

Small Satellite Missions Symposium (B4.)
Small Spacecraft Launch, Injection, and Orbit Transfer Systems (5.)

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**AN AUTONOMOUS KIT FOR IN-ORBIT TECHNOLOGY
DEMONSTRATION – A RECURRING FLIGHT OPPORTUNITY WITH KAP
STARTING 2008**

Abstract

Kayser-Threde GmbH has developed a new concept called KAP (Kayser-Threde Arianespace Platform) for In-Orbit Demonstration of new technologies and scientific experiments based on past experience with test satellites for Ariane 5. The main idea is to use available remaining payload capacity of the launcher to provide an efficient and flexible access to space for experiments and auxiliary payloads. KAP is a fully autonomous kit providing the complete necessary infrastructure (power, data acquisition, telemetry) based on space qualified equipment flown on MAQSAT-B2 on Ariane L521 in 2005 and on TEXUS/MAXUS. The KAP Kit including the experiments remains attached to the launcher upper stage. Using maximum battery lifetime the system can operate due to its autonomy even beyond upper stage passivation with the goal of up to 1 week. Different accommodation scenarios for KAP are foreseen in order to ease its integration. Two main configurations have been set-up. KAP can be either be mounted on an additional load carrying raising cylinder located underneath the payload adaptor, or integrated on a platform for auxiliary payloads. Typical potential customers of KAP are those looking for an in-orbit demonstration under real space environment (TRL 6 to 7), where a demonstrating on ground using representative test facilities is not sufficient to get a new technology qualified to be used in future space systems. Starting by begin of 2007 Kayser-Threde has entered a Phase B of KAP on Ariane 5 with a co-funding contract from ESA in the frame of the GSTP-4 program. Objective of that Phase B is to consolidate the design concept and to identify a mission concept for a first demonstration mission in 2008. In parallel to that the customer acquisition will be intensified with e.g. publishing a Call of Interest by ESA in spring 2007 for the planned demonstration mission. The complete KAP program is planned to have one flight opportunity per year starting from 2008 on altering launchers. Therefore, there are feasibility studies ongoing for an application on SOYUZ and VEGA to have finally the complete European launcher family covered. This will allow other applications (LEO instead of GTO on Ariane 5/enlarged low-gravity phases/separation

of CubeSats). The paper will present the current program status and progress performed in the last year and describe the detailed mission for 2008 on Ariane 5. In addition the SOYUZ and VEGA concepts for will be outlined.