

NEWSLETTER

Spring | 2019



IMechE Lancashire Area

INSTITUTION OF MECHANICAL ENGINEERS LANCASHIRE EDITION

CHAIRMAN'S COMMENT



Welcome to the Lancashire Area's 2019 winter newsletter. Our committee's objectives are;

- creating opportunities for personal and professional development
- hosting various engineering events
- promoting STEM education, engineering profession and the IMechE
- inspiring, developing and supporting our members

We have new committee members and change of roles. Our distribution list is growing, showing good health and sustainability. We are committed to be a diverse and inclusive committee. Lancashire Area continues to support North and South Lancashire Young Member Panels based in Lancaster University and

University of Central Lancashire respectively. We are also in the process of setting up a new YMP at the Blackpool & Fylde College. We will dedicate a section for YMP activities in our next newsletter. We also support our Business Development Manager, Emma Guy, who is hosting IEng and CEng applications workshops.

In this period, we learnt about mechanical sealing technology at Bolton University, discussed the importance of vacuum technology and hosted a technical visit to Leyland Trucks factory. We later attended marketplace stands at Engineering Your Future career awareness days as well as Primary Engineer & Secondary Engineer Leaders Award Launch events and supported STEM Ambassador Hubs. The first event in 2019 was a technical lecture discussing plant reliability improvement through mechanical seal managed condition monitoring programs. We then reviewed the tragic Sandilands tram accident with the Rail Accident Investigation Branch in a joint effort with the Institution of Engineering and Technology (IET).

We have a great selection of events lined up for you in the next six months, but we are always on the lookout for future events and would love to hear your suggestions. If you would like to join our Lancashire Area or Young Member Panel committees, be included in our distribution list, borrow our Science Kits for your STEM activities, please get in touch with us through email or social media.

Apart from monthly meetings, talks, lectures, STEM activities and visits, our committee also come together in annual dinners. We closed 2018 with our Lancashire Area Annual Dinner with partners and reflected on our friendship in the committee. We will also attend North West Engineering Excellence Awards dinner on 29th March, and everybody is invited.

I would like to thank all readers, and all our committee members for their continued leadership in improving Lancashire through engineering.

**Murat Islam : CEng MIMechE
Honorary Chair, Lancashire Area**

ST. MARY'S CAREER CONVENTION: INSPIRING THE NEXT GENERATION



Representing IMechE Lancashire Area, Murat Islam, Gavin Tracey and Andrew Medd attended a

Careers Convention at St Mary's Catholic High School and they talked to dozens of students and parents about engineering and apprenticeship career routes and answered many questions. We encourage our members to participate in STEM activities and provide careers advice for the young generation.

Murat Islam CEng MIMechE

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MECHANICAL SEALING TECHNOLOGY

TECHNICAL LECTURE FROM JOHN CRANE



This winter, IMechE Lancashire and Greater Manchester Area are jointly hosting a series of technical lectures from John Crane (www.johncrane.com) who are specialised in rotating machinery mechanical seals, couplings, filters, predictive digital monitoring technologies as well as reliability and maintenance programmes.

For the first part of the series, Ian Gaffing, an experienced Mechanical Engineer working on the development of High Duty Mechanical Seals in Trafford Park, have presented a technical lecture on rotating machinery mechanical sealing technologies after a refreshments and networking session.

University of Bolton have provided their facilities and a Board Room for the presentation. The lecture started with an introduction to John Crane quickly fol-

lowed by design principles of mechanical seals with industrial application examples. Product samples and models were also displayed at the event.

Dr. Karl Gregory, a Senior Lecturer and Academic Coordinator for the School of Engineering at the University of Bolton, also provided a university tour

at the end of this lecture and explained their capabilities at The National Centre for Motorsport Engineering

(<https://www.bolton.ac.uk/subject-areas/motorsport-automotive-performance-engineering>).



ENGINEERING YOUR FUTURE JIG

The **Joint Institutions Group North West** (JIG NW), with a vision to be the common voice and single point of reference for all Professional Engineering Institutions (PEI's) and other stakeholders, had another very successful year in 2018.

