EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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OPTICAL INSTRUMENTS FOR METEOROLOGY AND CLIMATE RESEARCH, KAYSER-THREDE'S PARTICIPATION IN THE MTG PROGRAM

Abstract

The future European satellite fleet MTG (Meteosat Third Generation) will comprise 6 satellites and is planned to go into service in 2017. Each satellite will be equipped with sophisticated sensor technology and instrumentation under development by Munich's high-tech company Kayser-Threde. The systems are required to work for mission durations of at least 8.5 years supporting a total MTG mission life time of more than 20 years. MTG will permit local weather forecasts for Europe from geostationary orbit with highly improved precision. Improvement of forecasts for large-scale thunderstorms, intensive rainfall and for flight control information and rescue coordination is expected. Basic knowledge about our blue planet will be improved with the aid of this third generation of European weather satellites - and it is not only Europe that will benefit from a better understanding of the Earth.

Kayser-Threde is instrument prime for the optical instrument IRS, the infrared sounder of the Sounder Satellite MTG-S which will probe the atmosphere and provide information on the horizontal, vertical and temporal distribution of water vapor and temperature structures. Two flight models have to be delivered to the MTG-S prime OHB System. The IRS instrument is designed to detect, with a high radiometric accuracy, the signals emitted from gases in the atmosphere. A demanding spectral resolution for velocity determination is used to determine the wind profiles at various heights above ground with a high spatial and temporal resolution.

In addition, Kayser-Threde is also responsible for the design, development, procurement, AIT and delivery of one proto-flight model and 3 flight models of the Telescope Assembly of the Flexible Combined Imager (FCI) to Thales Alenia Space France. The Flexible Combined Imager provides the data and images of well-known daily "now-casting" and forecasting weather maps on TV.

Finally, Kayser-Threde is core team member with Astrium Germany and responsible for the Structure and Thermal Assembly including all mechanisms of the Sentinel-4 UVN instrument, also located on the MTG-S satellite. The S4 UVN instrument is part of the GMES Program (Global Monitoring for Environment and Security) which supports Europe's goals for sustainable development and global governance of the environment.

The Paper will present the current project status at PDR and give details on the preliminary design baseline. Main critical technology topics driving the ambitious systems will be highlighted. Furthermore, an outline will be given to the synergetic approach Kayser-Threde has implemented to harmonize the development of all three instruments.