AIMCH

TRANSFORMING
HOW WE BUILD HOMES

Advanced Industrialized Methods for Construction of Homes

Stewart Dalgarno – Director of Product Development SMG & AIMCH Project Director

Irish House Builders Conference

25-3-21

STEWART Milne GROUP

BARRATT DEVELOPMENTS PLC BUILDING EXCELLENCE SINCE 1958

mtc Manufacturing Technology Centre

L&Q

CONSTRUCTION SCOTLAND INNOVATION CENTRE

FORSTER GROUP

INDUSTRIAL STRATEGY

UKRI UK Research and Innovation

Project & Partners

£6.2M 3 YEAR PROJECT WITH £4M IUK FUNDING

UK Research and Innovation

INDUSTRIAL STRATEGY

FOUR KEY INDUSTRY PARTNERS

STEWART Milne GROUP

FORSTER GROUP

BARRATT DEVELOPMENTS PLC BUILDING EXCELLENCE SINCE 1958

L&Q

TWO RESEARCH & INNOVATION PARTNERS

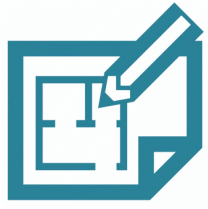
CONSTRUCTION SCOTLAND INNOVATION CENTRE

mtc Manufacturing Technology Centre

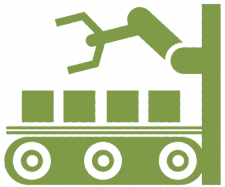
Our ambition

To deliver modern methods of construction (MMC), using panelized offsite systems (OSM) that are cost neutral, higher quality, faster, safer, robust and more productive than traditional masonry methods of construction.

DIGITAL WORKING AND STANDARDISATION



OFF SITE MANUFACTURING & INTEGRATED SUPPLIERS



ON SITE LEAN ASSEMBLY & MONITORING

HOMES FOR SALE OR RENT

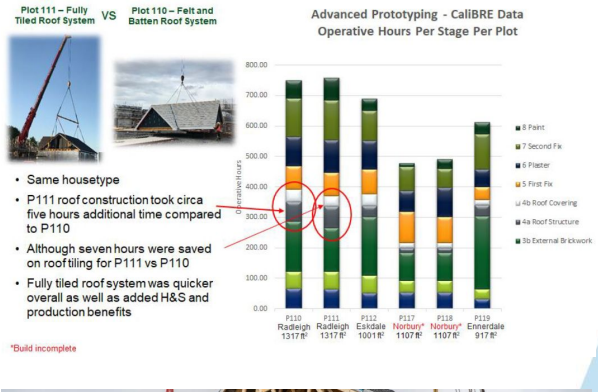
Tangible benefits

MMC and panelised OSM for same cost as masonry, that is faster, more productive, safer and higher quality

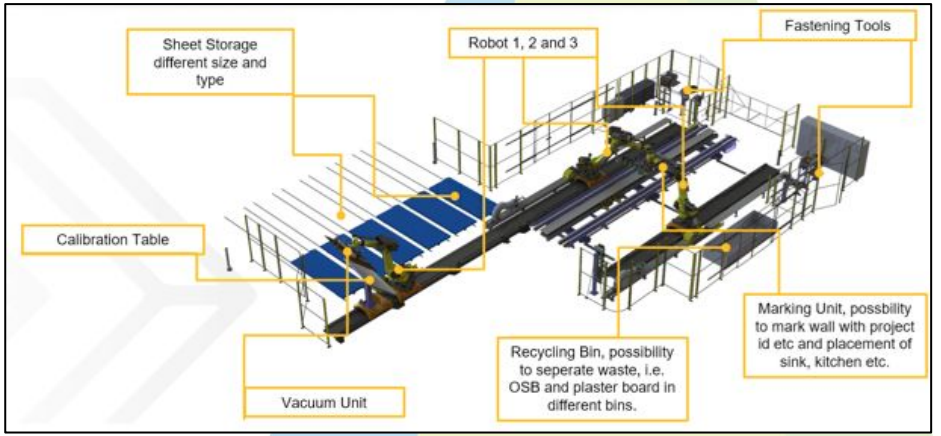
- ✔ **Improve build quality**
- ✔ **Improve HSE**
- ✔ **More attractive careers**
- ✔ **Reduce time to build**
- ✔ **Increase productivity**
- ✔ **De-risk construction**
- ✔ **Improve predictability**
- ✔ **Reduce waste time and materials**
- ✔ **Increase PMV**

