campaign cost was fully recovered before the end of the financial year in March 1995. This means that NHS Trusts cannot dismiss campaigns on the basis that capital is not available. In times of budget cuts and funding crises in the NHS, an extra £24 million per year put into patient care should be welcomed by the Government, NHS Trusts and local communities.

So how can this be achieved in practice? What are the principles of effective energy campaigns in the NHS?

Here are 12 key principles.

## SENIOR MANAGEMENT

Energy Officers still exist in the NHS, but they are an endangered species. Often they are on relatively low grades with little ability to influence management in the Trust. Therefore to effect change it is vital to gain support of management at a senior level (eg chairman, chief executive and development director). It is important to develop a campaign aim and strategy with the risks and benefits clearly defined. This can then be presented to senior managers with a specific request for their commitment and support. It is also important to see the campaign's

broader benefits e.g. Southmead was runner up in the 1996 NHS Estates National Awards for "Best Environmental Initiative".

Not only do senior managers need to be committed but also middle managers who will usually only respond to pressure from above. So if senior management is weak the campaign will be ignored by middle managers.

Being committed does not mean that

## campaigns in NHS Trusts

by John Mulholland, Training Division Manager, NIFES Consulting Group

management has to devote a lot of time to the issue. However, it will involve a visible commitment, e.g. giving speeches at campaign launches, releasing staff for energy training, ensuring energy is on the agenda of management meetings, including energy in enviro

earthcare

meetings, including energy in environmental policies and releasing funds. In the Southmead campaign an 'Energy

Champion' was appointed: Isabel Powell, the Nursing Director with 30 years experience in the Trust. Ms Powell, along with the Works Manager, conducted 'energy



EARTHCARE it's in your hands

walkabouts' in each of the Trust's 100 buildings during the first 12 months of the campaign. These walkabouts demonstrated a visible top-level commitment.

## 2 FUNDING

To run an effective campaign the

## Campaign materials used in NHS Trust energy awareness campaigns

SOUTHMEAD HEALTH SERVICES

investment level usually needs to be between 1% and 2% of the total annual utility bill. So a figure of £20,000 should be considered for an annual utility bill of £1 million. This is a substantial investment but

Trusts have in the past invested sums of  $\pounds$ 500 to  $\pounds$ 2000 and wondered why savings are not achieved. To reach a critical momentum these sums are simply not enough. In fact such investment is wasted and it would be wiser to do nothing if less than 1% of

the annual utility budget is available. The point has already been made that campaigns can easily be funded from energy revenue budgets.

Despite the fact that paybacks are very short, technical people find it much easier to invest in hardware solutions rather than 'soft' solutions such as people. However, hard facts show that there is enormous potential in saving energy through people if the strategy is right.

## **3 TAILOR-MADE STRATEGY**

In some people's minds an energy campaign is the equivalent to putting up some posters and stickers and having an article in the in-house newsletter. This is not an energy campaign. However, these measures can be useful reminders if they are part of 20 other initiatives comprising a tailor-made and coordinated strategy. It is important to design a campaign appropriate to corporate culture. Every culture is different so "off the shelf" campaigns are not very effective. Each campaign must be carefully crafted and tailored for maximum impact.

During a needs analysis it is useful to determine staff attitudes and awareness levels. These can be determined using surveys and questionnaires. In one staff survey recently at an NHS Trust, 70% of staff thought it was cheaper to leave on a fluorescent light than to switch it on and off as required. This gives some indication of potential savings.

### **4** APPROPRIATE TIMING

An energy campaign is a change programme: motivating people to become energy savers and not energy wasters. But energy campaigns do not happen in isolation. Staff may have a number of other extra initiatives on their agenda, eg organisation restructuring, health and safety training, fire safety, clinical or hygiene training etc. If healthcare staff are hit with everything at once they may respond negatively. Much depends on their capacity and attitude. It is important to co-ordinate the timing of an energy campaign so that it gets the recognition it deserves. There is never an ideal time to run a campaign because convulsive change is a cultural norm in NHS Trusts, but there may be a good window of opportunity which minimises the risk of staff being overwhelmed.

## 5 SENSITIVITY TO STAFF MORALE

Another factor affecting campaigns is staff morale. For example, it is not the best strategy to launch an energy campaign in the same week that redundancies are announced. Saving energy requires staff cooperation. If staff feel grieved about a corporate issue they usually hit back at easy targets such as energy campaigns.

Critical reactions to energy campaigns are usually symptomatic of illfeeling by employees towards their organisation. After all, who can logically argue against the case for energy efficiency? Even political parties of every persuasion agree that energy efficiency makes sense.

## 6 INVESTMENT AND MAINTENANCE

In any energy management strategy it is important to invest in energy efficient plant, controls and buildings. It is also important to avoid waste in existing equipment. Some people invest to the point where they can go no further with technical solutions. They then turn to people solutions, partly because there is nowhere else to go and partly because any potential savings from investment can easily be wasted by end-users of energy if they are not sufficiently aware and motivated.

Sometimes people solutions are approached from another direction: there is not much capital available and because people solutions are low risk and relatively low cost, energy awareness is a logical focus. However, one of the problems with this approach is that endusers can have the attitude: 'It's all very well you telling us to switch off equipment - but what about all those draughts in our office and leaking taps that never get fixed when we report them? And what about some investment in a decent heating system?'

So energy campaigns must not be an excuse to by-pass the maintenance or investment elements of a sound energy management strategy.

The ideal situation is to run an energy campaign in parallel with an ongoing capital programme. This communicates with end-users that it is not a one-way street. Also in parallel it is important to have an effective maintenance function which responds rapidly to users' needs.

## 7 AWARENESS

Improving awareness is relatively straightforward. It involves increasing knowledge levels on energy efficiency. During attitude surveys in NHS Trusts a comment often heard is "we would be more motivated to save energy if we knew what to do".

One way to improve awareness is to focus on energy use in the homes of staff. The principles of saving energy in the home are the same as saving at work. It is unusual for a person to be wasteful of energy at work and be highly efficient in energy use at home. Otherwise there would need to be a personality change in the hospital car park twice a day. So a first step in getting people committed at work is to get them committed at home.

