Innovate UK: Investing in innovation for Sustainable Composites

Prof Mark Gillan CTO Innovate UK
Innovate UK

We are the UK’s innovation agency

We connect businesses to the people that can help them and fund businesses and research collaborations in all economic sectors, value chains and UK regions to accelerate innovation
Since 2007 we have delivered...

- £2.9bn since 2007
- Industry match funding taking the total value of projects above £5.1bn
- Up to £21.2bn in added value to the economy
- Up to £7 for every £1 we've invested
- We've funded around 11,000 projects
- 8,500 unique organisations involved
- 9 jobs for each organisation involved
- 100,000 jobs created in total
Catapult Network

Fostering innovation to drive economic growth

- bridge the gap between businesses, academia, research and government
- transforming the UK’s ability to create new products and services
- ensure global opportunities for the UK and sustained economic growth for the future
Connecting by HVM Catapult Centres

AFRC
NAMRC
MTC
NCC
CPI
AMRC
WMG
HVM Catapult Composites Capability

- AFRC
- NAMRC
- MTC
- NCC
- CPI
- AMRC
- WMG

Selected HVMC Composites Capability

- National Formulation Centre and Graphene Application Centre
- Lightweight Manufacturing Centre
- iCAP expansion of NCC Capability for aerospace and other sectors
- Automotive Composites research Centre
- Composite filament winding, machining and composite / metal structures
The National Composites Centre in numbers

- Officially opened in 2011
- £200m invested in capabilities
- £36.7m of the £200m invested in 10 new capabilities
- 350 composites engineers
- 150 engineers at ACCIS
- 21,500m² facility at NCC HQ
- 725 organisations engaged
- 2 locations with NCC Filton
- 46% of those are SMEs
- 60+8 members + major sectors supported
- 60+ university partners
- 10 New technologies tailor-made by 2020
Sustainable Composites Market Opportunity

37 Offshore wind farms in the UK Costing £3.64bn to decommission [1]

6,000,000 Cars scrapped each year [4]

10,000 tonnes Estimated composite wind turbine blade waste annually by 2035 [5][6]

214,500 tonnes Composites waste in automotive per annum

Of which 91.8% is glass fibre [3]

600 Aircraft scrapped each year [7]

Worth £1.5bn

End-of-life (EoL) strategies for composites are limited both in number and in variety. Current material chemistries are seldom designed to facilitate easy disassembly, reuse or recycling at EoL. ReDisCoveR is focussing on both solving issues faced by existing composites at EoL, and developing new materials that make EoL easier. All identified opportunities within ReDisCoveR are grouped into four streams: Recycling, Disassembly, Circular Materials, and Reuse.
iCAP: Expanding NCC Capability for aerospace and other sectors

One of the UK government’s largest ever investment in composites

£36.7m

10

New technologies, tailor-made to NCC specifications

6

Technologies installed with the remaining 4 by end of 2020

21,500m²

Open access workshop space

* Total budget c£37m funded through ATI, Local Enterprise Partnership & Catapult/UKRI
iCAP Programme

- Unique deposition capabilities for dry composites materials
- Comprehensive Automated Fibre Placement and Automated Tape Laying capabilities
- Resin Transfer Moulding of composites for harsh environments
- Thermoplastic overmoulding of composites structures
- Automated preforming of composites materials
- Automated non-destructive inspection
- Large scale resin infusion and cure
- Digital through-line on all technologies

Braider
Ex 1: Low Cost FST Compliant Composite Components

• Supply chain partnership
  • CECENCE
  • SHD Composites
  • Wavelength NDT
  • Pitch Aircraft Seating (customer)

• National Aerospace Technology Exploitation Programme (NATEP) project
• Grant awarded £150,000
• The development of low cost, fast process methods & Fire, Smoke and Toxicity (FST) compliant thermoplastic/ thermoset materials to replace structural aluminium components. Bio resins and low toxicity recyclable solutions will be a focus.

• [https://www.adsadvance.co.uk/publications/35/issue1/volume10/](https://www.adsadvance.co.uk/publications/35/issue1/volume10/) (page 14)
Ex 2: Biocomposites for Aerospace Interiors (BAIT)

• Supply chain partnership
  • Coventive Composites
  • AIM Composites
  • Composites Evolution
  • AIM Cabin Interiors (customer)

• National Aerospace Technology Exploitation Programme (NATEP) project
• Grant awarded £146,570
• The project will develop pre-impregnated (“Prepreg”) composite materials for aerospace interior applications that are based on a novel 100% bio-based fire-safe resin system that provides an alternative to conventional petrochemically-derived phenolics.
• High-performance reinforcements and resins for composites that are produced from sustainable, non-fossil fuel resources - natural fibre reinforcements and bio-derived resins.
Thank you