

Singapore university team completes flight-test of homegrown eVTOL

BY ATHENA BROWNING

A team of students and researchers has completed flight testing of Singapore's first indigenously designed and built eVTOL, demonstrating its ability to hover and transition to fixed-wing flight.

AIR



Image: NTU Singapore

A team at a university in Singapore has completed a month-long flight-test campaign with the country's first homegrown electric vertical take-off and landing (eVTOL) aircraft.

Nanyang Technological University (NTU) led the programme, with two research demonstrators tested at the German Aerospace Center's (DLR) National Experimental Test Center for Unmanned Aircraft Systems in Cochstedt. The larger aircraft has an eight-metre wingspan and reached an altitude of 92 metres, while the three-metre variant reached an altitude of 60 metres and a speed of around 120km/h.

The aircraft demonstrated vertical take-off and hover before transitioning to fixed-wing flight. Testing also included flying beyond the pilots' direct line of sight and transferring control between outdoor and indoor pilots while the aircraft was airborne.

"This is a historic feat for an aircraft designed, engineered and built in Singapore," said Professor James Wang, Director of NTU's eVTOL Research and Innovation Centre. "Reaching these heights and going from hover to forward flight marks a new milestone for Singapore-made electric aircraft."

More than 20 students and alumni worked alongside Wang on the project. Over more than three years of development, the NTU team designed and assembled the aircraft's airframe, propulsion systems, electrical architecture, avionics, sensors and flight-control systems. The university's eVTOL research centre has around 30 research engineers.

The aircraft uses electrically powered lift rotors mounted on its wings to take off and hover. As it accelerates, its fixed wings generate increasing amounts of lift while a rear propeller provides forward thrust.

Cochstedt gave the team access to a 1.2km by 2.4km flight area, which NTU said was larger than any free open space available for flight testing in

Singapore. DLR provided flight-test expertise and facilities for the campaign.

The aircraft is currently a research technology demonstrator and is not designed to carry passengers. The project is intended to develop the systems-engineering expertise and talent needed to design, build, test and eventually support electric aircraft and advanced air mobility systems in Singapore.

NTU and Singapore's Industry Alignment Fund Pre-Positioning initiative support the programme under the country's Research, Innovation and Enterprise 2025 plan, in collaboration with the Agency for Science, Technology and Research (A*STAR). Industry partners from Singapore and overseas have also contributed to the programme.

The flight campaign was not completed without a setback. The 8-metre prototype suffered a hard landing at the end of the testing period and could not be repaired in time for the team to evaluate its forward propulsion.

NTU plans to continue testing the aircraft's autonomous flight capabilities and range. Wang also said the team is exploring hydrogen propulsion and higher-capacity batteries, while longer-term plans include aircraft of different sizes, including a potential five-seat variant.

The project remains a research and technology-development programme, with no regulatory certification for commercial operation in Singapore. Wang said commercial operations would require substantial further investment, talent and government support.