

Issue 2

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Institute of  
Explosives  
Engineers

VOICE OF THE EXPLOSIVES INDUSTRIES

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Institute of Explosives Engineers

# EXPLOSIVES ENGINEERING



## This Month's Features:

ATO Graduation

Addressing EOE Capability Gaps

Company Member Focus – UXO Control

IExpE Celebrates 50 years

Two new explosion-protected network devices



# 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](http://www.fulmination.org)

**TUESDAY 10<sup>TH</sup> - THURSDAY 12<sup>TH</sup> JUNE 2025**

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



VOICE OF THE EXPLOSIVES INDUSTRIES



**FULMINATION**



[www.fulmination.org](http://www.fulmination.org)

**TOGETHER, TOWARDS TOMORROW**

# Features

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**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 December 1997.

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

## Registrants

### Chartered Engineer:

Robert Charters – CEng  
Benjamin Scarfe – CEng

### Incorporated Engineer:

Neil Vickers – IEng

### Engineering Technician:

Riki Swindells - EngTech  
Ross Parkins – EngTech  
Bethany Bray - EngTech  
Niall Saunders - EngTech

## New Members

### Members

Stuart Atkins  
Jamie Brunton  
Paul Dunn  
Ryan Gallagher  
Stephen Hayward  
Paul Hocking  
Curtis Iggulden

Samuel Krarup  
Max Mayne  
Alan McAvoy  
Robert McClure  
Michael McNally  
Cher Chia NG  
Wen Ong  
William Sanson  
Ryan Selbie  
Callum Skea  
James Talman  
Hwa Heng Ben Tan  
Rebecca Thompson  
Aubrey Thyer  
Daniel Vaughan  
Declan Williams  
James Young

### Technical

David Burden  
Richard Marr  
Nathan Rowe  
Darren Shaw

### Associate

Daniel Humphries  
Edward Chiswell Jones  
Omar Mekkaoui

### Students

Stephen Turner  
Lucy Wyatt

### OME Students

Thomas Appleby  
Quin Dunbar  
Adam Foley  
Alexander Lamdin  
Emma Lane  
Michael Sloan

### Company

Safety Service Organisation  
UXO Control Limited

## IExpE Board Members 2024 – 2025

Martyn Sime – President  
Emma Willes – Vice President  
Steve Roberts – Vice President  
Nick Savage – Vice President  
Dave Welch – Executive Officer  
Rik Arthur  
Ruth Barber  
Andy Carr  
Ed Clinton  
Mark Hardman  
Helen Jones  
Robert Woolley



Image: Some of the IExpE Board recently attended a strategy meeting hosted at Ramora UK.

# ATO Graduation

## Ammunition Technical Officers' Course 64 Graduation Wednesday 27 Mar 24

The students of the Ammunition Technical Officers Course 64 arrived at the Defence Academy in September 2023; and were full of the joys of spring, having just spent the past two years eating, living and breathing with their soldiers – an all-encompassing occupation. They were then orientated to the Defence Academy, where they only had themselves to look after, and the small issue of passing the second longest course in defence! Their look forward and constant motivator was an amazing career as an ATO which spans supporting the Home Office on Op TAPESTRY, a Military Aid to the Civil Authority task, and Ammunition Technical Support to the multi-national effort on the Eastern and Middle Eastern Fronts.

As students on the ATO course they have had a staple diet of maths, chemistry, mechanics, thermo physics, wave theory, electricity and magnetism, to keep them entertained and out of trouble throughout the dark winter months; the thought of which is enough to give most people a nosebleed! Not satisfied with this high protein science-based diet they have also chosen in their own time to study for a Post Graduate Diploma in Explosive Ordnance Engineering with Cranfield University, which is testament to their determination and passion to become ATOs. Their boundless enthusiasm and dedication to education will ensure that they reap the benefits in the years ahead. In addition, as part of an ongoing professionalisation programme they will be strongly encouraged to pursue the Chartered Engineer status with the Institute of Explosive Engineers on completion of the ATO course.

They will rely on the education received at the Defence Academy every day of their future careers, as the lessons learned will be indelibly marked in

their minds, and at some point in the future will assist to save their lives, or lives of the soldiers that they are responsible for. The ATO course students have acquired a highly sought-after skillset that will be put to immediate use when they leave the second part of the course which takes place in Kineton. Most of the students will take their place on duty supporting the various police forces of the United Kingdom ensuring the protection of the public with regard to explosive safety. In the near future, they will have the opportunity to apply their skill set overseas, or work within the Weapons Intelligence arena – they truly have attractive career prospects.