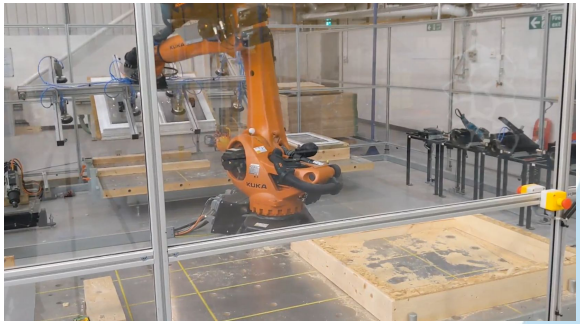
KPI	MMC compared with traditional
Cost	Equal or cheaper
Time	Half the time to build
Quality	¼ of the cost of defects
PMV	Increase from 5% to 30%

Monitoring, Prototyping & Scaling up Panelised MMC



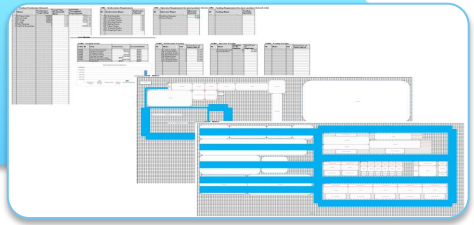
Advanced Manufacturing – Robotics & Automation





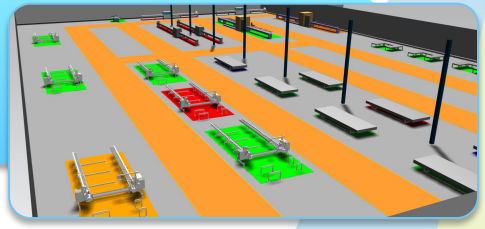
MMC Future Factory Blueprint

Mathematical Modelling



- A factory specification and associated visual layout of the proposed factory
- Illustrate the access and usability of modelling techniques for factory planning without specialist software

Discrete Event Simulation (DES)



- 2D factory **analysis** using a structured data sets & planning to highlight system process & interactions **KPI's**
- Planned and analysed factory specification to be presented as a **3D final factory design**
- **Visual 3D** factory to understand and communicate the factory design

Revit 3D Factory Flythrough

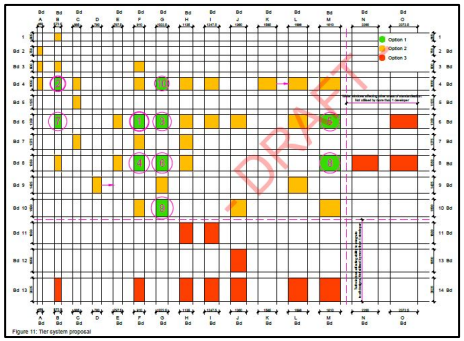
- Illustrated a greater level of detail the factory unit & surrounding service areas
- Created an **animated fly-through** to bring the design to life

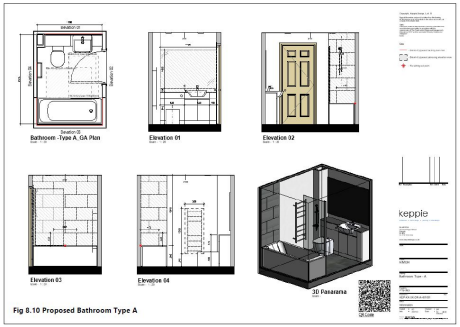
Design Standardization & DFMA

Design Standardization & Product Families

DFMA Guide to Timber Panelized MMC Systems

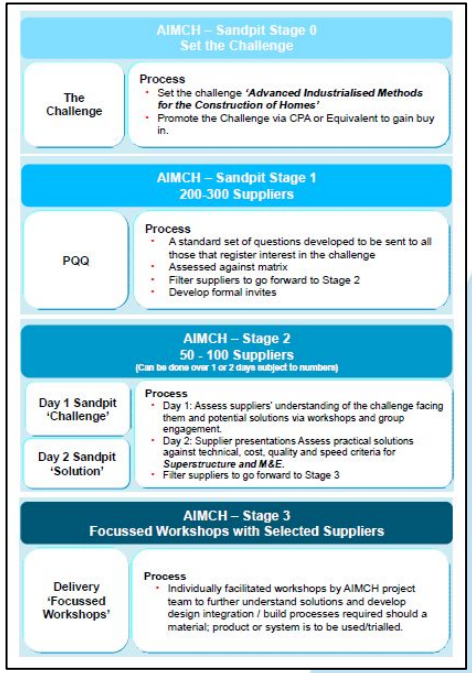
Future Industrialized Housing Pattern Book