At Southmead the staff numbered 4900. If each member of staff represents a household with an average home energy bill of £800 per year, this totals £3.9 million, which greatly exceeds the Trust's annual bill of £1.2 million. So the saving potential at home greatly exceeds the saving potential at work.

## 8 MOTIVATION

In a recent seminar for NHS Managers the questions was asked, 'Why Save Energy?'

The answers were:

- it reduces costs and releases more funds for patient care
- · it reduces environmental pollution
- · it prolongs life of finite fossil fuels

- better environment for staff and patients
- · why waste it?
- · It prolongs equipment life
- greener image

These area all good logical reasons and they will motivate some staff some of the time. A question often raised is "where will the savings be spent?" If staff think that saving energy will simply save money for the Government they are not likely to be motivated. However, if there is a Scanner Appeal in progress and 50% of measured savings go to the Appeal then staff can see a tangible benefit for their efforts.

Focusing on the home and environmental issues can be very good motivators - as can giving public recognition to people who have made good savings.

Before embarking on any programme it is vital to identify where in the awareness/motivation grid staff are located. Are they motivated but unaware? Or demotivated but quite aware? Or perhaps both demotivated and unaware? Wherever they are, everyone needs to be moved to a position of both high awareness and high motivation if significant savings are to be achieved.

It is important to determine where people are in their levels of awareness and motivation before designing a programme. One method of determining where people are is to devise a simple questionnaire which focuses on knowledge (awareness) and attitude (motivation) levels. The questionnaire should be tailored to the specific organisation/section/department in which the staff are located.

It is relatively easy to move from high motivation/low awareness to high motivation/high awareness. The motivation is already there: it is simply the awareness that is missing.

## 9 TARGETING

A question often asked about campaigns is 'where do we target our effort?' One extreme is to target every energy enduser. The other extreme is to focus on a small group of people, for example catering, laundry and maintenance staff.

In most organisations targeting is not an 'either ... or' scenario but a 'both ... and'. The Pareto principle can be helpful in deciding where to target resources. This 80/20 rule suggested that 20% of staff control 80% of the energy and 80% of staff control the remaining 20% of the energy. In some organisations it may be 90/10 or 60/40. Whatever the ratio it is important to identify who are key people and focus resources on them. In order to create energy saving as a cultural value and norm, it is worth applying mass publicity to raise the awareness of the remainder. But the balance between the key players and every user must be carefully struck.

## **10 FEEDBACK MECHANISMS**

Once expectations are raised, most staff will make some effort. The next question is 'how are we doing?' Without an adequate monitoring system it will be impossible to answer this important question. 'Success breeds success' - but if success cannot be measured then everyone is in the dark. Not only will staff not know how they are doing, but it will be impossible to relay back to those funding the campaign any progress towards achieving the set energy/financial saving targets.

## **11 RESPONSE RESOURCES**

It is one thing to raise staff expectations and awareness, but quite another to respond to the number of ideas, suggestions and questions generated by the campaign. It is important to allocate staff time to deal with the response which the campaign will generate. If people do not get a response they may get the feeling that the response mechanism is inadequate and lose interest.

At Southmead there are 2000 PCs in the Trust operating on a network. If any member of staff has a questions, suggestion or complaint, they can contact the Energy Manager on internal e-mail. The Manager aims to give a response within 24 hours.

## 12 MAINTAINING MOMENTUM

Any campaign has a limited life. To maintain momentum beyond the initial thrust it is important to think about integrating energy efficiency as a topic for induction/update training, as part of staff appraisals, annual energy week, energy calendars etc. A key to maintaining momentum is to analyse existing culture and communication systems and build the energy message into existing mechanisms.

In one Trust contract caterers are subject to a weekly comprehensive audit to ensure they meet contract requirements. The Energy Manager was able to expand the checklist of the audit criteria to include energy efficiency. This means that a weekly check on energy efficiency in catering is built into the system.

## CONCLUSION

There is a large potential to save energy through end users in the NHS. These savings could be as much as £24 million per year. Several Trusts have run energy campaigns in the last five years. One successful campaign is Southmead Health Services NHS Trust and the 12 key factors contributing to the success of that campaign could be replicated in most Trusts. This will reduce energy consumption and costs, improve patient care and bring associated environmental benefits.

Contact John Mulholland at NIFES in Nottingham, tel: 0115 984 4944, fax: 0115 984 4933.



## 1998 and the role of communications

Mains-borne signalling, or power line carrier communications technology has never really taken hold in the UK. However, a side effect of the opening-up of the domestic electricity market to competition next year is that this technology is being looked at again as a vehicle potentially to deliver automatic meter reading and a host of other services. Here, Clive Nunn describes the potential for his company's system - PowerNet.

The need for advanced metering applications and communications technology will become more urgent than ever before in 1998. This is due not only to a requirement for greater operational efficiency but also because of the opening up of competition in supply for all energy consumers.

The competitive electricity supply market is supported by a complex settlements system designed to facilitate trading in circumstances where the electricity price varies from one half hour to the next. So called 'second tier' customers in the 1 MW and 100 kW sectors have already benefited from new electronic meters with the ability to measure and store half hour demand profiles for this purpose. Daily data collection has been achieved with the help of communication links.

Meters and communications of this sort are, however, relatively expensive. From April 1998 onwards when both domestic and small commercial customers will be free to choose their electricity and gas suppliers, systems with greater costeffectiveness will be required.

While the 1998 debate extends far beyond automatic meter reading (AMR) itself, this is nevertheless an important issue. Much effort has been directed into establishing a robust business case for AMR. Many believe that competition in supply will be the driver and combined with other applications, it will finally tip the economic arguments in favour of the widescale implementation of the technology.

The question is how can AMR be most effectively delivered? The electricity supply industry has always believed that power line carrier technology (PLC) represented the ideal mechanism for a cost-effective AMR system based on two-way communications. The medium itself is owned and controlled by the industry and offers, by definition, a communications network potentially embracing all electricity consumers.

