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26 TELESCOPES OF PLATO MISSION, PRODUCED IN A HIGH-RATE INDUSTRIAL PROCESS, WITH VERY SIMILAR HIGH PERFORMANCE AT CRYO-TEMPERATURE

Abstract

The Italian Space Agency is a main contributor to the ESA mission PLATO. In particular, ASI has instructed Leonardo SpA - leading a Team of Italian Space Industries - to develop the 26 telescopes that will fly on board the PLATO payload module with the aim to discover, observe and analyze exoplanets and their host stars. The mission is based on a challenging telescope design with peculiar optical performance to be assured at very low operative temperature (-80C). The "large" number of telescopes, produced in high rate (up to 3 telescopes every 2 months), is quite unusual for the production of scientific payloads. It has imposed a change with respect the prototypical manufacturing and test approach as standard for a few space equipment/instruments, addressing the implementation of smart and fast methodologies for the aligning and focusing of the telescopes, based on simulation of the as-built data. The opto-mechanical design of the telescope was optimized for an industrial approach used for all the manufacturing, assembly, integration and test (MAIT) phases. The number, production rate and the performance result of the flight units so far delivered to the PLATO – Team, is validating the selected design solutions and selected MAIT approach and procedures.