



Collective **inspiration**

Lancashire and Cumbria Network

Newsletter Vol. 7 No. 1
September 2010



www.theiet.org/lancscumbria

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Cover picture

Hubble drifts over Earth after its release on May 19, 2009 by the crew of the Space Shuttle Atlantis. The crew had performed all planned tasks over the course of five spacewalks, making the Servicing Mission 4, the fifth astronaut visit to the Hubble Space Telescope, an unqualified success.



Welcome to this session. I hope that you find that we have an interesting programme of events covering a wide area of our Network. This session we will be having events in the Northern Cumbria area based around Whitehaven/Workington.

Please look at the website as there will be additional events that are notified by e-mail and on the website. I hope that you have found the previous newsletters to your satisfaction and that we keep you informed about the Network. If you have any comments please do not hesitate to contact me at mbell@theiet.org or on 07870 666917.



The Editor

Next Issue

The next issue of the IET Lancashire and Cumbria Network newsletter will come out in January 2011.

Please send copy to the editor at mbell@theiet.org by 1 December 2010.

Disclaimer The IET Lancashire and Cumbria Network arranges lectures, site visits and other events of professional and general interest to members and their guests. In doing so the IET endorses neither the opinions of speakers nor products and services supplied by them or by their companies.

I N T R O D U C T I O N



The Lancashire & Cumbria Network continue to be successful in attracting good attendances at the events we promote, with many of us inviting friends and associates to these events.

This has been recognised by the IET Headquarters and we have been encouraged to continue to develop our programme in a similar way.

I have been invited to stay on as Chairman for a further year and I have been pleased to accept the invitation and I look forward to seeing you at our meetings.

Last season I gave my Chairman's address at three locations including one in Carlisle and I am pleased that we are continuing to work closely with our colleagues in the north of our network.

I believe we should work with other Institutions to promote our profession and this season we plan to keep you informed of any events which may be of interest which are being organised by them. This will be by E-Mail.

We have decided to start some of our lectures at 6.30pm and make light refreshments available, thus enabling people to attend straight from work.

We need to encourage our younger members / Young Professionals to attend and we hope these changes in time and catering will help.

If you have any suggestions to further promote our Network, please let me know and we will do our best to see if they can be incorporated in the programme.

I look forward to seeing you at our events.



Jim Hindle - Chairman

Registration for Events

The Network used the Plus! For Events online registration system to collect pre-registration details for some of the events that were held in the last session. This enables members and non-members to register for events. The network has used it previously for visit registration and it has worked well. There is no need to register for the event but it will help in organizing the event if you do. You can still attend the event without registering. For events which have a meal after the event then it is important to ensure that the booking form is returned to the organizer.

This system has been introduced to help Networks extend their reach and increase their audiences. The online registration system also makes life easier for the Network by:

- Collecting metrics information automatically
- Producing sign-in sheets quickly and easily
- Gathering feedback from attendees after an event

As a result of networks using the online registration system the Network will be able to send emails to non-members, as well as members to alert them to Network events that are happening in their area. When a non-member registers their interest in attending a Network event, using the online registration system we get their agreement and their details are stored. Staff are then able to add them to the circulation list for every promotional email that goes out on behalf of the Network in the future.

Opportunities for New Committee Members

The Network is still looking for members who would like to get involved in the local IET community and help to develop that vital “external perspective”, that is necessary in today’s job market and also for professional registration.

Offers of help would be welcome from members who wish to either join the committees or perhaps help to organise an event and/or who would like to contribute new ideas and proposals for events at committee meetings. Involvement with the committees is an excellent way to develop organisational skills and extend your network of contacts within the professional engineering arena.

The Network is aware how busy everybody is these days – with many members working long hours or commuting extensively, however the level of involvement/commitment is entirely up to you. Should you join the Committee you can contribute how and when is most convenient and you need not feel locked in or trapped.

In addition to the main Network Committee, volunteers for the Young Professionals Section would also be welcome.

