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Materials Innovation & Growth Team (IGT) report is out

Following six months of industry consultation to determine current and future trends in the use of structural materials in advanced engineering products, the Materials IGT has published its first major report.

The report summarises the IGT's findings, together with recommendations for future representation of the materials sector through *Materials UK*, a company limited by guarantee set up by the DTI to focus ongoing activities.

The NCN will play a key part in continued consultative interactions and technology transfer for the composites industry in its role as the node of the [Materials KTN](#), which is an integral part of Materials UK. A copy of the report (52 page PDF file) is available on the DTI website: [to the report](#).

New Government investment in R&D for recycling and reuse

NCN Programme Director Deborah Pullen explains the background and spotlights the issues . . .

Healthy increase in the use of composites in civil aerospace components has resulted in an annual growth of 3-4% in the associated revenue in 2004 and 2005 in the UK and Europe, against an annual growth of less than 1% p.a. for the previous 5 years.

This growth has given rise to a significant increase in current and projected build rates and associated raw materials usage for the next 10 years and beyond. In turn, this has led to a recent shortage of some types of carbon fibre stock, which has not only contributed to maintaining the high price of new raw material supplies but also forced manufacturers to address a number of routes to minimise scrap during manufacture.

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Scrap reduction could involve use of 3-D moulding technologies where near-net shape preforms are used or automated tape lay and tow placement technologies build up multilayer structures with minimum waste. This may support improved short-term efficiencies and allow forecasted build rates in sectors such as aerospace to be achieved.

However, other sectors now designing products to use composites in critical components may face a longer-term problem with supply, even when planned fibre production increases in two to three years time.

In addition, there are increasing legislative pressures to minimise the total associated energy related to raw material and product manufacture, thus maximising the use of materials by recycling. This opens up new technological and supply-chain development issues which must be addressed to allow the development and manufacture of competitive products made from recycled stock.

This challenge has been recognised by the DTI, and its recently announced Call features a number of hot topics including reuse, recycling and improved energy efficiency in product development. The total funding available in this Call is £80M, with specific budgets for these key areas:

- Emerging energy technologies (£17M)
- Sustainable production and consumption (£12M)
- Advanced materials (£9M)

For further details of this Call see [information on the DTI's website](#).

Best practice guide on recycling of composite materials

- everything you need to know about recycling composite materials

The first NCN Best Practice Guide *End-of-Life Options for Composite Waste: Recycle, Reuse or Dispose?* has been published on the NCN website.

Written by Sue Halliwell of [NetComposites](#), it's a comprehensive guide to all aspects of this subject, including applicable legislation; waste minimisation; reuse and recovery; recycling technologies; and disposal. You must be a registered NCN member to read, download and print the guide. Membership is free and registration is easily completed on-line on the [NCN website](#). [To the guide](#) (PDF file).

UK company making money out of recycling

Whilst the industry at large is gearing up for recycling and reuse of composite materials, there are already examples of companies such as Milled Carbon Ltd (launched 2005) which is currently focused on developing its business for the production of carbon fibre materials from scrap composite using CARBONCLEAN®, a patented thermo-chemical process.

The process efficiently extracts fibre from its original resin matrix, allowing further processing to form high quality fibre stock in the form of short-fibre felts and blankets for use in the manufacture of new composites parts. Further information about Milled Carbon and its technology at www.milledcarbon.com/

NCN strengthens links with SBAC

During the past 18 months the NCN has formed alliances with many sector and technology networks; for example, the Network Group for Composites in Construction (NGCC). A number of Trade Associations have proved to be valuable networks with which the NCN can work closely to increase outreach of its activities and services to individual companies who can benefit directly.

SBAC, the [Society of British Aerospace Companies](#), is the national voice for aerospace in the UK: it now represents around 2, 600 companies, its membership recently extended through formal links with many of the existing regionally-based networks.

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A number of jointly sponsored activities is being defined by the SBAC and NCN - more information in due course.

Cutting the cost of aerospace composites

The NCN recently co-ordinated a DTI Global Watch Mission to the USA. This examined the American aerospace industry's drive for low-cost composite processing methods. A brief report, [Cutting the cost of aerospace composites](#), is on the NCN website.

Spotlight on NCN expert subcontractor

White Young Green (WYG) - Specialist Structures Group

David Kendall, Director of Specialist Structures at WYG, describes his team as 'A select group of engineers providing a wide range of consultancy services to all industry sectors, specialising in the application of composite materials.'

David explains: 'Our projects range from a few pages of calculations, to a complete concept-to-reality service; not only including design and analysis, but also project management and procurement advice as required. We always like a challenge and many of the projects we undertake are highly innovative, pushing composites into new applications.'



David Kendall,
Director of Specialist
Structures, WYG

WYG is one of a group of NCN expert subcontractors which provides consultancy under NCN technical support services. The company has completed a number of NCN-funded projects ranging from small components such as a horse-riding helmet, to a composite vehicle structure. WYG is currently producing an outline design for a large, articulated structure supporting four 1MW underwater turbines to provide efficient renewable energy (www.tidalstream.co.uk).



