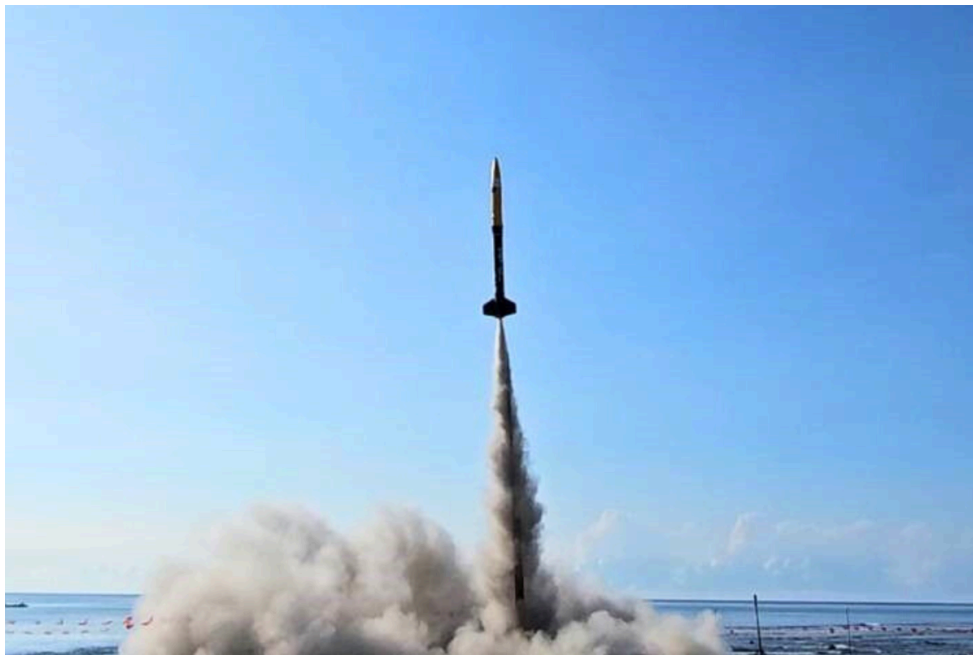# NEWS

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NYCU Student-Built Solid Rocket Successfully Launched for the First Time at Pingtung Syuhai Base

A solid rocket, SSTO, built by 11 students from the Institute of Space Systems Engineering at NYCU, was successfully launched at the Pingtung Syuhai Base on August 5th.

Translated by Chance Lai

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Following the successful launch of a rocket developed in collaboration with the Taiwan Space Agency last month (Read more: *NYCU ASARe Team Successfully Launches Sounding Rocket in Taiwan for the First Time*), National Yang Ming Chiao Tung University (NYCU) achieved another milestone on August 5th. At 7:36 AM, a student-built solid rocket was launched from the Syuhai base in Pingtung for the first time.

The rocket reached its peak altitude of approximately 1 kilometer in just 15 seconds, deployed its parachute, and completed a total flight duration of

Challenges and Educational Value of Practical Rocket Engineering Project

Xiang-Zhe Jian, the SSTO team leader and a graduate student in mechanical engineering, emphasized the complexity of the rocket's engineering system, which required interdisciplinary collaboration from development to launch. He expressed gratitude to the SSTO team for their countless nights in the lab, fueled by numerous cups of coffee, and hoped this project would inspire rocket research among students across Taiwan.

around 2 minutes and 2 seconds. After landing in the sea, the rocket was recovered by a retrieval vessel, marking the first full recovery of a rocket at the Syuhai launch site.

All the students involved in the launch mission were thrilled to see their rocket pierce the sky at the national rocket launch base.

Cost-effective, Reusable Rocket Designed for Educational and Competitive Use

This solid rocket, codenamed SSTO, was built by eleven students from the Institute of Space Systems Engineering at NYCU as part of their "Space System Integration" course. Named Macaran (after the local Sakaroh tribe), the rocket measures 2.76 meters long, 16.4 centimeters in diameter, and weighs 28.4 kilograms at launch.

The mission aimed to develop a cost-effective, reusable rocket capable of reaching one-kilometer altitude with a fixed propulsion system for future use in teaching or competitions. The propulsion system features a low-cost and safe RNX solid fuel with a maximum thrust of 200 kilograms. This project is part of the practical coursework in the "Space System Integration" class.

Assistant Professor Shih-Hsin Wei, who leads the course, highlighted students' challenges in applying systems engineering concepts to plan and execute the launch mission with limited resources and a single flight test opportunity. The highly modular rocket design uses commercial off-the-shelf components to reduce costs, with the rocket body, excluding the propulsion system, costing just 20,000 TWD. The course provides students with hands-on experience in practical systems engineering and integration concepts.

The successful launch of the SSTO rocket marks a significant milestone for NYCU and its students, showcasing their dedication and ingenuity in the field of aerospace engineering. This achievement highlights the potential of student-led projects and inspires a new generation of engineers to reach for the stars. As NYCU continues to foster innovation and practical learning, the future of space exploration in Taiwan looks brighter than ever.
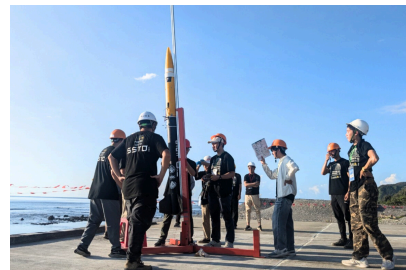
NYCU's Institute of Space Systems Engineering students prepare the SSTO solid rocket for its successful launch at Pingtung Syuhai Base on August 5th.

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