

ANNUAL HIGHLIGHTS

▲ 2023



Foreword

Professor Robin Clark

Dean and Managing Director of WMG



This was another exciting year for WMG and one in which we continued the process of change to strengthen the foundations for our future.

Having started the journey with our strategy in 2021, which focused our work on the themes of Sustainability, Digitalisation and Workforce Transformation, attention turned to our leadership and organisation in 2023. Our refreshed Executive Team, Governance and Research structures will enable us to produce the very best results for those we work with, whether in Research or Education. We have more to do, but I believe many of the key components are now in place.

It has been a strong year in both Research and Education, with many and increasingly diverse opportunities being realised. Our work in the battery space continues to lead the way nationally, and our work considering the safety of intelligent transport is having an international impact. The Coventry Very Light Rail project is entering the next phase and our new activity in the field of Agricultural Technology

(joint with the University of Warwick's School of Life Sciences) is starting to flourish. These are just a few examples, but ones with critical relevance to our global future. It is this work, and the associated Education, that has drawn visits from key political, industrial and academic figures throughout the last year.

Student recruitment has remained strong, drawing talented individuals from around the world, as well as those engaged with our Degree Apprenticeship Programmes. Our excellent Postgraduate Taught Student Survey results for 2023 are a testament to the quality of the applied learning that takes place in WMG.

This year has seen a marked increase in travel internationally as I have visited partners and met many new people whilst sharing our work in WMG. India continues to be an international focus and I hope that our many conversations will start to bear fruit during 2024.



WMG's Executive team. From left to right: Professor Paul Jennings (Research), Louise Ledden-Rocks (People and Culture), Professor Robin Clark (Dean and Managing Director), Paul Bradley (Finance), Professor David Greenwood (Industrial Engagement and HVMC), Professor Gill Cooke (Education)

Graduations are always special, and this year I have not only attended the Warwick graduations on campus, but those in Malmesbury for our Dyson cohort, as well as Singapore, Beijing and Hong Kong. The reach of WMG truly is global!

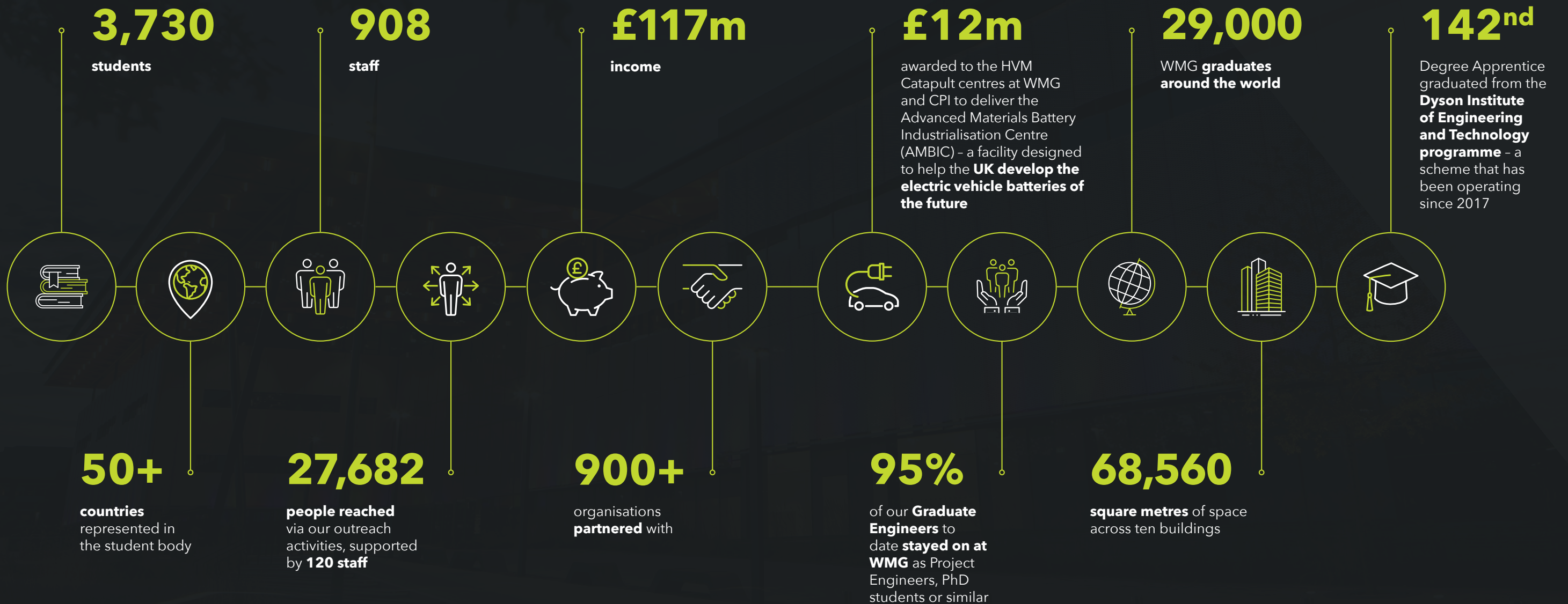
Looking forward, the opportunities are ever increasing. Being a Centre of the High Value Manufacturing Catapult is core to our plans and we look forward to clarity from the next government - whoever that might be - to enable us, and UK industry to capitalise on the opportunities