If you wish to get involved please contact the Network Secretary, Mike Bell, mbell@theiet.org, tel 07870 666917.

IET Connect- the IET Benevolent Fund

Life can change suddenly for anyone. In some cases an injury, illness or accident may cause unexpected financial difficulties; in others, advice and information may be all that's needed.

IET Connect has a range of services for IET members and their dependants. We can refer you to a free legal helpline for personal and employment matters. For members who have been unemployed for more than 4 months, and with less than £16,000 in savings, we offer an Outplacement Scheme giving one to one support to help you get back into work.

If you are struggling to meet an unexpected cost, or going through a difficult patch financially, we may also be able to give short term financial assistance. For help managing debts, we can refer you to independent money advice to help to get back in control.

We also offer specialist advice on State benefits and funding and can put you in touch with other organizations for help with a particular situation.

IET Connect can also assist with a wide range of care needs through its Speirs Fund which offers funding towards respite breaks, independence and help at home, right through to care home fee top up.

If you are facing a difficulty, financially or otherwise, then the earlier you contact us the better.

For more information on services and funding please contact the IET Connect helpline on 0845 685 0685 or email ietconnect@theiet.org

IET Connect's work is entirely funded by donations and legacies from IET members. Please visit www.ietconnect.org for more information on how we can help or go to www.justgiving.com/ietconnect if you would like to make a donation online.

Forthcoming Events

For latest news on local network activities go to www.theiet.org/lancscumbria. It is hoped to run some additional visits and lectures during the year. These will be shown on the website and there will be notification by e-mail. Details of other Institutions events will also be shown on the website.

Twenty Years of the Hubble Space Telescope

Date: Tuesday 28 September 2010
Time: 6.00pm for 6.30pm
Speaker: Robin Catchpole
Venue: Swallow Hotel, Preston New Rd, Samesbury, Preston, PR5 0UL
Contact: Jim Hindle: 01282 771355, jim.hindle@btinternet.com

Date: Wednesday 29 September
Time: 7.00 for 7.30
Speaker: Robin Catchpole
Venue: Forum 28, Duke Street, Barrow, LA14 1HH

Organised by: Joint with PESC
Contact: Ralph Hobson: 01229 583762, ralph@thehobsons.co.uk

From almost the world's most expensive scientific disaster, to most famous telescope of all time, the Hubble Space Telescope has helped bring a new and deeper understanding of our Universe. At the same time it has provided images that have stimulated the imagination of people around the world. This richly illustrated lecture will give a brief history of the telescope, show how it works and explain some of the exciting results.

Dr Robin Catchpole, recently retired as Senior Astronomer at the Royal Observatory Greenwich, currently works at the Institute of Astronomy, Cambridge, and has been an astronomer all his life. He has authored and co-authored over 100 research papers and used a number of telescopes around the world including the Hubble Space Telescope. His research interests include the composition of stars, exploding stars, the structure of our Galaxy and galaxies with black holes at their centres. He has given many lectures and radio and TV interviews.

EuroFighter Typhoon

Date: Tuesday 12 October 2010
Time: 7.00pm for 7.30pm
Speaker: Mark Bowman BAE Systems
Venue: UCLan Westlakes Campus, Samuel Lindow Building, Westlakes Science and Technology Park, Whitehaven, CA24 3JY
Contact: Darren Johnston: 07843 271224, darrenjohnston555@googlemail.com

Following on from the Tornado the Typhoon has now entered RAF Squadron service. It is a remarkable aircraft in both performance and construction. It has been designed in a European collaboration and is built in Lancashire with final assembly at BAE Systems at Warton.

Mark Bowman spent his early days as a RAF pilot and is now the Chief Eurofighter Typhoon Test Pilot with considerable experience of test flying the aircraft and bringing it into squadron service with the RAF.

