

The team RAD/OBDH-Node

The team RAD/OBDH-Node has been part of the ESEO project in SSETI since 2001. The group is responsible for two subsystems in the satellite, RadFET and OBDH-Node.

RAD

The purpose of the RadFET sensors is to measure total ionized dose in and around the ESEO (European Student Earth Orbiter) satellite, thereby increasing the scientific value of the satellite. The information gathered by these measurements will be used in later SSETI projects to protect the crafts from the harmful radiation surrounding the Earth.

The current design uses 6 RadFET's circuits to make the measurements, but after the latest workshop, where the mission profile was altered slightly, a new design is considered involving 12 RadFET's. During the same workshop the RAD/OBDH-Node group became responsible for a new experiment testing COTS (Commercial Off-The-Shelf) products in the harmful environment of space.

OBDH-Node

The OBDH node (OnBoard Data Handling) is a node between several subsystems in ESEO. The node connects for example AOCS (Attitude and Orbit Control Subsystem) with the propulsion actuators and links different environment sensors with OBDH-Core, which contains the onboard computer. The OBDH node will also harbour the RAD experiments and transfer their data to OBDH-Core. All communications with AOCS and OBDH-Core will be made through a CAN-bus, which almost all subsystems are connected to. The OBDH-Node will also contain several microcontrollers to be able to do simpler data and message handling. As COTS build up the node, radiation becomes a vital issue and redundancy has therefore been an important part in the design.

What SSETI is to us

SSETI means very much to us, as it gives us a chance to get practical experience on building subsystems for a satellite. This is a morale boost for us because even though the education is good at the universities, it is seldom that we get an opportunity to build something that will be launched in real life. SSETI as an organisation extends over many European countries, which means that we learn to communicate with people from other countries and other cultures.

This allows us to develop social skills and take more responsibility beyond what our formal education provides. It also helps us to create a net of contacts that can become useful to us in the future. This project also gives us the opportunity to meet and talk to various experts in the space industry, this offers many insights to how this industry works. It is very rewarding for a student to be able to discuss with an expert the system that you designed and worked on. To manage a project like this a multidisciplinary approach is needed and this opens up for many students with different knowledge to meet and work together. Another good aspect is that through this project the university can offer inspirational assignments in related courses for the interested student.

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From an earlier student campaign - launch of the REXUS sounding rocket. Picture. SSC.

Håkan Helzenius – A student at Luleå University of Technology. Currently at the final year for a Master of Science in Space Engineering with a specialisation in space electronics.

Jens Lundström – Also from Luleå University of Technology. Became coordinator for the RAD/OBDH-Node team in 2005 and specializes in astrophysics.