with confidence. The relevance of our research work is unquestionable, positioning us well with government and with companies both large and small. I think Higher Education will see changes in the coming years as the focus becomes more about the workforce of the future than the attainment of an academic qualification. A shift and an opportunity I think for which WMG is well placed.

“Our work in the battery space continues to lead the way nationally, and our work considering the safety of intelligent transport is having an international impact.”



A year in numbers



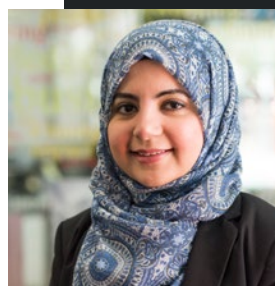
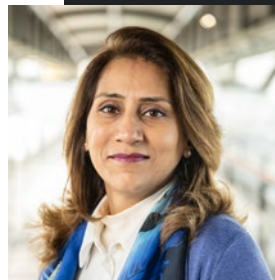
Valuing people

Our aim: To build a positive working culture and a supportive, dynamic and stimulating environment based on the principles of diversity, inclusion and respect.

Proud members of Athena SWAN

The Athena SWAN Charter is a framework which is used across the globe to support and transform gender equality within higher education and research. By being part of Athena SWAN, WMG is committing to adopting the Charter's key principles within our policies, practices, action plan and culture.

We have been a proud member of the Athena SWAN Charter since 2013 and WMG currently holds a department Silver Award.



"Our people are at the heart of everything we do. We pride ourselves on building an open and inclusive environment at WMG for our people, students and partners to ensure we retain and attract outstanding individuals who exemplify our values."

Louise Ledden-Rocks
Director of People and Culture

Highlights

Dr Fatemeh Shahbazi, Assistant Professor of Engineering at WMG, was announced among the first members of the new UK Young Academy – a network of early career researchers and professionals established to help tackle local and global issues and promote meaningful change.

Zachary Parkinson, WMG's Workshop Manager, was appointed to the Technical Council at the Institute for Technical Skills and Strategy (ITSS). Its aim is to support and enable the UK to be a global superpower in science, engineering, and the creative industries.

Dr Asima Iqbal, Assistant Professor at WMG and **Dr Freeha Azmat**, Associate Professor at WMG were awarded the Collaboration and Co-production Fund by Warwick Institute of Engagement (WIE) to deliver a transnational Youth Support Programme (YSP) in collaboration with an international community partner, Dr Naima Qureshi, a University of Warwick alumna. This project aims to offer a comprehensive skill development programme for the local unemployed youth community in Lahore, Pakistan.

From top to bottom: Dr Fatemeh Shahbazi, Assistant Professor of Engineering; Zachary Parkinson, Workshop Manager; Dr Asima Iqbal, Assistant Professor; Dr Freeha Azmat, Associate Professor

In 2023, we recruited

192

new colleagues and 18 new graduates to WMG



WMG has

908

staff and **3,730 current students**



In 2023

34

WMG employees **received long service awards**



95%

of our **Graduate Engineers** to date **stayed on at WMG** as Project Engineers, PhD students or similar upon completion of the programme



Find out more about our people

World-leading and innovative education

Our aim: To support the changing needs of a diverse community of learners and employers by providing innovative engineering, technology and management education programmes to ensure people can gain the right skills for their careers, their organisation and for life.

Accreditations and recognition

- Teaching at the University was rated 'outstanding' by the UK Government's Teaching Excellence Framework (TEF).
- We were ranked 22nd in the world and 4th in the UK in the influential QS 2023 rankings for International Trade Education for our MSc International Trade, Strategy & Operations.
- Our BSc Cyber Security programme achieved full certification from the National Cyber Security Centre (NCSC).
- The Chartered Institute of Logistics and Transport accredited our MSc Supply Chain and Logistics Management.

