

IMECHE WEST CUMBRIA

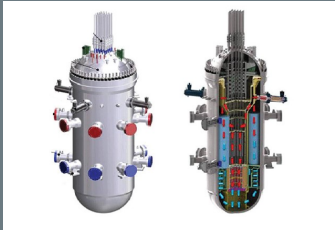
UPCOMING EVENTS

To book your place on any of the events below please visit;
<http://nearyou.imeche.org/near-you/UK/North-Western/West-Cumbria-Area/events>

Don't forget if you have registered your email with us you will be the first to know when future events are available for bookings. For more information, contact the event organiser.

TALK: Small Modular Reactors

13 September 2016, 19:00 (registration 18:30)
SMR's have been proposed for deployment in the UK, particularly over the last 12-18 months. Rather than describe how an SMR works (as it is essentially a typical nuclear reactor, just smaller), this talk will address advantages and disadvantages, including economic deployment, their role in an energy mix, UK opportunities, technology maturity, and the different designs proposed.
Location: Lakes College West Cumbria, Lillyhall, Workington, CA14 4JN
Organiser: Tom Pritt (tom.pritt@jacobs.com)



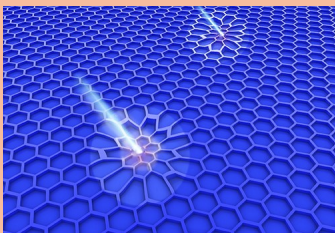
VISIT: M-Sport LIMITED NUMBERS

20 October 2016, 18:30 (registration 18:00)
This is an opportunity to have a tour of the world class motorsport manufacturing facility of M-Sport at Dovenby Hall, Cockermouth. Dovenby Hall dates back to the twelfth century and was a private residence until 1930 when it became Dovenby Hall Hospital. In 1998 it was purchased by Malcolm Wilson and has since undergone extensive development to turn it into the world class facility it is today.
Location: M-Sport, Dovenby Hall, Cockermouth, CA13 0PN
Organiser: Simon Farrell (simonf81@yahoo.co.uk)



TALK: Materials for Nuclear Challenges

1 November 2016, 19:00 (registration 18:30)
Presentation by UK's National Nuclear Laboratory Chief Scientist Professor Andrew Sherry FREng, highlighting material challenges associated with current and future reactor systems. He will provide understanding regarding interactions between advanced materials, new manufacturing technologies and the operating environments in operating reactors.
Location: Lakes College West Cumbria, Lillyhall, Workington, CA14 4JN
Organiser: John Foster (john.foster@gen2.ac.uk)



TALK: The Birth of a Reactor

19 January 2017, 19:00 (registration 18:30)
A talk to highlight the history behind the Nuclear Industry and in particular the development of Nuclear reactors in the UK. From early experiments of Becquerel whose work was continued by Curie and Rutherford, to attempts made by Hahn, Strassman and finally Otto Frish and Lise Metner which in the USA underpinned the success of Fermi in CP1 and subsequently the UK development programme from BEPO/GLEEP to the UK AGR.



Location: Lakes College West Cumbria, Lillyhall, Workington, CA14 4JN
Organiser: Mike Farrer (mike.farrer@hotmail.com)

TALK: Hydrogen Fuel Station

14 February 2017, 19:00 (registration 18:30)
As the search for clean, cost effective energy advances, this presentation by Charles Pukes of ITM Power will discuss ITM's Hydrogen Fuel Stations and the technology behind how hydrogen can be produced on site, with wind and water to support the roll out of Fuel Cell Electric Vehicles.
Location: Lakes College West Cumbria, Lillyhall, Workington, CA14 4JN
Organiser: Mark Holmes (mark.holmes@arup.com)



Pre-booking your place on an event is mandatory, each event will become active for bookings nearer its date. Events are for all ages with no specific requirements unless specified, visit the events page of our website for more information or contact the individual event organiser.

You do not need to be a member of the IMechE to attend our events, all are open to the public and free entry unless stated.



