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RECENT DEVELOPMENTS OF SPACE OPTICS AT SAFRAN REOSC

Abstract

For more than half of a century, Safran Reosc has been a key player in the development of optical components and equipment for space applications. From the Meteosat first generation and the SPOT 1 optics up to the most advanced enabling technology using silicon carbide off axis mirrors that are the key components of the Near Infrared Spectrometer, one of the instrument on board the recently launched James Webb Space Telescope, Safran Reosc has delivered optics for the most advanced scientific and earth observation satellites. This paper will highlight some of the recent developments in space optics and equipment: low CTE ceramics mirrors and silicon carbide free form mirrors and the SEEING instruments suite for nano-satellite earth observation and SSA applications. Ultra stable ceramics mirrors are still widely used for space mirrors application both for earth imaging applications and climate monitoring missions. The demands for extreme light-weighting mirrors are still further pushing the limits of glass machining technology and this trend is well illustrated by the primary mirror of the receiving channel of the MERLIN telescope, one of the most critical component of this mission devoted to the monitoring of the methane concentration in the Earth atmosphere. The primary mirrors of the KOMPSAT-7 payload developed for the Korean Aerospace Research Institute (KARI) illustrates another trend in space mirrors, combining a large diameter and highly accurate surface profile for improved ground resolution. In the field of silicon carbide mirrors, Safran Reosc has delivered to Airbus Defence and Space four sets of flight mirrors for the PLEIADES NEO instruments and new development such as the polishing overcoating R-SiC and the highly aspheric freeform mirrors have been implemented on the MICROCARB telescope to achieve unprecedented compactness. Safran Reosc has designed and developed the SEEING imagers, a family of 16U- 30U instruments for earth observation of meter class ground resolution. The first imager, the SEEING 130 a wide field of view instrument, will be delivered later this year to the Norwegian Research Defence Establishment and will be part of the NorSat-4 satellite.