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SOLAR PIONEER GETS DOMESTIC PV

A 2kW Over-Tile PV roof system has been installed by **PV Systems** for Mr **Fred Treble**, the pioneer of photovoltaics in the UK and Europe, at his house in Farnborough, Hampshire. Fred was keen to take advantage of the improved economics for PV power generation in the UK today. The low VAT rate of 5% and the net metering offered by TXU (Eastern Electricity) have prompted the



change and the reduced system cost (now installed complete for under £6.50 per Watt-peak) makes this type of installation more attractive. The system is strap mounted and grid connection is by G77 compliant inverters. Fred is monitoring the system himself.

The 2kWp array, consisting of 24 BP Solar high efficiency 85Wp monocrystalline silicon frameless modules, is mounted on the south-facing tiled roof.

The modules are connected in two series strings, each feeding a SMA 850W inverter with maximum power point tracker. The inverters have a display indicating the instantaneous array power and voltage, the energy yield of the current day and the cumulative energy yield, which is

expected to reach 1600kWh in an average year. Solar electricity surplus to household requirements is fed into the grid under a net metering scheme administered by Eastern Energy (the only utility in the UK to do so at present). With no subsidy, the generator is not cost effective at present but Fred wants to gain first-hand experience of living with PV.

He also hopes that others will be encouraged to follow his example, so as to reduce CO₂ emissions, help build the PV market and thereby reduce costs.

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FURTHER CONTRACT IN SUPPORT OF G77

The DTI has recently awarded a contract for technical work in support of G77 - the electricity industry recommendation that simplifies the connection of small PV systems to the electricity network. The work is to be undertaken by **Halcrow, EA Technology** and **SunDog**, using the test facilities available at EA Technology. It aims, in conjunction with advisory groups from the electricity and PV industries, to design 'black box' tests for inverter output systems that will be independent of the technology used. This will give consistency between different types of

inverter, and would complement the Type Tests already set-up as part of G77. It has particular relevance to AC Modules which at present typically use different technology from main stream inverters due to their small size, and hence require additional components to meet G77.

For further information, or if you would like to take part in the development, please contact Jim Thornycroft at Halcrow.

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EDITORIAL

Opportunities and Challenges

The future for the renewables industry in the UK is looking much brighter. After many years of trying to get the British government to invest more in a renewable future we can see some prospects of serious investment and a more amenable market place. But this new scene brings challenges and opportunities to our industries. The major "green" speech by the Prime Minister in March may have been the keynote speech for announcing a much stronger commitment to renewable energy including PV but it has been surrounded by a series of complementary announcements and moves which leave some of us overwhelmed. PV-UK and its companion associations have for years been arguing for such support and suddenly it all seems to have come together. The question being posed is can we in the industry rise to the challenges?

The first challenge is to use the new resources wisely to develop steady and sustainable growth in our markets. There is still much to be done by government and industry to devise the roadmaps and programmes with PV taking its fair share of the funds. We need sensible and complementary schemes which will help our PV industry not just in world class R&D but also to move forward to fully commercial, self-sustaining markets.

The next challenge is to provide the products and quality of service which clients look for in a maturing industry. We don't need cowboys in the business. Our third challenge is to compete effectively in the world markets. These are all areas where PV-UK can play a role on behalf of its membership. We also have our internal challenge to grow and adapt so that we can provide the services expected of a maturing association.

Over two years ago now PV-UK published "Photovoltaics in the UK - Facing the Challenge". Now we have a real chance to turn the policies and programmes set out there into a reality. As the new chairman of the association I feel honoured to have the opportunity to lead us into this new era but, members be warned, I shall be looking for your assistance and encouragement to set us on the right path.

Rod Hacker, Halcrow
Chairman

FIRST DIY PV SYSTEM

Wind & Sun Ltd, suppliers of roof-top grid-connected PV systems, have provided the back-up expertise and training to enable a do-it-yourself handyman to successfully install his own system. Mr Tony Skelton, of Leek Wootton, Warks wanted to incorporate solar electricity into his bungalow and was keen to carry out as much of the work as possible. With Wind & Sun's help he completed installation of the entire 1kWp system consisting of 12 x BP Solar 585 modules and GCI-1200 850W Sunny Boy inverter. **Wind & Sun** engineers were only required at the site to commission the grid interface, and the local utility (Powergen) were impressed with the high quality installation. Steve Wade from **Wind & Sun** said "We have been training professional electricians to install PV for some time, but this is the first DIY grid-connect

application we have assisted. Obviously it saves money for the customer and they can take their time incorporating features that would not normally be economic for an installation crew." Output of the system has so far exceeded expectations - Tony reckons it has halved his electricity bill. The system is now subject to extensive monitoring as part of a DTI programme.

