Autumn 2016

Mech Eng Matters

Professor Gary Lock, HoD

A warm welcome to all new and returning students, and to those just back from industrial placements.

The greatest strength of our Department is the quality of our undergraduates, and recruitment continues to be buoyant. A record number of students have entered the programme in 2015/16, with 95% of home students achieving A*AA or better at A level.

As many as 70% of our undergraduates experienced an industrial placement between years 2 and 3. The connection with industry remains a key element of the undergraduate teaching in the Department.

We have an action-packed *Mech Eng Matters*, with exciting features on the student competition events. The University of Bath celebrates its 50th Anniversary in 2016 and I wish everyone success this year.

A warm welcome to.....

Dr Stephen Wilson, Ms Emily Glover, Dr Pooya Mahmoodi, Miss Sophie Parsons, Mr Reza Imani Asrai, Dr Demitri Ginzburg and Yang Zhang all new Research Associates.

Dr Evros Loukaidis,and Dr Hamideh Khanbareh our new academics

Mr Daniel Ball, Mr Alastair Hook, Mr Nick Norman, Mr Keith Watson and Joe Evans who join the technical team.

First UK team to win a Formula Student Competition

Team Bath Racing is the University of Bath's entry in to the Formula Student competition, which challenges students to design and build a single seat racing car with a business concept and cost analysis with it. Each year we attend Formula Student UK and two other competitions in Europe. This summer, Team Bath Racing attended Formula Student UK, Formula Student East and Formula Student Czech.

TBR16 took to Silverstone with the aim of winning Formula Student UK. Despite an excellent start, a faulty engine sensor caused a lot of backfiring and performance suffered in the sprint and endurance races. Overall the team came 4th out of 112 teams and were the top UK team yet again.

The next competition was Formula Student East in Gyor, Hungary, where the team set off to another strong start. But this time, it was a damaged radiator which meant the car could not perform fully in the endurance race.

The team won the Business events and came 2nd in Design and Overall Statics, coming 5th in the overall competition. With the radiator fixed, the team were prepared to go all out in Formula Student Czech.

Finally, the car was running close to its top performance and the team achieved 1st in Cost and Manufacturing, 2nd in Business, 2nd in Design, 1st in Fuel Economy, 2nd in Sprint, 2nd in Endurance and 1st Overall.

This makes Team Bath Racing the best team in the UK and the first UK team to win any Formula Student Competition; a truly momentous achievement.

TBR17 are looking to continue this incredible achievement with a win at Formula Student UK 2017. This year we are making a full carbon fibre monocoque, developing the powertrain to produce more power when it is needed, Four Wheel Steering and a full aerodynamic package. For all this, we need the help of any and all students who want to help.

If you are interested in being a part of Team Bath Racing, come down to the Build Room in 4E and simply ask to get involved.

RADAR Summer School, Bonn, Germany - Ben Thomas, PhD student

In August I attended a summer school in Bonn, Germany, on the subject of RADAR technology. Having arrived on a Friday, the 40 attendees spent the weekend exploring the cities of Bonn and Cologne, allowing us to get to know each other. This was one of the great successes of the week, as it really helped us all interact and get the most out of the experience. There was a great range of people from all over the globe, with at least 20 countries represented and backgrounds from satellite design to environmental monitoring.

During the week we visited the largest radome in the world, which is used for space observation and object tracking. At 34 meters diameter, the antenna is a very impressive structure especially considering it takes only 15 seconds to fully rotate the 240ton structure!

The lectures spanned from radar basics all the way up to the cutting edge of research in the field, and I learnt a great deal from the guest professors. My research involves three dimensional seabed mapping using sonar-equipped underwater robots,
and there is a rich history of techniques used in radar being adapted for use underwater with sonar. I am currently working on some ideas inspired by the lectures, which I hope to test out on data to be collected off the coast of Italy this October.

Having the opportunity to meet such a mix of academically minded people was fantastic, and I would truly recommend the summer school to anyone with an interest in radar or sonar.

Research Collaboration Visit to South Africa - Dr Alan Hunter

The University of Bath's International Research Fund supports new international collaboration efforts with a number of our partner universities around the globe. In August, I travelled to Cape Town, South Africa with my colleague, Dr Chris Blenkinsopp, from Civil Engineering under an "initiator" grant. The purpose of our visit was to investigate the application of our joint expertise in above water and underwater remote-sensing systems for monitoring marine mammal populations. This is important for conservation and the tourism economy in the region.