IMPROVING
THE WORLD
THROUGH
ENGINEERING

IMechE West Cumbria: nearyou.imeche.org/near-you/UK/North-Western/West-Cumbria-Area
IMechE WC Young Members: nearyou.imeche.org/near-you/UK/North-Western/West-Cumbria-Young-Member-Panel
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Institution of
**MECHANICAL
ENGINEERS**

Improving the world through engineering

North Western Region, West Cumbria Area
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Autumn/Winter | 2016

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Education

Young Engineers

IMechE_WCumbria



» FEATURES

YOUNG MEMBER NEWS P2
West Cumbria Young Members went off the rails at Ravensglass in the name of engineering, as well as venturing off-land onto the prototype Tenacity vessel.

IGGESUND WOOD YARD TOUR P3
We returned to the Workington mill for an insight into how the company processes wood stock, plus how their Biomass plant is key for future business success.

ANNUAL DINNER 2016 P4
Over a hundred guests joined us at our infamous West Cumbria Annual dinner, with special guests George McNeill and James Hobbs.

RAILWAY REVOLUTION P5
Uncovering developments within the rail industry, seeking to ask why we make changes and whether these are always for the right reasons.

THE IRISH SEA RIM PROJECT P6-P7
Insight into the project of developing economic growth around the Irish Sea through government, business, community and education collaboration.

TATA STEEL PROJECTS P7
With a vast history of steel making stretching back to the mid-1800s, we visited TATA Steel's Workington site, looking into the past and towards the future.

» UPCOMING EVENTS 2016/17

AUTUMN/WINTER CALENDAR
Take a look at the back page for our Autumn/Winter events calendar. Get yourself booked onto one!

NEWSLETTER

INSTITUTION OF MECHANICAL ENGINEERS WEST CUMBRIA EDITION

CHAIRMAN'S COMMENT



Welcome, I am delighted to introduce myself to you as the new chairman of the Institution of Mechanical Engineers West Cumbria Area Committee. IMechE West Cumbria continues to be actively involved in promoting engineering throughout our area, not only to existing engineering communities,

but in local schools and colleges. It will be a privileged to take over from my predecessor, David McArthur, to continue the good work he has done in taking the West Cumbria Area forward in all that we do.

I am also pleased to report that we continue to have significant representation at Regional and at a National IMechE level. Our committee member David Williamson, who has recently completed his three year tenure as North West Regional Chair, has been elected as a Fellow of the IMechE Council and a member of the IMechE Educational Advisory Group. This group sets the institute's Educational Policy on engagement with Government, Educational Providers and Industry.

As your new chairman, I would like introduce this regular and packed Autumn edition of the West Cumbria Area Newsletter. In the following pages you will find information on the engineering activities we have undertaken over the last six months,

including talks on rail industry development, the Irish Sea Rim Project and industrial visits to TATA Steel Projects and the Iggesund wood yard and bio-mass plant.

Not forgetting, there is also a write-up about our fantastic evening at Lakes College West Cumbria for our Annual Dinner 2016, plus details on our educational initiatives, and what our 'Young Members Panel' have been up to over the last six months.

You will also find on the back page our Autumn Events calendar, which includes a great chance to see first-hand the latest developments at M-Sports' Dovenby operation. We have also arranged a selection of talks on local industry interest. These include a talk on Small Modular Reactors by Professor Paul Gilchrist of Jacobs and a talk by our very own West Cumbria Area Secretary Mike Farrer, on the Birth of Nuclear Reactors. Please share the events and encourage your friends and colleagues to come along.

Work will soon be commencing on our 13th Anniversary IMechE West Cumbria Annual Dinner, so keep an eye on our website for details.

I would like to take this opportunity to once again thank all our sponsors for supporting this year's annual dinner. Without their fantastic support we would not have the funding to continue to grow our educational initiatives. In addition, thank you to the generosity through donations of those who attended, to support our 2016 chosen charities; Cockermouth Mountain Rescue, Hospice at Home and the Royal National Lifeboat Institution.

Best Wishes,

Simon Mandale BSc(Hons) AMIMechE
Chairman – IMechE (West Cumbria)



SUPPORTING YOUR IMECHE KEY SPONSOR 2016/17



Proud to support the IMechE in West Cumbria

Arup is an independent firm of designers, planners, engineers, consultants and technical specialists offering a broad range of professional services.

