SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Small Launchers: concepts and operations (7)

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VEMS - A VIDEO AND ENVIRONMENTAL MONITORING SYSTEM FOR THE VEGA QUALIFICATION FLIGHT

Abstract

Based on the success of the missions MAQSAT and OCAM for Ariane 5, Kayser-Threde has been contracted by ELV Spa. – Industrial Prime for the VEGA Launcher – to developed and realise a video monitoring system combined with a multipurpose environmental monitoring system (VEMS) for the maiden flight of the VEGA launcher scheduled end of 2011. VEGA is Europe's new small launcher for payloads up to 1.600 kg in LEO consisting of four stages.

The purpose of VEMS is to acquire flight environment data relevant to the maiden flight of the VEGA launcher. The main objective is the monitoring of the environmental level sustained by the launch vehicle P-80 first stage including measurement of the vibrations, accelerations, thermal and mechanical stress at high acquisition rate. In addition the system will provide video imaging capability in order to provide additional information regarding nozzle extraction of the 2nd stage and stages 1-2 relative kinematics following separation. All the acquired data in conjunction with the standard telemetry from the launcher will give a complete picture of the environmental conditions enabling to improve the launcher user manual. The VEGA Video and Environment Monitoring System (VEMS) is part of the overall VEGA Additional Telemetry (ATM).

The Video and Environment Monitoring System is composed of the following subsystems:

Environment Monitoring Subsystem (EMS) including Battery Modules (Li-ion) to supply both EMS and OCAM Online Camera subsystem (OCAM) comprising two RF transmitters including antennas

The VEMS PSU ground segment consists of an Electrical Ground Support Equipment (EGSE) composed of the following equipment:

Check-Out Terminal Equipment (COTE) Overall Check-Out Equipment (OCOE)

The presentation will give an overview of this flight monitoring system acting as a modular kit and add-on to the nominal launcher telemetry system and to be used also for further VEGA flights and other launcher.