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THE QUARTERLY NEWSLETTER FOR SOE MEMBERS | **AUTUMN 2023** | ISSUE 22

Celebrations as the IRTE Skills Challenge winners are announced

On Thursday 7th September the very best apprentices, technicians and engineers of the bus and coach industry came together to celebrate the winners of the 12th annual IRTE Skills Challenge.

The IRTE Skills Challenge is an annual competition held by the Society of Operations Engineers (SOE) and hosted by S&B Automotive. S&B Automotive Academy is a leading provider of automotive training and is home to a state-of-the-art assessment centre which makes it an ideal location to put the skills of the industry's most talented apprentices, technicians and engineers to the test. This year's IRTE Skills Challenge testing week took place between the 5-9 of June and attracted the very best of the industry.

Throughout the week the attendees had the chance to work and test their skills on some of the industry's most complex and cutting-edge vehicles. Competitors would compete against each other on a number of tasks ranging from general welding and fault finding to diagnosing solutions on a complex clean fuel bus. The wide variety of challenges pits competitors in a series of electrical, mechanical and bodywork challenges that push both apprentices and qualified engineers alike to their limits in order to find the very best in bus and coach.

Over 60 qualified and apprentice PSV engineers from some of the biggest names in the transport industry, from Arriva, Go Ahead, First Bus, Metroline, Trent Barton and National Express took part in the IRTE Skills Challenge. It was clear that each and every one of the companies taking part sent their very best talents to this year's Skills challenge as the competition was fierce and the results were close.

The awards show took place on Thursday the 7th of September at the Jaguar Experience Centre in Castle Bromwich, Birmingham. The awards show consisted of a drinks reception in which managers, contenders and sponsors alike could meet. After the reception, all attendees gathered in the main auditorium for a few words from the generous IRTE Skills Challenge sponsors which was then followed by a lunch. After lunch, the runners up and winners of each category were invited on stage to collect their trophies and have their pictures taken.

Go-Ahead London was the most successful competitor at this year's event, winning 5 awards followed closely by Arriva who won 4 awards. The overall level of talent and dedication has once again exceeded all expectations and demonstrated a new level of skill and overall competence.

Continued over ▶

"The IRTE Skills Challenge provides us with an excellent opportunity to showcase the skills and talents of our engineers, technicians and apprentices from all around the UK"

Oliver Teasell, Membership and Registration Manager, SOE

FACTS & FIGURES

12

The number of successful IRTE Skills Challenge competitions held to date. This year's winners were celebrated at the Jaguar Experience Centre in Castle Bromwich, Birmingham.

60

Qualified and apprentice PSV engineers took part in the IRTE challenges to find the best technicians within the bus and coach industry.

20

IRTE Skills Challenge 2023 winners. Go-Ahead London was the most successful operator at this year's event, winning 5 awards closely followed by Arriva who won 4.

4

Sponsors who helped make the IRTE Skills Challenge 2023 come to life. Thank you Teng tools, Imperial engineering, Freeway and Knoor-Brent.

INDUSTRY UPDATES

ENGINEERINGUK LAUNCHES NEW 5-YEAR STRATEGY TO ENABLE ENGINEERING AND TECHNOLOGY TO THRIVE

EngineeringUK, a not-for-profit organisation that drives more young people to choose engineering and technology careers, has announced that they are entering a new strategy period – which will set the direction of the organisation over the next 5 years. With a core purpose of driving change so more young people choose engineering and technology careers, EngineeringUK's vision for the UK is to have a diverse workforce which is crucial for engineering and technology to thrive and to drive not only economic prosperity but also improve sustainability and achieve net zero.

"For engineering and technology to really thrive, we urgently need more people and more diversity in our workforce. Our new strategy provides us, and importantly all of our partners, with a renewed focus on what we're trying to achieve, and clarity on how we're going to get there," says Dr Hilary Leevers, Chief Executive of EngineeringUK

EngineeringUK's strategy from 2023 to 2028 consists of 3 key strands of activity including:

- **Research and evidence – establishing the composition of the current engineering and technology workforce, future workforce needs and how to address them**
- **Leadership – leading efforts to grow the collective impact of all engineering and technology inspiration and careers activities with young people of school age**
- **Activities for schools – expanding its activities to encourage more, and more diverse, young people into engineering, technician and tech roles.**

HYDRAULICS FIRM DOMIN HAS OPENED ITS NEW TECHNOLOGY CENTRE IN BRISTOL

Domin, a leading provider of hydraulic motion control systems, has opened a new state-of-the-art facility in Bristol, UK. The new facility consolidates the company's engineering and manufacturing operations from multiple sites across Europe, streamlining operations and optimising efficiency.

This new facility will enable Domin to accelerate the development and production of its innovative hydraulic motion control systems. The company aims to radically increase efficiency and intelligence in motion control across a wide range of applications in globally important industries.

