





**INVEST  
GLASGOW**


Advanced Manufacturing Innovation District Scotland


# ENGINEERING, DESIGN AND ADVANCED MANUFACTURING

## KEY REASONS TO INVEST IN GLASGOW'S THRIVING ENGINEERING, DESIGN AND ADVANCED MANUFACTURING SECTOR

 Glasgow, Scotland's largest city, has a global reputation as a centre for engineering and design excellence. This reputation stems from its role as one of the world's first industrial and heavy engineering centres that earned the city the title of **"workshop of the world"**.


 The Glasgow City Region is renowned for its innovative, creative and successful approach to engineering, design and manufacturing across a range of specialist sectors because it is home to a range of **global and indigenous companies alongside world-class universities and colleges**, generating a flow of well qualified, highly skilled engineers and designers leading the way in industry-relevant innovation and knowledge.


 Except for London, **Glasgow is the only UK city to have two universities ranking in the top 35 nationally.**

 **A world-class engineering, design and advanced manufacturing business development environment** consisting of state-of-the-art industry infrastructure and extensive R&D centres of excellence underpinned by a robust and innovative 'triple helix' partnership of industry, academia and the public sector.


 Glasgow City Region is home to just under **3,000 manufacturing companies** with a combined turnover of over £10 billion,

employing over 55,000 people with a GVA contribution of £3.5 billion.

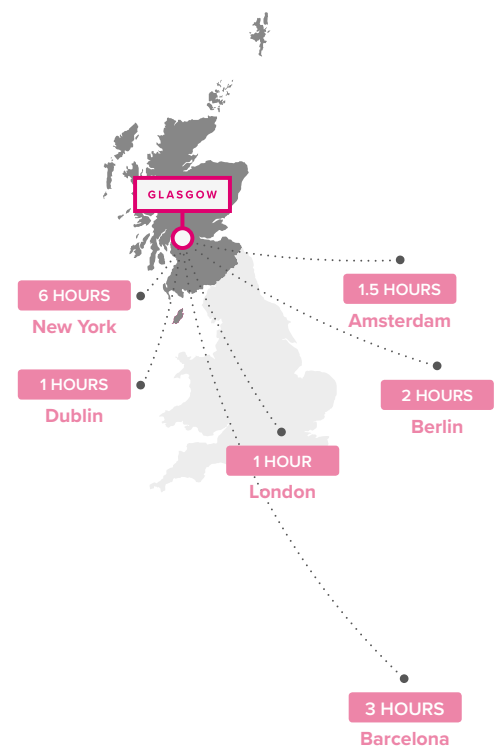
 Developing specialist sectors locally and deploying them in global markets is a key attribute of Glasgow and Scotland. Many successful companies have typically either grown from, or are strongly connected to the city's internationally recognised **academic expertise** and infrastructure.

 Access to the very best talent pool, Glasgow is **ranked no. 1 of the UK's 10 core cities** for producing the highest number of both students and graduates in engineering, design and advanced manufacturing.

 **With a rate of more than 46%, Glasgow ranks in the top 10% of regions in Europe** for the proportion of working age adults with at least a degree-level qualification.

 Tailored solutions that meet your business requirements provided by a **well-established and sophisticated business support ecosystem** including access to extensive inward investment incentives including job creation and R&D grants, low taxes, dedicated business support and much more.

 Glasgow offers a **high quality of life coupled with cost-effective business costs** – labour and property costs are significantly lower compared to Edinburgh, Manchester and South East England.



### An International Strategic Location

Most European destinations are within two hours of Glasgow, offering short journey times and low cost travel.