Founded in 1946, Arup has 12,000 people working in 92 offices in 40 countries and our projects have taken us to more than 160 countries. We are passionate about the work that we do in West Cumbria and are committed to supporting our local communities.

www.arup.com | mark.holmes@arup.com

ARUP



DEVELOPING YOUNG ENGINEERS

RAVENGLASS & ESKDALE STEAM RAILWAY

The IMechE West Cumbria Young Members had a first-class visit to the Ravenglass and Eskdale Steam Railway train rail shed - including a run out one of it's trains.

Peter Van Zeller gave a comprehensive tour of the current fleet, as well as the team's latest acquisition - the 1929 German Krauss Pacific locomotive No.8457 "train from Spain".

He covered the technical complexities as well as the legislative issues surrounding running the smallest public rail service in the UK. Peter took us through the rail's history, including taking us around the speed record holder - a model T-ford powered train which averaged 40mph on postal runs - many years ago!

Peter ran us through the (lottery funded) next heritage steps of the railway, including the new buildings, which subject to further land acquisition, will display the railway's heritage carriages and engines for members of the public.



Train From Spain: The most recent arrival is a 1929 German Krauss Pacific locomotive No.8457

Overall the day was well received and a fantastic social outing, as well as a great insight into the train enthusiast community and the engineering behind it all.

I'm sure the young members will be visiting the railway again in a few years' time to see the "train from Spain" in action, as well as visiting the new heritage displays.

Robin Pickford , IMechE Young Members Panel



TENACITY

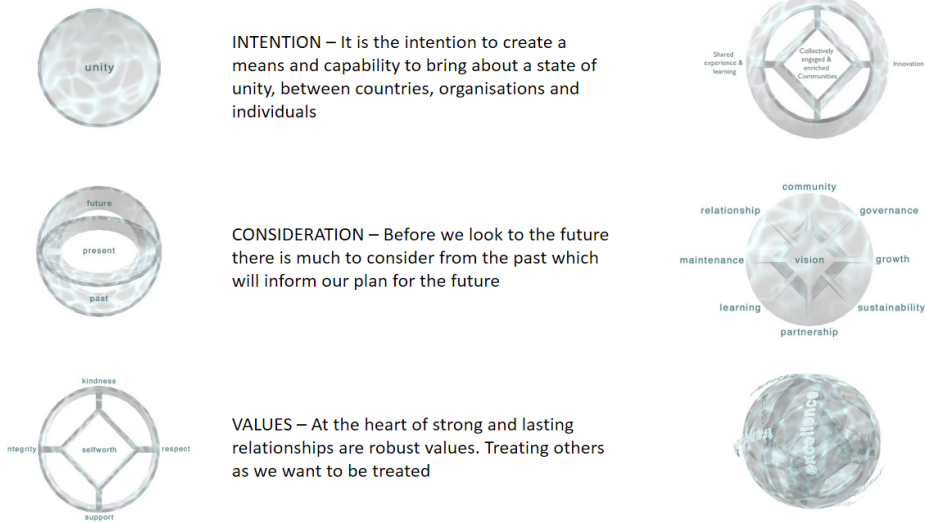
On Thursday 21st of July the Young Members organised a tour of the prototype vessel Tenacity, moored in Whitehaven harbour. Tenacity has been developed to deliver personnel and equipment to offshore windfarms. Thanks to its innovative design, offers significant improvements to the vessels that currently fill this role.

The group were shown around the vessel by Stephen Beadmore of Wave Access who explained thoroughly the design evolution of Tenacity and meeting the challenges that influenced that process. This has resulted in a unique design that is capable of operating in seas much rougher than current vessels and with greater fuel economy.

Stephen led us into the interior of the vessel to view the crew compartment and engine room, answering technical questions on all aspects of Tenacity's performance and construction. With ten of us on the tour, the boat was at near capacity but we all still managed to get a good look inside and out.

Simon Walsh, IMechE Young Members Panel

Utopia Foundation Principles Model



Supporting this rich energy region are over twenty universities located around the Irish Sea in England, Ireland, Northern Ireland, Scotland and Wales. In addition there are established initiatives such as Britain's Energy Coast (BEC), Solway Energy Gateway, Northwest Energy Gateway, Mersey Gateway Bridge and the Energy Island (EI) of Anglesey, along with others around the ISR.