Welcome back to SOE News

NOTE FROM THE EDITOR

Welcome to the Autumn edition of SOE News. I am Chris Knight, the new Editor and PR coordinator for the Society of Operations Engineers. I am responsible for both the writing and publishing of the Society's online articles, social media content and SOE News. I have a background of working in and writing about the architecture and technology industries so engineering is slightly new to me, but I have enjoyed learning about the latest stories in the sector as well as hearing the latest about what SOE members have been up to around the country.

This edition of SOE News is packed full of exciting content from the last few months. In September the SOE held the 12th annual IRTE Skills Challenge Awards lunch which I had the pleasure of attending. During the event, I had the chance to meet several competitors, both apprentices and qualified engineers as well as our sponsors.

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Of all the competitors the one who stood out to me the most was first-year apprentice Thang Tang from First Bus, who competed in the apprentice Mechelec category. Thang only recently took the leap and changed careers to become an engineer and is clearly excelling, scoring exceptionally highly. This is particularly impressive as he is a first-year apprentice. His attitude and the joy he took from taking part in the competition meant that it was a real pleasure to see him win the Judge's Choice category.

It's stories like this that demonstrate that the industry is in safe hands with committed and competent engineers coming through. One of the many strengths of the Skills Challenge is highlighting people like Thang to demonstrate the exemplary professionalism within the sector.

On a very different note, another story that grabbed my attention while putting together this issue was that of the innovative use of technology, with Unmanned Areial Vehicles (UAVs) being used to improve safety and efficiency at Sellafield.

UAVs are being used in the decommissioning of the nuclear power station. Sellafield, formerly known as Windscale, is a large multi-function nuclear site close to Seascale on the coast of Cumbria, England and as of August 2022, its primary activities are nuclear waste processing, storage and nuclear decommissioning.

Sellafield is currently on track to be decommissioned which will be a huge task since the site, which houses more than 1000 buildings, is the largest nuclear complex in Western Europe. Sellafield Ltd is the organisation responsible for the safe operation and clean-up and has begun to use UAVs to map out radiation hotspots and potential hazards. By using this new innovative technology, engineers are kept at a safe distance as they scout the location for radiation hotspots.

Aside from the excitement at seeing how far and fast the industry is progressing it is heartening to see companies invest in vital innovations to protect their employees' health and well-being. It shows that the industry using is moving in the right direction, placing safety at the heart of everything.

This SOE News is packed with stories I was personally fascinated by, and which showcase some of the best in the road transport, plant, engineer surveying and environmental sectors. I hope you enjoy reading it as much I enjoyed putting it together.

If you have any stories or tips, please do get in touch with us. I am always keen to hear about events you may have had in your region, or something you have been working on that you think would interest other SOE members. You can do this by sending an email to editor@soe.org.uk or a letter addressed to Chris Knight at 22 Greencoat Place, London SW1P 1PR.

2023 IRTE Skills Challenge winners are announced

▸ Continued from previous page

The Philp Margrave Memorial Award for Outstanding Achievement was also awarded to Richard Harrington, Group Engineering Director at Go-Ahead. The award recognises an individual who has contributed to the promotion of standards, safety, apprenticeships and ongoing training in the bus and coach industry. The award was first introduced in 2015 in memory of Philip Margrave, former Engineering Director for Go-Ahead London.

Philip Margrave's son Lewis Margrave, currently Engineering Manager at the Go-Ahead group, presented the award on behalf of his father.

"My father was an active member of the IRTE for 24 years. He was committed to raising standards within the UK bus industry and was instrumental in setting up the annual IRTE Skills Challenge competition. This award is presented each year to somebody who champions his legacy by supporting apprentices and promoting standards and training".

The IRTE Skills Challenge 2023 was generously sponsored by Imperial Engineering, FCL, Knorr-Bremse and Freeway. Without the continued generosity of all these sponsors, the IRTE Skills Challenge would not exist. So, a big thank you for supporting the continued development of the next generation of superb talent.

It's undeniable that each year the contenders continue to raise the bar. Not only does this show that the overall talent within the engineering industry is increasing but that the level of training and development is reaching new highs. If this trend continues the future of the bus and coach industry looks bright and full of innovation. We look forward to next year's IRTE Skills Challenge and hope that even more talented apprentices, technicians and engineers take part and represent the next generation of talent.

"There was so much talent present at the IRTE Skills Challenge 2023. It was great to see both the apprentices and technicians take part and enjoy themselves"

John Eastman, SOE President

MAJOR MILESTONE FOR TRANSPORT FOR LONDON

1000th zero-emission bus hits the streets

The Mayor is spending more than £300 million to transform London's bus fleet by retrofitting thousands of buses and committing to phase out pure diesel double-deck buses.

The zones are expected to reduce NOx (Nitrogen Oxides) emissions by 84 per cent and thousands of school children in these areas will benefit from cleaner air.

Euro VI is the latest standard in diesel engines, reducing emissions of NOx by up to 95 per cent compared to the previous generation of buses

The buses are quieter, more fuel-efficient and cleaner than standard diesel buses, reducing emissions by between 30-40 per cent.

