



The
University
Of
Sheffield.

/AMRC
Cymru.

World-class manufacturing innovation for Wales and the UK



amrc.co.uk

“AMRC Cymru is a game-changer.”

It will ensure a thriving industry base that will be a catalyst for economic growth across the supply chain, increasing productivity and supporting the competitiveness of Welsh industry at home and around the world.”

Ken Skates AM,
Minister for Economy and Transport.



The team behind the University of Sheffield AMRC Cymru is a powerful partnership between the Welsh Government, local authorities, growth and enterprise agencies and a world-leading R&D centre in advanced manufacturing.

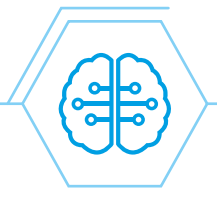
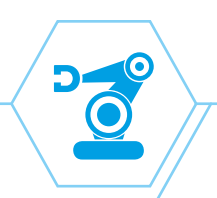
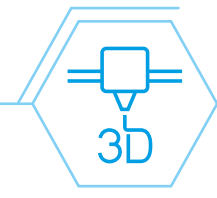
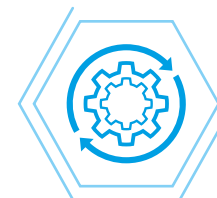
As a cutting edge R&D facility, AMRC Cymru will be driven by industry, for industry.

It will provide an open innovation platform accessible to all manufacturers for the whole of Wales.



Our mission is to:

- De-risk R&D investment in innovation to drive step-change improvements in productivity, quality and sustainability
- Accelerate the adoption of Industry 4.0 technologies including:
 - Robotics and automation
 - Artificial intelligence and machine learning
 - Augmented and virtual reality
 - Digital twins, simulation and modelling
 - Additive manufacture
 - Connected smart factories and supply chains
- Stimulate inward investment from high-value added manufacturing brands
- Attract and inspire research talent from across Wales and the wider world
- Support the expansion of a high-value added skills base, widening opportunity for all and acting as a magnet for inward investors and fast growing scale-ups



The research team operating AMRC Cymru is part of the University of Sheffield Advanced Manufacturing Research Centre and a member of the High Value Manufacturing (HVM) Catapult, a consortium of leading manufacturing and process research centres backed by Innovate UK.

Our ability to draw on the proven R&D talent of the University of Sheffield AMRC and the seven-member HVM Catapult, provides immediate strength in depth to support the Welsh Government in its ambition to make North Wales the epicentre of innovation driven, advanced manufacturing.

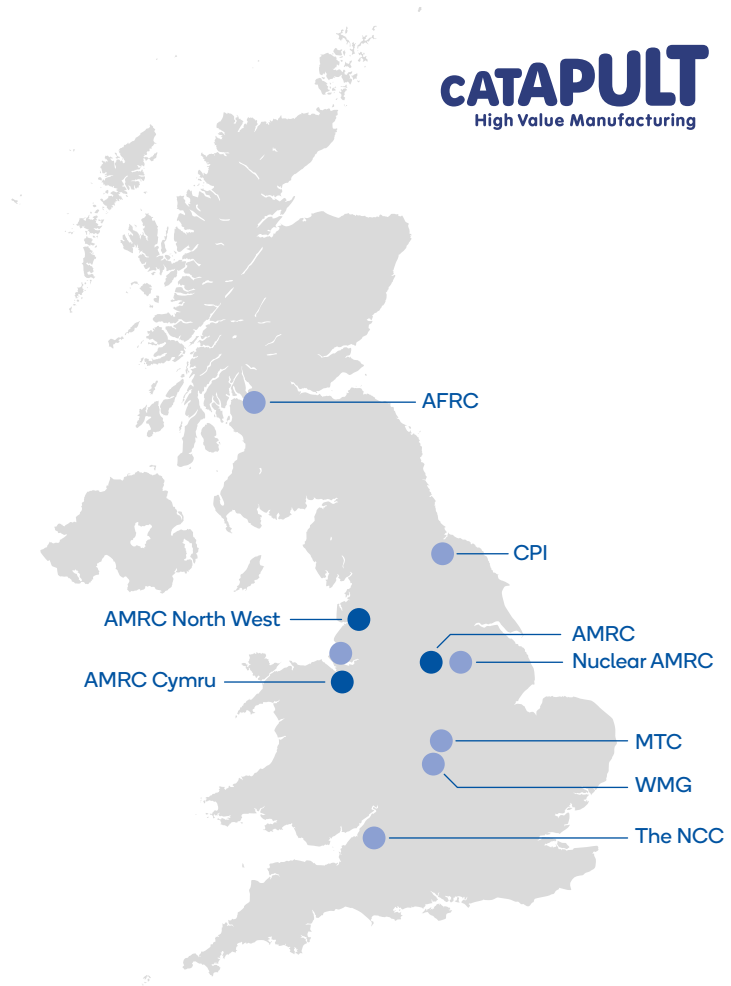
The AMRC's global reputation as the go-to-place for aerospace R&D, whether in new engine manufacturing processes, inspection and verification, materials and methods for wing manufacture and connected factory development, makes us a natural fit for North Wales which is a national hub for aerospace engineering and manufacturing excellence.