Reservation is important for this event. To confirm a place at the event please use the IET Website, www.theiet.org/lancscumbria. and book a place or contact Darren Johnston: 07843 271224, darrenjohnston555@googlemail.com



The
Samuel Lindow
Foundation

The Psychological Approach to Driving

Joint with Blackburn Engineers

Date: Thursday 14 October 2010
Time: 6.30pm for 7.00pm
Speaker: Adriam Sharmer,
Driver Awareness Ltd
Venue: Whitehall Country Hotel,
Darwen, BB3 2JU
Organised by: Joint with Blackburn Engineers
Contact: Jim Hindle, 20 Cowley
Crescent, Padiham, Lancs.
BB12 8SX, 01282 771355

Driver Awareness Ltd. takes the view that repetitive 'drills' testing and instructing, in relation to driving for qualified drivers, are policies of the past and are mostly ineffective and unproductive. Drivers are educated to drive appropriately, giving them the skills needed to take control of the situation. We believe that tools and techniques that take control away from the driver like automatic 'speed control' devices are a crutch and not a long term solution.

The lecture will inform us some of the 'common sense' approach to driving & the talk will not be a 'boring' do this and that lecture

Dinner is at 7.00 p.m. and will be followed by the talk; it is possible to attend the talk, which will start at approx 9.00pm without the meal if desired. Booking for the meal is essential. Detail of the cost of the meal is available from Jim Hindle. The cost of the meal is £19.00 each. Bookings to Jim Hindle, 20 Cowley Crescent, Padiham, Lancs. BB12 8SX, 01282 771355. using the flyer enclosed.

Naval Aviation

Date: Thursday 21 October 2010
Time: 10.30am for 11.00am
Speaker: Prof Eric Grove,
Salford University
Venue: Crofters Hotel, Cabus Garstang
Contact: Brian Flynn, 53 Wilderswood
Close, Whittle-le-Woods,
Chorley, Lancs PR6 7SH
Tel: 01772 330278

The Royal Navy has a long interest in aviation. They first used balloons and airships for reconnaissance purposes and the first flight from a moving ship took place in 1912. Professor Grove, Professor of Naval History at Salford University, will tell us about the many developments since – such as Flying Boats, assisted take-off, development of aircraft carriers, naval helicopters etc etc and will bring us right up to date. The Crofters is a popular venue with plenty of parking and disabled facilities.

A cup of tea/coffee will be available on arrival from 10.30 am and the talk will commence at 11.00 am. This will be followed by a 2-course lunch and coffee. Please advise of any special dietary needs. All members, their partners and guests, are very welcome.

Please send all applications on the enclosed flyer before October 18th to Brian Flynn, 53 Wilderswood Close, Whittle – le – Woods, Chorley, Lancs PR6 7SH.

Modern Water Turbines

Date: Thursday 28 October 2010
Time: 7.00pm for 7.30pm
Speaker: Matt Crosher, Gilkes & Co, Kendal
Venue: Crooklands Hotel, Kendal
Organised by: Joint with K&DES
Contact: Richard Harrison,
01524 733898
rharris@globalnet.co.uk

Having long been associated with water pumps and turbines, Gilkes now finds itself in the key position of responding to the demand for hydro projects using 'renewable green' energy.

Matt will describe some the projects he and the company are involved with, giving us a technical insight into the mechanics and engineering which the politicians pass over as if a magic wand makes these things happen, but as engineers we know means many hours of careful design, manufacture and installation.



Matthew Crosher is the UK Sales Manager for Hydro Turbine Manufacturer Gilbert Gilkes and Gordon Ltd. Responsible for all UK new hydro turbine projects. A Qualified Mechanical Engineer with over 12 years experience, having worked previously in the Valve, Water, Oil and Gas industries. Possessing an interest in environmental issues he studied Renewable Energy Technologies in 2000 with the Open University before joining Gilkes in 2004. Since then has gained a detailed knowledge of Hydro Turbines and their associated M&E equipment, through working on projects throughout the UK and as far a field as the South Georgia and New Zealand.

Annual Northern Aerospace Forum

"Where is the Region's future Aerospace business coming from and how much could there be?"