## A DYNAMIC MIX OF WORLD-RENOWNED ENGINEERING, DESIGN AND ADVANCED MANUFACTURING COMPANIES

4c Design  
 Aggreko  
 BAE Systems  
 Barr + Wray Ltd  
 Clyde Space Ltd  
 Clydeunion Pumps  
 Coherent Scotland Ltd  
 Doosan Babcock

Forrest Precision Engineering Co Ltd  
 Fraunhofer Gesellschaft  
 Halcrow Group Ltd  
 Henry Technologies Ltd  
 Hewlett-Packard  
 Howco Group  
 Howden Group  
 Jacobs Engineering Group

Lockheed Martin UK  
 M Squared Lasers Ltd  
 Rolls-Royce  
 Selex Communications (Marine) Ltd  
 Spire  
 Thales Group  
 Weir Group  
 WGM Engineering Ltd

### SPECIALIST SECTORS IN GLASGOW

- Electronics, Photonics and Sensors
- Aerospace
- Shipbuilding and Marine Energy
- Advanced Manufacturing
- Chemicals
- Quantum Technologies
- Space and Satellite Technologies
- Intelligent Transport Systems
- Medicine Manufacturing

### LARGE SECTOR CLUSTER

- **55,300 people** are employed by **2,975 manufacturing companies** within the Glasgow City Region.
- Manufacturing companies generate **£3.5 billion** in GVA and a turnover of over **£10.1 billion** (Scottish Government's Businesses in Scotland Release/Scottish Annual Business Statistics).



Advanced Forming Research Centre

### R&D CENTRES OF EXCELLENCE

• One of only seven UK high value manufacturing catapults, the **Advanced Forming Research Centre (AFRC)** is a centre of excellence in innovative manufacturing technologies, R&D, and metal forming and forging research to support the design and manufacture of products, across a range of sectors including aerospace, automotive, energy, medical devices and marine. The AFRC is a collaboration between the University of Strathclyde, leading multinational engineering firms including Rolls-Royce, Boeing, TIMET, Aubert & Duval, Barnes Aerospace, Bifrangli and DMG Mori, the UK Government and Scottish Enterprise.

• **Fraunhofer UK Research Ltd**, the headquarters for all UK based Fraunhofer research centres and the gateway to the Fraunhofer network was established in Glasgow in 2012. The first UK Fraunhofer research centre, the Fraunhofer Centre for Applied Photonics was established at the same time at the University of Strathclyde to develop the UK's most innovative research to a stage where it can be adopted by industry.

• Underlining Glasgow's strong offer in the photonics industry is the **University of Strathclyde's Institute of Photonics**, established in 1995 as a commercially focused research partnership between the university, industry and government specialising in advanced laser engineering, photonic materials and devices and neurophotonics.

• The **£10m Centre for Sensors & Imaging Systems (CENSIS)** based at the University of Glasgow is a key part of the developing innovation landscape in Scotland. CENSIS enable industry innovators and university researchers to collaborate at the forefront of market-focused sensors and imaging systems innovation, developing products and services for global markets.

• The **Scottish Centre of Excellence in Satellite Applications** is innovating for a better world empowered by satellites and

seeks to foster economic growth and launch new business development opportunities.

• **The Industrial Biotechnology Innovation Centre**, an industrially led consortium consisting of GSK, Ineos, Ingenza, Sustainable Solutions, Applikon, HGCA, SASOL, Lucite International and 4 leading Scottish Universities led by the University of Strathclyde has a specialist role to stimulate the growth of the sector in Scotland to £900m by 2025.

• **The Off-shore Renewable Energy Catapult** is the UK's leading technology and research centre for off-shore renewable energy.

• The world's first multi-million pound **International Max Planck Partnership**, involving five Scottish universities and five prestigious Max Planck Institutes in Germany, is of major importance in enhancing Scotland and Glasgow's reputation as a world leader in the development of new quantum technologies and fundamental science in Scotland.

