

# NTU opens \$30m 3D printing research centre

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THE buzz surrounding 3D printing is set to heighten with a focused institute that will encourage industry collaboration. The Nanyang Technological University (NTU) Additive Manufacturing Centre (NAMC) launched yesterday will partner businesses to conduct research into 3D printing – building an object layer by layer according to a digital model.

The \$30-million centre, co-funded by the Singapore Economic Development Board (EDB), NTU and industry partners, has a capacity of about 100 projects at any one time. Currently, it already has 22 projects from NTU PhD students and six with industry partners. Industry projects are mainly with companies in sectors such as aerospace, marine and offshore, healthcare (medical devices) and manufacturing.

NAMC has partnered electronic company Molex to explore 3D printed connectors, and will work with a Fortune 500 healthcare company to develop orthopaedic implants. It has also partnered DSO National Laboratories for a year now to test printing materials for defence applications.

The centre thus allows businesses to see how 3D printing technologies can apply to them before investing in it. Each printer is unique with its own range of materials and processes and companies cannot adopt the technology immediately, said Professor Chua Chee Kai, chair for the School of Mechanical and Aerospace Engineering, and NAMC's director.

"They must understand each printer and what it can deliver given the price. It's price over performance," said Prof Chua. Instead of buying a white elephant, the best way is to partner NAMC and experiment, taking advantage of the printers it has, he added.

Some of NAMC's nine printers can cost up to \$2

million each, and are state-of-the-art machines suited for industrial purposes, Prof Chua said. They range across various processes such as laser-aided or liquid-based machines, using materials from plastic to human tissue. "It has all the representative techniques in 3D printing housed under one roof," said NAMC's deputy director Yeong Wai Yee.

There has been strong interest in the centre even before its launch, and besides the current total of 28 projects, there are others under negotiation. Prof Chua expects to hit full capacity by next year. NAMC will also be increasing its current research strength of about 50 staff and students to over 100 by then.

On top of industry collaborations which are often specific to a company's needs, the research projects by PhD students involve testing various materials to understand and optimise them. To further develop 3D printing capabilities, NAMC also inked a \$5-million joint laboratory agreement yesterday with a leading manufacturer of 3D printers, SLM Solutions. The lab aims to develop new materials and printers which can print larger parts suitable for sectors such as aerospace.

Even as the technology improves, it will take some time for some industries to adopt it due to stringent qualifications, said Prof Chua. "If a phone doesn't work it's fine, but if a plane doesn't work, it's a disaster," he said, adding that 3D printing is still in its infancy for certain sectors. "If you talk about printing of things, will the industry accept it? It will take time and certification."

In conjunction with NAMC's launch, NTU also opened Singapore's first International Conference on Progress in Additive Manufacturing, which will see more than 100 scientific papers from over 20 countries being shared and presented among academics and industry players.