

Title: DECAN (Deutsche CanSat-Höhenrakete) – A Sounding Rocket Project at TU Berlin

Authors: M. Schmid, Institute of Aeronautics and Astronautics, TU Berlin, H. Adirim: AI: Aerospace Institute, Berlin

Abstract:

The “DECAN – DEutsche CANSat-Höhenrakete”-Project, within the DLR STERN (STudentische ExperimentalRaketeN) framework, allows aerospace students of the TU Berlin to develop, manufacture, test and launch a two-stage sounding rocket. The main intention is to offer a practical and hardware-oriented education in the field of propulsion and launch system development and to train young space engineers in Germany. Therefore the design, manufacturing and testing of a sounding rocket, including all subsystems and in compliance with ECSS is to be performed by students themselves under professional supervision. The two-stage sounding rocket serves as practical example for the development team and improves their knowledge in a variety of engineering fields. The sounding rocket will have a maximum launch mass of 150 kg and will be able to launch a small CanSat payload to an altitude of up to 10 km. Moreover a telemetry unit will be integrated, which will measure important trajectory data, e.g. the flight altitude, the GPS-position, the acceleration and the velocity. The trajectory data will be sent by means of a small transmitter to the ground station and recorded on an on-board flash memory unit as well. The upper stage will be accelerated by a solid or hybrid rocket motor and provides the opportunity to launch and flight-test a small payload. The lower stage is powered by an environmentally friendly hot water or solid rocket motor. After successful ground testing and qualification of both stages separately the two stage rocket will be launched 2015 in Kiruna, Sweden.

Student participation is organised in the context of the course “Project Space Systems” at the TU Berlin where different aspects of space technology are investigated. The aim of this project-orientated course is to increase experience and perform different activities in the frame of the typical development phases of a complex system, from the first concept to the qualification and flight testing.

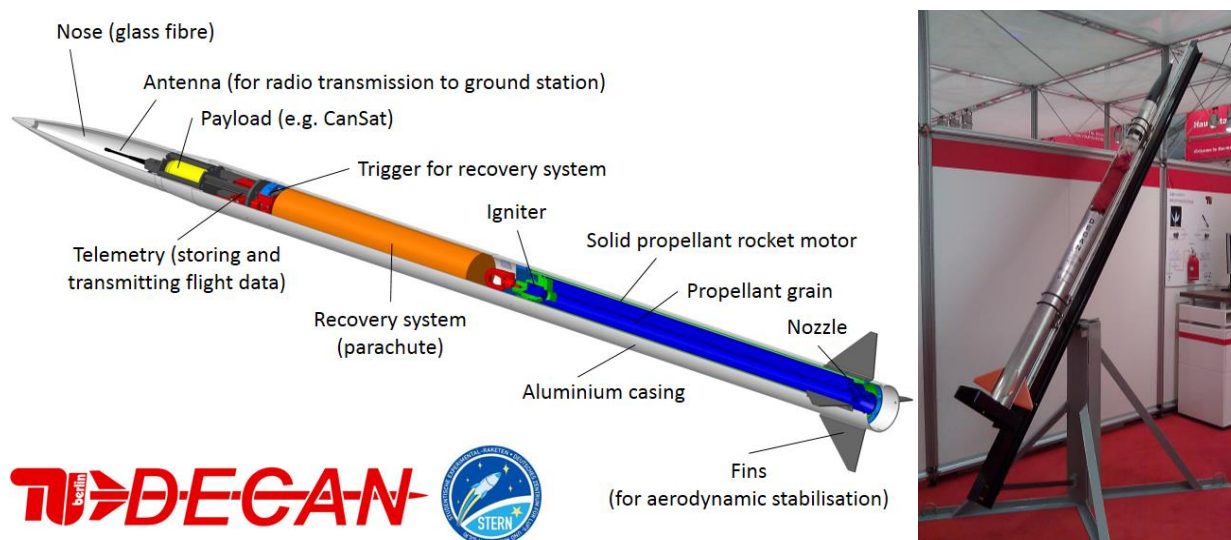


Image of DECAN Upper Stage (left) and Engineering Model on Berlin Air Show 2012 (right)