Hydrogen-powered vehicles have a range similar to conventional diesel vehicles achieving 350-400 miles on a single tank of fuel, and they can be refuelled within 3-5 minutes.

London has just passed the substantial milestone of 1000th zero-emission buses on routes throughout the city. This means that, at the time of writing, just over 1 in 9 buses are now green, with the number of zero-emissions buses on London's roads increasing by just over 3,000 per cent since 2016, growing from a humble 30 vehicles to a fleet of 1,000 buses.

This is a major achievement for Transport for London (TfL), which is reportedly on track to transition to a fully zero-emission bus fleet by 2034. TfL's new zero-emission bus fleet is the largest in Western Europe and has the lowest CO2 emissions per passenger kilometres compared to most other European cities.

The 1000th zero-emission bus is a significant milestone in the decarbonisation of London and the bus network.

Zero-emission buses have several benefits for London, including reduced air pollution: zero-emission buses do not produce any tailpipe emissions, which helps to improve air quality in the city. This is particularly important in London, which has some of the worst air quality in Europe. Similarly, zero-emission buses do not produce any greenhouse gas emissions, which helps to reduce the city's carbon footprint. This is important in the fight against climate change. Zero-emission buses are also much quieter than diesel buses, which can help to reduce noise pollution in the city. This can lead to Improved air quality which have a number of health

benefits for Londoners, including reduced rates of asthma, heart disease, and cancer. In terms of economic input TfL's investment into a zero-emission fleet has created around 3,000 jobs throughout the UK and has the potential to lower bus fares for passengers in the future as zero-emission buses have lower operating costs than diesel buses.

Although the positives are substantial there are also several challenges that TfL faces in transitioning to a fully zero-emission bus fleet, such as a high upfront cost since zero-emission buses are more expensive to purchase than diesel buses. With this in mind TFL is currently working to reduce the upfront cost of zero-emission buses through its procurement process and seeking government funding, The impact on the existing set up and the need for charging infrastructure is also a concern for the city as they will need to build out a network of charging stations to support this new zero emission fleet. This is a significant investment, but TfL is working with the government and stakeholders to make it happen. Some people are concerned that zero-emission buses do not have the same range as diesel buses. However, TfL is collaborating with bus manufacturers to develop zero-emission buses with longer ranges. There are also concerns that drivers and engineers need to be trained on how to operate and maintain zero-emission buses. TfL is providing training to its bus drivers to ensure that they can safely and efficiently operate zero-emission buses.

The government's investment in a zero-emission fleet has benefited cities outside of London as well. This investment has created around 3,000 jobs throughout the UK including Ballymena, Falkirk, and Yorkshire. The investment also creates economies of scale which help lower the costs of funding zero-emissions buses which in turn will assist local authorities in upgrading their fleets. TfL is also working to share its knowledge and experience with other cities around the world. For example, the Londons Mayor is working with the city of Paris to help it transition to a zero-emission bus fleet. Not only will this allow the UK to be a leader in zero-emission bus fleet production and development, it will also help in the global mission to lower emissions.

"Zero-emission buses are a triple win for our lungs, our climate and the UK economy. I'm delighted London has hit this milestone but we've still a long way to go to rid our lungs of diesel fumes," said Oliver Lord, Head of UK for Clean Cities Campaign Manager, SOE

INDUSTRY UPDATES

ENGINEERING COUNCIL AND KIVI SIGN AGREEMENT TO FACILITATE INTERNATIONAL MOBILITY

The Engineering Council and the Royal Netherlands Society of Engineers (KIVI) have signed an agreement to facilitate the mobility and recognition of engineering professionals between the UK and the Netherlands.

The agreement will create streamlined processes for professional registration, following the model adopted in similar agreements with other countries. This will make it easier for engineers to move between the UK and the Netherlands and work on cross-border projects.

The agreement is part of the Engineering Council's broader work on international mobility and professional recognition, which includes collaboration with ENGINET, a network of European engineering associations that employ competency-based assessment.

The aim of the agreement is to move towards mutual recognition of professional competence, which will benefit both engineers and the public. Engineers will have more opportunities to work internationally and the public will be confident that engineers are meeting high standards of competence, regardless of where they are qualified.

The agreement is a positive development for the engineering profession in both the UK and the Netherlands. It will help to promote international collaboration and innovation, and it will make it easier for engineers to find work and develop their careers.

PRIME MINISTER'S EDUCATION OVERHAUL

Prime Minister Rishi Sunak has announced a major overhaul of education for over-16s in England. The plans, which are due to be introduced in 2026, will replace A-levels and T-levels with a new Advanced British Standard (ABS) qualification. The ABS will be a broader and more rigorous qualification than its predecessors, with students expected to study five subjects at different levels. This will give students a wider range of skills and knowledge and make them more competitive in the global economy. The government has said that apprenticeships will play a key role in the new education system. Apprentices will be able to combine academic and vocational elements in their ABS qualification, and they will be able to start apprenticeships earlier, at the age of 16. The government is also providing additional funding for apprenticeships, including a tax-free bonus of up to £30,000 for teachers in key shortage subjects, such as engineering and manufacturing.

