



# Core Research Facilities Sydney Manufacturing Hub Case Studies



# SYDNEY MANUFACTURING HUB

Sydney Manufacturing Hub is a manufacturing-focused research facility geared to enable concept-to-production demonstration capabilities, including advanced pre- and post-processing of materials.

## GE Additive partnership underpinning Sydney Manufacturing Hub capability

Additive Manufacturing is a profound scientific and technological disruption that is transforming the nature of manufacturing. The prospective value of the markets for this technology are in the hundreds of billions of dollars. Advanced manufacturing is a disruption to design, materials, supply chains and commerce allowing objects/components/devices and, potentially, whole machines to be transformed from the digital realm to the physical realm, with high precision.

Academically, Australia is a strong performer in advanced manufacturing research. The Sydney Manufacturing Hub, the newest core research facility, places the University of Sydney in a position to contribute leadership in this rapidly burgeoning field.



Via the **Sydney Manufacturing Hub**, the University has locked in a strategic research partnership with global prime GE Additive (GE), and opened new engagement with the NSW State Government. This new facility delivers research capability that positions Sydney's academics to deliver intellectual leadership in advanced manufacturing, leveraging the clear focus on this area by defence, government and industry.

In June 2020 the University of Sydney and GE signed an agreement that will see four state-of-the-art GE 3D metal printers installed in the purpose-built **Sydney Manufacturing Hub** laboratory. GE Additive will also invest in bespoke research and development activities at the University.

A successful and ongoing partnership with GE Additive is aligned with the University's growth agenda in advanced manufacturing in Camperdown, and across our precincts—particularly at the Western Sydney Aerotropolis. Access to GE's remarkable global scientific and engineering network with in-kind access to specialised training and research support across is a major benefit of the partnership for the University.



GE Additive

### Find out more

- [sydney.edu.au/research/facilities/sydney-manufacturing-hub](https://sydney.edu.au/research/facilities/sydney-manufacturing-hub)



## Industry Partnership – 3rd Axis

The **Sydney Manufacturing Hub** enables both discovery-based fundamental research with industry-driven applications challenges, creating an exciting innovation capacity advance manufacturing. Partnerships are critical to sustain this capacity. One of our founding industry relationships is with local start up, 3rd Axis.

The University of Sydney and 3rd Axis commenced a partnership whereby the **Sydney Manufacturing Hub** hosts a state-of-the-art ceramic 3D printer owned by 3rd Axis and access is provided to researchers. The 'Cerafab7500' uses lithography-based ceramic manufacturing technology, enabling enormous freedom in design, including the fabrication of bionics such as canals and pore structures, undercuts, cavities and thin-walled structures, that were not previously possible with traditional ceramic manufacturing techniques. The ceramic printing capability has been used for research-based applications ranging from medical implants to components for satellites and has attracted strong interest from the University research community.

Inside 3rd Axis' ceramic 3D printer at Sydney Manufacturing Hub



This arrangement with 3rd Axis provides the University's researchers and partners with access to cutting-edge ceramic printing technology. Meanwhile, 3rd Axis conduct developmental work and produce commercial prototypes, and explore collaborative and translational research opportunities that arise with the University community.

The 3rd Axis Managing Director and Chief Technical Officer are regularly onsite at the **Sydney Manufacturing Hub** and readily meet with researchers to identify potential grant and collaboration opportunities.

“Ceramic 3D printing has technical applications across some of the most highly regulated industries such as medical implants and aviation, thus requiring extreme expertise. By partnering with the University of Sydney and the Core Research Facilities, world class expertise and state of the art testing has become a part of 3rd Axis”

**Ash Jain, Director of 3rd Axis**



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