## GETTING DOWN TO BASICS

PowerNet offers a wide range of characteristics which make it particularly suitable for use in a remote metering system. Firstly, the more advanced PLC systems are based on low-power highfrequency carrier signals which provide two-way communications. In contrast, traditional ripple control systems, which are still used extensively outside the UK for load and tariff control purposes, use high-power low-frequency signals. The oneway direction of the communications is inappropriate for meter reading

PowerNet has the advantage of using an existing and ubiquitous medium, the electricity distribution networks themselves. By definition, every electricity customer, not to mention every gas and water customer, can be served by a PowerNet system. In other words, the potential exists to convert the electricity distribution network into a powerful and versatile global intelligent communications infrastructure.

The subject of extensive trials over the last three years driven partly by the demands of 1998, PowerNet provides a comprehensive, high speed and reliable two-way communications capability. It operates over low (LV) and mediumvoltage (MV up to 11 kV) - and over both overhead lines and underground cables.

Communication with a new generation of intelligent electronic meters is via controllers installed on the network. This allows rapid transmission of information to, and from, a central point, at substations for example, to pre-programme all meters individually to switch over simultaneously to a special new morning tariff.

Conforming to key international standards, the system operates at instantaneous data rates of up to 19,200 bits per second.

The ability to provide a low-cost reading and billing facility is an extremely useful feature of PowerNet communications. RMS has always recognised, however, that any system dedicated purely to meter reading would be difficult to cost justify for the domestic market. The thinking behind its implementation has been the need to develop a general purpose communications system of maximum versatility that could be put to use for the widest possible range of applications.

### BENEFITS

The benefits that RMS' PowerNet communications can provide include:

- routine (batched) meter reading
- · real time (ad hoc) meter reading
- energy cost optimisation through automatic load control
- advanced tariff management through a configurable electricity meter
- tokenless prepayment
- quality of supply monitoring (outages, voltage profiling etc)
- remote connection and disconnection
- customer messages through the meter or an associated display terminal.

In addition, network automation provides a good example of the wider benefits that the technology can bring. Quite apart from the tangible financial benefits of automation

## power line carrier

## by Clive Nunn, market development director, RMS Communications



Schematic of the RMS PowerNet installation infrastructure, Perth and Fort William in Scotland

on the MV networks, in the run up to 1998, pressures are now being imposed by regulators and customers to improve network performance and reliability.

Once a PowerNet infrastructure is installed, it will be possible to offer spare communications capacity to third party carriers and communications operators for their own use. It is estimated that on some networks only 25% of the data carrying capacity will be needed by a utility for its own use leaving 75% for other applications from electricity utilities or other third parties.

Potential additional applications include:

- · gas and water metering
- alarm system monitoring
- · appliance monitoring
- payment processing
- · home shopping and banking
- · e-mail
- · home automation support.

## DEMAND SIDE MANAGEMENT

In many environments, the biggest potential return for the technology will come from load management, the driver for the recent implementation of PowerNet communications by the Jersey Electricity Company.

The system can help reduce overall peak demand for electricity in several ways, ranging from time-of-use tariffs which encourage load shifting to direct load control, enabling the supplier to reduce demand in real time on a selective basis as required. Bearing in mind the huge expense associated with generating and distributing electricity, a tiny reduction in the maximum system demand can have a significant impact on the utility's operating costs.

## **JUSTIFYING THE INVESTMENT**

The justification for implementing the system results from a complex mix of tangible and intangible benefits. Hard benefits include offsets to planned meter purchasing investment, reductions to data collection costs and reduced fraud and tampering. Soft benefits include load balancing, network optimisation and the cost savings to be gleaned from new efficiencies in the area of electricity purchasing.

## PRACTICAL REALITY

In the run up to 1998, RMS has been putting theory into practice by implementing a number of pilot AMR installations in the UK. These include a pilot network installation with SWEB and Wessex Water, involving thirty customers, which tests the performance of the RMS system over long stretches of overhead 11 kV lines.

In a contract with Southern Electric, RMS is installing meters in 85 customers' homes in and around Odiham in Hampshire with communications over an extensive 11 kV network. Additionally, the Jersey Electricity Company's installation is now completed and involves 18 meters and PowerNet communications over approximately eight kilometres of underground MV cables.

However, perhaps the most significant of RMS installations is its benchmark installation at Perth and Fort William in Scotland. Commissioned by Hydro-Electric, it will eventually encompass some two thousand homes and businesses in this area of the Scottish Highlands. On completion, it will be one of the largest remote metering installations based on PLC anywhere in Europe.

Contact RMS on tel: 01256 701212, fax: 01256 701010

## **Boilerhouse upgrades** - nine steps to improved cost effectiveness by Murdo MacDonald, UK Technical Manager, Spirax Sarco

mproving boilerhouse efficiency need not involve a major investment. A wide variety of modern control equipment, costing from only a few hundred pounds, can be added whenever budgets allow. Implementing any of the following upgrades will boost performance and achieve short payback with real cost savings.

## I RETURN OF CONDENSATE

Condensate is such a valuable resource that recovering even small amounts is viable. Condensate contains about 25% of the energy in the steam from which it came. When returned to the boiler, instead of being dumped to drain, condensate can save thousands of pounds per year.

## **2** AUTOMATIC BLOWDOWN AND HEAT RECOVERY

Tremendous cost savings can be achieved by improving boiler water blowdown systems, which control boiler contamination. Many boilerhouses use blowdown valves manually opened at regular intervals by a boiler operator, with any water removed simply being dumped to drain.

Much better is an automatic total dissolved solids (TDS) blowdown controller. Continuously monitoring TDS build-up in the boiler, the controller regulates blowdown valve opening to reduce contamination. More precise than manual control in drawing off the correct amount of water, automatic control minimises energy loss.

Greater efficiency is also achieved by recovering the heat from the blowdown water as it flashes to steam. The flash steam can be separated out in a flash vessel and injected into the boiler feed tank.

