

Issue 3

2024



Institute of
Explosives
Engineers

VOICE OF THE EXPLOSIVES INDUSTRIES

Official Journal of the
Institute of Explosives Engineers

EXPLOSIVES ENGINEERING



This Month's Features:

Apprenticeship Graduation

Three Peaks Challenge

Subterranean Blast Effects

The History of the Gunpowder Mills at Waltham Abbey



FULMINATION 2025

TICKETS SPONSORSHIPS OPPORTUNITIES TO SPEAK AT FULMINATION 2025

The all-encompassing conference for all sectors of the explosives industry is back in June 2025. To book your place visit the Fulmination 2025 website: www.fulmination.org

TUESDAY 10TH - THURSDAY 12TH JUNE 2025

**The East Midlands Conference Centre & Orchard Hotel
Beeston Ln, Nottingham NG7 2RJ**



VOICE OF THE EXPLOSIVES INDUSTRIES



FULMINATION



www.fulmination.org

TOGETHER, TOWARDS TOMORROW

Features

- 6** Apprenticeship Graduation
- 9** Three Peaks Challenge
- 12** Subterranean Blast Effects
- 22** The History of the Gunpowder Mills at Waltham Abbey

DISCLAIMER: The opinions expressed in Explosives Engineering are those of the authors concerned. They do not necessarily represent the views of the Institute.

Front Cover: Image of an archived edition of Explosives Engineering published in September 2004.

Given our continued growth, IExpE are now registered for VAT. There will be no increase in Membership Subscriptions as these are exempt, however other services provided by IExpE will now be subject to VAT.

Our Corporate Members

Institute of Explosives Engineers
 VOICE OF THE EXPLOSIVES INDUSTRIES

Institute of Explosives Engineers Registered Office:
 Ground Floor, Unit 1, Greyfriars Business Park,
 Frank Foley Way, Stafford, ST16 2ST
Company No: 07905911. Company Limited by Guarantee.
VAT Registration No: 450546405

Engineering Council

Welcome to our New Members

New Registrants

Matthew Rumke EngTech
Karl McDonald EngTech

New Members

Honorary Fellow

David Brown

Fellow

Stephen Glover
Nicola Roberts

Member

David Atkinson
John Baird
Simon Bishop
Jason Chia
Lawrie Clapton
Dominic Crawford- Vine
Rhys Tim Evans
Leslie Giffen
Stephen Grogan
Benjamin Groves
Darren Hanny
Daniel Homewood
Barry Jones
Grant Keogh
Seng Kiat Lim
Richard Le Page
Jonathan Lee
Samuel Long
Megan Marks
Adam McRae
Ryan Millward
Leigh Murphy
Richard Newe

Geoffery Newman

Jeffery Newman

Ryan Philips

Ian Robertson

Jamillah Robinson – Heather

Philip Smith

Joshua Snowball

Timothy Styles

Christopher Watkins

Raymond West

Douglas Williams

Nicholas Wood

Andre Zamith Cardoso

Technical

Jack Brown

Gethyn Jones

Jiarong Alvin Li

Samuel Skinner

Soon Mong Tan

Daniel Warman

Associate

Janine Huck

Cormac McLean

Leah McMillan

Student

Marcus Baker-Wells

Benjamin Flannigan

Tara Green

Gareth James

Jesamy Kellow

Andrew Myers

Leo Oliver Smith

IExpE welcome new Fellow, Nicola Roberts FIExpE



Nicola Roberts FIExpE

What is your career history?

I spent 22 years in the Army specialising in ammunition and explosives, deploying on operation tours to Kosovo, Iraq, Northern Ireland, and Afghanistan. My final job was overseeing the assurance and

inspection of the Army's c.1,500 ammunition storage facilities. I have recently started working at AWE with a focus on nuclear warhead safety processes.

To make the industry become more diverse what changes would you make?

Face to face interactions can have a significant impact in influencing people's career decisions. Creating opportunities in which those from minority groups can talk to people who work in the explosives industry might help sow the seed amongst the target audience.