Steve Wade, Wind and Sun, info@windandsun.co.uk



ADVICE ON GREEN ELECTRICITY

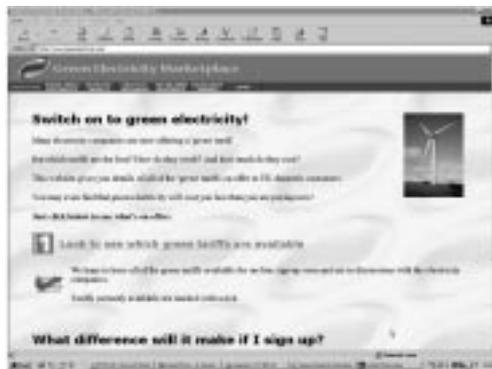
Since the deregulation of the electricity market in the UK, consumers have had a choice of electricity supplier. Nearly all of the major electricity companies in the UK now offer 'green tariffs', whereby the electricity company either matches energy used with energy from renewable sources, or puts money into a fund to support renewables. However, these tariffs vary considerably in cost and conditions, and independent information on what is available is often hard to find.

Green Electricity Marketplace, in which **IT Power** has a major share, has set up a website that provides information on all the green electricity tariffs in the UK and compares the offers available. The site, which can be found at www.greenelectricity.org, also enables consumers to sign up to a green tariff on-line.

The site is now being expanded to provide a service to business customers. Since green tariffs will be exempt from

the Climate Change Levy, which came into force in April 2001, many businesses are now considering switching to a green supply to avoid the tax. Through its Climate Change Strategy Unit, **IT Power** is also advising businesses on the other options available to ameliorate the effects of the Levy.

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RUBBISH IS EDUCATIONAL

SunPower, assisted by Ampair, carried out a project for Camden Council earlier this year to develop an Energy Education Project at the Camden recycling plant. The Energy Education Centre at the site is run entirely by renewables, consisting of 10 PV panels on the roof, 2 wind generators and Solar Water Heating. Inside the small classroom there is a control panel which shows the amount of energy being produced by the PV panels and wind generators and it also shows the temperature of the water.

Sean Cavendish, SunPower sean@sunpower.freeserve.co.uk



IEA PV FOR DEVELOPING COUNTRIES

The UK leads the IEA's work on PV co-operation with developing countries, with **IT Power** appointed as Operating Agent for Task 9. The project includes experts from Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Switzerland and USA. The objective is to increase the rate of market deployment of PV in developing countries, by assisting multilateral organisations, like the World Bank, and bilateral donors. The past two meetings have been held in Morocco (September) and Indonesia (March). In Marrakesh the meeting was linked to a World Bank workshop. The meeting in Jakarta included a Business Promotion Seminar, sponsored by Switzerland, with several swiss PV companies supported to participate and develop business in Indonesia.

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The Task 9 group on a field trip in Marrakesh

WORLD'S LARGEST SOLAR PROJECT

Over 400,000 residents of the Philippines will benefit from a deal signed between **BP** and the Spanish and Philippine governments to bring solar power to 150 isolated villages in the Philippines. Led by the Philippines'



Department of Agrarian Reform (DAR), the \$48 million contract - the largest solar energy project ever - is financed by the Spanish government and will be

implemented in two phases, the first scheduled to begin in September. Phase I of the project will centre on 35 Agrarian Reform Communities (ARCs) in the Mindanao region of the Philippines and the second phase will be for another 44 ARCs. **BP** will use solar in around 70 villages to power home lighting systems, irrigation systems, potable water and distribution systems, schools, community centres, health clinics and communal lights. New AC power supply systems will be provided for income generation purposes, and training for community organisations will be included.