In 2018 we again teamed up with the national organisation **Engineering UK** (www.engineeringuk.com), who run the Tomorrows Engineers (www.tomorrowsengineers.org.uk) and BIG BANG (www.thebigbangfair.co.uk) programmes, to run **FIVE** of our unique **Engineering Your Future (EYF)** Career Awareness Days for STEM students (Science, Technology, Engineering, Maths) in the Years 11 to 13 (16 – 18 years old) from local schools and colleges. These were held in Liverpool, Preston, Manchester (South), Warrington and Manchester (Central).



These unique events rely on the resources of the PEI's and their members to facilitate the delivery of multiple interactive engineering workshops covering different disciplines of engineering, together with a Market Place hosting representatives from local and national engineering companies, universities and training providers etc.

We would again like to sincerely thank our sponsors including Siemens, Warrington Council and Manchester Metropolitan University.

2018 Key Findings:

24% of students at the events were **female**.

77% of students would **recommend** the events to peers.

74% of students said EYF events helped them with **careers** advice and 65% said they were more likely to consider an **Apprenticeship** route. The careers advice element of EYF is extremely important.

100% of teachers said that the events met their **expectations** -cf- 89% in 2017

100% of teachers said the events were **enjoyable** -cf- 91% in 2017

100% of teachers said they would **recommend** the events to colleagues -cf- 91% in 2017

100% of the Presenters said they **enjoyed** the events and 98% thought they were **worthwhile**.

93% of Presenters agreed the students engaged in their workshops, higher than 2017 (85%)

98% of Presenters would recommend the events to colleagues.

53% of Mentor/Guides were using the events for the **CPD**, a 20% increase on last year.

97% of Mentor/Guides believe the events are worthwhile to **educate** future STEM Professionals and a further 89% would **recommend** the event to colleagues and peers.

Again, the 2018 EYF events very significantly exceeded **all** EngineeringUK's Engineering Brand Monitors (EBM), which is a survey carried out annually by EngineeringUK to provide a benchmark for such activities.

A full copy of Engineering UK's 2018 EYF Impact Report is available on



request by emailing Andrew Medd: andrew.medd@btopenworld.com

EYF 2019

It is hoped that 2019 will see the EYF events again grow with interest from the University of Chester, Lancaster University and BAE Systems at their ASK Centre in Samlesbury Aerodrome, with the full line-up being:

If any members and/or their companies wish to get involved with the EYF programme, please get in touch with:

Andrew Medd BSc(Hons) CEng FIMEchE, Hon. President, Joint Institution Group (NW)

2019 UPCOMING DATES

- October – Liverpool (Liverpool FC)
- October—Preston (BAE ASK Centre)
- November – Manchester South (Siemens)
- November – Warrington (Halliwell Jones Stadium)
- November – Warrington (Halliwell Jones Stadium)
- November – Manchester Central (venue tbc)
- December – North Lancashire (venue tbc)



LANCASHIRE SCIENCE FESTIVAL

UCLAN 28-30 JUNE



UCLAN's multi-award winning **Lancashire Science Festival** entered its seventh very successful year in 2018. The festival took place between **28th – 30th June 2018 on UCLAN's Preston Campus** and welcomed more than 13,000 visitors over the three days. Sponsors and contributors included BAE Systems, Electricity North West, Fort Vale Engineering, **Institution of Mechanical Engineers**, National Nuclear Laboratory and the Institution of Engineering and Technology.

These events are free and accessible and are about engaging, inspiring and raising the profile of STEM (Science, Technology, Engineering & Maths).

On the Saturday when the IMechE exhibited, the festival welcomed 7900 members of the public on that day alone. Via social media the overall festival made over 2.3 million impressions and engaged 620,000 accounts. The event was covered in BBC North West Tonight, BBC Radio Lancashire and regional press with an estimated reach of 776,000.

The **IMechE** are proud to support these events and in 2018 had an even bigger stand than 2017 (and that was big!). Displays and interactive activities included:

- Working model Sterling Engines
- The Dyson Fan explained and Bernoulli's Principle
- Floating Balls on Air and again demonstrating Bernoulli's Principle
- Paper Helicopter Competition
- Paper Aeroplane Competition
- UCLAN's Formula Student Racing Car
- Thermal Imaging Camera – How Hot Are You?

Our two competitions to win a **Quadcopter Drone** were fiercely contended throughout the day, and the winners were:

Paper Aeroplane – Jonathan Smith
Paper Helicopter – Shaun Urmston & Aelwyn Whitehead-St.Pierre

Join us in 2019 on the 27th, 28th & 29th June for an even bigger and better Engineering Experience!