When looked at in isolation there is already much expertise in energy across the region. However, there is the possibility to pull these technologies via an Irish Sea energy rim portal; forging entities closer together through concentrated collaboration and more focused

research.

Thus, between academic institutions and entities with an interest in energy, technology and engineering; it is proposed the region has an opportunity to become a real power house of expertise in energy generation, energy engineering and manufacturing, skills development, facility and research excellence. ISR will link with tier 1, 2 and 3 companies, further developing the supply and value chains across the industry.

The 'glue' holding the ISR together
All successful communities have been shown to have a common cause, a masthead that keeps

PURPOSE – What our goal is defines what we need to do, how we do it and what resources are needed to achieve it

GOVERNANCE – To ensure that we keep the vision of what we are doing true to its aims we need to ensure that we embrace all the facets and objectives of good governance

In order to ensure that the model is delivered in the appropriate manner it has to be supported within meaningful and robust atmosphere

David Williamson, IMechE West Cumbria

TATA STEEL PROJECTS

On 10 March 23, local engineers and engineering enthusiasts visited Tata Steel Projects in Workington. The evening started with a presentation from Engineering Manager, David Preshaw, on the history of steel in Workington.

With Cumbria as the world's premier source of phosphorus free haematite iron ore, and the local coalfield providing energy for steel production, Workington was a natural place for steel production.

Originally there were many small steel companies, including the Harrington Iron Company, the Moss Bay Hematite Iron and Steel Company and the Workington Iron Company. These companies often closed down or were taken over, but in 1909 they all merged together as The Workington Iron and Steel Company.

In the mid-19th century, the world's first large-scale steelworks was opened in Moss Bay. The steel made in Workington was known to be of a very high quality and was exported all over the world. It was made using the Bessemer process, which involved huge Bessemer converters turning iron into steel at very high temperatures.

Moss Bay, which had initially supplied steel plants at home and abroad with what was known as Bessemer iron, built its own Bessemer steel making plant and rolling mill in 1877, with three 8-ton converters. These were later upgraded to 15 tons and then replaced by two 25-ton converters in 1934. Bessemer steel output in Cumberland alone rose from 127,000+ tons in 1879 to 580,000+ tons by the turn of the century.

As the iron and steel works closed in the 20th century, only Moss Bay remained in

Cumbria, producing steel for rails until 1974, after which steel ingots were brought in from Teeside for reheating and rolling at the works.

Since its inception, the Moss Bay steel plant has undergone numerous process and name changes. Having been British Steel and Corus, the plant was purchased by Tata Steel and currently the manufacturing plant for Tata Steel Projects.

Tata Steel Projects is a multi-disciplinary solutions business with extensive engineering capabilities, a substantial portfolio of projects and a leading capability in delivering innovative solutions. As well as the manufacturing facility in Workington, it has offices in York, Birmingham, Manchester and Reading. They are responsible for designing, manufacturing and constructing major infrastructure projects in the UK, serving many different and demanding market sectors including; transportation, defence & security, energy & power, construction, nuclear and industrial.

Following an introduction to the history of the plant, our group was taken on a fascinating tour of the facility. The plant has a plating envelope of five and a half thousand square metres and a level floor plate envelope of 9 hundred square metres, with two 10 tonne manipulators and assorted rotators from 10 to 25 tonne capacity.

Their welding capability includes two submerged arc welding sets, fourteen semi-automatic MIG, and four manual TIG sets. Three metre wide plate rolling can be done cold or hot, with thicknesses of up to 60mm and 150mm respectively. The plant machining capabilities include numerous CNC controlled horizontal boring machines, milling machines, vertical turning machines and lathes.

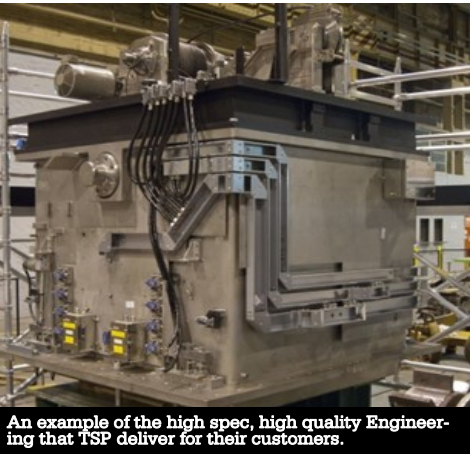
To assist in some of their major manufacturing projects such as production of nuclear fuel transport flasks and hatches for the

Astute-class submarines, the plant has two assembly pits.

