

# Invest West Midlands

## ADVANCED MANUFACTURING



**At the centre of the UK's largest automotive, rail and aerospace clusters, the West Midlands is at the vanguard of solving many of the key global future mobility challenges.**

Establishing a legacy for invention at the height of the first Industrial Revolution, today the region remains a powerhouse of productivity and innovation. A leading location for goods exports outside London and the South East, the West Midlands' manufacturing sector generates £10.4bn GVA for the national economy – more than any other cluster across the country.



**USA, Germany & China are the region's top countries for exports.**

A 211,000-strong workforce accounts for 11.3% of all local employment – well above the national average of 7.9%. Specialising in machinery, electronics, and transport, the region's extensive and multi-layered supply chain reflects its deep-rooted expertise.

Manufacturers at all stages of the growth cycle – from homegrown startups to historic SMEs – support a network of global heavyweights that call the West Midlands home, with Jaguar Land Rover (JLR), Aston Martin, Rolls-Royce Control Systems and Collins Aerospace among the leading local players. A collaborative ecosystem of academic-industry partnerships underpins the scale of the sector, offering a fertile landscape to commercialise new technologies from research labs to market.

### Key Strengths

#### UK's leading manufacturing sector

Worth £10.4bn and with the UK's largest specialist workforce, the region's manufacturing industry is the beating heart of the nation's industrial economy, propelled by exclusive R&D assets from high-profile industry, academic and public sector leaders.

#### Automotive capital

The UK's leading centre for automotive innovation and production with a proportion of employment five times higher than that of England as a whole, the West Midlands is at the vanguard of next generation vehicle technologies, delivering transformational innovation in Connected and Autonomous Vehicles (CAV); battery propulsion; and electrification, backed by a Joint Venture Partnership to build a Gigafactory.

#### HS2 and rail supply chain

The epicentre of the UK's new High-Speed 2 rail network (HS2), the region is on track to transform the future of train travel through world-class R&D in digital systems, light rail and Very Light Rail (VLR), and decarbonisation.

#### Aerospace expertise

Specialist knowledge in aircraft control systems, propulsion and metals have created a nationally significant aerospace cluster, turbocharged by transferrable knowledge from the local automotive supply chain.

#### Unrivalled talent

Access to talent is evergreen – the established local employment base is fuelled by over 32,500 STEM students following engineering and technology subjects at the region's eight universities each year, as well as a vast network of vocational training facilities teaching the latest emerging technologies.

#### Industrial transformation

The region's status as the UK's first multi-city 5G testbed is a platform for Industry 4.0, unlocking automation and robotics technologies for use on factory floors. Collaborative R&D partnerships between the region's academic institutions and private sector businesses are driving new products to market, supported by exclusive real-world testing facilities.

### Key opportunities

#### Automotive



**Over 21% of all the UK's automotive parts and accessories manufacturers are situated in the West Midlands – the most of any UK region.**

The West Midlands is the engine of the UK's automotive industry. A third of all British-made cars and one in four UK engines roll off the region's production lines, powered by a 46,500-strong workforce. £13.7bn of cars and parts from the region were exported around the world in 2019, accounting for 36% of the UK's total for the sector.

A critical mass equalling 21% of all automotive parts and accessories manufacturers nationally combines with the region's central location to serve the industry's biggest names – many of which call the West Midlands home.

Jaguar Land Rover, BMW, Aston Martin Lagonda, Geely (LEVC and Polestar) and Changan all have major operations in the region, while notable plants such as Oxford Mini and Toyota Burnaston are on the doorstep. This significant cluster of Original Equipment Manufacturers (OEMs) has established a deep-rooted network of Tier 1 to Tier 4 manufacturers specialising in powertrain and battery propulsion; prototyping and product design; power electronics and electronic machines; and CAV technologies. Cascading opportunities throughout the supply chain for businesses of all sizes and ambitions to access, these high-profile OEMs have extended investments in local facilities in recent years, driven by the region's growing capabilities as the UK's first Future Mobility Zone.