We met potential collaborators with expertise in pattern recognition at our partner university in Stellenbosch, as well as marine biologists at the University of Cape Town, and coastal engineers at the Council for Scientific and Industrial Research. We made some preliminary field measurements with our thermal imaging and passive sonar equipment and even managed to see and hear some marine mammals. The visit has resulted in some exciting prospects for future research collaboration in South Africa.

FPMC Symposium in Bath - Dr Nigel Johnston

FPMC is the leading international annual conference for activities in the field of Fluid Power and Motion Control, and was held on September 7-9, 2016.

This is the 25th time it has been held at the University of Bath. Since 2008 it has been organised in partnership with the American Society of Mechanical Engineers (ASME) and alternates with locations in the USA – Hollywood, Washington DC, Sarasota and Chicago. This year we had 50 papers and 79 delegates from 16 countries – our biggest event so far at Bath.

As part of the conference, the prestigious ASME Koski medal was presented to Professor Kim Stelson of the University of Minnesota. Professor Stelson presented the Koski lecture entitled 'Is there a future for fluid power?' In addition, the 2014 Joseph Bramah Medal was awarded to Professor Win Rampen of Edinburgh University and Artemis Intelligent Power, in recognition of his contributions to fluid power.

Last but not least, Professor Kevin Edge was awarded the honorary degree of Doctor of Engineering as part of the University of Bath's 50th Anniversary celebrations.

The image shows Professor Kim Stelson (right) receiving the 2016 Robert E. Koski Medal.

A Pint of Science - Susan Lattanzio, PhD student

In May, Chris Bowen and John Rogers of Mechanical Engineering entertained and engaged the public as part of the international, three day, Pint of Science festival.

Pint of Science aims to deliver science talks in a fun, engaging, and approachable way and takes place simultaneously across 100 different cities in 12 different countries. As part of the festival The University of Bath took over four city centre pubs, running twelve events across four different research streams.

Sonia Ramos Pascual, Mendy Mombeshora, and Sue Lattanzio, post graduate researchers from Mechanical Engineering, took on the challenge of organising the engineering stream 'Tech Me Out'. The three nights brought together speakers from across the Engineering and Computer Science faculties including Architecture and Civil Engineering, Chemical Engineering, and Mechanical Engineering.

John shared his encyclopaedic knowledge of sustainable home heating and how to become 'an armchair eco-warrior', and Chris wowed the public with his shape memory alloy, climate adjusted shirt - if that didn't excite the public I don't know what would! The event went down a storm with every night sold out and people even being turned away on the door. With all 590 tickets sold, 58% of those to the general public, this was the second biggest public engagement event organised by the University this year.

More pictures from the event can be viewed on twitter: @suelattanzio, @soniaramosp, @ mendymombeshora

ASME Conference in North Carolina

In August Linda Newnes and Sue Lattanzio from Mech Eng, together with Derrick Dunkley their National Grid industrial partner, took part in the influential American Society of Mechanical Engineers Conference, in North Carolina.

Their attendance at the event offered the chance to meet others working in the field, and provided a forum to communicate the excellent work being done by the Department in the discipline of physical asset management. Sue presented a paper on behalf of the research team, as well as co-chairing one of the sessions, whilst Linda and Derrick led a panel discussion on the Circular Economy.

Perhaps the highlight of the event was a reception at the famous NASCAR Hall of Fame. Here delegates were able to network and compete as teams in changing a racing car wheel.

Our representatives did Bath Mech Eng proud, completing the challenge within a very respectable 19 seconds. The rumour is that they are currently looking to offer their newly found skills to Team Bath Racing!

The Conference was combined with a meeting of the group with National Grid's American operation, based in Boston. This provided a unique opportunity for international benchmarking and knowledge exchange within the electrical transmission sector.

Congratulations to...

Linda Newnes who has been promoted to Professor

Kevin Robinson and Geraint (Speed) Owen who have won the University Teaching Award for the "Best Team in Support of Student Learning" for their work with our Formula Student project. Their nomination was based on many years of support, culminating in the team's most successful year to date.

Vimal Dhokia and Jon Du-Bois for successfully completing their probation

Carl Sangan for winning the John Willis Award, which recognises his excellent achievements in teaching and research.