Date: Thursday 4 November 2010
Time: 1.30pm till late
Venue: Dunkenhalgh Hotel, Blackburn (close to Junction 7 of the M65)
Organised by: ANAF (RAeS, I MechE, IET & NWAAs)
Contact: Bill James at
billjames2@ntlworld.com

The slowing of the Global economy has halted the growth of the civil aerospace sector over the past 12 months and, whilst short-term order books remain full, the prospects for renewed growth remain unclear. The World Trade Organisation investigation into "Government Subsidies" in the Commercial Aircraft sector is also influencing the development of the next generation of single aisle aircraft. In the UK it is expected that the Defence sector will be subject to a full defence review and associated realignment of budgets after the next general election, whichever party is then in power. The US Defence establishment is also about to launch its Quadrennial Defence Review to identify its Defence needs and associated budgets for the next 4 years, with "big ticket" projects under close review. As a result of this "perfect budget storm" future budgets and thus potential levels of future WORK are under great strain and threat!

The North of the UK aerospace and defence industrial base currently enjoys significant business generated from the Civil and Military sectors. As a result, the implications of the potential budget developments in both of these sectors are of immense importance to the economic well being of this region. An understanding of the potential impact of future market and budget changes is thus important in informing the future planning of the regions activities and capabilities.

ANAF 2010 will explore the latest developments in the commercial market place, identify the budget implications of the UK defence review, the US defence QDR, and debate the implications for the region.



Lancashire and Cumbria Network Events: September – December 2010

www.theiet.org/lancscumbria

**TUESDAY, 28 SEPTEMBER 2010, SWALLOW HOTEL,
SAMLESBURY, 6.00 FOR 6.30 P.M.**

TWENTY YEARS OF THE HUBBLE SPACE TELESCOPE

Robin Catchpole

Talk at Swallow Hotel, Preston New Rd, Samlesbury, Preston,
PR5 0UL

Contact Jim Hindle, 20 Cowley Crescent, Padiham, Lancs.
BB12 8SX or Tel. **07870 666917**

**WEDNESDAY, 29 SEPTEMBER 2010, BARROW,
7.00 FOR 7.30 P.M.**

TWENTY YEARS OF THE HUBBLE SPACE TELESCOPE

Robin Catchpole

Talk at Forum 28, Duke Street, Barrow, LA14 1HH

Contact Ralph Hobson: ralph@thehobsons.co.uk
or Tel: **01229 583762**

**TUESDAY 12 OCTOBER WHITEHAVEN
7.00 FOR 7.30PM.**

EUROFIGHTER TYPHOON

Mark Bowman BAE Systems

Talk at UCLan Westlakes Campus, Samuel Lindow Building, Westlakes Science
and Technology Park, Whitehaven, CA24 3JY

Contact Darren Johnston: darrenjohnston555@googlemail.com
or Tel: **07843 271224**

**THURSDAY, 4 NOVEMBER 2010, DUNKENHALGH HOTEL,
BLACKBURN 1.30P.M.**

ANNUAL NORTHERN AEROSPACE FORUM

Talk and Dinner at Dunkenhalgh Hotel, Blackburn (close to Junction 7 of the M65)

Contact Bill James, billjames2@ntlworld.com

**WEDNESDAY 10 NOVEMBER, WORKINGTON,
7.00 FOR 7.30PM.**

TECHNICAL INNOVATION AT SELLAFIELD

Mike James, Head of Technology, Sellafield Ltd

Talk at ENERGUS, Blackwood Road, Lillyhall, Workington, Cumbria CA14 4JW

Contact Darren Johnston: darrenjohnston555@googlemail.com
or Tel: **07843 271224**

**TUESDAY 16 NOVEMBER 2010, BAE SYSTEMS, WARTON
9.15 A.M.**

UNMANNED AIR SYSTEMS VISIT AND SYMPOSIUM

Talk at BAE Systems, Warton Aerodrome, Warton Lancashire. PR4 1AX

Contact Mike Bell at mbell@theiet.org or Tel. **07870 666197**

**THURSDAY 14 OCTOBER 2010,
WHITEHALL COUNTRY CLUB 6.30 FOR 7.00 P.M.**

THE PSYCHOLOGICAL APPROACH TO DRIVING

Adriam Sharmer, Driver Awareness Ltd (Joint with BES)