2020 saw Coventry & Warwickshire identified as a nationally strategic location where foreign companies can access CAV modelling and simulation expertise, under the UK Government's High Potential Opportunities programme to boost overseas investment in the sector. Housing the country's most extensive 5G enabled real-world trial environment for self-driving technology, investors can benefit from a series of facilities exclusively designed with industry collaboration in mind to advance the design, build, testing and validating CAV solutions – such as the Centre for Connected & Autonomous Automotive Research (CCAAR), jointly run by Coventry University and Horiba MIRA.

Meanwhile, the region is also championing the UK's electrification ambitions through a landmark Joint Venture Partnership seeking investment to build a Gigafactory in Coventry, just a stone's throw from JLR's global headquarters and the UK Battery Industrialisation Centre. Offering up to 5.7 million sq ft of production space, the West Midlands Gigafactory has been designed with a maximum 60 GWh per annum of battery manufacturing output once at full capacity and will offer 'cradle to cradle' battery recycling services. The facility will also be powered by 100% green energy from sources including solar, wind and grid supplied renewables.

Additional investments in electrification from the region's existing big-name brands confirm its credentials for a Gigafactory; in 2020 JLR opened its new Battery Assembly Centre near Birmingham, while LEVC launched a new commercial electric van line from its HQ in Coventry.

## Rail



**2029 HS2 will enable faster Journey times from London to Birmingham**

Signalling change in the UK's rail network, the West Midlands is the centre point of the country's new High-Speed 2 line (HS2). Europe's largest infrastructure project, HS2 will bring London within a 38-minute travel time.

HS2 builds on an already strong hub of local rail expertise; the West Midlands is home to the highest number of railway related jobs of any UK regional authority area. Rail supply and systems are the region's largest sub-sectors, which HS2 has catalysed further investment in, establishing a 350-strong dedicated supply chain of businesses engaged in project works. Further growth is anticipated, with business of all sizes proactively being invited to bid for an additional £3bn of commercial contracts in areas such as railway systems and rolling stock services.



**40,000 railway related jobs, the highest of any other regional authority area**

Simultaneously, the region is developing critical emerging rail technologies to decarbonise and enhance connectivity of the UK's railway network. In digital systems, the West Midlands' 5G testbed is offering businesses exclusive access to trial and test applications of connected devices, operations, infrastructure and passenger services.

A region-wide pilot to install a Very Light Rail transport network in Coventry City Centre is also underway, backed by R&D from the University of Warwick and an industry-first VLR National Innovation Centre in Dudley, designed to house forward-thinking companies on the cusp of cutting-edge design and invention. Other projects include the UK's first hydrogen train, HydroFLEX, led by the University of Birmingham.

## Aerospace

A nationally significant cluster of aerospace control systems expertise has seen the region take off in the sector. Moog, Meggitt, Collins Aerospace and Rolls-Royce Control Systems are all West Midlands- based, creating a diverse supplier network of specialist metals, castings, tools and precision manufacturers also capable of serving a vast spectrum of highly regulated industries, such as defence, marine and nuclear.

Unique to the West Midlands is the opportunity to apply insights from its established automotive base. Knowledge on light-weighting and precision components from the region's Formula 1 micro-cluster has sparked new aerospace applications, bolstered by commercial R&D from the Universities of Birmingham, Wolverhampton and Coventry's Manufacturing Technology Centre.

## Industry 4.0

The West Midlands' 5G testbed is kickstarting a digital revolution in manufacturing, with initiatives like the installation of purpose-built private 5G network at Coventry's Manufacturing Technology Centre allowing manufacturers to explore multi-edge computing and wireless connectivity applications.

