Welcome to WMG

July 2019
Who are we?

- Founded in 1980
- Academic department within the University of Warwick
- A unique mix of academics and industry-experienced engineers, guided by professional project managers
- Working with over 1,000 regional, national and international industry partners
- 650+ staff working in 9 buildings
- 350+ technical staff from Jaguar Land Rover and Tata Motors European Technical Centre co-located
What do we do?

- We work in multi-disciplinary teams with businesses and organisations across the globe, large and small, to help solve their challenges.
- We provide education, research and knowledge transfer.
- We help in a variety of ways:
  - Research
  - Develop
  - Advise
  - Educate
  - Collaborate
Education – workforce of the future

WMG Academy for Young Engineers
University Technical College (UTC)
Caters for 14-19 year olds
Business-like and business-led (supported by industry)

Degree Apprenticeship Centre
Opening Sept 2019:
Multidisciplinary engineering-related degree apprenticeships
Academic study with practical experience

Undergraduate
Full-Time Degrees
in all Engineering disciplines and Business Management

Full-Time Postgraduate
Intensive one-year MSc programmes in Business, Management and Engineering

Research Degrees
Industry sponsored PhD and Engineering doctorate (EngD) programmes

Professional and Executive
Bespoke modules developed with industry
Our research teams

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High Value Manufacturing Catapult

7 world class research centres working together to:

▶ Drive growth in manufacturing
  ▶ Helping companies of all sizes take new technologies to the market
▶ Accelerate and de-risk innovation
▶ Provide access to:
  ▶ World class equipment
  ▶ The UK’s best research knowledge
  ▶ Unique mix of highly experienced engineers, scientists & technicians
  ▶ A collaborative environment for innovation – cross-sector; cross-technology; and across the whole supply base
▶ £130m of core funding, 5 year plan
Our focus on Low Carbon Mobility

- Lightweight Structures
- Advanced Propulsion
- Autonomous Vehicles
- Energy Storage and Management

- Design
- Materials
- Manufacturing
- Systems
- Business
Our target sectors

Extensive experience in the automotive industry is being successfully transferred to other sectors

Underpinned by broad range of digital capabilities
Our SME support

Dynamic team, dedicated to supporting small and medium-sized enterprises in the West Midlands and beyond.

- Raising awareness of new tools, techniques, and industry best practice through demonstrations, workshops, and collaboration networks
- Collaborative, fixed-term, challenge-specific projects
- Collaborative R&D within a consortium

Impact 2012:2017

- 240 Created or saved jobs
- 230 New products and processes
- 110 SME internships
- 789 SME interventions
- 15,000 SMEs in WMG networks
- 5 Start ups
For almost four decades, we have history working with industry on the challenges they identify

“Academic excellence with industrial relevance has always been at the heart of what we do...it’s what makes us unique.”

Professor Lord Kumar Bhattacharyya, Chairman and Founder (1941-2019)
Thank you!

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Advanced Propulsion Systems

Our expertise
- Electric machines
- Power electronics
Vehicle Energy Facility

Research and test facility capable of testing whole hybrid vehicle powertrains, components and subsystems.

- Collaborative Birmingham Science City Energy Efficiency and Demand ERDF project

- Provides OEMs, suppliers and researchers accurate and repeatable assessment of existing and emerging technologies

- Objective assessment of driveability using hardware-in-loop (HiL) methodology
Energy Storage and Management

Unique to UK facilities cover from raw materials/powder right through to characterisation and recycling/second life of battery packs

Our expertise

- Fundamental Chemistry
- Process Scale-Up
- Battery Characterisation
- Cell to Module to Pack
- System Performance
- Re-use and Recycling

Unique to UK facilities cover from raw materials/powder right through to characterisation and recycling/second life of battery packs.
Energy Innovation Centre

The leading UK facility for battery research and development

- Over £60m investment, unrivalled breadth and depth of capability for battery innovation and energy storage research

- WMG research covers all parts of the battery manufacturing R&D process

- A key focus is enabling scale-up from research at fundamental lab scale (g) through to industrial scale (kg) manufacturing

- Full systems development: BMS / HIL advanced modelling and simulation
Connected and Autonomous Vehicles

We take a multi-disciplinary approach to autonomous vehicles in order to understand the full research and practical implications.

Our expertise

- Human-machine interfaces and driver-in-the-loop
- Security, robustness, validation and verification of complex systems and software
- Direct and indirect sensing
- Data analysis
- Legal and ethical frameworks
- New business opportunities
Advanced Materials for Lightweight Structures

Our expertise:
▶ Advanced joining and machining techniques
▶ High fidelity multi-material / process characterisation
▶ Next-generation high-strength steels
▶ Injection-moulded polymers reinforced by nano materials
▶ Additive layer manufacturing solutions
▶ Complex whole systems modelling, metrology and simulation
Automotive Composites Research Centre

- Dedicated facility within WMG's Materials Engineering Centre
- Developing carbon fibre reinforced composite manufacturing technologies for high volume automotive applications
- State-of the art, industrial scale equipment to carry out process development and demonstrations
  - 1700 tonne Engel V-Duo press facility:
  - Hennecke Streamline 65 resin injection
  - CNC 2 dimensional cutting table
  - Robotic pick and place cell for ply assembly
  - Automated fibre preforming facility
Digital industry at WMG

Intelligent Devices & Machines
Effective & Efficient Manufacturing
Dynamic Supply Chains
Connected Products & Services
Innovative Business Models

Our competencies

Manufacturing performance
Protecting intellectual property
Systems security
Data analytics
Modelling and simulation
Design
Visualisation
Automation
Autonomous systems
Process workflow
Manufacturing processes
System integration
Product verification

Sustainable results

Leadership
Education and skills
Industrial impact
Our industry partners
Organisations we work with