Dinner and Talk at Whitehall Country Hotel, Darwen, BB3 2JU

Contact Jim Hindle, 20 Cowley Crescent, Padiham, Lancs.
BB12 8SX or Tel. **01282 771355**

**THURSDAY 21 OCTOBER 2010, CROFTERS HOTEL,
CABUS, GARSTANG 10.30 FOR 11.00 A.M.**

NAVAL AVIATION

Prof Eric Grove, Salford University

Talk and Dinner at the Crofters Hotel

Contact Brian Flynn, 53 Wilderswood Close, Whittle-le-Woods,
Chorley, Lancs PR6 7SH or Tel. **01772 330278**

**THURSDAY 28 OCTOBER, CROOKLANDS HOTEL, KENDAL
7.00 FOR 7.30 P.M.**

MODERN WATER TURBINES

Matt Crosher, Gilkes & Co, Kendal (Joint with K&DES)

Talk at Crooklands Hotel, Nr Kendal, LA7 7NW

Contact Richard Harrison, rharriso@globalnet.co.uk
or Tel. **01524 733898**

**THURSDAY 18 NOVEMBER, WHITEHALL COUNTRY CLUB
6.30 FOR 7.00 P.M.**

BUILDING OF THE SIERRA LEONE

RAILWAY MUSEUM

Steve Davies, National Railway Museum

Dinner and Talk at Whitehall Country Hotel, Darwen, BB3 2JU

Contact Jim Hindle, 20 Cowley Crescent, Padiham, Lancs.
BB12 8SX or Tel. **01282 771355**

**TUESDAY 30 NOVEMBER 2010, GRANGE OVER SANDS,
10.30 FOR 11.00 A.M.**

**THE DEVELOPMENT OF THE WALNEY
OFFSHORE WINDFARM**

Peter Sills and Willi Christiansen of DONG Energy

Talk and Lunch at the Netherwood Hotel, Grange over Sands, LA11 6ET

Contact George Heaton, Garth Cottage, Yealand Road,
Yealand Conyers, Carnforth LA5 9SG or Tel. **01524 736554**

Full details and event synopses are given in the newsletter and online at www.theiet.org/lancscumbria. Maps and directions can also be found online.

The events are open to all with all talks being free unless otherwise stated Programme Secretary: Barry Lewthwaite: 01539 733767

jblewthwaite@theiet.org

ANAF 2010 will consist of:

- Talks by speakers including:
 - Sir Kevin Smith Chief Executive, GKN
 - Michael Kurth MD, Boeing UK
 - Chris Boardman MD Typhoon Mission Support and International Programmes, BAE Systems, Military Air Solutions
 - A Forum of Senior Aerospace figures, including the Speakers, to discuss and debate the issues raised in the Talks.
 - And, finally, a Dinner at which Sir Kevin will sum up the outcome of the day.

The Forum will consist of the speakers and a number of other individuals, including:

- Group Captain Ian Vallely, CAS Air Staff Strategy Group
- Simon Witts, Director of Training Academy, FlyBe
- Simon Luxmoore, Chief Exec, RAEs

The cost for attending the Talks and Forum only is £10, for the Talks, Forum and Dinner it is £50 if booked before 3 October, £60 if booked thereafter.