Because of the prohibitive cost of extending power lines and the difficulty of transporting generator fuel to remote, developing areas, international funding organisations are increasingly turning to solar as a low-cost way to supply electricity for the first time to remote areas and build the foundation for social and economic advancement in developing countries.

Ray Noble, BP Solar nobler12@bp.com, www.bp.com

SUNDAY: JUNE 2001

SunDay, the annual Europe-wide celebration and promotion of renewable energy organised by ISES-Europe, is happening on Sunday June 24th 2001. The U.K. branch of ISES, the Solar Energy Society, is co-ordinating events across Britain in a bid to show as many people as possible the enormous potential of different types of renewable energy.

There will be a great range of events including open days at wind farms, nature reserves, parks and gardens, where all sorts of alternative technologies will be on display. Many events are registered already, but it is still not too late to become involved. The Solar Energy Society are offering large amounts of information and advice, and a range of resources are on offer to event organisers. Existing events can be incorporated under the banner of SunDay. To become involved, or simply for information about what is going on around the country call David Garlovsky on 0114 2499 459, e-mail solarsunday@hotmail.com www.sundayeurope.com

ENERGY MINISTER LAUNCHES GOVERNMENT-INDUSTRY PV GROUP

The Minister for Energy, Peter Hain MP, launched the Final Report of the Government-Industry PV Group during a visit to the **Northumbria Photovoltaics Applications Centre** on 26 March. The University of Northumbria hosted a short reception at which the Minister spoke about the importance of photovoltaics as a future energy supply and the business opportunities in the photovoltaics industry. Representatives of the Government-Industry Consultation Group also spoke briefly about the recommendations in the report, copies of which were distributed. Despite the short timescale for organisation of the event, which made it difficult for many of the PV community to make the trip to Newcastle, colleagues from both local and national PV organisations attended the launch. PV-UK was represented by David Hillcox, one of the board of directors. Following the speeches, Mr. Hain visited the Northumberland Building façade and the NPAC research laboratories in order to learn about some of the work being undertaken. The visit concentrated on NPAC's activities in building integrated PV systems and in PV cell development and testing.

The PV Group Report can be found at: www.dti.gov.uk/renewable/photovoltaics/photovolt.pdf

*Nicola Pearsall, NPAC
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Minister for Energy, Peter Hain MP (centre), in front of the Northumberland Building PV façade. He is accompanied by Dr Nicola Pearsall (left), Director of NPAC, and Professor Tony Dickson (right), Deputy Vice Chancellor (Academic) of the University of Northumbria

PV IN BUILDINGS

The UK plays a big role in the IEA PVPS Task 7 programme on PV in the Built Environment, providing leadership and information and acquiring for UK businesses up to date information on developments in other countries.

The most recent event was a workshop on building with PV and new products on 9th May in association with the Sustain Exhibition and Conference in Amsterdam. Case studies and product information are available on the web site.

The programme is now in its final year and several outputs are due soon. Reports will be published on new electrical concepts, design issues and reliability; hybrid PV-thermal systems; and on PV potential, economics and promotion strategies. Teaching materials are being prepared for university level. More information can be had from the web site www.task7.org from which most of the information will be downloadable, or Halcrow at Burderop Park, Swindon SN4 0QD (Stephanie Temme, 01793 816500).

*Rod Hacker, Halcrow Group
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PHOTOVOLTAICS IS THE SPICE OF LIFE..... TAKE 2

Arup together with project partners **Renew North** and **Northumbria Photovoltaics Applications Centre** continue working on demonstration projects in the North East of England. The 'SPICE' project (Objective 2-urban) provides opportunities for local SMEs to participate in the use of photovoltaics. The latest installation was completed in March at the Greentyre Company Ltd, Middlesbrough, who manufacture 'solid' tyres for bicycles, wheel barrows, wheelchairs etc. using recyclable polyurethane. The process is



clean, non-carcinogenic, is CFC free and releases no harmful toxins to damage the atmosphere. The PV system has been designed to replace the existing double-glazed units in the south facade of the main entrance. The main objective was to provide a solar shading system that is both functional and aesthetic. The 2kWp rated system consisted of 18 double-glazed PV modules, manufactured by Solarnova using BP Solar mono-crystalline Saturn cells, integrated into the existing curtain wall support

system. All the DC wiring was managed within the external cover strip of the existing support system to provide both a neat and flexible innovative solution. The predicted power output is approximately 1,200 kWh/year and, as the system is grid connected, the electricity produced from the system will be used directly within the building. The PV modules were installed by GRANADA Aluminium Ltd and the system was electrically connected by **Winsund** with a single inverter provided by NADA Electronics Ltd.