Elsewhere, the region's extensive base of industrial strengths has fostered a robust landing ground for robotics and automation firms, attracting overseas technology giants like KUKA Systems, FANUC and Wolf Automation. In turn, their presence, with others, has swelled the local portfolio of systems specialisms to encompass sensors, SCADA (Supervisory Control And Data Acquisition), telemetry, predictive maintenance and embedded systems, offering a cross-cutting spectrum of expertise on the doorstep.

## Centres of Excellence

### The Manufacturing Technology Centre (MTC)

Based in Coventry the MTC is part of the High Value Manufacturing Catapult (HVM Catapult) established by Innovate UK – the UK's innovation agency – and supports research commercialisation with real-world testing facilities in additive manufacturing; digital manufacturing; and robotics and autonomous systems.

### The UK Battery Industrialisation Centre

The £130m (UKBIC) in Coventry is the UK's leading facility for battery development from prototype scale to mass production. UKBIC is a key part of the Faraday Battery Challenge, a UK Government programme to fast track the development of cost-effective, high-performance, durable, safe, low-weight and recyclable batteries.

### HORIBA MIRA and Mira Technology Park

The Nuneaton (Warwickshire) based leads engineering, research and test services for the automotive, defence, aerospace and rail industries. Electrification and energy; powertrain and emissions; vehicle resilience (cybersecurity); and CAV are among its leading expertise. The Park hosts a number of UK-first, real-world testing facilities specialising in battery abuse; climactic vibration; electric cycling; and self-driving technologies.

### The Birmingham Centre for Railway Research and Education (BCRRE)

Based at the University of Birmingham the BCRRE is leading critical investigations into alternative fuels for rail, launching the UK's first Hydrogen train – HydroFLEX – in 2020 in partnership with rolling stock provider, Porterbrook. Alongside decarbonisation, the Centre is advancing digitisation as the home of the **Centre of Excellence** for Digital Systems – a collaboration with the UK Rail Research and Innovation Network to advance simulation tech; data integration; cybersecurity; smart monitoring; and autonomous systems.

### Quinton Rail Technology Centre

The UK rail industry's only privately-owned and independent testing site. Based in Warwickshire and connected to the national rail network, the Centre facilitates impact testing, product development and training, and is currently working with Cisco on an exclusive "trackside to train" data transfer project.

### The Very Light Rail National Innovation Centre

Supporting growth of the VLR industry, the VLR Innovation Centre offers an onsite 2.2km test track; conference space; research labs; and advice bureau for local authorities and transport planners. The Centre's facilities are being used to explore the development of autonomous trains and 5G applications for enhancing safety.

### Warwick Manufacturing Group

Part of the University of Warwick – is a HVM Catapult member pioneering research in hand with industry across the energy; materials & manufacturing; digital technologies; and intelligent vehicles markets. The University hosts the **National Automotive Innovation Centre** – the largest automotive research facility in Europe, uniquely driven by a partnership between WMG, Jaguar Land Rover, and Tata Motors European Technical Centre.

## Talent

The West Midlands is bursting with talent, offering access to a deep pool of skilled professionals and up-and-coming industry talent. Eight universities produce over 57,000 graduates, over half of which choose to stay and kickstart their careers in the region. A further 127,000 graduates from 20 universities within a one hours' drive boost the region's pipeline.

In manufacturing, 32,570 students followed engineering and technology courses at the region's universities in 2019. Qualifications in research disciplines spanning mechatronics; electronics and electrification; computer systems, software, and cybersecurity; and automation and AI are among the opportunities on offer.

The region also leads on-the-job training provisions, with a network of further education and technology colleges offering apprenticeships in partnership with esteemed manufacturing firms in the local area. A number of sub-sector centres additionally ready new talent in specialist subjects, such as additive manufacturing at the MTC in Coventry, and high-speed rail engineering at the National College for Advanced Transport & Infrastructure in Birmingham.

Contact [InvestWM](#) to speak to our team of sector specialists, who offer a free support service to businesses investing in the West Midlands.