

CUTTING EDGE

CUTTING ENERGY

Carbon Nexus, a globally unique, open-access carbon fibre/composite research facility, is open for business and conducting strategic research projects with industry.

Deakin University's \$34m facility, located at its Geelong Waurin Ponds Campus, near Melbourne, offers:

- State-of-the-art research and analysis laboratories.
- Pilot scale and research carbonisation lines, operated by experienced production staff.
- A team of capable, energetic researchers dedicated to working with industry to produce high quality carbon fibre, while reducing production costs and speeding up manufacturing processes.

CARBON NEXUS – TAKING THE NEXT STEP FORWARD IN CARBON FIBRE

Carbon Nexus understands the needs of the carbon fibre industry. For more than a decade Deakin University researchers have been developing new and improved fibres and carbon composites. This new facility significantly enhances the capacity to deliver real outcomes for industry to capture the enormous market potential of carbon fibre and related composites.

Carbon Nexus is an integral part of the \$103m Australian Future Fibres Research and Innovation Centre at Deakin.



RESEARCH CAPABILITIES

Research at Carbon Nexus is driven to make industry-relevant breakthroughs in four key themes:

1. Low cost carbon fibre.
2. High performance carbon fibre.
3. Surface treatment of carbon fibre.
4. Advanced composite manufacturing.

Carbon Nexus is also exploring the interplay between processing conditions, the molecular composition of the precursor, and the structure of the resulting fibre and its effect on the manufacture of composite components.

This is supported by an extensive history of research on composite materials and a strong focus on the rapid out-of-autoclave cure of these materials.

Research has also been conducted on nanocomposites, functionally graded materials, natural fibre composites, new methods for bonding composite materials, crashworthiness of composites, defence applications of composites, A-class surface finish of composites and the use of 3D preforms in automotive structures.

The latest equipment for processing, testing and characterisation of fibres underpins Carbon Nexus' research. Facilities include a Favimat (AI) Robot2, Surface Energy Analysis (SEA), Tensiometer and the Quickstep MOD QS5 composite curing machine.



THE CARBON NEXUS VALUE PROPOSITION

The global challenge to design and develop the next generation of fit-for-purpose, resource-efficient carbon fibre materials and structures is under way and Carbon Nexus is ready to assist in meeting it.

The Carbon Nexus Value Proposition includes:

- **A globally unique carbon fibre and composite research facility**, owned and operated by Deakin University and developed through the support of VCAMM (The Victorian Centre for Advanced Materials Manufacturing), the Australian Government and the Victorian State Government.
- **Research projects driven by industry needs** that focus on carbon fibre and composite materials development and improved manufacturing process engineering.
- **Tailored and intensive training programs** for production line staff.
- **Open access** for industry to a state-of-the-art carbon fibre manufacturing research facility.
- **Integration with the Australian Future Fibres Research and Innovation Centre** - a world class materials research institute administered by Deakin University and the Australian Government's lead scientific agency, CSIRO (Commonwealth Scientific and Industrial Research Organisation).
- **Access to outstanding research capabilities.** Deakin's materials engineering and macromolecular chemistry research has been awarded the top Australian ranking, putting it in the class of being "well above world standards".
- **Secure environment** for research material and intellectual property.

THE CARBONISATION LINES

Companies working with Carbon Nexus will have access to:

- A 20 to 55 tonne pa commercial grade Carbon Fibre Pilot Line that features four-zone centre-to-end oxidation ovens, multi-zoned low temperature and high temperature carbonisation furnaces, surface treatment, sizing and drying capacity, abatement, and a 30-position creel and winder.
- A fully integrated, single tow research and development carbon fibre process line.

These lines have been supplied by Despatch Industries, in collaboration with Australian-based Furnace Engineering, which provided the innovative low and high temperature furnaces. With the potential to apply multiple configurations, operational flexibility forms part of Carbon Nexus' unique capacity to produce and analyse carbon fibre, as well as review and test efficiencies in the production process.

The facility also provides an unparalleled opportunity for carbon fibre manufacturers to train their staff in production processes. It offers the capacity to simulate many process scenarios away from the pressures of commercial facilities and client schedules.

The requirement for security during carbon fibre research is essential and Carbon Nexus provides sophisticated protocols and systems to ensure client intellectual property and material remain secure.

TO FIND OUT MORE, OR TO GET INVOLVED WITH CARBON NEXUS

To find out more about Carbon Nexus' capabilities, or to arrange a visit to the facility, visit www.carbonnexus.com.au or dial +61 3 5227 3369 to speak with our development team.



Australian Government