## **3 FEEDTANK HEATING AND DE-**AERATION

Less fuel is needed to produce steam from hot feedwater. Using returned condensate to raise

boiler feedwater temperature by 6°C gives a fuel saving of 1%. Ideally, feedwater should be maintained at 9°C.

However, simply feeding condensate into the top of the feedwater tank can be inefficient. As it falls through the space above the water, vapour and energy can be lost and air will be admitted. A de-aerator head, which mixes returned condensate, flash steam

and cold make up water as they are fed into the feedwater tank, overcomes this.

## **4** INSULATING PIPEWORK AND HOT SURFACES

Insulating pipework, flanged joints and the bodies of steam valves can substantially reduce heat loss. Proper lagging of feedtanks with a covering of 50 mm normally cuts heat losses by about 90%.

## 5 LEVEL CONTROL

Manpower resources can be released for other tasks by installing advanced level controls. Operation without a trained boiler attendant is permitted by the Health & Safety Executive's Guidance Note PM5, providing that two independent high integrity, self-monitoring, low level alarm systems are fitted and there is a competent person on site capable of safely shutting down the boiler and calling for help.

## 6 AUTOMATIC START-UP VALVE

Manpower can also be saved and safety increased by installing an automatic warm-up system. An electrically actuated valve controlled by a timer opens automatically at a pre-set time and at the correct rate to slowly heat up the steam system.



## **7 AUTOMATIC BOTTOM BOILER** BLOWDOWN

Manpower, energy and water savings can be achieved by automatic boiler bottom blowdown to remove sludge from the boiler. This estimates excessive blowdown, wasting water and energy, which often results when a boiler attendant manually opens the blowdown valve.

### 8 STEAM METERS

Measuring energy consumption gives an important benchmark when working to improve energy efficiency. Steam meters can also be used to detect excessive consumption; to charge energy costs to individual departments, thereby encouraging sound energy management; or to measure steam consumption.

## **9 MONITORING EQUIPMENT**

Worn or malfunctioning equipment can significantly affect boilerhouse efficiency. Installing monitoring equipment maximises effectiveness by detecting problems before they worsen.

Contact Spirax Sarco, tel: 01242 521361; fax: 01242 573342

## **Doubling wealth, halving** resource use by Brian Locke FInstE

Factor Four - doubling wealth, halving resource use, the new report to the Club of Rome by Ernst von Weizsacker, Amory B Lovins and L Hunter Lovins,

Earthscan Publications Ltd, London, UK Edition 1997, £15.99.

Extensively reviewed elsewhere, this book promises that "resource productivity can and should - grow fourfold. Thus we can live twice as well - yet use half as much". Here, Brian Locke looks at the book and its background.

his book gives the world reasons to raise the efficiency of use of energy and other resources including labour, capital and markets; and reduce waste, pollution, incompetence in management and mistaken objectives. As well as technological and industrial implications, the authors consider economics, trade, population and philosophical issues and aim to show how "to double the global standard of living while cutting resource use in half." It will take time but the means have long been available.

The Club of Rome began in 1968 with concern for the future of humanity, and has published many reports to it, and one by it: "The First Global Revolution" in 1991. The first publication:"The Limits to Growth" (by Meadows et al of MIT, with a Club of Rome commentary in 1972) considered natural resources, food, industrial output, population and pollution - likely growths and their interactions. It was attacked in Britain but widely studied elsewhere. Being neither a zero-growth nor an ecological panegyric, those who actually read it could realise the dangers of unrestricted exponential growth that hitherto had been many economists' recipe for mankind's development. That book helped forward thinking around the world.

This book was initiated by Club of Rome member Ernst von Weizsacker (President of the Wuppertal Institute for Climate, Environment and Energy in the North-

Rhine/Westphalian Science Centre, Germany) who had many discussions with other Club of Rome members, and who roped

into the effort two of the world's leading pioneers in energy efficiency - Amory and Hunter Lovins (Vice-President, and Director respectively, of the Rocky Mountain Institute, USA).

There are presentations that can be used by all energy and other technologists and engineers, for two main reasons. First, it is good, fundamental sense. Second, it should help communicate to the public, to civil servants, and to politicians what many in bodies such as this Institute, and the engineering, economics, environment, planning and related professions, have been doing and saying for most of their lives, without winning over enough of those taking decisions at top level. Too many worthy inter-government and other conferences have produced useful reports whose recommendations have been dwarfed by more immediate interests and concerns of those influencing events. It is easy for "top people" to utter in public resounding words written by staff, and not followthrough. This book contains bases for actually doing things: the time is right to take these issues seriously, now, and above party, or international, politics.

The Duke of Edinburgh wrote in 1988, "No generation has ever liked its prophets, least of all those who point out the consequences of bad judgement and lack of foresight. The Club of Rome can take pride in the fact that it has been unpopular for the last twenty years. I hope that it will continue for many years to come to spell out the unpalatable facts and to unsettle the conscience of the smug and the apathetic." The need is still with us.

The growing consensus upon worthwhile improvements on 'going on doing what we've

always done' - of which this book is a part is encouraging. Several initiatives came from Club of Rome members. The 1992 UN Rio de Janeiro Conference was one such; while it, and its predecessors and successors, achieved little in tangible results, there was much value in ratcheting forward the realisation of what mankind could do, if it really looked ahead.

Engineers and other professionals are not the only prime movers needed: progress needs all the non-professionals, too, who constitute most of those who govern in the world. Non-governmental organisations have an increasing part to play. Professional understanding needs to resonate with emotion-based support from the grass roots, preferably free from the dishonest argument or self-aggrandising anti-social activity that can too easily devalue otherwise useful publicity.