### Top Student – The Chris Kavanagh Cup

In his memory, friends from the 1991- 92 ATO course have donated the Chris Kavanagh Cup for the student achieving the best results on the academic phase of the ATO Course. All students did exceptionally well to pass this academically challenging course. In 2024 the Top Student award, who will be awarded the Chris Kavanagh Cup, goes to Capt Fred Dickson RLC. A huge congratulations to him on his tremendous effort over the past two academic terms.



**External photograph:** *The Chris Kavanagh Cup – Awarded to the Top Student*

### Mystery item response!

I have seen the mystery item pictured on page 6 of the latest Institute journal. This item is known as a falling pin seismograph or balance pin seismograph. To work, each of the tubes would have a thick pin/cylinder of corresponding length balanced upright inside, placed so that they can fall over. Following a seismic event (in this case a blast) the approximate force can be measured by identifying the shortest pin to have fallen over.

I'm not really sure about the historical value, but I'm sure I've seen one in a museum somewhere.



- Jonny Dunn

# Get to know IExpE's new Board Members

Get to know our newest board members!



## Bob Woolley

### What is your career history?

I joined EPC-UK (then known as Exchem Explosives) back in 1998. Before then, I was working in the extractives industry where I received my first exposure to explosives. During past 25 years at EPC-UK there is very few parts of

the Business in which I have not worked.

### How did you get into a career within the energetics sector?

My first exposure to explosives was whilst working in a local quarry. This involved helping with the charging of blast holes. As bulk explosives had not yet reached the UK market, this was done with gelatin and water gel cartridges and hand mixed ANFO. This was then initiated using detonating cord and an electric detonator on the surface. This early exposure to energetic materials ignited an interest that has never waned since and as a result when I was approached by EPC-UK to see if I was interested in a role with them, I jumped at the chance and since then, I have diversified my experience across various operational and functional roles, nurturing a deep-seated commitment to safety in the production, storage, transportation, and utilisation of explosives. In October 2023, I celebrated 25 years with EPC-UK.

### What is your most exciting moment so far within your career?

I have been involved with many exciting projects during my time with EPC-UK and have played a part in the evolution of the Business over the past 25 years. Exciting may not be the right word, but one of the highlights has been delivering a talk at the SAFEX Congress in Helsinki in 2017 on burning ground safety. Another highlight was my promotion to Head of Health, Safety, Environment & Quality for EPC-UK and EPC Group North Europe.

### What inspired you to become a board member?

Over the course of my experience in civil explosives manufacturing and utilisation, I have observed many seasoned individuals with vast expertise leaving the field. This pattern is particularly noticeable in the

civil explosives manufacturing sector, where there is a misunderstanding about the safety of newer formulations like emulsions. I decided to join the board in order to use my experience and knowledge to help address this competency gap and revive the necessary skills and proficiency required by today's leaders, managers, supervisors, and technicians in the civil explosives industry.

### What are your aspirations as a board member?

My goal will be to not only preserve but also broaden the wealth of knowledge and proficiency within the explosives industry. This way, we can ensure our industry is equipped to address not just current demands, but also those of the future.



## Helen Jones

### What is your career history?

After a year of working in the MoD in the Armour Research Team, I decided to undertake a PhD at Cranfield University (Shrivenham) while simultaneously becoming a full time Ordnance Researcher. These years were spent designing and conducting

explosive and ballistic trials, analysing results then presenting findings at various conferences or seminars. Subsequently I re-joined the UK MoD in IGMR for a couple of years as EA for fixed forward firing weapons before settling into my current role as Chief Defensive Systems Engineer at Leonardo Helicopters. Currently I am responsible for integration of all OME on our rotary wing platforms as well as all explosive licensing and storage.

### How did you get into a career within the energetics sector?

During my Masters Degree at Cranfield University RMCS, I had visions of becoming a fire investigator. Unbeknown to me at the time I was fortunate enough to be awarded a body armour themed thesis topic, which meant I started working on the Small Arms Ranges.



**What is your most exciting moment so far within your career?**

It is hard to pick just one. Graduating with a PhD in Explosives Engineering while working full time and having a one-year-old daughter has to be one of my biggest professional accomplishments, but highlights range from detonating munitions under a Tornado aircraft, to firing crew-served weapons airborne from a helicopter. I have been lucky enough to travel the world with work and been privileged to work in some unusual and beautiful places.

**What inspired you to become a board member?**

I have been a member of IExpE for over a decade but never felt connected to the institute. I decided to become a board member to gain visibility of the community, put some of my expertise out to the industry and possibly demonstrate other areas in the field of explosives work.

**What are your aspirations as a board member?**

Increase involvement from those who like myself do not necessarily feel connected with or represented by the Institute.

