

Sentinel 2 Mirror Polishing



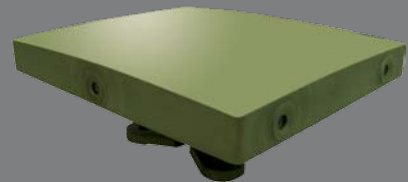
Sentinel-2 is a multi-spectral optical imaging mission for high resolution Earth observation with a large swath. It is developed in the frame of the

initiative for Global Monitoring for Environment and Security (GMES – ESA). It provides the continuity to the SPOT and LANDSAT missions, in significantly improved form.

ESA and Astrium selected AMOS for providing the polishing and coating of the instrument main mirrors, which are off-axis aspherical components made in silicon carbide.

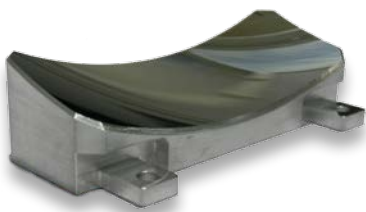
The AMOS contribution will then be to figure the mirrors to a nanometric

accuracy, to apply a reflective coating and to demonstrate their correct matching within a telescope jig structure, similar in its configuration to the real telescope.



Proba-V TMA Manufacturing

PROBA-V is an Earth observation mission, which will ensure continuity to the actual SPOT / VEGETATION mission



until Sentinel-3 will become operational. PROBA V will provide daily global monitoring at 300 m resolution for latitudes above 35° with a complete global coverage in 2 days and with a geometric accuracy below 108 m.

ESA/Verhaert/OIP selected AMOS as the TMA telescope provider. This TMA consists of three aluminium mirrors (two aspherical and one spherical) which are diamond turned to their

ultimate accuracy and are mounted afterwards with a 10µm accuracy onto a common structure, which ensures their imaging work within the required performance.

The Vegetation instrument of the PROBA-V mission will make use of a set of three identical telescopes, carefully aligned with respect to each other to increase the available field of view.

E-ELT's Design Studies

The European Extremely Large Telescope (E-ELT / ESO) will be the future 42 m diameter explorer of new astronomical frontiers in the next decade. On behalf of ESO, AMOS is conducting two design studies addressing telescope subsystems.

The so-called Pre Focal Station is a giant opto-mechanical multi-purpose system, which shall redirect the light beam to the various analysing instruments of the focal plane.

This station includes a main mechanical structure that supports a complex set of mechanisms and mirrors.

The Tertiary Mirror Unit consists in a 4 m-class mirror supported by an active mount.

The purpose of this device is to correct every minute the mirror shape during the telescope tracking. The correction is applied by means

of force actuators and aims at keeping an optimized telescope imaging quality.

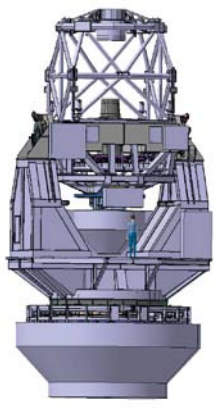
AMOS is also involved in the design of the adaptive M4 Unit as a partner of CILAS.



In the workshop

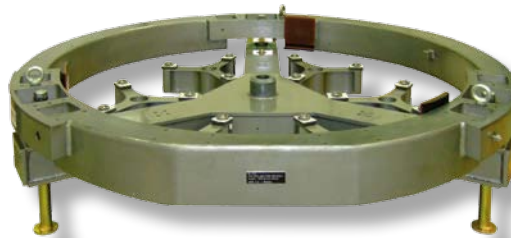
3.6 m Devastal Optical Telescope

After two years of study, the telescope has started its manufacturing phase. A large system of 140 tons in which accurate subsystems are nested. Among them: the hydraulic azimuth track that supports the telescope and, combined with the altitude bearing system, enables a very precise star tracking; the primary mirror cell with 69 actuators for active optics; and the acquisition and guiding unit that measures tracking, mirror shape and alignment errors to close the control loops.



MROi Unit #1

After being awarded in July 2007 by New Mexico Tech for the design study of the MRO Interferometer telescopes, AMOS has been selected for its manufacture. Telescope one (UT 1) is under manufacturing, assembly and tests in AMOS workshop. The first telescope will be delivered and installed on site, Magdalena Ridge Observatory – Socorro – New Mexico - USA, by AMOS in 2010.



MAST

The Multi Application Solar Telescope (MAST) for the Udaipur Solar Observatory in India is mostly assembled. AMOS is proceeding with the integration of the telescope and with verification at sub-system level. The beta-release of the Telescope Control System (TCS) software has been provided by Observatory Sciences Ltd. Next step will be complete integration of the telescope to be followed by tuning and tests. Installation on site will take place in 2010. The nine mirrors of the telescope are manufactured by AMOS optical workshop.



AMOS Activities



The company AMOS was launched in 1983 on the basis of the mechanical expertise of "Ateliers de la Meuse" and on the optical know-how of the Institute of Astrophysics from the University of Liège.

About 70 employees are specialised in design and manufacturing to a very high accuracy of opto-mechanical systems. They are mainly delivered to space industry as well as to professional astronomy and divided into three categories:

Equipment to test satellites on the ground is used to qualify payloads in the flying conditions. These are vacuum chambers that create an outer space environment, thermal panels to simulate flying temperatures or fake stars (collimators) identical to those observed after the launch.



XMM space simulator delivered to Liege Space Centre (CSL), whose dimensions are 7 m high and 6.5 m in diameter.

On board equipment flying on board satellites, probes or the Space Shuttle. They are mainly mirrors, mounts, telescopes, structures or mechanisms.



The three mirrors anastigmat telescope from the GERB experience (METEOSAT). Its weight: 1kg650, its dimensions: 17cm x 13cm.

Equipment for professional astronomy ordered by worldwide astronomers, these are telescopes, components or instruments installed within the largest observatories.



The mobile ATS (Auxiliary Telescope System) designed and manufactured for ESO VLT. Its characteristics are: 32 T, 6 m high and a primary mirror of 2m.