Technical Innovation at Sellafield

Date: Wednesday 10 November 2010
Time: 7.00pm for 7.30pm
Speaker: Mike James, Head of Technology, Sellafield Ltd
Venue: ENERGENUS, Blackwood Road, Lillyhall, Workington, Cumbria CA14 4JW
Contact: Darren Johnston:
07843 271224,
darrenjohnston555@
googlemail.com

Sellafield has a developed Lifetime Plan to address the operations and remediation of the site in the future. Sellafield is looking at opportunities to accelerate site clean up and improve the efficiencies of current operational plants and this presentation will provide an overview of the work undertaken in the areas of innovation and technology deployment. There will be an over view of the work being undertaken to develop Technology Road Maps to identify the key requirements for the implementation of the technological requirements. Challenges to the business will be presented ranging from the near term technology transfer requirements such as plant operations or waste retrieval through the medium term development requirements to the longer term research areas. Work from the innovation portfolio will provide a summary of work as diverse as muon tomography and the deployment of hot isostatic pressing.

Unmanned Air Systems Visit and Symposium

Date: Tuesday 16 November 2010
Time: 09.15 to 16.15
Venue: BAE Systems, Warton
Aerodrome, Warton Lancashire.
PR4 1AX
Contact: Mike Bell, 07870666917,
mbell@theiet.org

There will be a symposium which is planned on the subject of Unmanned Air Systems (UAS) where members of the IET can be briefed upon and discuss issues surrounding the operation of these aircraft in Civil UK airspace. Technical briefings will be given by BAE Systems personnel covering a variety of important issues, including:

The ASTRAEA Programme

Civil UAS Applications

Key UAS Technologies, including:

Sense and Avoid

Weather Integration

Autonomy and Decision Making

Mission Management

Certification

The symposium will incorporate time for detailed formal discussions of the presented topics and there will be planned breaks, particularly during lunch, which will give delegates plenty of opportunities to interact at an informal level.

The Symposium will conclude with an afternoon visit to some of the Warton site's engineering facilities.

There will be a charge for the day to cover lunch and transport around the site. To confirm a place at the event please use the IET Website, www.theiet.org/lancscumbria. to book a place or contact Mike Bell, 07870666917, mbell@theiet.org.

Building of the Sierra Leone Railway Museum

Date: Thursday 18 November 2010
Time: 6.00pm for 7.00pm
Speaker: Steve Davies,
National Railway Museum
Venue: Whitehall Country Hotel,
Darwen, BB3 2JU
Contact: Jim Hindle, 20 Cowley
Crescent, Padiham, Lancs.
BB12 8SX, 01282 771355

Steve Davies was a Colonel in the British army which was sent to Freetown, Sierra Leone, on assignment with the International Military Advisory and Training Team (IMATT) to help train the Army after the civil war there.

Steve is a railway enthusiast and found the disused workshop which still had a few locomotives & carriages stored in it.

He encouraged and paid out of his own pocket some locals to help him clean up the place and put the exhibits in a presentable condition.

His talk will cover the history of the railway and how with his help they have a viable museum today.

Dinner is at 7.00 p.m. and will be followed by the talk; it is possible to attend the talk, which will start at approx 9.00pm without the meal if desired. Booking for the meal is essential. Detail of the cost of the meal is available from Jim Hindle. The cost of the meal is £19.00 each. Bookings to Jim Hindle, 20 Cowley Crescent, Padiham, Lancs. BB12 8SX, 01282 771355. using the flyer enclosed.

The Development of the Walney Offshore Windfarm

Date: Tuesday 30 November 2010
Time: 10.30am for 11.00am
Speaker: Peter Sills and Willi
Christiansen of DONG Energy
Venue: Netherwood Hotel, Grange over
Sands, LA11 6ET
Organised by: The Retired Members Section
Contact: George Heaton, Garth Cottage,
Yealand Road, Yealand
Conyers, Carnforth LA5 9SG
Tel: 01524 736554

The new Walney Offshore Windfarm project is located out in the Irish Sea, approximately 15km west of Barrow-in-Furness. The project consists of Walney 1 and Walney 2 each with 51 – 3.6MW turbines giving a total capacity of 367.2 MW. Each turbine has a height of 150 m from blade tip to sea level, larger than the London Eye.

Construction is underway and the first wind turbines are now erected. A major offshore substation is on site (33 to 132 kV) and in order to connect to the National Grid 45 km of 132 kV cable, is being laid in a single length, 2m deep in the seabed.