Testing facilities on the plant include pressure testing up to 750 Bar, X-ray and gamma source radiography and ultrasonic inspection. In addition to the manufacturing of new products for outside customers, another major source of work is the refurbishment of machinery from steel production plants within the Tata Group. Their services usually involve site equipment removal, dismantling, clean-up and inspection, before redesign and manufacture of new components before the rebuild.

The visit was enjoyed by all of those attending. For some members of the tour, who had started their careers working on the lathes at the plant, the visit was a trip down memory lane. Since our visit to TSP the ownership of the plant has now passed to Greybull Capital - the company will operate under the name familiar name of British Steel.

Simon Farrell , IMechE West Cumbria



An example of the high spec, high quality Engineering that TSP deliver for their customers.

EXPANDING LOCAL KNOWLEDGE

THE IRISH SEA RIM PROJECT

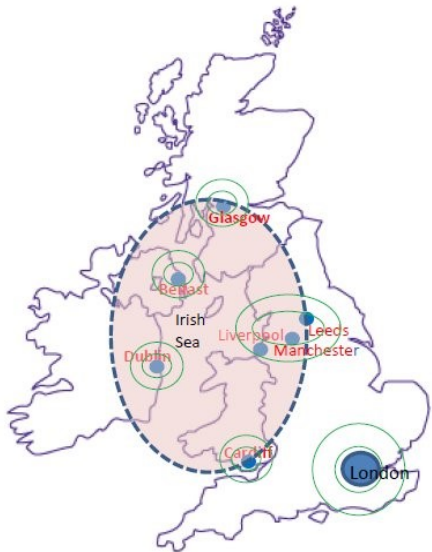


On the evening of Tuesday 10th May, members and guests of IMechE West Cumbria attended a slightly different genre of talk. The lecture at Lakes College was given by Nigel Catterson, Chair of the British Energy Coast Board and Professor Philip Leigh, from the University of Chester.

The evening consisted of a “blue-sky” visionary talk about the project to develop economic growth around the Irish Sea Rim (ISR) through innovative collaborative engagements between the industry, government, local businesses, educational sector and communities. This distinct zone encompasses the areas of two nation states, six countries, and a wealth of public and private sector linkages.

Nigel and Philip discussed the potential of surrounding lands contained by the Irish Sea coming together to form a unique combination of interlinked communities and cultures. Some of Europe’s most beautiful environments are located in these regions, with the Republic of Ireland, Isle of Man, Northern Ireland, Wales, North West England and South West Scotland being within the ISR belt.

The ISR Project has the potential to drive socio-economic growth across national boundaries and develop regional excellence through increased collaboration and an integrated network that cross-cuts sectors. The



ISR will operate as an association of institutions and portals for regional programmes, investment and projects to over 15 million people with the ability to develop as a regional economic counterbalance to London and the South East.

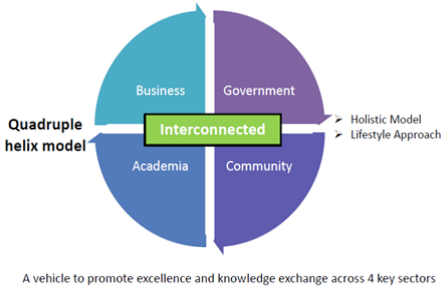
“““
TO DEVELOP ECONOMIC GROWTH AROUND THE ISR THROUGH INNOVATIVE COLLABORATIVE ENGAGEMENTS BETWEEN GOVERNMENT, BUSINESS, COMMUNITIES AND THE HIGHER EDUCATION SECTOR
ISR MISSION STATEMENT

Irish Sea Rim Project Overview
As an overview, the project proposes to generate links between business, universities, government and communities in order to create a new business paradigm via a quadruple helix model. The project will be delivered by the ISR Group and associates who will act as an umbrella organisation over the planned activity over outlined timelines. There will be a number of projects designed with cross-cutting themes to link them to the overall vision and strategic direction of the entity as a whole.