There are other forward-looking programmes based in this Institute, such as Power Aid for poor villages abroad, and TEMOL and CREATE in education for instance; plus the Zero Emissions Research Initiative (from Sweden and in Gloucestershire); the World Futures Studies Federation Conference (Australia, 1997); initiatives of Mihajlo Mesarovic and colleagues at Case Western Reserve University, Ohio, USA, including UNESCO publications such as "Cybernetics of Global Change"; and those of The Institute for Global Ethics such as "Britain's Agenda for the 21st Century" (St George's House, Windsor 1996) - are but a few of the quite separate activities that happen to be related to members of the Club of Rome and to Institute members.

The New Scientist suggests that "There are probably as many economists as natural scientists investigating global warming today". But it is the energy and other engineers and technologists who make possible the realities of sensible progress for those who govern. Factor Four helps us in our important work, and we have important, relevant and new technology coming along all the time.



One way of helping ensure that the best engineering students go on to a career in industry is to give them a taste of real work in some of Britain's top companies. The 'Year in Industry' scheme does just that.

**Some 650 of the students** about to embark on an engineering degree course this month have already gained their first year of high quality - and paid work experience in some of Britain's top companies. The energy sector is one major source of year long, pre-degree placements organised by 'The Year in Industry' scheme.

Now in its eleventh year, the scheme has so far placed more than 3000 students at over 600 companies across Britain. As well as offering a year's relevant work to school leavers planning an engineering career, the scheme also offers companies a pool of keen young people who can and do make significant contributions to corporate objectives often bringing a fresh approach to old problems. Students are paid at least £130 a week by the participating company, which also pays an annual administrative fee to fund the scheme.

The Year in Industry brings valuable benefits to both parties. Students gain a powerful insight into how the early years of their future careers might feel, and earn a living for a year to boot. But more valuable is their increased employability participants in the scheme obtain better degrees and are more successful in finding full-time employment after graduation, according to scheme director Brian Tripp.

Of the scheme's first 500 participants,

## year in

24% achieved first class degrees (against an overall average of 7%) and 44% ended up with an upper second. And 72% had organised themselves a proper job within six months of graduating, compared with just 30% of all graduates. And while it is true that the young people who seek out the scheme and make a success of it tend to be both bright and well-motivated to begin with, the scheme undoubtedly gives them an added boost.

Perhaps the most important benefit to the country is that some 86% of participants return to industry following their degree, rather than being tempted out of engineering altogether. Indeed one of the drivers for establishing the scheme back in the 1980s was the loss of many of the best engineering students to careers in the City.

Participating companies are expected to offer real, challenging work to the students, and encouraged to profit from their efforts too. Many are surprised at the size of the contribution which an enthusiastic new player can make.

The scheme's administrators advise participating companies on how to get the most out of their student, and lay on additional training to students during the year.

Among the 500 or so students who have just completed their year, many have made contributions to the energy industry. (See four examples, right).

Now, as one set of participants are completing their year at work and beginning their student years, a new batch of 650 young people have just started their year in industry. The scheme is already seeking both students and companies to participate in the 1998/9 round.

## Contact The Year in Industry's National Director, Brian Tripp, on tel: 0161 275 4396.

Brian will put you in touch with your nearest regional Centre.

## Monitoring cooling tower performance for National Power

lain Brooksbank was employed by National Power at Drax Power Station in Selby, Yorkshire. Iain worked in the Process Optimisation Section at Drax, which looks after the efficiency of plant.

During the year lain completed a major investigative project into the continuous monitoring of a Drax cooling tower. The objective of the work was to find when would be the optimum time to clean the towers while ensuring efficient operation. This was the first time anything like it had been tried in the UK.

lain was in overall charge of the project from initial specification, through instrumentation installation to commissioning and testing.

The continuous monitoring of a large natural draught tower is not easy due to the physical size and fluid flows through the device. The water flow and outlet temperature are the most difficult performance parameters to measure due to the high volumes involved.

His work involved researching cooling tower performance theory, fluid mechanics theory and discovering the pros and cons of different instruments. He designed the computer screen displays and derived a number of complex algorithms (mainly for water flow and weather data). The results are now coming off the station computers.

There are significant cost benefits to the system. As the scheme monitors fouling, the tower will not need to be taken out of service for fouling inspections, which saves at least 20 hours out of service, measured at  $\pounds1000$  per hour.

## Condition monitoring of generator motors for First Hydro

Gillian Pritchard worked for First Hydro

## industry

Company, an independent power producer operating the Dinorwig Power Station, investigating the long-term integrity of the company's plant - particularly the generator motors. Condition monitoring is an important method of safeguarding the motors, which are some of the most highly stressed machines of their type in the world.

According to First Hydro's' Electrical Engineering Manager Ian Cook, Gillian's work made an important contribution in three areas. First, it has been a very valuable piece of research into vibration from electromagnetic sources: this is a little understood subject particularly on electrical machines of the size and type of the Dinorwig Generator Motors. Second, a fibre optic accelerometer has been used to measure the vibration of the generator motor windings - the first time this has been done anywhere in the world on a pumped storage machine. And third, it has provided an excellent basis for long term condition monitoring of the motors.

In the future, it is intended that the vibration monitoring that Gillian has recommended will be used to provide information for preventative maintenance work on the generator motors. This will be of major benefit to First Hydro Company in helping it to reach its business objectives financially and those on availability and reliability of the plant.

## Improving control of dosing plant for Nuclear Electric

Richard Barnbrook worked for Nuclear Electric at Hartlepool Nuclear Power Station. As well as taking part in the day to day operations of the station, he undertook two projects involving the use of the programmable logic control (PLC) systems for controlling specific aspects of the station's processes. Richard's main project involved the control of an aspect of the electochlorination plant producing sodium hydrochlorite for dosing cooling water. The process is tide related and there are problems when it is energised, as high tides bring a high concentration of manganese.

The PLC system Richard devised is virtually maintenance free and incorporates tide tables for period of 10 years ahead with capacity for more. The project has been implemented and is yielding significant savings. The system allows the plant to run for longer periods without risk of failure and without the need for an operator to visit the plant four times a day to operate a switch.

The second project was a joint study to see if the present reverse contactor, part of the system for controlling rods within the reactor, could be replaced with a PLC. He developed and produced a test rig and control programming. Although the study proved successful, because of the high safety standards essential in the nuclear industry, further development is needed to the system before installation can go ahead.