**Lancashire
Science
Festival**
28-30 June



uclan
University of Central Lancashire

PRIMARY ENGINEER LEADERS AWARD

THE MANCHESTER INITIATIVE



On Monday the 10th December we launched the Primary Engineer Leaders Award in Manchester, "The Manchester Initiative" at Manchester University.

This event and forthcoming events are intended to raise the profile of engineering within the Greater Manchester Area which has a serious shortage of professional engineers.

The event is co-funded by Manchester Council and the Mayor of Manchester Andy Burnham, Primary Engineer, and The Institute of Mechanical Engineers.

This initial short event was very well supported by industry and academia

all of whom fully engaged with the 45 children who took part. Their challenge was to design something to make the world a better place.

The top picture shows Andy Burnham addressing the assembly. He is giving this Initiative maximum support and is clearly very enthusiastic.

The following pictures show the interaction we had with the students.

Next year the event will be held on two days 14 and 15th June where we will have many more children and importantly their parents. Manchester University will be supporting this again with both exhibits and staff.



The children and parents will have the opportunity to speak with industry and academia about their experiences and help them understand what a fantastic career awaits them if they choose engineering.

Thank you to Andy Burnham, Primary Engineer, The Institute of Mechanical Engineers and Manchester University for such wonderful support.

Paul Shechter CEng FIMechE

INVESTIGATING THE SANDILANDS TRAM ACCIDENT

RAIB—RAIL ACCIDENT INVESTIGATION

We attended "Rail Accident Investigation Branch - Investigating the Sandilands Tram Accident" event jointly organised by IMechE Lancashire Area and IET Lancashire and Cumbria Network. The speaker, Andrew Hall FIET, Railway Accident Investigation Branch Deputy Chief Inspector, said "We are here to learn safety lessons and we are here to learn them fast". They vigilantly liaise with fire department, ambulance services, police and other investigators to ensure they don't risk lives or damage vital evidence, while gathering information to report the cause, and create health



and safety recommendation to prevent future accidents. They use 3rd party companies to conduct dynamic simula-

tions to prove particle trajectories and evidence layout at the accident scene to prove the root cause.

Murat Islam CEng MIMechE

VACUUM THE 4TH SERVICE TO INDUSTRY



Richard Pilkington is a senior lecturer in Physics at the University of Salford. Richard gave a presentation on the history of vacuum technology and how it has become the 4th service to industry.

Richard talked about the history of vacuum and how it has developed. The vacuum sector has assisted the second industrial revolution! Vacuum underpins the modern-day society, without it many items we take for granted will not be available from drug development right through to almost every item in our homes – such as televisions, mobile phones, computers and fridge freezers!

Gavin Tracey AMIMechE

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LEYLAND TRUCKS FACTORY TOUR AND COMPANY PRESENTATION



20 people enjoyed a customised guided tour of the Leyland Assembly Plant facility at Croston Road, followed by a presentation on current and future products hosted by Robert Lawton.

Leyland trucks is a division of PACCAR Inc. An American truck company that owns Peterbilt, Kenworth and DAF brands.

Leyland trucks is responsible for the design and development of the 7.5 -19 tonne DAF LF and CF66 6x2 rigid, as well as all RHD CF and XF DAF trucks.

The tour consisted of two groups, which followed the continuous vehicle assembly through all stages from chassis frame laydown to the vehicle being driven off the line for delivery to dealership and customers. This included the robotic chassis paint stage, which was the first with in PACCAR and the inline Body building stages, which is another first for PACCAR.

Comments below

"Just wanted to say thank you for organising the IMechE visit last Wednesday, it was most enjoyable. It was also a good opportunity to admire your display vehicles, both new and old." Regards, Alec Morrow

"Thank you for organising such an informative visit. It makes a change for me to see things being engineered and going together so well. Fluid dynamics doesn't give that opportunity" Paul Shechter

Jane Salisbury CEng MIMechE

ANNUAL DINNER: DINING WITH CONCORDE

No it's not an illusion this is the real Concorde at its Bristol Museum. I, along with Dave Terry (NW Regional Secretary) attended the IMechE annual dinner on Thursday 22nd November. A great pity this magnificent aeroplane was grounded. This was an excellent dinner supported by c 300 members and guests. Prior to the dinner we had the opportunity to walk through Concorde on our way to the drinks

reception. The new IMechE President Tony Roche gave a short introductory speech which was followed by some excellent food. We were fortunate to have the engine designer on our table amongst other very interesting people, all with differing engineering experiences. Before the dinner as well as going through Concorde we viewed the museum displays. The picture below shows Dave in the simulation cockpit complete with captain's hat.