WYG is very active in construction where it's developing new concepts for producing all-composite buildings, as well as pushing the use of composites in bridge structures to much larger spans. To demonstrate the potential, the company recently produced an outline design for a new carbon fibre footbridge spanning all the way across the River Thames in London - a single span of 330m!



Contact information

David Kendall, Director of Specialist Structures. Tel: 0870 609 1084
E-mail: david.kendall@wyg.com Web pages: [WYG Specialist Structures](#)

FREE technical support from NCN

Your company can benefit from free tech support in any aspect of composite materials, design, manufacture or use. The NCN provides -

- Direct access to technologies, facilities and expertise
- FREE information and advice
- FREE consultancy/problem-solving services

All you have to do is contact the NCN Helpdesk: tel 01223 894 662 or e-mail info@ncn-uk.co.uk

As well as providing information, the Helpdesk sets up one-to-one consultations with experts and organises direct practical assistance through NCN's *Information*, *Diagnostics* and *Solutions* range of in-depth tech support services, summarised in a [printable leaflet](#) on the NCN website (www.ncn-uk.co.uk).

Technology road-mapping for the UK's metal matrix composites industry

The NCN is producing a series of technology road-maps to help prioritise activities in a number of industry sectors and technologies. A one-day workshop has produced a road-map for the UK's metal matrix composite (MMC) industry; key representatives from materials suppliers, end-users, and universities were involved in a facilitated brainstorming to address these questions:

- Where are we now?
- Where do we want to be?
- What is stopping us getting there?
- What needs to be done to overcome the barriers?

The following comments, actions and recommendations arose from the workshop:

- The UK has important strengths in MMCs, including a good record of creativity and innovation, and significant expertise in aluminium MMCs. There is, however, no critical mass at present. The aim should be to achieve critical mass by 2010.
- There would be many benefits to the UK's MMC community if there was a strong network in place. This would enable sharing of best practice, with improved communications, and would lead to faster development times.
- There is a lack of knowledge about what is happening generally, and what the capabilities are in this field. The NCN is in a strong position to provide databases, and the following were suggested:
 - Directory of capabilities;
 - Guidelines on design and machining;
 - Certified database of materials properties.
- There is a knowledge-gap in current and potential applications for MMCs. More publicity should be generated. A set of case studies on MMCs would also be useful for promotional purposes.

Outputs from the workshop will be used to form an agenda for future activities both within the NCN and for stakeholders within the MMC community. Recommendations will be fed through to the relevant Innovation and Growth Teams (IGTs) and funding bodies.

The full report is available on the NCN website. To access this you must first login (free registration is required). On the homepage, select *Roadmapping* from the *Activities* menu, and then select *Metal Matrix Composites Roadmap*. To the [NCN website](#)

The NCN Working Group on MMCs is led by Simon Barnes, Light Metals and MMC Research Manager at NATEC (Northern Aerospace Technology Exploitation Centre). For further information please e-mail simon.barnes-2@manchester.ac.uk or tel 0161 275 8174.

New NDT Workgroup to be launched

Following the formal launch of the National Validation Centre at TWI's Port Talbot facility (featured in [March NCN E-news](#)), the NCN Technology Transfer Programme is launching a focused Workgroup to consider the status and future needs of technology for composites inspection.

Planned for June, the launch-meeting for this new NDT Workgroup will be at the Validation Centre. During the meeting, an overview of existing and planned capabilities for the Centre will be presented, together with a tour of the facilities. The meeting will also define terms of reference for the Group and seek input to an inclusive agenda for activities over the next year.

Those wishing to attend this meeting and take part in the NDT Workgroup should express their interest in the first instance to Lizzie Muncey at TWI: lizzie.muncey@twi.co.uk

Future events

Smart Composites

25 May 2006; IOM3, London

Organised by SMART.mat and the NCN, this workshop will review a range of smart material technologies and their applications in composite structures. Topics include: self-healing materials; shape-memory polymers; auxetic materials; structural health monitoring; and novel application of smart composites.

[Further information](#) on the Materials KTN website.

Thermoplastics Composites Technology – challenges and opportunities for the manufacturing supply-chain

25 May 2006; 600 Group, Shepshed, Leicestershire

Organised jointly by the GTMA and the NCN, this half- day, cross-sectoral workshop will assess the implications for SMEs of using thermoplastic composites throughout the manufacturing supply-chain. It will also provide an opportunity for achieving an understanding of future trends in the use of these materials.

[Further details](#) on the NCN website.

NCN Annual Conference

28 September 2006, 3M, Bracknell

Details to be announced shortly.

Register with the NCN for detailed technical information

Registration with NCN gives you web access to technical information on composites (in the form of FAQs, Best Practice Guides, etc contributed by NCN programme partners); training and expertise directories; latest industry news; and information on upcoming events. [Register with NCN](#)

. . . for even more composites information -

For an even wider selection of technical information on composite materials, visit the composites portal of the [Materials Knowledge Transfer Network](#). Registration is free and gives you access to information on composite materials, processes and applications, as well as online databases for materials selection, standards and other topics. [Register for the Materials Knowledge Transfer Network](#)

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