## Developing an asset database for National Grid Company

Jonathan Rose's placement was with the National Grid Company plc. Jonathan spent most of his year within Asset Investment (North) whose responsibilities include management of all capital expenditure and write-offs within the north of England.

His role was, via liaison, to ensure that the relevant engineers, project leaders and finance department exchange the information necessary to produce the asset register entry each financial month. In the financial year 1994/95 he monitored the commissioning of £250



Gillian Pritchard wins the Welsh area Engineering Employers' Federation competition run as part of the Year in Industry scheme

million worth of assets.

His major project during the year was to construct a new database to manage schemes, such as the replacement of old circuit breakers or the construction of a new substation. The database monitors nearly all stages involved in progressing the scheme from inception to closure, via a user friendly interface with powerful report generating capabilities.

He was tasked with the research into what was required of the database, to draw up a plan to implement these requirements, and then to develop and hand over a completed product. This work is highly regarded by the company with a total added value to date of more than £50,000.

The database is currently the core information system for Asset Investment, and required the bringing together of management, financial, commercial software development and presentation skills. Labour MP urges Government to change the public face of engineering

The Engineering Council has welcomed Labour MP Claire Curtis-Thomas's call to the Government for greater efforts in promoting UK engineering and applauded her comments as the most supportive ever made in Parliament about the profession.

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In her maiden speech to the House of Commons, Mrs Curtis-Thomas, herself a Chartered Engineer and an Engineering Council Senator, urged the Government radically to increase its support for UK engineering and publicly emphasise its importance to the national well-being.

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She criticised Government departments for undervaluing engineering's contribution to national wealth creation by attributing only 5% of GDP to the industry. The true figure, she said, was nearer to 40% when the contribution of engineering-led companies in construction, petrochemicals and the service industries was taken into account.

She also made a plea for mandatory regulation as a contribution to raising the status of British engineers on the world stage. She said: "We have a national register of qualified and competent engineers maintained by the Engineering Council, but it does not have any legal status as yet. The Government could correct the anomaly at a stroke by affording the register the same legal status as that held by other professions."

Mrs Curtis-Thomas also called for the appointment of a Chief Engineering Advisor. "Why does the Government have a Chief Scientific Advisor and not a Chief Engineering Advisor? Science is a net consumer of national wealth by comparison, engineering is a net generator of wealth."

In response, John Battle, Minister of State for Industry, Energy and Science, recognised the "vital contribution" of engineers and engineering to the economic success of the nation. Mr Battle added that although no formal case had been put to the Government for mandatory registration, such a case would be considered seriously if it had the support of employers.

## Your profession needs you

The new network of 15 Professional Engineering Institutions (PEIs) throughout the UK presents individual engineers with a golden opportunity to have a direct influence on how the public, particularly schoolchildren and students, perceive engineering.

The profession needs more role models and ambassadors to promote its successes and engineers are the most valuable asset we have in this respect.

Proportionally fewer engineers now work in industry, but are often now in jobs giving greater contact with a wider public. This, of course, presents more opportunities to deal with people of influence in the community, within trade sectors or other professions.

A major concern for engineers is the status of the profession in the eyes of the public and how its image can be transformed. This is a challenge not only for the Engineering Council, the Institutions and the wider engineering community but, primarily, for individuals. The personal commitment of engineers themselves can do a lot to reinforce the effort being directed into successful headline campaigns such as the current 'Year of Engineering Success'.

This means exploring all outlets for increasing awareness of the profession. Many thousands of registered professional engineers work voluntarily with programmes and campaigns involving children and young people. This is excellent work, which humanises engineering and gives a 'face' to members of a profession which, through occupational circumstances, tends to operate out of the spotlight.

An involvement in community affairs as, for example, a school governor or residents' association leader, can be an ideal opportunity to demonstrate that the thought processes we use in solving engineering problems can be applied to other issues. I hope that all of you who carry out voluntary work of any kind ensure that everybody you work with knows your profession and that you are proud to be part of it.

The newly established PEI network is the perfect route through which the enthusiasm and commitment of all engineers can be channelled in the joint venture projects of the Institutions.

This new regional structure for the profession will eliminate the duplication of effort and waste of resource which previously hindered implementation of a cohesive strategy for the promotion of engineering. The PEIs should not become just 'talking shops'. They must be outward looking and dynamic organisations working towards cultural change through inspired leadership and

By Mike Heath, Director General, the Engineering Council

enthusiastic support. The effectiveness of that support is very much down to the motivation of the individual engineer. It is essential that a climate is created in which both established activities and new initiatives can benefit from the contributions of people with fresh ideas.We want to see more young engineers and more women reinforcing the sterling work of the current activists.

Engineers have the power to influence a host of issues - from local services infrastructure to matters of national concern, such as the environment. It is crucial that the views of engineers, through the PEIs, should be heard by as wide an audience as possible.

## October 1997

## CoalTrans 97

Conference and exhibition, 13-15 October, Istanbul Details from CoalTrans Conferences Ltd, tel: 0171 779 8945, fax: 0171 779 8946

### Cables for power systems

EA Technology course, 14-15 October, Capenhurst Details from Ms Del Bennett at EA Technology, tel: 0151 347 2557, fax: 0151 347 2256, email: db@eatl.co.uk

## GasElec Expo 97

Exhibition, 14-16 October, Amsterdam Details from GasElec Expro, tel: +31 20 549 1212, fax: +31 20 549 1894, e-mail: gaselecexpro@rai.nl

## Dearing and SARTOR - the facts and implications

IChemE seminar, 15 October, Loughborough Details from IChemE, tel: 01788 578214, fax: 01788 577182

## New challenges for the UK gas industry

SBGI autumn seminar, 15 October, Warwickshire, £185 + VAT Details from SBGI, tel: 01926 334357, fax: 01926 450459