(We didn't take off!)

This was a very enjoyable evening with excellent company. Both our new President and CEO (*interim*) Colin Brown are very impressed with what we are doing in the North West, long may it continue. My thanks to all of you in the North West, you are doing a great job.

Paul Shechter CEng FIMechE



JOHN CRANE: PERFORMANCE & RELIABILITY

Dr. Pat Stokes explained the brief history of John Crane Performance Plus® and how they improve plant reliability through Mechanical Seal managed reliability programs.

Their solution is based on fixed contract portfolio management, resulting in a rewarding system for all parties while increasing Mean Time Between Repairs (MTBR) as opposed to the traditional repair contractors who benefit from increased work load with increased failure rates.

Interesting questions were raised by the attendees covering condition monitoring, machine learning algorithms and collected data rights. Professor Peter Myler also provided a tour to National Centre for Motorsport Engineering at The University of Bolton, showcasing F1 race cars and their manufacturing workshops and laboratories.

Murat Islam CEng MIMechE



IMECHE LANCASHIRE AREA UPCOMING EVENTS

Institution of
**MECHANICAL
ENGINEERS**

To book your place on any of the events below please visit;

<http://nearyou.imeche.org/near-you/UK/North-Western/Lancashire-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 on any of our events, contact the event organiser.

CHAIN:19

02/03/19—09:30-16:00—John Dalton Building—Manchester

CHAIN:19 is a free event for Young Engineers taking place in Manchester. Get the inside track on your early career in engineering from the Institution of Mechanical Engineers, Institution of Engineering and Technology, Manchester Association of Engineers, the Royal Aeronautical Society and many more. Please book your free place at Eventbrite website; https://chain_19.eventbrite.co.uk

NUCLEAR FLASKS—DESIGN FOR SAFE TRANSPORT & STORAGE

04/04/19—18:00-20:30—Foster Lecture Theatre, UCLan, Preston

Nuclear transport flasks are used to store and transport nuclear waste material. To be transported within nuclear licenced sites, the flask design must fulfil specific safety requirements taken from the International Atomic Energy Agency (IAEA) regulations for safe transport of radioactive material. This presentation demonstrates a typical analysis driven design process undertaken to fulfil these requirements. Lecture is free and refreshments are also provided.

IENG & CENG APPLICATIONS WORKSHOP

07/05/19 OR 24/09/19—10:3-15:30—BAE Systems, Salmesbury

All Engineers, who satisfy the academic and competence requirements and who wish to make an application for Professional Registration as a Chartered or Incorporated Engineer should attend this workshop.

THE WEAVER'S TRIANGLE—CANALSIDE WALK & ENGINE HOUSE TOUR

12/06/19—18:00-20:30—Weaver's Triangle Visitor Centre, Burnley

Meeting at 6pm at the visitor centre for networking with refreshments and 6:30pm start for the 45-minute historical Burnley canalside walk followed by 15-minute Engine House tour and finally walk back to the visitor centre. Walking alongside the canal is required and entrance to the engine house is by a flight of stone steps.

CLA APPLICATIONS WORKSHOP

02/07/19—10:30-13:30—BAE—Blackburn

All Engineers, who are looking to make an application via the CLA route and have spoken to the BDM before booking on this workshop.

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.

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 Lancs Area: <http://nearyou.imeche.org/near-you/UK/North-Western/Lancashire-Area>

IMechE NL Young Members: <http://nearyou.imeche.org/near-you/UK/North-Western/north-lancashire-young-member-panel>

IMechE SL Young Members: <http://nearyou.imeche.org/near-you/UK/North-Western/south-lancashire-young-members-panel>

IMechE UK: www.imeche.org

If you're a working engineer or technician, find out about membership or professional registration for you or your colleagues: membership@imeche.org

If you're an existing member of the Institution with a vision to be a future volunteer in education, become a STEM Ambassador: ambassador@imeche.org