**Ed Clinton****What is your career history?**

I started out as an explosives engineer when I joined the British Army in 2005. The Army's Ammunition Technician trade has an unparalleled range of explosive engineering jobs from assurance, policy and legislation, to processing, audits and inspections and; perhaps

our more known roles in, Explosive Ordnance Disposal, inclusive of Improvised Explosive Devices. I have been exceptionally fortunate and I have spent time in the majority of these disciplines over the last 20 years whilst being tested on operations around the world.

More recently, over the last 4 years I have had the huge honour of being the head of this circa 500 strong trade, where I have championed work force strength,

education, capability and training. For me, this role is the pinnacle of explosives engineering in the Army.

**How did you get into a career within the energetics sector?**

I didn't enjoy College! I looked for other options and always had an interest in the Sciences and wanted the more practical side of things. The British Army was on a recruiting drive and the Ammunition Technician trade was recruiting; it was the £500 signing on bounty that got it over the line at 17 years old. Jokes aside, the opportunity to work with explosives, drive robots and one day wear a "bomb suit" in addition to travelling around the world is what drew me in. Looking back, I would do it all over again.

**What is your most exciting moment so far within your career?**

There have been many! However, the rendering safe of an Air Dropped Weapon in London and subsequently being awarded the Queens Commendation for Bravery is up there.

**What inspired you to become a board member?**

The ability to influence and make positive changes. In my current role I have seen how critical it is being in the right positions to advocate for what is needed and having the understanding to drive through meaningful change. I hope to bring this to the table as a board member.

**What are your aspirations as a board member?**

Firstly, demystifying the application process for Eng Tech, IEng and CEng. Having pushed hard to professionalise the AT trade in recent years, one of the biggest barriers for our engineers was the understanding of the process. I therefore asked for support and we implemented trade workshops to simplify the application process with great returns. I would like to do something similar for the wider industry to help professional explosives engineers be recognised for their achievements.

A second driver will be to consolidate networks and ensure we promote best practice and lessons learned throughout the industry. Open and honest cultures are; in my opinion, critical to success and safety at all levels. I want to give back to an industry that has looked after me for many years.

# Addressing EOE Capability Gaps

**The annual Research and Development (R&D) Industry Day for the Defence Weapons, Ordnance, Munitions, and Explosives (WOME) Engineering School (DWES) was held on Friday, 22 March.**

Hosted at the Ammunition Hall of the Defence Academy, part of the Defence College for Military Capability Integration (DCMCI), the event saw participation from military, academic, professional, and industry partners. This event represented the climax of extensive R&D efforts carried out by participants of the Explosive Ordnance Engineering Master of Science programme and the Ammunition Technical Officers.

With the onset of the academic year, course participants were presented with a question related to R&D, conceived by industry and governmental partners. Students were then afforded two academic terms to conduct their literature reviews, alongside designing and performing the experiments necessary to address these questions.

This year, the calibre of submissions was particularly high, with questions posed to course participants by various prestigious bodies including:

- Defence Equipment and Support (DE&S)
- Naval Authority & Technology Group
- Defence Intelligence
- National Protective Security Authority
- 8 Engineer Brigade

Emphasising the essential connection between DWES, industry partners, academia, and the Institute of Explosives Engineers (IExpE), explored themes encompassed:

- Investigation into Helmet Test Methods and Structural Testing Rigidity
- Kinetic Defeat of Small Un-crewed Aerial Systems
- Explosively Formed Projectiles and Terminal Penetrative Effects
- The Impact of Additional Fragmentation on Device Lethality
- Subterranean Blast Modelling

The event commenced with a welcoming speech by Pete Norton, the module leader and Fellow of the Institute of Explosive Engineers, who extended his gratitude to all attendees, especially the project sponsors, supervisors, and students. He also thanked the IExpE for generously providing lunch and refreshments at the Defence WOME Engineering School.

The presentations proceeded smoothly, evidencing the thorough rehearsal in the preceding days. Following each presentation, there was an opportunity for questions, allowing sponsors to deeply examine the outcomes of the projects they had supported and enabling students to showcase their comprehensive knowledge. This was a crucial academic assessment for a master's level module, wherein students' criticality, depth, and breadth of knowledge were continuously evaluated by supervisors and module leaders.

During lunch, participants reconvened at the WOME School for refreshments and the chance to explore the stands prepared by each group. These stands, which complemented the presentations, will remain in the WOME School throughout the year, detailing the projects' objectives, the methodologies employed in their investigations, and their findings and conclusions.

The day concluded with the team researching Explosively Formed Projectiles (EFPs) – noted for having “pushed the bounds of defence understanding” who received their award from Lt Col Steve Roberts MBE, head of the Defence WOME School. He closed the day by reiterating his thanks to all those involved and commending the high quality of the presentations.



*Image captions:*  
1. Penetration of EFP  
2. ATO Presentations



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