## Decentralised cogeneration and the climate change challenge

Conference, 15-16 October, Brussels. Details from COGEN Europe, tel: +32 2 772 8290, fax: +32 2 772 5044, e-mail: cogen\_europe@compuserve.com

INTELEC 97: Power and energy systems in converging markets International conference on energy and power for communication systems, 19-23 October, Melbourne Details from Dr John Hawkins, tel: +61 3 9277 7016, fax: +61 3 9253 6563, e-mail: intelec97@trl.telstra.co.au

## Modern battery technology

Course, 22-24 October, The Netherlands Details from The Center for professional Advancement, tel: +31 20 638 2806, fax: +31 20 620 2136

## National Homes Energy Rating

Conference, 27-28 October, Stratford-upon-Avon Details from NHER, tel: 01908 672787, fax: 01908 662296

## The future of the UK

electricity industry Conference, 27-28 October, London, £849 + VAT Details from Business Seminars International, tel: 0171 490 3774, fax: 01424 773334

## Introduction to petroleum refinery processing Course, 27-29 October, The

Netherlands Details from The Center for professional Advancement, tel: +31 20 638 2806, fax: +31 20 620 2136

## Exploiting new opportunities in the UK gas market Conference, 28-29 October, London Details from IIR, tel: 0171 915

5055, fax: 0171 915 5056

## November 1997

## Controlling industrial emissions - practical experience

IChemE conference, sponsored by the Institute of Energy, 3-4 November, London Details from Julie Morgan, IChemE, tel: 01788 578214, fax: 01788 577182, e-mail: jmorgan@icheme.org.uk

## **Environment 97**

Virtual conference, held on the Internet, 3-14 November Register at http://www.environment97.org Details from IChemE, tel: 01788 578214, fax: 01788 560833

## European gas - coping with oversupply

Conference, 4-5 November, Barcelona. Details from Overview conferences, tel: 0171 613 0087, fax: 0171 613 0094

## Power system protection

EA Technology course, 4-6 November, Capenhurst, £895+ VAT. Details from Ms Del Bennett at EA Technology, tel: 0151 347 2557, fax: 0151 347 2256, e-mail: db@eatl.co.uk

## European Oil Refining

Conference, 6-7 November, London, £899 + VAT Details from SMi Ltd, tel: 0171 252 2222, fax: 0171 252 2272, email: 100531.3067@compuserve.com

## Engineering profit from waste

IMechE conference, 11-12 November, London Details from Conference Services Department, tel: 0171 973 1316, fax: 0171 222 9881, e-mail:

p\_george@imeche.org.uk

## Turkish energy conference

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11-12 November, Ankara, Turkey Details from The Economist Conferences, tel: 0171 830 1000, fax: 0171 931 0228

## Corporate energy

management in just one day DETR workshop, 12 November, Watford Details from BRECSU, tel: 01923 664531, fax: 01923 664602, e-mail: brecsueng@bre.co.uk

## Corporate energy

management in just one day DETR workshop, 13 November, Norwich Details from BRECSU, tel: 01923 664531, fax: 01923 664602, e-mail: brecsueng@bre.co.uk

## The developing energy markets of central & eastern Europe

Conference, 13-14 November, Prague, £945 Details from The Adam Smith Institute, tel: 0171 490 3774, fax: 01424 773334, e-mail: 100451.3120@compuserve.com

## **Boiler water treatment**

Conference, 17-18 November, London Details from FT Conferences, tel: 0171 896 2120, fax: 0171 896 2696, e-mail: lucindar@pearson-pro.com

## Introduction to petroleum refinery processing

Course, 17-18 November, The Netherlands. Details from The Center for professional Advancement, tel: +31 20 638 2806, fax: +31 20 620 2136

## Meet some of the faces behind the voice of your profession



VIEN/15

Louise Evans Acting Executive Secretary



Louise Collins Projects & Marketing Officer

In recent months there have been some changes at the Institute, so we thought this would be a good time to introduce you to the team. Meet part of your organisation - the permanent staff.

Working with the branches and the network of committees, the staff each have a responsibility to deliver and improve the products and services available to you as members of the Institute.

Louise Evans is a familiar face to many members now, after  $4^{1}/_{2}$  years at the Institute developing project and marketing activity and managing conferences. In addition, Louise is responsible for the majority of the Institute's publications and fulfills her role as Deputy Secretary. Louise Collins manages many of the projects and is a key figure involved in developing events and promoting the products and services available. You will also notice that she is the Art Editor of this magazine! She and Maria Adams answer all of the calls for information about the Institute and its various products, as well as taking the opportunity to regularly visit organisations, speak at conferences and attend exhibitions.



Tracey Fisher Membership & Education Manager

Derek Smith and Naveed Ikram manage the finances of the Institute, monitoring how your fees are spent, ensuring that you as members, get value for money from your subscription. Derek is also responsible for all maintenance and building services management. Pat Wiggins and Deepti Jayawardena Wilkinson are the newest arrivals at the Institute. Pat has a wealth of experience in developing education services, especially vocational education, and Deepti worked previously for a well known energy consultancy. Both will be working with Tracey Fisher to streamline administration so that they can spend their time developing more benefits of membership for you. As a mechanical engineer and lecturer well versed with industrial and academic experience, Tracey is the final link to creating a more vibrant and innovative professional body. All we ask is that you keep in touch with us now as we work on your behalf.



Deepti Jayawardena Wilkinson, Membership & Education Assistant



Maria Adams Projects & Marketing Assistant



Naveed Ikram Accounts Clerk



Derek Smith Finance & Administration Manager



Pat Wiggins Membership & Education Assistant

Institute

## More news on recognition for Energy Management professionals

In the July/August issue we announced the ground breaking changes we had been allowed to make to the criteria regarding a particular grade of membership - AMInstE (Associate Member of The Institute of Energy).

Now all energy management professionals who achieve an N/SVQ 4 and have five years practical energy management experience will be able to apply for a recognised grade of membership within the Institute.

Not only have we achieved a first for the energy manager, but the IoE is the first professional body to link an N/SVQ award directly to membership criteria of the organisation. This is a great achievement and we hope you will support us.

