New Centre to Host Singapore’s First International 3D Printing Competition

Nanyang Technological University

NTU ramps up 3D printing with $30 million research centre

Soon, life-saving body parts such as corneas, skin and heart tissue may just be a click away, thanks to the rapid advancement of 3D printing technology at Nanyang Technological University (NTU).

Singapore’s research in 3D printing, also known as Additive Manufacturing, will be boosted by the establishment of a new $30 million research centre at NTU.

The new NTU Additive Manufacturing Centre (NAMC), supported by Singapore’s Economic Development Board (EDB), will have the latest 3D printing machines, such as laser-aided machines for building metal parts and objects for industry, and bioprinters which are able to print human tissues.

Additive Manufacturing includes processes that can create 3D products from computer-aided design models by adding materials in a layer-by-layer fashion, much like how current printers print ink on paper. As opposed to conventional manufacturing processes such as machining, casting and moulding, this modern fabrication process can handle complex designs and changes easily without incurring additional costs.

The 300sqm centre, will work closely with the manufacturing industry on R&D projects to develop new materials, software and processes leading to commercial applications.

Singapore’s First 3D Printing Competition

As its first initiative to spark interest in 3D printing in students and the public, the centre will host Singapore’s first international 3D printing competition with top prizes worth $10,000 each.

Named the Singapore International 3D Printing Competitions 2013, it has two categories - one for wearable modern fashion and the other for designing the abacus. Although poles apart, these two categories were conceptualised to reflect the vibrant mix of cultures in Singapore, a place where East meets West.

The competition, held by the centre and NTU’s School of Art, Design and Media, is now open for both local and international submissions and will close on 1st November.

Keeping Singapore’s Edge in 3D Printing

Professor Chua Chee Kai, Chair of NTU’s School of Mechanical and Aerospace

Engineering who will also be the director of the new centre, said: "The NTU Additive Manufacturing Centre will be keeping Singapore at the forefront of 3D printing technology, developing capabilities not yet available elsewhere in the world."

"Due to its ability to address volatile industrial demands and because it can adapt easily with evolving technological trends, Additive Manufacturing is the optimal choice of technology in today's knowledge-based economy," added Prof Chua, who is the world's most academically-cited author for 3D printing and a pioneer in Additive Manufacturing with over 23 years' experience.

Julian Ho, Assistant Managing Director, Economic Development Board, said "The NTU Additive Manufacturing Centre builds on NTU's strong R&D capabilities to grow a competitive Additive Manufacturing industry in Singapore. By training students and collaborating with industry on R&D, we hope the centre will enable companies in Singapore to take advantage of this exciting technology as they develop better products. In the longer term, we see Additive Manufacturing as one of the disruptive technologies which will ensure that our manufacturing industry remains globally competitive."

Singapore's New Growth Sector

Advanced manufacturing technologies have been identified as a new growth opportunity for Singapore's manufacturing sector, which is a key growth driver, accounting for 22 per cent of the country's Gross Domestic Product.

At the recent National Day Rally, Prime Minister Lee Hsien Loong announced that EDB will set aside $500 million over the next five years to support a Future of Manufacturing plan that will develop new and disruptive technologies such as 3D printing.

The setting up of NTU Additive Manufacturing Centre is therefore timely as it aims to address a growing trend in the development and use of additive manufacturing in major industries, such as aerospace, automotive, oil and gas, electronic and bioengineering. Future applications also include organ and tissue printing, food printing and hybrid manufacturing.

Grooming Talent Pool

Besides spearheading cutting-edge research, the centre will also groom engineering talents and manpower for the industry. It will have about a hundred researchers and scientists working on dozens of new projects.

The recent global trend in adoption of Additive Manufacturing and the influx of precision engineering companies have created a demand for highly skilled engineers in this area. NTU is therefore offering a new PhD programme to equip researchers with in-depth knowledge and expertise to lead in research and development work.

In addition, NTU will be introducing a new programme specialisation in Additive Manufacturing in the current Master's Degree programmes on Precision Engineering, Mechanical Engineering and Manufacturing Systems and Engineering,

at the School of Mechanical and Aerospace Engineering. Students from the Master's Degree programme will be involved in industry-based projects.

Undergraduates will also benefit from the university's drive in 3D printing. They can gain practical industry knowledge and capabilities when they work on Additive Manufacturing-related Final Year Projects or through NTU's Undergraduate Research Experience on CAmpus (URECA) programme, which allows undergraduates to pursue independent research under the supervision of a professor and acquire essential skills for further research.

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