The ISR will write and contribute to policy papers on a wide range of subjects, organising events on an annual basis in and around the ISR. The project will link with external facing business support agencies, businesses and universities.

As the project develops, partnerships will form around the numerous sectors within the ISR.

Business and Commerce
Two area’s key to the ISR success are business and commerce. The businesses around the ISR are distributed as micro, small, medium and large enterprises, all of which have a role to play in its success. The largest concentration of large companies is associated with the five largest cities in the region; Manchester, Liverpool, Glasgow, Dublin and Belfast. It is no real surprise that the regions with the largest cities and population also have the highest number of micro and small companies. University Enterprise Zones are viewed as potential ‘hot spots’ for business-university collaborations. The ISR’s vision is to engage with these to assess their success.



University Opportunities with ISR
Over the past decade, Higher Education Institutions (HEIs) have increasingly developed their links with the private and public sectors in order to enhance and complement the provision of research and teaching. One of the principal ways in which this has been achieved is through the engagement of undergraduate and postgraduate students on business-related projects and placements. An exploration of university degree programme advertising reveals that most HEIs now offer students the opportunity to undertake a short-term or dissertation project in partnership with an external organisation.

The rationale for this is clear; students gain valuable employment experience through their studies, whilst the business concerned gains new insights into an area which it needs help or expertise, but lacks the in-house resources. Furthermore, many placements are undertaken at low or zero cost to the business involved, making them attractive, especially for small and medium-sized enterprises. With academic supervisors also involved, such projects have the potential to develop into longer term contracts or collaborative research between the university and outside organisation involved.

The ISR project has the potential to link up to thirty academic institutions, which together host over 350,000 undergraduates, 100,000 postgraduates and 30,000 academics.

Irish Sea Energy Rim
Located around and within the Irish Sea region are a plethora of energy generation technologies. This ranges, from nuclear and gas, to wind, hydro, biomass, solar and many other renewable technologies. In addition there is advanced research into wave and tidal systems - the UK has one of the largest tidal ranges in the world. New and unconventional energy such as shale gas is an emerging technology adding to the rich energy mosaic.

EXPLORING OUR ENGINEERING EXCELLENCE

IGGESUND WOOD YARD & BIOMASS CHP



A World Class Mill: Continuous development and adaptation to customer needs and expectations are essential for success in a highly competitive market.

On Thursday 21st July, members of IMechE's West Cumbria and engineers from a number of different companies enjoyed an interesting visit to the wood yard of Iggesund Paperboard Ltd, Workington – one of the leading paperboard mills in the world.

Before the guided tour around the site, Ian Black (Head of Pulp and Power), Ian Grant (Wood yard Manager) and Donna Bradley (Wood yard Coordinator) gave an introduction talk to the visitors about some background of the company and information about the Wood yard. Visitors were also shown a safety induction video and were supplied with any Personal Protection Equipment (PPE) needed.

The Wood yard at Iggesund consists of two areas; Fuel handling and Fibre handling. The Fuel handling side supplies only clean virgin



biomass to the CHP boiler which was installed in 2013, whereas the Fibre handling side supplies Spruce Roundwood to the Pulp mill.

On the tour, the visitors were taken to the de-barking area and the control room of the Fibre handling side. Here the visitors could see the Fibre handling process. Firstly, the logs go through the de-barking drum and then a magnet, before any externally chipped logs go to the Hopper. Before going to the chip pile, all material goes through screening and any oversized material is diverted to the Chipper. The chip piles each hold approximately 2,500 tonnes. From the chip piles a percentage of internally and externally chipped logs are conveyed to the Pulp mill.

The tour continued with visitors being taken to the A-Frame of the Fuel handling side. This holds 5,000 tonnes of chippings which is approximately 2-3 days’ worth of fuel, depending on the season. From the A-frame the material goes to the biomass boiler which ensures that the whole Iggesund site is ran on 100 per cent bio-energy. Unfortunately, on this day the fuel handling side was not running, therefore it was not possible to see the A-frame in action. However, the visitors were able to get a good idea of the size and scale of the A-frame.