What first attracted you to the industry?

The excitement offered by working in explosives was a real draw - and didn't disappoint. Working in ammunition also seemed like one of the more interesting and prestigious career fields in the

Army. The quality of soldiers recruited into the Ammunition Trade was another factor, as it offered the chance to work with some of the most intelligent, professional, and competent soldiers within the Army.

To date what have been the highlights of your career?

Working as a bomb disposal operator – it is such an exhilarating role and you get enormous satisfaction being the person who can return a disrupted situation to normal.

Becoming the first woman to pass the most advanced bomb disposal course.

Within the industry what would your future aspirations be?

To grow my knowledge and understanding within the nuclear explosives field, and encourage other women to join the IExpE.

What do you see the industry looking like in 10 years?

I expect to see a continuation of what's happening already, so increased visibility of the industry within society, a more powerful network to share knowledge and professional opportunities, and increased diversity.

Important Member Update: This is your last paper journal as we go digital

At IExpE, we are continuously seeking opportunities to enhance our environmental sustainability practices. As part of this ongoing commitment, the next edition of Explosives Engineering will be made available to our members in a digital format, delivered directly to the email address registered with IExpE.

Further details will be communicated through our website, social media channels and by email throughout October.

For members who prefer a printed version, an option to receive a hard copy will be available upon request. Please email info@iexpe.org to opt in.

To ensure you receive all relevant communications, kindly verify that your contact details are up to date.



Apprenticeship Graduation

With Martyn Sime

In July I was privileged to attend the graduation of students from Ordnance Munitions and Explosives (OME) level 4 (HNC) and level 6 (BEng Hons) Apprenticeship programmes at the University of Wales Trinity Saint David (UWTSD).

The development of the level 4 and 6 programmes as well as the level 7 (MSc) programme operated by Cranfield University, has the potential to be a real success for the sector, driving competence, capability and professionalism. We should all be grateful to the industry trail blazer group who, working as part of the Sector Skills Strategy Group (SSSG), developed the standards; to the academic teams at UWTSD and Cranfield who have turned those standards into practical apprenticeships; to the course leaders and university authorities who have identified and supported the value of the apprenticeship route; and also to those employers who have recognised the benefits that apprenticeships bring to their organisations and employees and who have made the courses viable.

It was interesting listening to the apprentices after the ceremony concluded. Their enthusiasm for the explosives discipline was clear to see and it was interesting to hear how they felt that the model of combining block study with practical work contextualised their learning and highlighted the relevance of the course material making it more interesting and easier to learn. As someone whose parents undertook their higher education via day and block release and who was lucky enough to briefly return to formal vocational education after quite a long break, I can appreciate how the apprenticeship approach significantly increases the value of the taught elements of the courses. In fact, I have seen it myself as one of my team members is undertaking the level 7 apprenticeship and is routinely employing and consolidating his learning in the day job, significantly accelerating his rate of development.

Some of you will remember former HM Chief Inspector of Explosives, Neil Morton. Neil's explosives career, before he joined the Health and Safety Executive (HSE), was firmly rooted in explosives manufacturing and he always ensured that his inspectors, whatever their background, understood that the culture and capability of an organisation often resulted from the skills, knowledge and behaviours of its frontline supervisors and first line of management. This is because they were often the ones called upon to solve day to day problems in the workplace.



Neil's lesson is one that has been brought home to me throughout my career as an inspector with HSE, too often in what can only be described as tragic circumstances. Incident investigations at both large employers and at small and medium sized enterprises often lead me and my colleagues to conclude that the people who have actually been making decisions in the run up to an incident might understand their process or the equipment or facility that they are responsible for, but rarely have the formal education in the properties of explosives that allow them to make robust decisions when that process or the conditions deviate from what was envisaged by the designer, or the equipment suffers faults or deterioration in its performance.