But the R&D talent at AMRC Cymru will be accessible to all. Working with the Welsh Government, our goal is to drive innovation across the wider economy of Wales, supporting sectors such as food and drink and automotive, where Wales has great strengths, along with the extended SME supply chains that form the backbone of the economy.



Our capabilities:

- Additive Manufacturing
- Castings
- Composite Manufacturing
- Design and Prototyping
- Integrated Manufacturing
- Machining
- Manufacturing Intelligence
- Metrology
- Microscopy
- Structural Testing
- Training



High Value Manufacturing Catapult

- AFRC** – Strathclyde
- CPI** – Wilton/Sedgefield
- AMRC** – Sheffield / Rotherham / Preston / Broughton
- Nuclear AMRC** – Rotherham / Birkenhead
- MTC** – Ansty
- WMG** – Coventry
- The NCC** – Bristol



AMRC Cymru supports the Welsh Government's economic strategy of Prosperity for All. Our R&D talents are available to any manufacturer who wants to reduce waste, raise productivity, improve quality and make the transition towards zero-carbon while moving up the value chain.

We will help create a more competitive and resilient Welsh economy, building on its strengths in:

- **Aerospace**
- **Automotive**
- **Food, drink and packaging**
- **Metals**
- **Fabrication**
- **Construction**
- **Infrastructure**
- **Civil nuclear**
- **Medical technologies**



Food, drink and packaging

Our goal is to tackle the package and plastic challenge by

- Reducing/replacing single-use plastics with environmentally friendly materials
- Designing recyclability into the production process
- Reducing the amount of plastic waste entering the environment

Reduction in resource consumption

- Waste reduction (labour, water, energy and product)
- Data capture and real-time monitoring
- Predictive control for recipes and production

Reducing reliance on manual and contract labour

- Simple effective automation
- Movable and collaborative robotics
- Autonomous vehicles in low-risk and high-care essential but non-value added tasks

Effective use of data

- Product authentication
- Online quality detection
- Digital auditing and recording
- AI and ML for food and drink



The importance of aerospace and our goal to triple programmes by 2021

High Value Manufacturing Catapult Aerospace Strategy

- Continue to optimise existing technologies to support the continuous improvement of conventional aircraft
- Develop environmentally sustainable fuels and optimised flight and ground operations to reduce the environmental impact of increasing air transportation
- Develop 3rd generation aerospace technologies to secure the UK's position on future air transport vehicles and systems
- Define skills strategy to address future demand and ageing profile

£35bn
turnover

£30bn
exports

39%
growth since
2012

123k
direct
employees

3.9k
apprentices

© Airbus 2019 (Polly Thomas)

The UK is the second largest aerospace economy in the world and AMRC Cymru's mission is to ensure that this position is consolidated and strengthened.