During the tour, and afterwards, there were opportunities for the group to ask any questions. The visit was very informative and this is due to all those at Iggesund Paperboard that helped make the day a success, with all attendees thoroughly enjoying the day.

Caroline Hamilton, IMechE West Cumbria

“““
HAVING PREVIOUSLY RELIED ON FOSSIL FUEL FOR ENERGY, THE MILL IS NOW CARBON NEUTRAL, POWERED 100% ON BIO-ENERGY.



“““
THE BIOMASS PLANT REDUCES CARBON DIOXIDE EMISSIONS AT THE MILL BY MORE THAN 190,000 TONNES A YEAR, WHICH IS EQUIVALENT TO THE ANNUAL EMISSIONS OF 65,000 CARS EACH DRIVEN 20,000 KILOMETRES.

CELEBRATING LOCAL ENGINEERING

12TH IMECHE WEST CUMBRIA ANNUAL DINNER

On 23rd June the IMechE West Cumbria Area hosted their annual dinner at Lakes College West Cumbria. The event was attended by over one-hundred IMechE members, sponsors, local company representatives and guests.

Our guest speakers on the night were former professional world sprint champion, George McNeill, and Chief Operations Officer for the IMechE, James Hobbs. Guest were greeted with canapés and drinks and given the opportunity to network with colleagues from other West Cumbrian-based engineering employers, as well as having time to look at various engineering related projects that Lakes College students had recently been undertaking.

Prior to the dinner, outgoing Chairs of IMechE West Cumbria and the Young Member Panel, Dave McArthur and Andras Kaldos, gave reviews of the last twelve months. They also took the opportunity to thank their committee members for the assistance they had given during their time as Chairs of their respective committees.

George McNeill is the only man to have won both of the most famous professional footraces in the world; the New Year Sprint in Edinburgh (1970) and the Stawell Gift in Australia (1981). In August 1970 he broke the world professional 120 yard record, setting a time of 11.14 seconds. Prior to his sprinting career, George spent a number of seasons playing football for Hibernian, Greenock Morton and Stirling Albion. He gave a highly entertaining after dinner speech filled with humorous anecdotes and memories of his life in football and professional sprinting.

James Hobbs, who had travelled from the IMechE's London headquarters, gave an interesting presentation on the current national plans and direction of the institution. James explained how the IMechE will be looking at new ways of working collegiately with the other main Professional Engineering Institutions on key focus areas such as Registration and STEM education provision in schools.

Short presentations were then given by representatives from this year's chosen IMechE West Cumbria charities. Tim Chittenden representing the Workington Lifeboat Appeal, Linda Hewitt of Hospice at Home West Cumbria and Martin Pickervance of Cockermouth Mountain Rescue, informed guests of the work that their charities carry out and how money raised by our Annual Dinner raffle would assist



Celebrating Local Engineering Achievement, the 12th IMechE West Cumbria Annual Dinner

them. As ever, we offer thanks to the generosity of those who participated in the raffle, which raised £1,350 which was split between the three charities.

Steve Cockayne, Chief Engineer at Sellafield Limited, was on hand to present student awards for Michael Bury - Best Higher National Diploma Engineering Operations, and Bryony Towers - Best Higher National Certificate Engineering Operations. We were also pleased that Paul Shechter, Vice Chair of the IMechE North West Region was able to join us.

As ever, the students and staff at Lakes College West Cumbria provided excellent hospitality. The quality of the food and service provided by the students was outstanding and went down very well with attendees. It is a pleasure for us to hold our dinner at the college, and we are pleased to help in the development and education of the students, whether they strive to gain employment in engineering or the hospitality sector.

Finally, IMechE West Cumbria Area would like to thank all of the sponsors of the evening, particularly our Gold Sponsor Arup. Without continued support from local companies it would not be possible to hold such a fantastic and enjoyable event every year.

Simon Farrell, IMechE West Cumbria

Our chosen charities:



We'd like to thank our sponsors:



David McArthur, James Hobbs and Paul Shechter.



Bryony Towers receives her Award from Steve Cockayne - Best Higher National Certificate Engineering Operations.



Michael Bury is seen here receiving his award from Steve Cockayne - Best Higher National Diploma Engineering Operations.



