

CEDRAT TECHNOLOGIES won the tender to supply a Fast Steering Mirror for ELT MICADO INSTRUMENTATION

MULTI-ADAPTIVE OPTICS IMAGING CAMERA FOR DEEP OBSERVATIONS

MICADO or the Multi-Adaptive Optics Imaging Camera for Deep Observations, is one of the first-light instruments for the Extremely Large Telescope (ELT) (Fig.1) and takes the Adaptive Optics (OA) technique to the next level. It will be the first dedicated imaging camera for the ELT and works with the multi-conjugate adaptive optics module, MAORY.

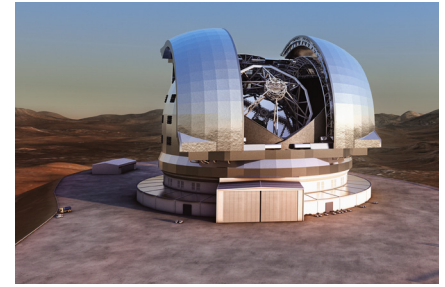


Fig. 1: Extremely Large Telescope ELT
Courtesy: ESO/L. Calçada

ELT - MICADO - BEAM STEERING MIRROR FOR SIGNAL MODULATION

CEDRAT TECHNOLOGIES (CTEC) has been involved in the development and delivery of several piezo actuators and mechanisms for critical subsystem parts of the ELT structure and instrumentation like M5 filed stabilization unit and MICADO instrumentation. MICADO, a large multi-purpose infra-red camera, is one of the first light instrument to be installed at the Extremely Large Telescope (ESO telescope) and an Adaptive Optics system to correct atmosphere defect will be realized at LESIA (Paris Observatory / CNRS). This AO system is based on a pyramid Wave Front Sensor to measure the wave front aberration with a very high accuracy. To linearize the signal and adapt the sensitivity of the sensor the focused image has to be modulated around the top of the pyramid optical component using a Fast Steering Mirror based on a piezo tip-tilt mechanism DTT40SM-SG (Fig.2). This FSM consists of a 50mm diameter and 8mm thickness glass mirror located in a pupil plane. To measure and correct fast change in the turbulent atmosphere, the system may run up to 500Hz with a stroke up to 2mrad in closed loop. In addition, CTEC has taken care to add a cover to ensure protection against excessive humidity in the environment, as well as a bracket to fix the modulation system with the mirror in a vertical position. Also, the FSM is equipped with strain gauges to measure the position of the angular deflection.

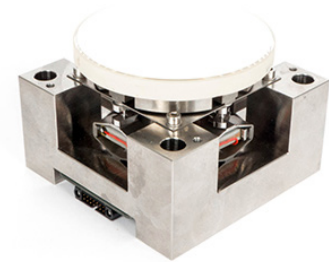


Fig. 2: Example of a Double Tip-Tilt DTT40SM

ABOUT US

CTEC is an internationally recognized specialist in Piezo & Magnetic Mechatronic solutions. We offer a wide range of standard products: Amplified Piezoelectric Actuators (APA®), Fast Steering Mirrors & Point Ahead Mechanisms (FSM, PAM), Preloaded Piezo Actuators (PPA), XY piezo stages, piezo motors, Fast piezo shutters, magnetic actuators, the associated electronics as well as customized products. CTEC has a strong experience (+20 years Heritage) in developing rugged OEM solutions for the most demanding applications (Line of sight stabilization, micro-scanning, ...) in the Space Industry. CTEC offers solutions to answer to the compact, dynamic and precise motion requirement from the astronomical instrumentation designer and manufacturer.