GOOD MONTH

CARBON CAPTURE CELL COULD BE A GAME-CHANGER

Researchers at the Massachusetts Institute of Technology have developed a new carbon capture system that uses an electrochemical cell to grab and store CO2 at room temperature which reportedly uses less energy than conventional systems. The system could help make carbon capture more practical for industrial applications. Traditional carbon capture technologies rely on amines to help "scrub" the pollutant by chemically bonding to it. This process requires immense energy, heat, and industrial equipment, which can burn even more fossil fuels in the process. The new MIT system uses an electrochemical cell to capture CO2 without the need for heat or complex equipment. The cell is powered by a liquid amine dissolved in dimethyl sulfoxide, and it can be easily switched back and forth between capturing and releasing CO2.

The researchers tested the prototype cell and found that it required less energy than other heat-based cells and was competitive with other electrochemical cells. They also found that the cell maintained nearly 95% of its original capacity after several cycles of charging and discharging. The new carbon capture system is still in its early stages of development, but it has the potential to revolutionise the way we capture and store CO2.

BAD MONTH

NET ZERO POLICY CHANGES COULD DERAIL CLIMATE GOALS

The UK government has announced changes to a number of green policies, including delaying the ban on the sale of new petrol and diesel cars from 2030 to 2035. The changes have been met with concern from industry and environmental groups, who worry that they will make it more difficult to meet the UK's net zero emissions targets. The Climate Change Committee, an independent statutory body that advises the government on emissions targets, said the changes are likely to take the UK further away from being able to meet its legal commitments. Net zero targets can only be achieved with support from industry, but the changes have highlighted new and existing issues in the nationwide efforts to attain those goals. Delays to the phase-out of sales of petrol and diesel vehicles have caused concern amongst manufacturers, who say the government needs to do more to make zero-emission vehicles more attractive to consumers. The government's focus on the power grid and planning reform is welcome, however, as it could be a key bottleneck in net zero delivery.

IRTE CORNWALL CENTRE

Harts Haulage visit

Members of the IRTE Cornwall Centre enjoyed an exceptional visit to Harts Haulage, where owners Neil and Emma Hart treated their guests to a brilliant afternoon in Cornish sunshine.

Members were given a fully inclusive tour of the site, including a fleet of over 30 immaculately prepared and presented trucks and tippers, along with crushing plant, screener plant, and a concrete processing plant, all within one large site at the foot of a local landmark called Carn Brea, with its distinctive monument and castle as a backdrop.

Cornwall IRTE Chairman Mick Pedley presented a plaque to Mr and Mrs Hart at the end of the visit, with an open invitation to attend any Cornwall IRTE event or visit.

IRTE NORTHEN CENTRE

Insightful CPD presentation from Driver and Vehicle Standards Agency

The Institute of Road Transport Engineers Northern Centre's new season of CPD lectures began with a presentation from Driver and Vehicle Standards Agency Enforcement Delivery Manager, Steven Brougham.

With over 50 members and guests attending, this CPD was not to be missed. Hosted in the Dunkenhalgh hotel in Accrington on the last Thursday in September, Steven Brougham presented a mixed media presentation on DVSA enforcement activities, and the recent structural changes over the previous 12 months within its enforcement division alongside its aims and objectives going forward.

Using both video and images, Steven gave a presentation on the various sectors that DVSA enforcement activities cover. He began by discussing the governance of the light vehicle MOT scheme and the work of its examiners, who ensure that MOT testers apply the correct standards and that fraudulent activities are dealt with by removing offenders from the scheme and prosecuting those responsible.

L to R: Danny Fisher (Northern Centre Hon. Vice Chairman), Steven Brougham, Michael Sweetmore (Northern Centre Hon. Treasurer)

Steven then moved on to discuss operator compliance work that is undertaken on behalf of the Traffic Commissioners and the roadside activities of DVSA, which included data information relating to identified vehicle defects, overloading offences, and driver's hours infringements.

Attendees were also informed of how the access to nationwide ANPR data has now given the agency an additional tool to pursue offenders with hard data evidence, in both tachograph manipulation and fraudulent MOT activities.

To round off the compelling presentation Steven invited attendees to ask any questions. After several insightful and informative questions Hon. Treasurer Michael Sweetmore thanked Steven and expressed the centre's gratitude for the presentation, before presenting Steven with a commemorative shield on behalf of the Northern Centre committee.

IRTE SCOTTISH AYRSHIRE CENTRE

Alexander Dennis Limited visit and talk at Scottish Ayrshire Centre

The Scottish Ayrshire Centre hosted a visit and talk from Alexander Dennis Limited (ADL) at the September Meeting in Kilmarnock. 23 Members and guests attended, including Jamie Wilson, Head of Concepts and Advanced Engineering at ADL.