This is a major engineering project which is mainly out of sight and only occasionally features in the media. This is an unmissable opportunity to hear all about this major renewable energy project taking place in our area.

Prior booking is essential, even if you are only coming to the talk, as space is limited and The Netherwood Hotel is always a very popular venue.

Parking, and disabled facilities are available. A cup of tea/coffee will be available on arrival from 10.30 am and the talk will commence at 11.00 am. This will be followed by an optional 3-course seasonal lunch, costing £20. All members, their partners and guests, are very welcome.

Please send all applications on the enclosed flyer before November 23rd to George Heaton, Garth Cottage, Yealand Road, Yealand Conyers, Carnforth LA5 9SG

Joint events

Many local network events are organised in conjunction with other organisations in our area. Each is identified by its initials in the events list, as follows:

- BES:** Blackburn Engineering Society
- CMI:** Chartered Management Institute
- IMechE:** Institution of Mechanical Engineers
- IOP:** Institute of Physics
- K&DES:** Kendal and District Engineering Society
- PESC:** Professional Engineers South Cumbria
- UCLan:** University of Central Lancashire

FEATURES

Become a Mentor with the IET Mentoring Service

Demand for mentors is growing fast. The IET need 160 new mentors throughout the UK to meet current demand and will need more in 2011.

Could you spare one or two hours a month? Would you like to share your knowledge and experience to the benefit of others? If yes, read on!

If you or anyone you know might be interested in this exciting opportunity to encourage, support and guide other engineers at key stages within their careers we would be pleased to hear from you.

Most members applying for a mentor through the Mentoring Service are hoping to achieve Professional Registration (CEng, IEng or EngTech). If you are CEng, IEng or EngTech-registered and would like to support other members towards achieving Professional Registration, contact us today. Full training and support will be provided.

Web: www.theiet.org/mentoring

Email: mentoring@theiet.org

Tel: 01438 767647

REPORTS

Energy Systems In New Schools

St. John Thursby College

Wed. 20th January 2010

An enthusiastic audience of more than 60 people enjoyed an interesting joint presentation and visit by Frank Mills and his son.

They have been involved with five schools for Lancashire County Council, all incorporating the latest technology including wind turbines and photovoltaic cells.

The basic aim is a 'passive' design allowing daylight and natural ventilation to do the maximum heating & cooling. The school is planned with peripheral classrooms feeding onto a central atrium; usually the hall. Air from outside enters the classrooms at low level through warmed damper controlled units and exits at high level into the central space. Here the warmed air rises and passes out through heat recovery units where the heat extracted can be stored in phase change material for future use or initial heating of the hot water system. The flow of air is by natural convection and only in the case of land locked rooms is forced ventilation required. On the cooling side a chiller does initially cool water to 8 deg. C, but again a low temperature phase change material unit can store 'cold energy' until required.

External heat is of course required for hot water and early morning heating in cold weather.

A biomass wood chip burning boiler is used for part of this need and it is 90% efficient and overall carbon neutral. Two condensing gas boilers act as back up/ top up and provide about 25% of the overall need.

Renewable energy in the shape of a 6kW wind turbine and 1.5kW of photovoltaic cells provide a maximum of 10% of the needs, but are also used for demonstration and educational purposes; as is the whole installation.

Via an elaborate Ethernet all the control systems in the school can be observed on students PCs together with efficiency calculations, live instantaneous readings and system performance.

Rain water is 'harvested' and used for toilet flushing and other service water needs.

The overall energy rating is only just below A and reliability to-date has been very good.