It builds on, and has access to, the R&D talents across the HVM Catapult network: but has sharp focus on supporting Airbus and its supply chain in retaining the UK's reputation as a global leader in wing manufacture, and the skills and jobs that support this.

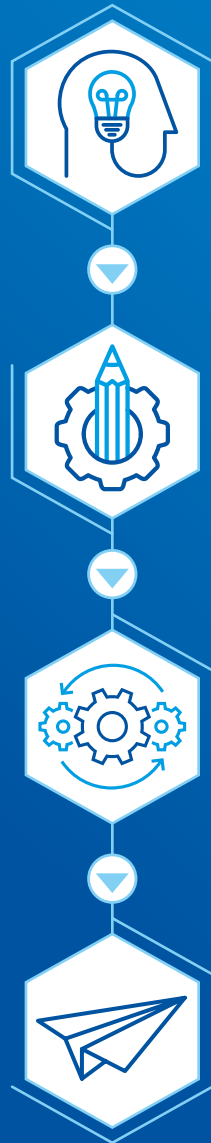
While Aerospace Wales including Airbus accounts for 8% of the UK Aerospace economy, there is tremendous scope for the industry in Wales to capture more research funding to drive innovation across a range of aerospace disciplines from wing production and propulsion to maintenance repair and overhaul.

AMRC Cymru, as part of the High Value Manufacturing Catapult, has a mission to develop projects that address this gap by tripling Aerospace Wales' engagement in Aerospace Technology Institute programmes by 2021.

© Airbus 2019 (J.V. Reymondon)

How we will deliver this...

...from insight to delivery



INSIGHT PHASE

- Fixed price three or six week package of work
- Understand partners' unique manufacturing requirements
- Establish which advanced manufacturing technology can be applied
- Present concepts and impact of those technologies being applied

DESIGN PHASE

- Fixed price four, six or ten week package of work
- Detailed designs of concepts down selected in previous phase
- Detailed assessment of the impact of the technology on the business

IMPLEMENTATION PHASE

- Individually costed packages of work
- Build and installation of technology solutions
- Testing and refinement of the technology solutions

DELIVERY PHASE

- Individually costed packages of work
- Transfer of technology to partners' facilities
- Training/On boarding of partner workforce

Who will deliver this...

...our leadership team

Andy Silcox: Research Director

Andrew has worked in the field of automated aero-structure assembly since 2003 - firstly with KUKA Systems and, from 2011 to 2018, with the Manufacturing Technology Centre as Chief Engineer for Aerospace. Andrew has led KUKA or MTC activity on a number of major collaborative-projects.

Nick Tyson: Commercial Director

Having spent many years as an engineer in various manufacturing organisations across Europe, firstly with Airbus and then Raytheon, Nick joined the local FE College where he became Assistant Principal in 2016. Nick then played a leading role in the development of one of the largest FE Engineering and Construction departments in the UK supporting the growth and development of 'Learners' and 'Apprentices' within the sector in Wales. Nick is currently chair of the MAKE UK Heads of Engineering group and is an active governor for a local High School.

Jason Murphy: Operations Director

A chartered mechanical engineer who spent the last 10 years working in Scotland as the Director for a leading exporter of engineering solutions to the Energy sector. He has a track record for growing business turnover and profit and he is acutely aware of the challenges that SMEs face when it comes to making decisions about investing in both people skills and product/process innovation to improve productivity. Jason is incredibly excited to work with the AMRC Cymru co-directors and highly talented team in the drive to make 'high value' the standard for the Welsh industrial base.



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Llywodraeth Cymru
Welsh Government

CATAPULT
High Value Manufacturing

AIRBUS

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