

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
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EUROCKOT LAUNCH SERVICES FOR ESA EARTH OBSERVATION SWARM SATELLITES

**Abstract**

For over ten years Eurockot Launch Services GmbH has been successfully providing commercial launch services in the low earth satellites market now. Eurockot has become one of the leading launch providers for satellites requiring high inclination and sun-synchronous orbits. A number of launches has been performed for operators of earth observation, technology and scientific satellites from Europe, the USA, Canada, Japan and the Republic of Korea. The present backlog of future launches comprises four different missions for the European Space Agency (ESA): the Swarm mission, so called "generic launch" for which the spacecraft will be defined by ESA in the near future (LISA-Pathfinder or ADM-Aeolus) and two missions in support of the European GMES (Global Monitoring for Environment and Security) programme - Sentinel-2A and Sentinel-3A.

Eurockot is now looking forward to launching the next ESA mission in 2012 - the three spacecraft of the Swarm mission. It will be one of the most complex missions in respect of accommodation and simultaneous separation of the three satellites. To ensure an impact free separation of all three satellites and to minimize the risk of a collision with the upper stage a special adapter/dispenser system was developed by Khrunichev Space Center. The interface between the spacecraft and dispenser will be realized using point attachment systems with mechanical locks. The Swarm satellites will be placed by Rockot in a near polar orbit of 490 km altitude and about 87 inclination from the dedicated Rockot launch facilities at the Plesetsk Cosmodrome in Northern Russia. Swarm will provide a study of the geomagnetic field and its temporal evolution unprecedented in its accuracy and completeness, and will help to improve our knowledge of the Earth's interior and climate.

The paper gives an insight into Eurockot's future missions, particularly the Swarm mission. This mission's launch scenario and technical solution to releasing the three satellites with a minimum of risk is also described. Besides this the paper touches the incremental increase of the Rockot payload performance achieved during the last years. Eurockot has improved the payload mass performance for a launch in 2012 by about 150-200 kg compared to the capability of 2005, depending on the selected mission profile.