Gary Lock, Carl Sangan, James Scobie, Mike Wilson and Mike Owen for securing a £1,4M EPSRC responsive-mode grant entitled Buoyancy-Induced Flow and Heat Transfer Inside Compressor Rotors. The grant is joint with Rolls Royce and the University of Surrey.

Dr Alan Hunter (ME) and Prof Peter Wilson (EEE); "Police Robot for Inspection and Mapping of underwater Evidence (PRIME)"; £100k, co-funded by the Metropolitan Police

Richard Burke, Colin Copeland, Chris Brace, Sam Akehurst and Jamie Turner in a successful H2020 funding application. "Mild Hybrid cost effective solutions for a fast Market penetration".

Richard Burke on the birth of his son Ethan Peter Burke on 8th June 2016.

Chris Bannister on the birth of his daughter Natalie Lena Elizabeth Bannister.

Jeff Barrie on the birth of his third child, a baby boy called Innes Alistair Barrie.

Andrew Cookson who got married on 3rd September 2016

Vana Adamaki on the birth of her daughter Konstantina.

Tomasz Duda on the birth of his daughter.

Colin Copeland on the birth of his son Alexander Leo Copeland

Pedal pedal, flap flap: BUMPAC flies - Dr Michael Carley

After five years of work by a series of student groups, this year the department's Human Powered Aircraft made its first real flight, at the British Human Powered Aircraft club's rally at Sywell near Northampton. The team's aeroplane was very highly regarded by veterans of the field and after a couple of successful short hops to find the best wing position, the aircraft managed a flight of 34 seconds along the Sywell runway.

This is the best performance by a UK university since the first HPA was flown by Southampton more than fifty years ago, and is a longer time in the air than all UK universities combined have managed since then. Hopes are high for next year's event at Lasham in Hampshire when an international field will be coming to show off their aircraft.

BURST success at eISR Gosport against the odds! - Jeff Barrie

University of Bath Racing Submarine Team (BURST) are a talented group of students, academics and technical staff who design, build and race a human-powered submarine. Like Formula Student, they compete against other institutions as part of the International SubRace event, which this year took place at QinetiQ's Ocean Basin in Gosport, UK.

As it was a slalom event this year, BURST's current sub Salacia was adapted for manoeuvrability and control. There were eleven teams competing, which included TU Delft, University of Warwick as well as US, Canadian and NZ teams-competing in prop and non-prop classes. Early in the event, however, disaster struck. As Salacia was being loaded into the Ocean Basin, it fell 10m from the trolley. The damage was quite extensive but it was quickly repaired. The sub managed to get past wet testing 3 days later and making some good runs (at about 2.1 knots).

BURST came in at a respectable 4th in the prop class (the best performing UK competitor) and won the 'best repair' trophy. Nonetheless, we are immensely proud of the team's performance despite the odds against them. Next year, the ISR competition will be held in the United States, Washington DC and it will be a straight 100m dash. With a new sub, new team and new build space the aim is to come home from the US with the winning trophy!

6 Big Questions - Professor Richard Trask

1. Favourite Quote?
I have two, both by Albert Einstein, which influence me.. "A person who never made a mistake never tried anything new" and "Strive not to be a success, but rather to be of value".

2. Favourite Film?
The Godfather by Francis Ford Coppola starring Al Pacino; adapted from Mario Puzo's excellent novel, which is a must read especially when on holiday in Sicily!

3. Outside Interest?
I help coach an U8 boys football team, I am a keen hockey player and I love DIY projects! I am also a competent "Taxi driver" for my 3 children.

4. Favourite food/dish?
If I'm cooking at home then a Sunday roast with a good red wine (my choice would be a Spanish Rioja), but if going out in town then Thai food, whether Phat Thai, a green Chicken Curry or a Spicy Shrimp Soup, all washed down with a glass of Mai Tai (a rum based alcoholic cocktail).

5. Favourite Place?
Tokyo...from the energy of ultramodern neon-lit skyscrapers to the peace and tranquility of the traditional historic temples. A city of extremes - I would go back tomorrow!

6. Who would you like to meet?
Neil Armstrong, the American astronaut and the first person to walk on the Moon. He was an aerospace engineer, naval avaiator, test pilot and university professor. I have so many questions.....