Jamie outlined ADL's history of bodybuilding passenger vehicles based on high-quality, low-weight, and accessible designs. He then gave attendees an insight into the technical challenges of modular layout on different configurations and the unique solution of their EV double-decker vehicles. ADL developed their own chassis for the latest Enviro range of buses. This gave ADL total control of their chassis packaging, and vehicle body interface, and allowed a very clever modular construction to be introduced.

ADL is also currently piloting their autonomous bus concept in Scotland. They are also working closely with other cities on similar long-term initiatives, pushing safety, reliability, and cost-effective whole-life solutions. Jamie stated that safety, both passengers and the public, is paramount to ADL's offering, and the current ranges are the most advanced in their field.

NEW CENV AND RENVP APPLICATION FORMS AVAILABLE ON THE SOE WEBSITE

All members who are applying for Society for the Environment (SocEnv) professional registration should note that the application forms for both Chartered Environmentalist (CEnv) and Registered Environmental Practitioner (REnvP) have been updated, with the new versions available on the SOE website. The old forms will not be accepted after 31 December 2023, so please check you are using the updated forms for your application.

A chat with George Haywood, Workshop Manager

George Haywood shares his experiences and guides us through his career starting in a youth training scheme all the way through to being a workshop Manager at TIP Lichfield. Originally aiming to be a mechanical and electrical engineer in mining, before shifting to road transport, George has had his fair share of achievements and challenges. He is eager to bestow his knowledge onto the next generation of engineers.

Professional background
Hailing from Newcastle-under-Lyme, engineering has – as George puts it, "always been in my blood". He originally set to be a mechanical and electrical engineer in mining and was just about to leave school when his father informed him that the local mine was going to close. With that in mind, George would have been halfway through his apprenticeship. This meant that he had to rethink if he should continue his path and face redundancy, or should he pivot to another industry. As George was always fascinated with engineering and electrics so to him it made logical sense to move to working on HGV vehicles. He went on to apply to Stoke-on-Trent College and was accepted into the Youth Training Scheme. After that George obtained a placement at Centurion Commercials, Scania's main dealer for Stoke-on-Trent and surrounding areas.

> "If you are interested in how things work or are undertaking anything STEM related or like to tinker around with your own bike or car, then this is the job for you"

Best parts of the job
George stepped into the world of management 8 years ago and as a people person he enjoys having the opportunity to give outstanding customer service. No two customers are the same which "really keeps you on your toes". Being able to adapt to each customer's needs is crucial in both understanding and negotiating the best possible outcome for both parties. George is also supportive of his team and states that working with them is some of the best parts of his role. "A manager is only as good as the employees under them" he says, "it's down to you to make them the best they can possibly be." By strongly encouraging his team with fantastic learning and development opportunities George has achieved an outstanding 99.23% pass rate from 939 assets tested.

On joining the Society of Operations Engineers (SOE)
George joined SOE to progress his career by utilising the extensive library of resources and CPD. He also wanted to have the seal of approval on his qualifications and experience to provide his customers peace of mind as well as sound engineering and operational advice "with the added bonus of a fantastic support structure the SOE really get behind you to enable you to make the next step in your career journey."

Tips for aspiring engineers
George believes that if you are willing to listen and ask questions then you will excel. Having the initiative and enthusiasm to ask questions when you are unsure or don't know the answer is what separates good engineers from the best.

Any closing remarks
"If you are interested in how things work or indeed are undertaking anything STEM related or like to tinker around with your own bike or car then this is the job for you. It can be so rewarding and take you on to so many career paths within the industry. Engineering is a job for life and you will never get bored. Looking back over my 31 years in the industry so much has changed and we are at the forefront of a massive powertrain revolution."

The time for engineers is now. "If anyone requires any help or information then please reach out. If I can help at least one person to change their life for the better then great, that's what life's all about".

TIP Mechanic Academy: where the future of commercial vehicle maintenance begins

On Monday the second of October both the SOE team and Oliver Teasell the Membership and Registration Manager had the pleasure of being invited to visit TIP trailers Nuneaton, by workshop manager George Haywood.

Situated in the heart of the town, this state-of-the-art facility was a hub for the repair and maintenance of some of the industry's most advanced trailers. The workshop is home to the industry's most advanced equipment which the mechanics use to carry out their tasks efficiently and safely. Workshop manager George, prides himself on keeping the workshop up to the highest health and safety standards.

In addition to its daily repair and maintenance activities, the workshop also runs a highly competitive apprentice program called the TIP Mechanic Academy. Out of the 500 plus applicants, only 12 are selected for the program, which consists of 12 months of intensive training. The apprentices have a blend of classroom, instructor-led, e-learning and hands-on training. They have the chance to work with a range of technicians to develop a well-rounded skill set.

