ScotCHEM at the Lightweight Manufacturing Centre

• Who we are
• What is Lightweighting?
• Role of the Lightweight Manufacturing Centre
• The National Manufacturing Institute for Scotland?
• ScotCHEM within NMIS
Lightweight Manufacturing Centre

The Lightweight Manufacturing Centre is an accelerator for the National Manufacturing Institute for Scotland.
The Lightweight Manufacturing Centre

Iain Bomphray  Director, Group Technical Specialist – Lightweight Structures
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Tony Rodden  Senior Manufacturing Engineer
Gerry Ward  Business Development
Dr. Ruoyu Huang  Process Modeller
Tobias Weis  Technician
Lightweight Manufacturing Centre

• Where are we operationally?

• Staff  5x FTEs

• Capital  1x Press, PEI (May 2019)
  1x RTM Press, Coexpair
  1x 5-Axis Machining, Breton
  1x Autoclave
  Cleanroom
  Metrology Lab
  Design & Engineering Office
Lightweight Manufacturing Centre

- Airport
- NMIS
- AFRC
- Rolls Royce
- Dock
- LMC
- Doosan
- Motorway
Lightweight Manufacturing Centre
Lightweight Manufacturing Centre
What is lightweighting?

The material and process agnostic application of materials in the pursuit of mass reduction

Taking into account structural efficiency, cost of manufacture, rate of manufacture and sustainability
A total of 82 strategic roadmaps were reviewed and 110 different challenges were identified. The challenges were grouped into 6 different themes and within each theme, they were grouped further into different topics.
The National Manufacturing Institute Scotland is an industry-led international centre of manufacturing expertise where industry, academia and the public-sector support bodies work together to transform skills, productivity and innovation making Scotland and the UK a global leader in advanced manufacturing.
• Make it easier for Scottish businesses to use technology to grow and compete
• Will create jobs right across the country
• NMIS will help to grow our economy by galvanising investment from within Scotland and internationally
• It will equip our people with the skills to lead and prosper in an evolving manufacturing environment and to inspire and attract a new generation of talent.

NMIS will transform manufacturing for Scotland
NMIS

Manufacturing innovation district growth

Advanced Forming Research Centre | Lightweight Manufacturing Centre
NMIS

- Digital Factory 2050
- Innovation Collaboratory
- Manufacturing Skills Academy
NMIS
• LMC capability aspiration:
  • Material handling
  • Large scale (physical) component manufacture
  • Hybrid material manufacture
  • Fibre pilot line manufacture
Lightweight Manufacturing Centre

- Reconfigurable Pilot Line Manufacturing
- Capability Development
- TRL 2 – 8, MRL 1 - 5
TECHNOLOGY TRANSFER & COMMERCIALISATION

WILLIAMS

TECHNOLOGY COMMERCIALISATION

TECHNOLOGY CREATION

TECHNOLOGY COLLABORATION

TECHNOLOGY CONVERGENCE

CUSTOMER
LIGHTWEIGHT EV PLATFORM

KEY FEATURES

• Composite / hybrid chassis
• Composite wishbones
• Innovative cell / module enclosure
• Structural integration of module case
• Battery cooling system via sills
• Energy absorbing sill
• Integration of battery cooling
• Wireless module control to BMS link
WILLIAMS ADVANCED ENGINEERING
SUSTAINABILITY DRIVEN
ENERGY EFFICIENT PERFORMANCE

- LIGHTWEIGHT STRUCTURES
  - High performance, composite and metallic technologies

- ENERGY SYSTEMS & TECHNOLOGIES
  - Capturing, controlling, storing and deploying energy

- AERODYNAMICS, THERMODYNAMICS & SIMULATION
  - Improving performance and efficiency

F1 CAPABILITIES DEPLOYED IN DIVERSE MARKETS
ScotCHEM @ NMIS