To my mind the apprenticeship programmes give us, as a sector, the opportunity to address some of those issues. In addition to educating new entrants into the sector, they are an ideal, government subsidised way, that organisations can upskill and develop the knowledge and behaviours of early and mid-career staff who make day-to-day decisions on the safe operation of facilities, plant and processes or who will, in future, design them. I therefore encourage all of you who want to develop your organisation's skills, knowledge and behaviours and who want to retain your brightest and best employees, to consider how the different apprenticeship programmes can help to deliver your aims and objectives and develop both your next and your current generation of explosives professionals.



You can find out more about the OME apprenticeship standards at:

<https://www.instituteforapprenticeships.org/apprenticeship-standards/ordnance-munitions-explosives-technician-v1-1>

<https://www.instituteforapprenticeships.org/apprenticeship-standards/ordnance-munitions-and-explosives-ome-professional-integrated-degree-v1-0>

<https://www.instituteforapprenticeships.org/apprenticeship-standards/ordnance-munitions-and-explosives-specialist-integrated-degree-v1-0>

You can find out more about the providers of OME apprenticeships at:

<https://www.uwtsd.ac.uk/programme-courses/undergraduate/motorsport-mechanical-and-electrical-engineering/apprenticeship-6>

<https://www.uwtsd.ac.uk/programme-courses/undergraduate/motorsport-mechanical-and-electrical-engineering/apprenticeship-5>

<https://www.cranfield.ac.uk/courses/taught/explosives-ordnance-engineering>

You can find out more about funding for apprenticeships at:

<https://www.gov.uk/government/publications/apprenticeship-funding> and from apprenticeship providers.



Spotlight on Apprentice Liaison Officer and Lecturer

Dave Holley FIEpE

Apprenticeship in Ordnance, Munitions and Explosives (OME), University of Wales Trinity Saint David (UWTSD)

Background:

Dave brings extensive experience and expertise to our team. With a robust background in Systems Engineering and chemistry, in a career spanning 45 years in both industry and academia. Currently, he works part-time as an Industry Liaison Officer at the University of Wales Trinity Saint David, collaborating with industry to train OME scientists and engineers. Dave was part of the team that created the OME apprenticeship standard and then worked to help deliver it post retirement from industry.

Experience: Dave's career at BAE Systems began as a Graduate Engineer in 1979 and culminated in the role of Design Authority for Energetic Materials, a key role in product safety assurance.

Throughout his varied career he was responsible for project design governance, product and process safety, pyrotechnics engineering and chemistry, development of new technologies, systems engineering, and knowledge management, leading and participating in multi-disciplined design teams.

He was recognised by BAE Systems as a Technical Specialist in Pyrotechnics and later became a BAE Systems Global Fellow. He is also a Fellow of the Royal Society of Chemistry, a chartered chemist and a Fellow of the IExpE. He has been a member of the International Pyrotechnics Society since 2000, a group of people who have provided friendship and support throughout his career.



Role:

Dave is committed to strengthening connections between our apprenticeship programmes and the industry. He ensures that our training aligns with the latest industry standards and needs, providing valuable insights and support to apprentices and organisations alike.

Key Skills:

- Industry liaison
- Product safety assurance
- Pyrotechnics engineering
- Systems engineering
- Knowledge management
- Technical training and development



Fun Fact:

Dave is the life and soul of the apprenticeship unit; he is always quick-witted with a tale to tell and passionate about education and industry collaboration and passing on his experience.



Dave has many interests outside work including Music, he's currently a roadie for "Moonlight Crisis", his son's band. Sport, he is a qualified cricket coach. Photography and Modelmaking, especially antique ships.

His extensive background and expertise make him a valuable asset to our team, ensuring our apprentices receive the highest quality training and support.

<https://www.uwtsd.ac.uk/programme-courses/undergraduate/motorsport-mechanical-and-electrical-engineering/apprenticeship-5>

**CONTINUE
READING...**

**CLICK HERE TO BECOME A
MEMBER AND READ FULL
VERSIONS OF
OUR LATEST JOURNALS**

BECOME A MEMBER