TIP is committed to providing ongoing career development opportunities for its employees, especially graduates of the TIP Mechanic Academy. By providing access to further training and advancement within the organization, either as a workshop manager or a technician, started his career as an apprentice, so he has firsthand experience with the best methods of training relatively new mechanics and operations engineers. He believes that the best way to bring out the full potential of the apprentices is by nurturing them rather than disciplining them. He also believes in providing them with opportunities to learn from their mistakes and to grow as professionals.

The TIP Mechanic Academy is a great example of TIP's commitment to training and developing its workforce. The program provides apprentices with the skills and knowledge they need to be successful in their careers, and it helps to ensure that TIP has a pipeline of qualified mechanics and operations engineers for the future.

The TIP Mechanic Academy is a valuable program that provides apprentices with the skills and knowledge they need to be successful in their careers. George Haywood's approach to training is based on his own firsthand experience and is designed to bring the best out of his apprentices.

Babcock partners with British Army to offer apprenticeships

Babcock International, a leading aerospace, defence, and security company, has been awarded a six-year contract to continue to support the Royal Electrical and Mechanical Engineers (REME) apprenticeship programme. The contract is worth over £100 million and will see Babcock provide a range of training and assessment services to help aspiring engineers develop the skills and knowledge they need to support the British Army's vital operations around the world.

The REME apprenticeship programme is one of the biggest apprenticeship programmes in the UK, with over 2,000 apprentices in training at any one time. The programme offers a range of apprenticeships, including Level 3 and Level 4 apprenticeships in mechanical engineering, electrical engineering, and electronic engineering.

Babcock will play a pivotal role in the delivery of the REME apprenticeship programme, providing learners with the training and support they need to succeed. This will include delivering over 758,000 individual training days annually, including

large-scale live and simulated collective training events to validate operational readiness for British Army battlegroups, brigade and division headquarters in the UK and Europe. In addition to providing training, Babcock will also be responsible for assessing apprentices to ensure that they meet the technical standards required to become qualified engineers. This will involve conducting a range of assessments, including practical assessments, written exams, and oral presentations.

The award of the REME apprenticeship contract is a testament to Babcock's expertise in delivering high-quality training and assessment services to the British military. Babcock has a long history of working with the MOD, and the company is committed to supporting the British Army in its mission to protect the UK and its allies.

The REME apprenticeship programme plays a vital role in ensuring that the British Army has the skilled engineers it needs to maintain and repair its equipment. REME engineers are responsible for a wide range of tasks, from servicing vehicles to repairing weapons and communication systems. They work in a variety of challenging environments, including on the battlefield and in extreme weather conditions. The REME apprenticeship programme provides apprentices with the skills and knowledge they need to be successful in their careers. Apprentices learn about the latest engineering technologies and gain practical experience working on real-world equipment. They also develop the teamwork and leadership skills that are essential for working in the British Army.

The award of the REME apprenticeship contract to Babcock is a positive development for the British Army and for apprentices alike. The contract will ensure that the British Army continues to have access to the skilled engineers it needs to maintain and repair its equipment. The contract will also provide apprentices with the opportunity to develop the skills and knowledge they need to be successful in their careers.

Ground investigations begin on Old Military Road

Ground investigations are underway on a parcel of land between the Old Military Road (OMR) diversion route and the A83 immediately north of the existing diversion tie-in.

The work is estimated to take around one week and after its completion will provide extensive geotechnical understanding of the ground conditions which Transport for Scotland dubbed as essential for informing detailed design and construction of the first phase of the OMR improvements.

The Scottish Government is committed to a long-term solution to the landslip risks at the A83 Rest and Be Thankful. In June, the preferred option for a long-term solution was announced. This involves building a debris flow shelter to protect the A83. In the meantime, work is underway to increase the resilience of the temporary diversion route along the OMR. The first phase of this work, which will realign the southern end of the diversion route, is due to start later this year.

The ground investigations that are currently underway will help to determine the conditions of the terrain for this part of the temporary diversion route. The planned improvements to the OMR will increase the resilience of the temporary diversion route by reducing the likelihood of landslides impacting the route. Transport Minister Jenny Gilruth said " The Scottish Government is committed to keeping the public updated on progress with the A83 Rest and Be Thankful scheme."

"The Scottish Government remains committed to a long-term solution to the landslip risks at the A83 Rest and Be Thankful. The planned improvements of the OMR will increase the resilience of the temporary diversion route by reducing the likelihood of landslides impacting the route"

Màiri McAllan, Cabinet secretary for transport and net zero.

Underwater robots used to inspect offshore wind farms

A pioneering new project at Heriot-Watt University's National Robotarium is developing robots that can be launched from crewless vessels to inspect and maintain offshore wind turbines.

The future of clean energy relies heavily on offshore wind farms. However, their maintenance and inspection have long been a significant challenge. This may all change with the new groundbreaking project at Heriot-Watt University's National Robotarium which is poised to transform the industry. This research aims to develop robots which are capable of being deployed from crewless vessels. This initiative is set to make offshore wind farms safer, more efficient, and cost-effective.