If you are currently a member and want to transfer to this new grade on completion of your VQ, contact the membership team for assistance. If you are not a member of the Institute then contact Deepti or Pat for your application form.

We can now provide you with the recognition you deserve!

Remember - we can come and talk to you about the link between professional development, VQ's, TEMOL and membership if it will help you make the right choices.

## Let's Save Paper

The Institute is currently reviewing its administration systems and trying to limit the amount of paper we use internally and send to you. This is one of the reasons why we are now trying to communicate with many of our members by email. So if you are thinking of sending correspondence to the Institute using the post, but you have access to email, then think again. Email is quicker, so we can respond faster.

## Correspondence should be addressed to:

Louise Evans: levans@ioe.org.uk Louise Collins: lcollins@ioe.org.uk Maria Adams: madams@ioe.org.uk Tracey Fisher: tfisher@ioe.org.uk Derek Smith: djsmith@ioe.org.uk info@ioe.org.uk membership@ioe.org.uk education@ioe.org.uk

We look forward to hearing from you

## **Branch & Associated Events**

## OCTOBER 1997

## YORKSHIRE

Tuesday, 14 October, 6.00pm "IPC and the Progression to Integrated Pollution Prevention & Control" Cyril McQuallan, Regional Environment Protection Manager, The Environment Agency. Joint meeting with the IChemE at Allied Colloids, Bradford. For details contact Mr A Mallalieu, tel: 0113 2768888

## NORTH EASTERN

Tuesday, 21 October 5.30pm Joint meeting with the Northern Energy Managers Group and IChemE "Energy from Municipal Waste - The development of the Cleveland Project" by Mr D C Clayton, University of Newcastle, Merz Court, Lecture Room L101. Contact Mr C Howarth, tel: 0191 222 7303

## NORTH WESTERN

Wednesday, 29 October "Renewable Energy - into the Next Century" - a one day workshop at AEA Birchwood Conference Centre, Risley, Warrington. Contact Geoff Loram tel: 0151 625 5025 or Eric Curd: 0151 625 6744

## NOVEMBER 1997

## LONDON AND HOME COUNTIES

Tuesday, 11 November, 6.00pm "Fuel Cells, Powering the next millennium?" - including demonstration by Paul Mitchell, Loughborough University and Advanced Power Systems. IGasE, Portland Place, London. Contact Mr PM Johnson tel: 01793 893330 email: philip.johnson@natpower.com

## IMECHE

Tuesday, 11 and Wednesday, 12 November Engineering for Profit from Waste - IMechE HQ. The Institute of Energy is cosponsoring this event, therefore member rates are available. Contact Mr P George, tel: 0171 973 1316

## NORTH WESTERN

Wednesday, 12 November "Responsible Utilities Management". Joint meeting with NW IChemE at AEA Birchwood Conference Centre, Risley Warrington. Contact Mr F Owen, tel: 01565 651506

## YORKSHIRE

Wednesday, 19 November 2.30pm "Combustion Engineers - they light fire don't they?" Prof. Gordon Andrews, Leeds University. Contact Mr A Mallalieu, tel: 0113 2768888

## LONDON AND HOME COUNTIES

Date in November to be confirmed, 2.00pm Visit/Talk - Wind Energy, Rutherford Appleton Laboratories, Didcot. Contact Mr PM Johnson, tel: 01793 893330, email: philip.johnson@natpower.com

## NORTH EASTERN

Wednesday, 19 November "Deregulation of the Energy Industry" Speaker to be announced. Contact The Northern Energy Initiative, tel: 0191 516 4400

## An alternative price

If you would like to learn more about the topics and issues raised in Energy World, then the publications listed below, at a discounted price, will be of considerable use and interest to you.

## **COMBUSTION & EMISSIONS CONTROL III**

You now have the opportunity to read at your leisure the papers, opinions and projects that the authors produced.

## **BIOMASS - FUELLING THE FUTURE**

Proceedings from the conference held last year in London are now available for those of you who are interested in the different aspects and the fundamentals of this growing energy source. The status of bioenergy is debated, as are the technical obstacles and the success stories. Papers examine the environmental implications, financial aspects and cultural issues.

## WHERE ARE WE NOW ON NUCLEAR POWER?

This publication, although published several years ago, provides a fascinating insight into how experts thought nuclear power would progress. If this is an area of interest for you, then you will be delighted to compare these views with today's realities.

## ENERGY FOR THE FUTURE

This publication provides an extraordinary explanation and insight into the different types of fuels that we use. Published 10 years ago, it allows you to identify with the experts' foresight as their predictions ring true in today's society.

## HOW CLIMATE CHANGE WILL CHANGE YOUR BUSINESS £20 £10

This publication contextualises the importance of climate change in a way everyone can understand and identify with.

## MEASUREMENT OF SOLIDS IN FLUE GASES

A reprint of this classic, was needed to satisfy the demand, so get in quick!

## **RESTRUCTURING THE ELECTRICITY & GAS MARKETS**

In 1996 the Institute ran a highly successful high profile event which attracted many delegates and much press coverage. If you would like to learn more about the energy markets before 1998 is upon us then purchasing this is a must!

## **ENERGY EFFICIENCY TRAINING SERIES**

Training packages in energy efficiency developed by ETSU and supported by the SAVE programme. Compiled by leading UK consultancies, they are arranged in modular form for easy reference, and teaching aids.

ENERGY EFFICIENT REFRIGERATION	£199	£149
ENERGY EFFICIENT ELECTRIC MOTORS & DRIVES	£199	£149
HIGH & LOW TEMPERATURE HEAT RECOVERY	£139	£149

SMALL SCALE CHP

## Small Scale Combined Heat and Power is a course designed for individual or tutorial use.

If you would like to purchase any of these publications or would like information on the other publications we sell, then please contact Maria Adams, on 0171 580 7124, or fax: 0171 580 4420, email: madams@ioe.org.uk.

£30

£10

£35

£X

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£25 £20

£25

£149 £99

£20