Schools outreach

- We took part in over 81 events and celebrated 10 years of delivering the Royal Institution Engineering Masterclasses.
- We developed two new events: an Engineering Industry Day where we welcomed 200 students from groups under-represented in engineering and STEM careers, and a Work Experience Week where students from local schools gained valuable insights into engineering pathways.

New skills programmes

- New cutting-edge short courses in battery abuse testing, laser beam welding and Xray-CT technologies were launched as part of the WMG Skills Centre.
- Our portfolio grew to over 50 specialist courses and, since being established in 2022, the WMG Skills Centre has worked with over 2,000 learners from more than 60 different organisations.

"Our Education Team are ambitious, leading and implementing innovative education. Through collaboration with industry and other departments we ensure we equip our learners with the skills and knowledge to make effective contributions to work and society."

Professor Gill Cooke
Pro-Dean Education



Collaboration and achievements

The **first cohort of Degree Apprentices in BSc Digital and Technology Solutions** graduated and an impressive **44% achieved a first-class degree.**



Sophie Powell, a recent BSc Cyber Security graduate, was named **Cyber Student of the Year** at the **National Cyber Awards 2023.**



We **partnered** with **Telford College** to support them to address skills needs around electrification and automation by working with employers in the region to specify the type of development needed and where that is best delivered.

"Our unique partnership gives local employers access to innovative skills solutions - a significant positive impact on the advanced manufacturing industry."

Janet Stephens
Deputy CEO, Telford College



We welcomed

2,040

new students across all our programmes



In January, we celebrated the **graduation of**

1,264

students, followed by a **further 562** in the summer



We worked in **partnership with**

22

businesses on Degree Apprenticeships



Discover our range of education programmes

Excellent and impactful research

Our aim: To work with government, academia and industry to ensure that our science and research expertise benefits society, the environment and the UK economy, and is shared with partners across the world.

Metrology and 3D imaging delivering multi-sector impact

The Centre for Imaging, Metrology, and Additive Technologies (CIMAT) is one of many WMG teams using advanced technology, tools and techniques, and applying them to deliver impact for diverse sectors.

Archaeology: Working with researchers at the Ca' Foscari University of Venice, WMG has used cutting-edge scanning technology to analyse and digitise ancient artefacts from the Altino heritage site, a pre-Roman Era settlement that marks the origin of Venetian society.

Healthcare: A cadaveric study utilised medical CT scans, image processing, optical CMM measurement and in-house developed hip simulations to create patient-specific targets for personalised hip replacement.

Forensics: WMG's Forensic Centre for Digital Scanning and 3D Printing works in partnership with West Midlands Police, using digital prototyping tools and techniques to generate forensic evidence to support the criminal justice system.



"Our work at WMG spans the whole research pipeline: from fundamental science, to applied research with partners, to delivering real-world impact - our work makes a difference. The expertise of our teams and our outstanding facilities and infrastructure enable us to solve challenges faced by industry with a world-class academic approach."

Professor Paul Jennings
Pro-Dean Research



Application

Advanced plastic recycling process enables a sustainable, low carbon, circular plastic economy

WMG's Sustainable Materials and Manufacturing team has worked with Mura Technology to develop a unique, advanced recycling solution known as HydroPRS™, which shows an 80% reduction in global warming potential (GWP), when compared to incineration.

Decarbonisation of Dover port

WMG is part of a consortium to investigate the ability of ferry traffic from the Port of Dover to be decarbonised. WMG has identified viable energy pathways, from alternative fuels to electrification and quantified the emissions reductions.

Ground-breaking safety assurance framework for automated transport systems

WMG brought together 38 UK and international organisations from industry, academia, government, and regulation to develop a common safety assurance framework for autonomous ships, aircraft, and vehicles. It encourages government policy to realise the safe introduction of automated transport systems in a joined-up manner.



122
awards
over £38m



34
new **doctorates** joined our community of over 252 PhD, EngD and MRes researchers



198
published **articles**

WMG's research is focused on five core themes:

- ▶ **Data:** connectivity and application
- ▶ **Electrification:** efficiency and affordability
- ▶ **Manufacturing:** productivity and resilience
- ▶ **Materials:** sustainability and circularity
- ▶ **Transport:** safety and integration

It's underpinned by several dedicated expert research areas.



