

AGENCY

The sun sets on ESEO as ESA's pioneering student satellite mission concludes

04/12/2020 1879 VIEWS 23 LIKES

ESA / Education / ESEO

After almost two years in space, ESA's [European Student Earth Orbiter mission – ESEO](#) – is coming to a close. Designed by students, for students, it has raised the bar for what can be achieved by university student teams.

Numerous technical setbacks provided additional hurdles, but also extra opportunities for students to learn about the reality of working with advanced hardware and software in orbit around our planet.

A satellite by students, for students

— ESEO undergoing electromagnetic compatibility tests at ESA's ESTEC test facilities, in the Netherlands. Copyright: ESA

ESEO was envisaged by [ESA Academy's](#) hands-on space programme as a revolutionary educational project; nothing less than a fully-functional satellite, with scientific and technological payloads designed and operated entirely by university students. This provided a unique opportunity for

students across Europe to gain significant practical experience in the design, development, launch and operations of a real space mission – for many, a dream come true.

In total, more than 600 students from [ESA Member States](#) have been involved in ESEO, from the project's beginnings and during each phase and iteration, developing the scientific and technology demonstration payloads, key sub-systems, and the entire ground segment. Throughout the project, students took part in workshops and lectures, were directly involved in the technical project reviews, and actively worked on the design, development, and testing of their hardware and software. "I came to the ESEO project when I was applying for the doctorate program in the field of space debris mitigation," recalls Dr. Chiara Palla, who worked on ESEO during her time as a PhD student at Cranfield University. "In fact, at Cranfield we were developing a drag sail mechanism to de-orbit the satellite. ESEO provided the chance to fully design, manufacture and test the device. This was an invaluable opportunity to engineer real space hardware and get hands-on with a space mission cycle in a fully international environment. I'm really convinced that the experience gained from ESEO has been driving me to successfully perform new research and lead new teams."

To make ESEO a reality, ESA teamed up with Prime Industrial contractor [SITAEL](#). This leading Transportation and Aerospace Group developed the satellite platform, then performed the integration and testing of the whole spacecraft, including the integration of the student-built payloads and subsystems. In addition, they provided valuable and much appreciated technical support to the student teams under ESA's coordination. Viktor Qiao was a student from the Hungarian Langmuir Probe team. He explains, "When I joined the Laboratory of Space Technology at the Budapest University of Technology and Economics, I was very lucky, because I was just in time to participate in the development of the Langmuir Probe for ESEO. It was the first engineering project that I worked on and I'll never forget all the practical skills I learned, and the experience of working with ESA professionals and participating in the final test campaign. Working with SITAEL was an excellent opportunity to gain experience in engineering fields other than our own, such as mechanical and systems engineering. It also provided a glimpse into the day-to-day reality of work within the space industry. I'm now a PhD student, and I'll always be proud of ESEO as the project that started my engineering career – hopefully only the first in a long list of projects to come."

A further valuable contribution by industry for the success of the ESEO project came from ST Microelectronics, which donated a set of Integrated Current Limiters used for the development of the power distribution board by the student team from BME Budapest.

A lasting legacy

Originally designed to be in orbit for just six months, project extensions have seen ESEO circling our planet for almost two years. The