Offshore wind farms play a pivotal role in the global transition to sustainable energy sources. They harness the power of wind over vast expanses of the ocean, generating clean electricity without the pollution which is generally associated with fossil fuels. Yet, despite their environmental benefits, these offshore wind farms face numerous problems especially when it comes to maintenance and upkeep.

The most pressing issue with traditional methods of offshore wind farm inspection and maintenance is that it is both costly and logistically challenging. Sending human divers or helicopters to wind farm sites has been the most common method, but these come with a steep price tags and a significant number of operational complexities.

Maintenance and inspection in these remote offshore environments is fundamentally risky and requires an immense level of skill and training. Both divers and helicopter pilots alike face perilous conditions, which can range from high winds to turbulent waters, and unpredictable weather patterns; all of which while being miles away from any aid. This presents a considerable danger to both personnel and equipment.

Additionally, offshore wind farm inspections and maintenance can be time-consuming and complex. Weather delays and logistical challenges can result in prolonged downtime, and reduced energy production, which ultimately leads to higher costs.

Heriot-Watt University's National Robotarium seeks to address these challenges by introducing underwater robots designed specifically for offshore wind farm maintenance. These robots can be launched from crewless vessels, offering several key advantages. Equipped with advanced sensors, cameras, and manipulation tools, these robots are able to perform a wide range of maintenance and inspection tasks, from cleaning turbine blades to replacing components.

By eliminating the need for direct human input such as divers and helicopter crews, the use of underwater robots significantly reduces the risks associated with offshore wind farm maintenance. Robots have the potential to operate in some of the world's most remote and hazardous conditions all whilst minimising, if not completely eradicating, the risk to human lives.

Remote robots can also improve costs as these robots can work around the clock and require minimal human intervention. This can lead to cost savings in terms of personnel, equipment, and operational downtime. Additionally, the initial investment in robot development can be offset by long-term cost reductions. These underwater robots can also improve costs as they can swiftly and accurately inspect wind turbines, identifying issues before they escalate. This proactive approach helps prevent costly breakdowns and ensures the continuous, efficient operation of offshore wind farms.

The development of underwater robots for offshore wind farm maintenance is poised to revolutionize the clean energy industry. By enhancing safety, reducing costs, improving efficiency, and ensuring the long-term sustainability of wind farms, these robots are instrumental in accelerating the transition to a cleaner, more sustainable energy future. Prof. Yvan Petillot is academic co-lead at the National Robotarium and principal investigator of the UNITE project. He says: "We're only a generation away from our obligation to deliver on our net zero promises by 2045 and 2050 in Scotland, so can't afford to let the challenges faced by the offshore renewables sector slow down the construction and operation of essential, green energy assets like wind turbines."

Drone technology keeping Sellafield workers safe

In a groundbreaking development at the Sellafield nuclear site in Cumbria, unmanned aerial vehicles (UAVs), also known as drones, are being utilised to ensure the safety of employees during the decommissioning process.

These state-of-the-art drones are equipped with advanced technology, including Lidar sensors and radiation activity detection (RAD) dosimeters, and play a crucial part in mapping potential radiation hotspots within the nuclear site.

The procedure begins with the deployment of the Elios 3 drone which is equipped with Lidar sensors. These sensors allow the UAV team, who are located at a safe distance, to gather detailed data about the site's layout and structures. Additionally, the drone is equipped with a RAD dosimeter which enables them to detect and measure radiation levels in various areas of the facility.

One of the primary objectives of these radiation monitoring flights is to create accurate 3D models of the facility. The Lidar data collected by the drones is processed in a computer-aided design (CAD) system, generating comprehensive 3D models. These models serve as valuable tools for engineers, aiding them in making informed decisions regarding the decommissioning process.

Amanda Smith, the UAV equipment program lead at Sellafield Ltd's Engineering Centre of Excellence, emphasized just how important the use of drones in hazardous environments is. She stated, "Sending a drone into this tight and unused space rather than an employee in the first instance reduces risk, and also saves time and money." Amanda also highlighted the challenges faced by drone pilots during these missions, such as navigating through tight confined spaces and adapting quickly to changing circumstances.