Lakes College Students who provided the cooking for this year's annual dinner, as always many thanks for their superb hospitality.

LEARNING FROM INDUSTRY EXPERTS

THE 'FANFARES AND FUDGES' OF THE RAIL INDUSTRY



St Pancras station

On 13th April, Newcastle University Senior Lecturer Rob Davidson presented the highs and lows – in his words 'the fanfares and fudges' – of developments within the rail industry, seeking why we make change and whether this is always for the right reasons.

Alumni contact with the University of Newcastle -Upon-Tyne introduced another speaker from out of the county. Senior lecturer Rob Davidson from the Department of Mechanical and Systems Engineering provided a lively presentation on 'Lessons Learnt from the Rail Industry'.

Rob started his career in the rail industry in 1979 and continued through to 1991 before joining the University of Newcastle-Upon-Tyne. Rob's experiences shaped his research within the university, however, knowledge from this sector has been transferable to subject matters as diverse as developing shower chairs with publications in the British Journal of Occupational Therapy. In addition, Rob has presented at conferences far and wide with a focus on materials and in particular tactile displays (touch screens), when touch-sensing technologies really started to gain popularity during the early 2000s. All these technologies have a huge impact on the gadgets that we use and take for granted today – from smartphones to laptop trackpads and graphics tablets.

Rob's enthusiasm for subject matter and education is also underpinned by his early work within the university that led to presenting at the International Engineering Education Symposium and his lively personality is why he was encouraged to present to the IMechE West Cumbria on his rail experience.

Rob's presentation on Lessons Learnt began when working for the British Railways Board as a Senior Project Engineer 25 years ago with the responsibility for buying fleets of electric suburban trains for Network South East. His budget was £300M with almost 900 vehicles.

During these purchasing activities Rob felt that most national railway systems tended to be large, traditional, hierarchical organisations focussed on responsibly doing the bidding of their governments. These organisations were fairly reluctant to develop and the needs of passengers – the real customers – often seemed to be considered rather less than the needs of the organisation.

Rob demonstrated this self serving need by using examples of traditional development for reliability which often were only practical over long timeframes, typically tens of years, where the real customer on a day-to-day basis saw little change. In fact, while the railways 'made things better' they seemed to ignore the obvious with weight rising, complexity rising and costs rising. Meanwhile the customer was out of pocket with the latter and feeling the formers when single component failures in the complex systems gave major breakdowns.

But it wasn't all negative press, during this period Chris Green was Director of Network SouthEast, and he was different and very dynamic Rob explained. He refused to let tradition and railway operating practice stand in the way of providing a good service to passengers, who were now renamed 'customers' and he created enemies of many traditional managers, causing Rob considerable trouble along the way. He believed in a public service being a proper service to the public: not a self-serving establishment, and so he revolutionised the railway and the service to the customers showing how a nationalised railway could be run effectively.

Rob also showed that the designers did often have the best intentions and were considering resolution of the issues, however, they often created further problems. For example, to save 10 minutes on a 40 minute journey, double the traction power and double the energy consumption was needed. To make rails last longer, they made them harder, but this resulted in rails fracturing as the normal cracked layer was not worn away by the train.

To avoid cutting the trees back, trains could use disc brakes, but the wheel-rail adhesion was so low that trains could not stop safely, - so squirt sand paste onto the track for grip, but this insulated the wheels and trains 'disappeared' from signalling, stainless steel grains was then added to the sand paste.....

The presentation was intended to be thought provoking for those in industry and Rob wanted to show that it is people and their actions that make the changes tangible to those it affects. In Rob's words, 'The present is not like the past. The future will not be like the present. Don't you dare to do more of the same. It will fail.'

I thanked Rob for the evening's talk, and having studied under him as an undergraduate, my interest in this sector of engineering was piqued, as too was everybody else's I'm sure.

There were some interesting questions posed at the end of the lecture and Rob was able to answer these and enlighten the audience on the more specific points raised. I am sure that the group would have been more than happy to stay and listen to more. Thank you to Rob for making the journey across.

Caroline Hamilton, IMechE West Cumbria



Caroline thanks Rob on behalf of IMechE for his presentation, with the handing over of the accoutremented "Fit Tankie".