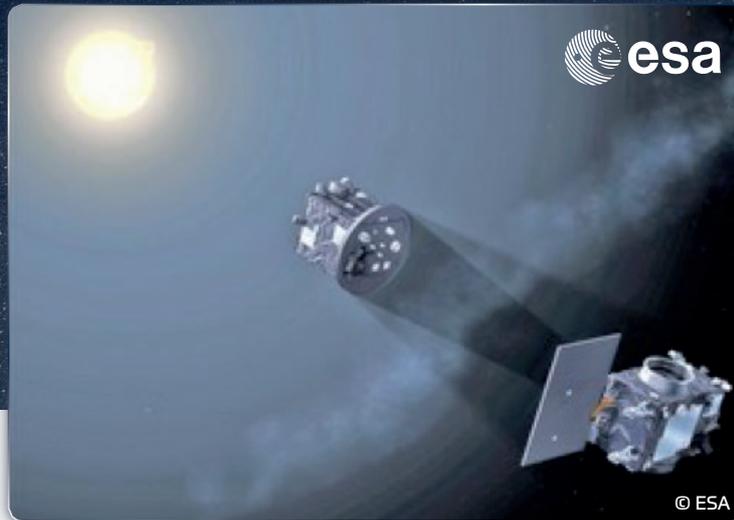


Objective for the ASPiICS Coronagraph



The project run by the international consortium ASPiICS (Association de Satellite Pour l'Imagerie et l'Interferometrie de la Couronne Solaire) is part of the technological mission PROBA-3 dedicated to a demonstration of the technology and technique of satellite formation flying.

This is the first project in which a flight of two satellites in precise formation will be tested. The scientific benefit of the Proba-3 mission is observation of the solar corona using a coronagraph located on the satellite located further from the Sun. The other satellite flies in a precise position 140 metres ahead and acts as a solar disk shield. ASPiICS is going to observe the solar corona in two different spectral regions – in visible light 540 - 570 nm and in the Hel D3 spectral line at 584.4 nm. The angular field of view is going to range between 1.04 and 3.00 solar radii.

The TOPTEC Centre is responsible for the overall optical design and tolerancing as well as the final production of the entire optical system, which it will deliver to the prime contractor and integrator of the coronagraph, the Centre Spatial de Liège. The telescope consists of two main parts – the primary objective and a relay optical system. The opto-mechanical design of both parts ensures that while minor perturbations in optical or mechanical tolerances do not affect the overall optical performance, the system remains capable of maximum performance.

The microroughness of the primary objective – designed as a diffraction limited doublet – must not exceed 0.2 nm, which is very challenging. This criterion is set in order to achieve maximum signal-to-noise ratio, which would be decreased by each imperfection on the primary objective.

The relay optical system employs aspheric surfaces to decrease the total weight of the system, which is always critical in space systems. This simplifies the optical design but puts high demands on the mechanical housing with respect to precision. TOPTEC, however, boasts both the machinery and the measurement techniques to successfully meet all the optical and mechanical requirements.