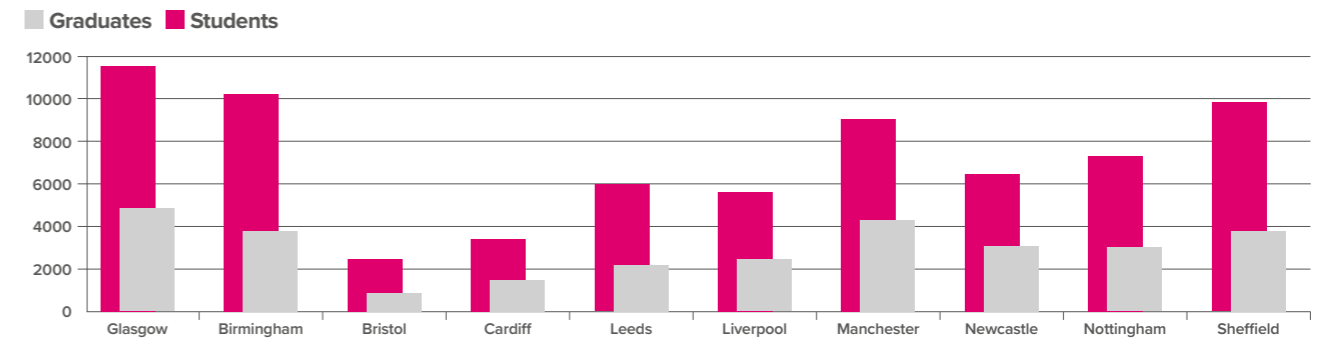
• **The Scottish Research Partnership in Engineering (SRPE)**, a collaboration between three regional university centres in Glasgow, Edinburgh and Dundee to enable focused access to large-scale, high quality experimental facilities representing major capital investment in equipment such as hydrodynamics tanks, structural test facilities and nano-fabrication units.



### WORLD-CLASS TALENT POOL

Of the UK's 10 core cities, Glasgow is ranked No. 1 for both the number of higher education sector students and graduates (HESA).

#### Engineering, design and advanced manufacturing students and graduates 2016/2017



### WORLD-CLASS EDUCATIONAL INSTITUTIONS

- Glasgow's universities have long been a hub for driving innovation in this sector. The University of Glasgow is home to the oldest School of Engineering in the UK, delivering world-class engineering education for more than 150 years and the University of Strathclyde is recognised as one of the UK's leading technological universities with seven of its eight engineering departments ranked in the top 10 in the UK on research power.
- The University of Strathclyde's engineering school is the biggest in Scotland and one of the largest in the UK. The university has also instituted an Engineering Academy, a partnership between

- the university, industrial partners and Glasgow's college network, offering a non-traditional pathway to an engineering degree through the academy.
- Product design in engineering degree courses are jointly delivered between the University of Strathclyde and the Glasgow School of Art.
- Glasgow Caledonian University has a dedicated School of Engineering and Built Environment that has earned an excellent reputation allied to the university's strong connections to industry leaders.

### STATE-OF-THE-ART FACILITIES AND INFRASTRUCTURE

- A new Glasgow City Innovation District is bringing together government, industry and academia to harness and build upon a base of research expertise, industry engagement and a pipeline of high-quality, work-ready graduates. Phase 1 of the Glasgow City Innovation District has seen the creation of two purpose-built buildings: the £13m 'inovo', and the University of Strathclyde's £89m Technology and Innovation Centre (TIC), acting as a hub for around 450 renewables engineers and project managers, and 850 energy academics and researchers.
- The TIC building is a hub for world-leading research, transforming the way academics, business, industry and the public sector collaborate. The centre works to find solutions to challenges that matter in areas of economic importance, including power and energy, health and manufacturing, and helping companies compete globally. inovo is a dedicated space offering Grade A office accommodation. Major companies already based within the TIC, include the Offshore Renewable Energy Catapult, SSE and Scottish Power/Iberdrola.
- The Digital Design Studio at the world renowned Glasgow School of Art is a postgraduate research and commercial centre that exploits the interface between science, technology and the arts to explore imaginative and novel uses of 3D digital visualisation and interaction technologies.
- The Advanced Manufacturing Innovation District Scotland, near Glasgow Airport, will be an internationally recognised centre for innovation, research and manufacturing in Scotland's industrial heartland and home to two new national innovation centres, the National Manufacturing Institute for Scotland and the Medicines Manufacturing Innovation Centre which will be the catalyst for

