



South West England

Composite technologies

All the right elements

All about our region

In the South West of England there is an unrivalled concentration of expertise devoted to developing new composite materials, understanding how they perform, designing new applications for industry and using these new applications to create more efficient components for aircraft, renewable energy systems, marine industry and cars.

Several universities have high level facilities and departments specialising in composite technologies, carrying out cutting-edge research, attracting national and international funding and expertise. Many of the world's most eminent aerospace companies, including Airbus, Rolls-Royce, AgustaWestland and GKN, located their headquarters or major operations centres in the region.

In addition, a host of local and national initiatives – such as the South West Composites Gateway – ensure that the region is fully prepared for this exciting and expanding field of study and industrial manufacture.

Bristol University ACCIS

Bristol University responded to the expected growth in demand for civil aircraft by creating the Advanced Composites Centre for Innovation and Science (ACCIS) in 2007.

Designing lighter, stronger, more corrosion resistant components for both aerospace, marine engineering and other industries, ACCIS has brought together research from across the University.

ACCIS is now a major international centre of research into composite technology, collaborating with companies including Airbus, Rolls-Royce and GE Aviation on design, analysis, intelligent structures and composites processing. It also partners major research universities worldwide, e.g Beijing, Paris and Denmark.

Exeter and Plymouth Universities

Researchers at Exeter University's School of Engineering, Mathematics and Physical Sciences (SEMPs) are helping to create more natural, sustainable and lightweight composite structures, using materials such as cashew nut shells and hemp, along with automotive projects that could help the UK meet EU targets for making 95 per cent of car parts recyclable by 2015.

Exeter University specialises in 'auxetic' materials, i.e. materials that become thicker when stretched, and are useful as shock absorbers or body armour.

At Plymouth University, the Advanced Composites Manufacturing Centre (ACMC) is active in a wide range of projects, and bridges the traditional gap between academic R&D and the needs of industry.

Contacts

For more details on any of these companies, colleges or organisations, please contact the South West RDA who will put you in contact. www.southwestrda.org.uk / tel: +44 (0) 117 933 0200.

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Aerospace

With an unrivalled concentration of expertise, academic research and industrial capacity, South West England is among the world's most sought-after locations for aerospace technology.

- 9 out of the 10 largest aerospace companies in the UK have headquarters or major facilities in the South West
- World-class civil and defence projects are located in the region
- The UK has the world's second-largest number of aerospace employees: more than a quarter of the country's aerospace industry is in the South West.
- Airbus's Composite Structures Development Centre is based in the region, tapping into a vibrant marketplace and strengthening the aerospace supply chain.

Environmental industries

South West England hosted the first UK wind farm, the first centralised anaerobic digestion power station and the first underwater tidal stream turbine in the world.

There are now more than 470 renewable electricity schemes, 1,500 renewable heat projects and more than 750 businesses working directly in renewable energy, employing almost 3,000 people, representing a 37 per cent annual employment growth rate since 2005.

Composite technology plays a key role in renewable energy development, from the design and manufacture of large scale wind systems, to solar power systems and marine energy development.

Bournemouth University

At Bournemouth University, composite materials applications range from combined heat and power systems to windsurfer fins, with various departments conducting research.

The university's School of Design, Engineering and Computing is working on micro CHP (combined heat and power) systems to generate electricity and produce both heat and hot water.

Further work is being carried out on three dimensional surface mapping, bench testing and surface analysis for composite materials, along with novel flexible tooling for composite manufacture.

University of Bath

Creating stronger, lighter materials for aircraft wings and wind turbine blades has helped companies to make huge savings on their fuel bills and reduce their CO2 emissions, thanks to the Composite Research Unit at the University of Bath.

By layering composite material correctly, it becomes stronger, meaning that aircraft body parts can be lighter, use less fuel and create less CO2. One Airbus UK study believes it could reduce the weight of its aircraft components by 40 per cent by replacing metal components with composites.

The Composites Research Unit has close links with Airbus, AgustaWestland, Vestas and Rolls-Royce as well as The Laboratory for Integrated Metrology Applications (LIMA) at the University.

South West Composites Gateway

The South West RDA funded the Aerospace Training South West (ATSW) skills initiative which identified composites as a key theme for skills development. Consequently, funding was secured by City of Bristol College from the Learning and Skills Council to set up the South West Composites Gateway. The Gateway prepares tomorrow's engineers for a future in which composites replace metallics in much of aerospace design and in other industries. It will ensure that the South West will provide the human resources for industries that depend on composite technology.

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