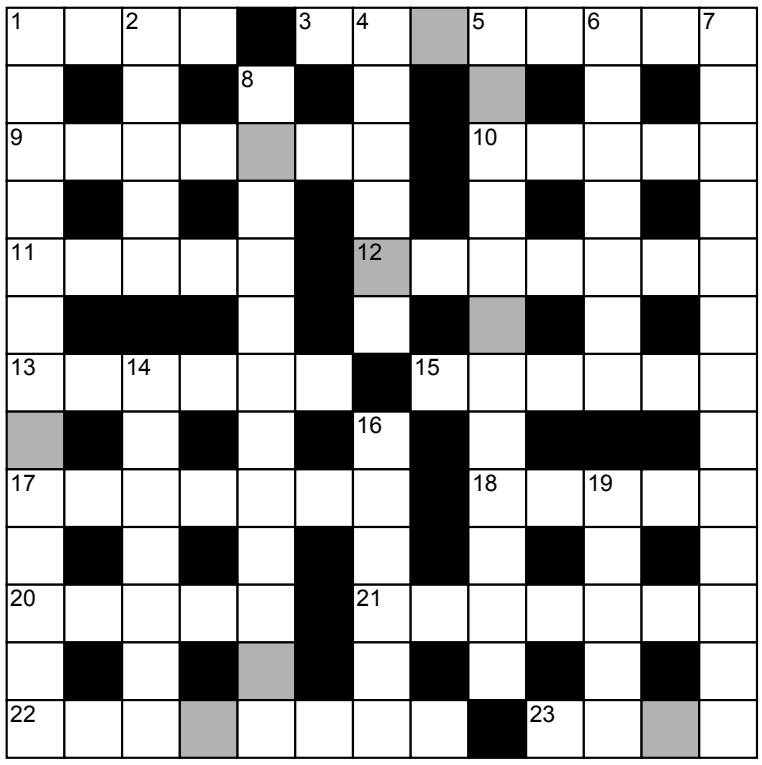
Sam Jay, UAV equipment engineer and chief pilot, underlined the significance of safety precautions in these intense flights. The drones are equipped with sensors that help prevent damage in case they come into contact with obstacles, such as pipework, within the facility.

Additionally, the radiation monitoring aspect of these flights is crucial in the identification of potential radiation hotspots in areas with unknown exposure levels. Tom Calverley, a radiometric physicist involved in the project, explained that the drones aim to pinpoint changes in dose readings within specific areas. If significant changes are detected, further investigations can be carried out to understand the reasons behind them.

The deployment of drones at the Sellafield nuclear site represents a pioneering approach to enhancing safety and efficiency during the decommissioning process. These UAVs, equipped with Lidar sensors and RAD dosimeters, not only reduce the risk to human workers and provide invaluable data and 3D models that aid engineers in making informed decisions. This innovative use of technology is not only transforming the way decommissioning is conducted and ensuring that radiation exposure remains within safe limits.

COFFEE BREAK

Crossword



Across

1 Witty remark (4)
3 Echinoderm with a distinctive shape (8)
9 French city (7)
10 Adornment (5)
11 Alphabetical list in a book (5)
12 Statement of commemoration (7
13 Supplied or distributed (6)
15 ___ Williams: former tennis star (6)
17 Modified (7)
18 Not together (5)
20 Lazed (5)
21 Augmented (7)
22 Recently married person (5-3)
23 Having pains (4)

Down

1 Accomplishment making one suitable for a job (13)
2 Epic poem ascribed to Homer (5)
4 Colours slightly (6)
5 Cooling device in the kitchen (12)
6 Copy; mimic (7)
7 Unenthusiastically (4-9)
8 By chance (12)
14 Lacking depth (7)
16 Fit for consumption (6)
19 Loft (5)

Unscramble

Unscramble the letters in the shaded squares in the crossword to reveal a themed word:

Codeword

2	10	11	21	20	10	4	19	■	15	21	4	6
6	■	24	■	21	■	1	■	■	■	13	■	26
9	6	9	5	4	■	11	1	5	9	10	19	11
25	■	6	■	10	■	10	■	■	■	14	■	6
■	■	21	■	3	■	3	5	22	22	10	6	9
15	1	11	11	6	9	25	■	10	■	19	■	10
6	■	■	■	19	■	■	■	9	■	■	■	1
9	■	21	■	11	■	13	21	7	18	5	6	9
10	9	16	19	1	20	6	■	1	■	4	■	■
1	■	10	■	■	■	4	■	4	■	8	■	14
23	6	20	10	12	1	23	■	10	4	5	9	6
10	■	14	■	■	■	6	■	5	■	19	■	2
7	9	1	17	■	15	9	1	20	15	11	13	25

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

1	2	3	4	5	6	7	8	9	10	11	12	13
									I			
14	15	16	17	18	19	20	21	22	23	24	25	26
						M	A					

A codeword is a completed crossword grid where each letter of the alphabet has been substituted for a number from 1-26. There will be at least one occurrence of each letter of the alphabet. Certain letters are given as starters. The solver must decipher the rest of the code to discover the words in the completed puzzle.

SuDoku

The rules of the game are simple: each of the nine blocks has to contain all the numbers 1-9 within its squares. Each number can only appear once in a row, column or box. Each vertical nine-square column, or horizontal nine-square line across, within the larger square, must also contain the numbers 1-9, without repetition or omission.

Every puzzle has just one correct solution.

		7	8			1		9
	4							
	6		4		2			
						3	6	8
1				7				5
8	5	6						
			1		3		5	
							8	
3		9			7	6		

Find this month's puzzle solutions on our website: soe.org.uk

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