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SCOLAR PROGRAMME CONCLUDES

The Scolar Programme has now reached a successful conclusion having developed PV systems for use in schools and educational centres, and installed over 80 sites around the country.

The Scolar Programme was part of the Technology Foresight Challenge launched by the Government in 1996 when solar was chosen as the promising renewable technology.

Philip Wolfe of Intersolar worked with the late Bob Hill to conceive a programme to install solar systems on nearly 100 schools around the country. The

aims of the programme included: Increasing awareness amongst hundreds of thousands of students, teachers and parents; Using the Internet to

link the systems together and disseminate information, educational materials and system performance data; Help educate the next generation about a technology which will be widespread in their world; and to build a broader UK industry of companies making and installing PV equipment.

Each Scolar system can generate about 600W of electricity in peak sunlight. Depending on location, this amounts to between 350 and 550 kWh per year - enough to power several computers for example - although in fact the power is fed into the local distribution system for any nearby electrical needs. As well as providing power the systems are an important educational resource for the schools and tie into many areas of the national curriculum.



Scolar system in front of the observatory at Dungannon School



Scolar walkway system in the playground at Swaffield School

The website, www.scolar.org.uk, was set up for the project. Here all the performance data from a system is uploaded where it becomes available to the other Scolar schools. Access is also provided to a comprehensive educational package, which provides a wide range of information on renewable and solar energy as well as project based material aimed at various key stages of the UK national curriculum.

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Wall-mounted Scolar system at Hermitage School in the Prime Minister's Sedgfield constituency

LOOKING FORWARD TO MUNICH

The 17th European Photovoltaic Solar Energy Conference and Exhibition will be held at the International Congress Centre in Munich this year 22-26 October. The Centre has a roof-mounted PV array rated at 1 MWp.

The Conference Chairman is Bernard McNelis of IT Power.



FORTHCOMING EVENTS

12th International PV Science and Engineering Conference, 11-15 June 2001, Cheju Island, Korea, <http://solarpv.or.kr/pvsec-12>

EPVSEC-17, 22-26 October 2001, Munich, Germany, www.wip-munich.de

1st International Conference on Solar Electric Concentrators, 29-31 October 2001, Marbella, Spain, www.nrel.gov/ncpv/



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GOVERNMENT SUPPORT RENEWABLES

A string of recent announcements from ministers have brought promises of at least £260 million to the renewable energy industries over the next three years. Some of the money is already allocated to particular technologies but PV should be able to take its share of the £100 m "green energy" money announced by the prime minister and the £55.5 m new R&D funding through the DTI. The allocation of the £100 m will await the publication at the end of the summer of the review by the Policy Innovation Unit of the Cabinet Office on a renewables strategy for the next 50 years. Meanwhile, Peter Hain has announced £10 m for PV over three years to start up a market stimulation programme to "enable UK to compete with Germany and Japan".

After years of financial famine and saying "if only..." our renewable energy industries are now going to have to perform and convince that we can grow successfully. PV-UK intends to have its say in how to spend this money wisely in order to build a world-beating industry.

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TARGET FOR EAST MIDLANDS

A target of 9.4% of electricity to be generated from renewable energy sources has been agreed upon for the East Midlands, as part of the UK government's regional renewables assessments.

IT Power, in conjunction with Land Use Consultants has completed a study of current energy projects in the region and potential for future renewables over the coming decade. The work had a wider scope than other studies undertaken in the UK as it had a significant focus upon energy efficiency and developing an energy supply/demand profile for the region to 2025. Meeting the targets for renewables and energy efficiency would lead to a reduction in CO2 of 6.2 million tonnes, equivalent to 8.7% of the region's 1990 emissions.

The final report, 'Viewpoints on Energy in the East Midlands' is available from the Government Office of the East Midlands.

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