Find out more about WMG's research

Positive relationships that develop regional resilience

Our aim: To be a leading partner in developing regional resilience in the Midlands by way of outreach and work with local organisations.

Jaltek case study

WMG and Jaltek partnership leads to:

- £3 million turnover boost
- Redesign of the layout for a new facility using digital twin technology
- Internship to secure major new clients
- Securing Knowledge Transfer Partnership (KTP) funding (approx. £80k per year) to implement innovative change management

“We’ve had a really positive experience working with WMG, our intern Nayan did such a great job that he is now working at Jaltek permanently.”

Stephen Blythe
Business Manager at Jaltek



Find out more about support for SMEs



A focal point for the West Midlands

Sir Keir Starmer visits WMG with Labour’s mayors and mayoral candidates, meeting researchers, technicians and students.



Prime Minister Rishi Sunak visits WMG to announce the UK rejoining Horizon – the EU’s flagship research scheme.



The West Midlands’ new devolution deal was signed at WMG by the Levelling Up Secretary **Michael Gove MP** and Mayor **Andy Street**.



374

companies supported by our SME Group’s Digital Innovation for Manufacturing programme, creating **634 new jobs**, safeguarding **2,655**, and contributing **£220m** of GVA to the region



£32m

GVA, creating **371 new jobs** and upskilling a further **1,054 people**



200

engineering internships completed with our SME group

Regional leadership

- ▶ WMG is leading the Electric Light Vehicle and Battery Storage cluster for the West Midlands Combined Authority (WMCA).
- ▶ Through our Net Zero Innovation Network, WMG’s SME group helped West Midlands manufacturers cut energy consumption. WMG also developed the Business Energy Advice Service for energy intensive businesses, leading a West Midlands pilot with plans for a national roll-out – the project aims to tackle the immediate energy crisis and, in the longer term, help businesses decarbonise.

Transforming industry and wider society

Our aim: To develop and deploy the technologies and skills that will create the industries of the future. To transform the sustainability, productivity and competitiveness of the sectors with which we engage through collaboration with companies and research bodies.

Revolutionising personal transport

Coventry Very Light Rail (CVLR) provides a highly cost-effective way of deploying electric trams in city centres. A combination of a lightweight vehicle and an innovative track structure means that only shallow digging is required to lay tracks in city centres – avoiding the need to disturb underground pipes and cables.

The CVLR track demonstration site at WMG has validated the installation and maintenance cost of the track system.

The track design, which uses advanced material and manufacturing processes, is not only more affordable to install by about £30m per mile, but enables rapid installation - minimising disruption to local properties and businesses.

Our work on micromobility also encourages the use of smaller, lighter and more affordable vehicles for short distance commuting and last mile deliveries. We're working on two government projects to make recommendations on micromobility battery safety and e-scooter technical regulations, and are looking forward to hosting our fourth annual micromobility event in September 2024, with sponsors NatWest.

Both sectors draw on the electrification, manufacturing, sustainability and technology experts at WMG, and both work across the breadth of our capability, in developing regulations, products, companies and supply chains, with organisations big and small.



Triumph Motorcycles' prototype TE-1 won the Electric Motorbike of the Year award at the 2023 GQ Car Awards. The bike is a product of a unique collaboration between Triumph Motorcycles, Williams Advanced Engineering, Integral Powertrain Ltd, and WMG - and was funded by the Office for Zero Emission Vehicles through Innovate UK.



Launch of Warwick Agri-Tech - a joint venture with the School of Life Sciences, bringing manufacturing automation and crop science together to combat labour shortages and improve food security and public health.



We've helped shape the work of **UK Government's Battery Strategy Taskforce** and been cited in the House of Lords' review of the UK's transport electrification policy, helping create a more robust approach to the Electric Vehicle transition.

"WMG has always focused its mission on industrial impact, and this year has been no different. As the UK's industry emerged from Covid and supply chain shortages, we helped it to innovate and grow."

Professor David Greenwood
Director of Industrial Engagement and CEO of the WMG High Value Manufacturing Catapult centre.



105

research and development partnerships began in 2023 (worth £32m)



Over

470

SMEs and over 390 larger organisations engaged with

New long-term partnerships



Find out more about WMG's work with industry



Valuing
people



World-leading and
innovative education



Excellent and
impactful research





Positive relationships
that develop regional
resilience







Transforming
industry and
wider society

Thanks to Adam Gasson, The Faraday
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