Power From the Sea

Angela Rowbotham

UCLan, Wednesday, 3rd February 2010

Angela Rowbotham reviewed various technologies and gave details of her successful design and installation in the North Channel. Since the tide is predictable; unlike the wind, it is guaranteed twice a day, every day. This of course gives some problems installing the device since there are tides rushing past the place you are trying to fix the thing to. She has now moved on from the company that made that machine and is tackling the difficult problem of shallow water fast tides. The best prospect looks like the hydrodynamic aerofoil oscillating vane driving it's hydraulic supports

From Fleming to Penryn

Brian Mann

Lancaster University, 9th February 2010

Brian Mann gave the history of electronics from the first diode to the latest wafer chips. Significant inventions were the flip flop both in vacuum bottle form and latterly in nano sized silicon chips. These lend themselves to digital computing and processing, eventually allowing very rapid calculations. The issue of information storage is more complex since the question arises; once a circuit is 'switched', how long will it stay like that without self discharging or 'leaking away'. The latest wafer production with million of integrated circuits on one 300 mm diameter wafer were shown together with the flash memory; the USB stick we are all familiar with.

Applications of LEDs

Graham Round

Forum 28, Barrow-in-Furness. 10th February 2010

Graham Round gave an updated version of the talk he gave to the retired members 18 months or so ago. Since then streamlined production has brought prices of the 'office panel' down considerably. Marl has production in the USA and marketing in Hong Kong in addition to the main plant at Ulverston. Many functional and decorative lighting projects have been completed, including a red, white & blue scheme for the front of Ulverston British Legion and perhaps more importantly a complete lighthouse job at Beachy Head. This latter should reduce bulb changing to every five years and give huge reductions in power consumption.

The Other Mr Faraday

Richard Harrison

Chase Hotel, Whitehaven. 15th February 2010

Richard Harrison gave a about William Sturgeon with added information about social conditions in the 1830s. Because he was from humble beginnings and not formally educated he was looked down on by Davy and Faraday and was rejected by the Royal Society, but actually invented the soft iron electro-magnet and the commutator. Replicas of Sturgeon's electric bell, DC generator and Electro-Magnetic Machine were demonstrated. Questioners wanted to know why he had not patented any of these devices. I can only assume he was not commercially minded and unlike Faraday and Davy did not have a tame patent agent to call on.

Marine Energy Devices

Michael Todman, Tidestream Partnership

Forum 28, Barrow, 24th March 2010

Over 90 people heard Michael Todman start by reviewing existing wave and tidal generation projects. The Pelamis wave generator is now operating off the coast of Spain where the wave amplitude is slightly more predictable than Scotland. La Rance estuary tidal scheme has been operating for over 30 years and whilst having some problems with silt, has been very reliable.

Latterly Tidestream has been looking at tidal flow generation since it is entirely predictable and even possible to calculate the potential power output of a particular flow. Various places around the world have very fast tidal stream streams, but the UK is well provided with the Pentland Firth having a regular 2m/sec flow in 60m depth of water leading to a possible 4,500 GWh per year, against total UK demand of 350 TWh.

Reviewing the possible devices for recovering this energy; oscillating hydraulic flaps, open rotors, pulse energy machines and vertical axis turbines have all been tried as ways of using the flow without a dam. The best solution so far appears to be the horizontal axis turbine; a small, more robust version of the wind turbine, but usually with only two blades.

The next variations come in method of fixing. Any devices in a fast tidal flow needs to be very strong with the added problem of limited time to install it, at slack water.

Marine Current Turbines currently have a tower mounted twin turbine machine operating in the North Channel. This is fixed to the seabed and can slide up the tower to above surface for maintenance.

Tidestream solution is to have an essentially floating device tethered to the seabed with the turbines submerged by partially flooding the support tower. The final version of this design is a pair of L shaped columns with the turbines mounted on cross arms. One turbine is mounted outboard of each column with a third in between. A two cross arm version therefore has six turbines of 1MW power output giving a 6MW unit. This is known as the Triton 6. It is suitable for 60 m water depth, has 23 m diameter rotors and weighs 1300 tons. It would be built on shore and sailed to the site as a catamaran before being flooded to tip vertically so that the turbine axes are then horizontal. Two tethers attached by huge gravity triangles on the seabed would then restrain the Triton in its operating location. Capital cost is expected to be £30- 40 m, but generation cost would be 7p/kWh.

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