- the development of Scotland's advanced manufacturing and life sciences sectors, providing support for businesses of all sizes and connecting all of Scotland's universities and colleges.
- The £65m National Manufacturing Institute for Scotland will be an industry-led international centre of manufacturing expertise. Research, industry and the public sector will work together to transform skills, productivity and innovation, attracting investment and making Scotland a global leader in advanced manufacturing.
- A new £56m state-of-the-art Medicines Manufacturing Innovation Centre (MMIC) will be established over the next three years. MMIC will accelerate development of a new generation of manufacturing processes for the UK's pharmaceutical and fine chemical industry. It will be led by the Centre of Process Innovation in partnership with the University of Strathclyde, the Medicines Manufacturing Industry Partnership, and founding industry partners, AstraZeneca and GSK.
- The new £9m Lightweight Manufacturing Centre is set to transform the manufacturing industry in Scotland. Run by the University of Strathclyde's Advanced Forming Research Centre, this specialist centre gives Scottish companies a competitive edge in new manufacturing processes for lightweight materials such as titanium and carbon fibre, which are increasingly being used in the aerospace, automotive, oil and gas and renewables industries.
- Glasgow's Power Networks Demonstration Centre (PNDC) is an internationally recognised smart grid acceleration facility that utilises innovative systems testing capability and research to de-risk grid technologies and ready them for deployment on power networks.

## 📍 STRATEGIC INTERNATIONAL LOCATION

- Glasgow has a rich heritage and strong track-record in the field of engineering, design and advanced manufacturing and is renowned as an international centre of excellence.
- Glasgow is the only metropolitan area in Scotland. The population of the greater Glasgow conurbation is around 2.3m, accounting for 43% of the country's entire population.
- Glasgow is one of the top performing cities for attracting FDI, ranked number 6 in the UK in 2018 (outside London).
- Glasgow is Scotland's main transport hub, with excellent road, rail, shipping and air services. The city is easily accessible from 3 airports serving over 150 worldwide destinations with Glasgow Airport only 15 minutes away from the city centre.
- As a designated assisted area, Glasgow qualifies for Regional Selective Assistance, a discretionary grant towards capital and/or revenue costs of new business projects in Scotland – usually between 20-30% of total costs.

## 🍷 COST-EFFECTIVE AND AN EXCELLENT QUALITY OF LIFE

- Out of 20 major cities across the UK, Glasgow offers young professionals the highest level of disposable income (CV Library 2018).
- Significant labour and property costs savings compared to Edinburgh, Manchester and South East England.
- Glasgow is the 19th most millennial friendly city in the world, and 3rd in the UK (Nestpick Millennial Cities Index 2018).
- Glasgow is the 12th most 'Hipster' city in Europe (Movehub Hipster Index 2018).
- Great Natural Beauty – the archipelago of the Clyde Coast and Islands and the Highlands' stunning scenery is on the city's doorstep, just 45 minutes away.
- Glasgow ranks in the top 25% of cities globally for social cohesion, well ahead of the established world cities of London and Paris (IESE Cities in Motion Index 2018).
- The Finnieston area of Glasgow was named one of the top 10 places to live in Scotland in 2018 and the hippest place to live in Britain in 2016 (Sunday Times).



“ *Fraunhofer Gesellschaft is Europe's largest provider of applied research and development services. In 2012 Fraunhofer UK Research Ltd was created along with the Fraunhofer Centre for Applied Photonics in Glasgow. The location is ideal, partnering with the excellent applied science and engineering of the University of Strathclyde, state of the art facilities in the Technology and Innovation Centre, excellent communications links with the rest of the UK, and access to a highly skilled and educated workforce. Fraunhofer CAP has grown beyond expectations and is delivering prototype lasers, and sensing and imaging systems, building many links between businesses in Glasgow to Germany and well beyond.* ”

Simon Andrews, Executive Director, Fraunhofer UK Research Ltd

## 🏠 STRONG ECOSYSTEM OF BUSINESS INCENTIVES AND SUPPORT

- Investment incentives (Regional Selective Assistance, Venture Capital Fund and Equity Funding)
- R&D and innovation grants
- Tax incentives including Tax Credits and Patent Box (pay up to 56% less corporation tax)
- Lowest corporation tax rate of the G20 countries
- Location and property advice
- Access to partners and networks
- Access to Scottish research capabilities
- Investment advice
- Business development support
- Staffing and recruitment support and subsidies
- Dedicated aftercare and account management

Glasgow City Council's Inward Investment Team provides one point of contact for all companies interested in Glasgow's engineering, design & advanced manufacturing sector. For more information, please contact:



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Invest Glasgow

PEOPLE  
MAKE  
GLASGOW



INVEST  
GLASGOW