

# Where construction meets digital manufacturing

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ADVANCED MANUFACTURING RESEARCH CENTRE

# AMRC research is helping increase the construction sector's pre-manufactured value.

As standardisation and pre-manufactured value come to the fore and the construction sector adopts a manufacturing mindset, the AMRC is uniquely placed in being able to help transform the way buildings and infrastructure of the future are delivered.



Building on the AMRC's global reputation for the way we have revolutionised productivity in other high-value manufacturing sectors, we are now helping our construction partners to de-risk investment decisions, and accelerate the early adoption of digital technologies to improve both performance and quality.



### **Our capabilities**

Our state-of-the-art facilities allow the construction sector to model, test and prove new ideas, with an offsite or onsite focus, in the safety of a non-production environment.

#### **Augmented reality**

Assisting the workforce by delivering information through smart connected tools and devices; used for complex assemblies where automation is not applicable.

#### **Virtual reality**

To develop virtual environments to support iterative product design, assembly process design and training, maintenance simulation and remote support.

#### Integrated large volume metrology

Including the design, development and process improvement of inline inspection and verification techniques used during the manufacture of large components and complex assemblies.

#### **Robotics and automation**

Automation of traditional processes to achieve rapid, repeatable production and assembly of building components, including robotic machining, drilling, sealant application, fixturing and assembly.

#### **Digital twins**

Optimising performance of physical assets by utilising real time information.

#### **Manufacturing informatics**

Using accurate live captured data to optimise and selfconfigure a multi-variable production environment.

#### **Manufacturing intelligence**

Developing numerical and simulation models to support projects and research in operations planning, facilities planning, supply chain modelling, cost analysis and trade-off analysis.

#### Intelligent machining

Sophisticated digital simulation tools that integrate the different aspects that affect machine tool and machining performance, the result of which will be significant reductions in energy consumption, production time and costs.



## Translational research projects:

- Automated rebar placement and verification
- Automated façade manufacture
- Automated assembly of light gauge steel frames
- Large scale component inspection and verification
- Improving traditional processes
- Reducing construction risk through simulation
- Composite machining
- Smart setting out
- Physical testing of novel construction products
- Tracking of construction products
- Immersive learning
- Using VR in the design of new sites

### For companies such as:

- Laing O'Rourke
- AECOM
- Berkeley Modular
- Ilke Homes
- Legal and General Modular Homes
- Yorkshire Water
- Polypipe

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