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NTU launches two new home-grown satellites

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This image shows the director of NTU Satellite Research Centre Assoc Prof Low Kay Soon (2nd from right), with some of his students who built the VELOX-I: (L-R) Htet Aung, 28; Soon Jing Jun, Charlie, 29; Xing Yi Tong, 29; and Lau Zi Rui, 26. The model of VELOX-I is in the foreground while in the background is NTU's new Mission Control Centre and its large projection display. Credit: Nanyang Technological University

The nation's latest satellites, VELOX-I and VELOX-PIII, were launched into space on India's Polar Satellite Launch Vehicle PSLV C-23 at 9.52 am (12.21 pm Singapore time), on Monday, 30 June 2014.

Designed and built by students and researchers at the NTU Satellite Research Centre, the VELOX-I is a nano-satellite, which weighs a total of 4.28kg. VELOX-PIII piggy-backs on its bigger "brother" as one unit but they will be separated in the later part of this experiment.

Both satellites are flying 650 kilometres above the Earth, on an orbital plane that has a fixed orientation with the sun, known as a sun-synchronous low-Earth-orbit.

Launched from the Satish Dhawan Space Centre at Sriharikota in Andhra Pradesh, India, the NTU duo was one of five mission satellites loaded on the space rocket owned by the Indian Space Research Organisation.

NTU has also built a new, state-of-the-art Mission Control Centre that will be the hub of operations for the NTU satellites. Located at NTU's Research Techno Plaza, the new 105m2 control centre, which has advanced satellite communication and computer systems, had earlier received confirmation from VELOX-I during its first ground pass that all its systems were functioning well. The solar panels, the communication antennas, and the camera optics have been deployed successfully.

The other two NTU-built satellites currently operating in space are:

1. X-SAT, Singapore's first locally built satellite launched in April 2011. The fridge-sized micro-satellite weighing 105kg is built by NTU and DSO National Laboratories

2. VELOX-PII, an NTU student-built pico-satellite satellite launched in November last year. It is the size of a 10cm cubic box weighing 1.3kg

NTU Provost Professor Freddy Boey, said NTU students have done Singapore proud with the successful launch of VELOX-I and VELOX-PIII.

"This milestone shows that our students have the aptitude and attitude to successfully apply what they have learnt in the sophisticated area of satellite-building," Prof Boey said.

"It is an excellent showcase of NTU's leading position in electrical and electronic engineering, and aerospace. It highlights our strengths in applied research and engineering, reinforcing Singapore's position as an aerospace hub, and is a boost to the development of a local space industry.

"Such projects will also spur greater interest in engineering research and development among undergraduates. We hope to nurture our young talents by having them design and build satellites. At the same time, NTU will continue to push the frontiers in satellite research and expand our partnership with satellite companies with made-in-NTU satellite technologies."

Associate Professor Low Kay Soon, Director of NTU's Satellite Research Centre, said the successful launch marks yet another momentous chapter in NTU's journey into space.

"I'm glad to see the fruits of labour from our undergraduates, who have enthusiastically participated in these challenging multi-disciplinary team-based projects. Not many universities have the capability to complete the design and development of several satellites that are functioning and orbiting in space simultaneously.

"Our current pipeline of even more sophisticated space projects will not only train our students for a career in the aerospace and space industry, but will also further strengthen NTU as an exceptional institution known for its excellent satellite technology and help realise Singapore's ambition to make a global mark in the space industry."

VELOX-I is built as a proof-of-concept to demonstrate advanced technologies designed and developed at NTU. It has a new camera sensor; a mechanism to control the orientation of the satellite; a new inter-satellite communication system; and a novel piggyback mechanism which allows it to deploy VELOX-PIII, a 193g mobile phone-sized pico-satellite, in space.

Missions planned for the satellites include testing the new technologies and the satellites' robustness, since many subsystems were designed and built by students.

NTU is Singapore's first university to have a satellite programme for undergraduates and postgraduates. Since 2009, top engineering students have participated in the development of real satellites under this programme.

NTU's expanding fleet of satellites

Under NTU's 10-year satellite road map, the university plans to develop a series of nano-satellites.

The satellite team is now working on a 12kg nano-satellite named VELOX-II.VELOX-II is two times larger than the VELOX-I and is on track to be launched in the later part of next year.

NTU is also building Singapore's first weather satellite funded by Singapore's Economic Development Board. Named VELOX-CI, it is a fridge-sized 130-kg satellite which will be used for tropical climate study and is due to be completed by September next year.

The core team from the X-SAT programme is also working on Singapore's first commercial remote sensing satellite, TeLEOS-1, under a joint venture company ST Electronics (satellite systems) Pte Ltd.

Provided by Nanyang Technological University

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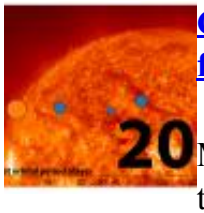

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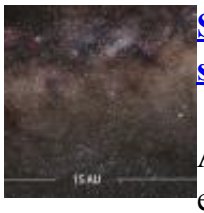

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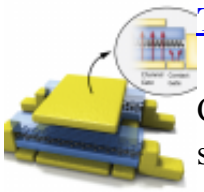

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