Standardization & Product Families

Standardization opportunities – wet rooms, stairs, windows/doors & service systems
Recommended sub assemblies & components
Dimensional standardization and guidance



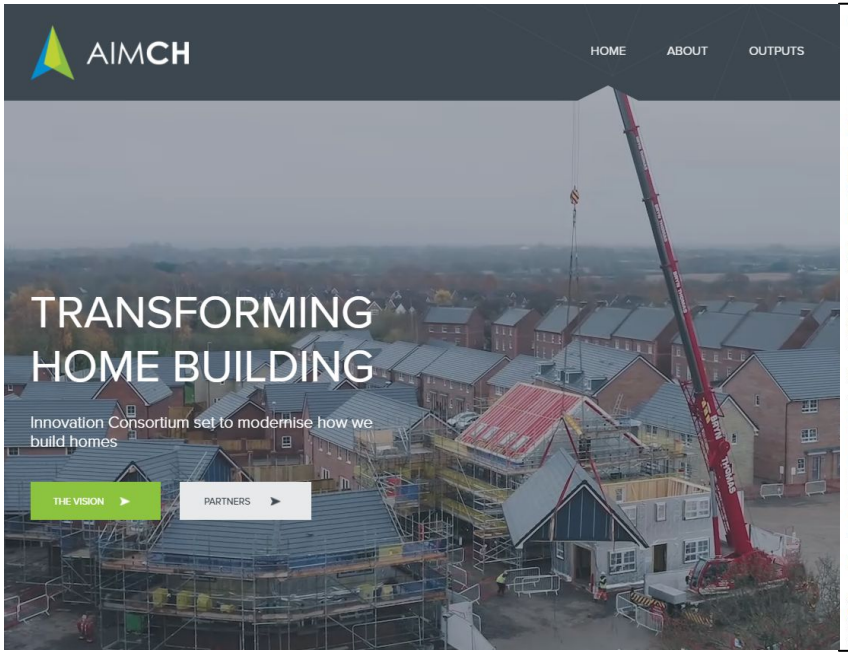
Supplier Sandpits

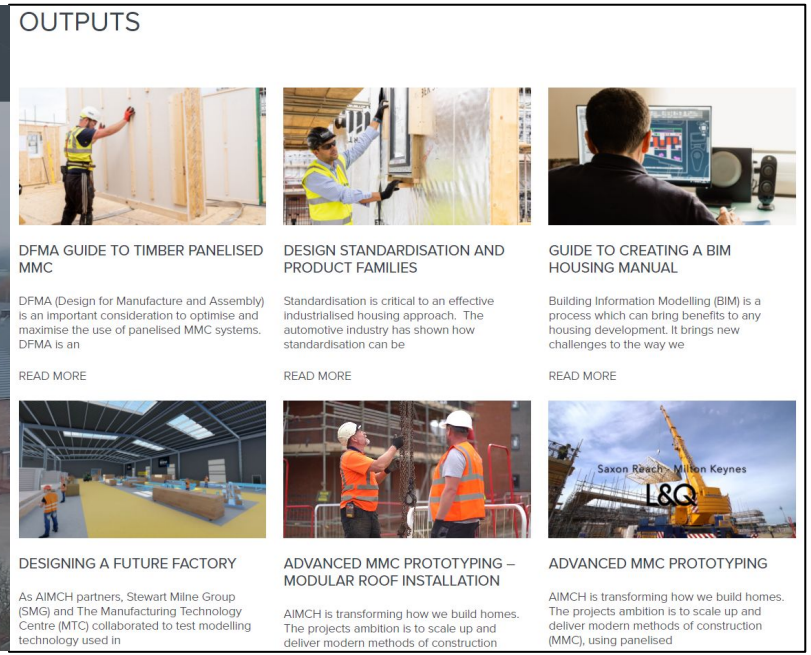
Challenge opportunities
Supplier selections
Collaborative procurement approaches

Future Housing Range

BIM enabled 3D modelled
DFMA friendly
Design Standardization
Product Families - sub assemblies

Dissemination - Engaging industry





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