

## **TMT International Observatory awards a contract to AMOS for Designing and Building the TMT Tertiary Mirror Support System and Positioner Assembly**

The TMT International Observatory LLC (TIO) recently awarded a contract to AMOS for designing and manufacturing the tertiary mirror support system and positioner assembly (M3SSPA) of the future extremely large TMT telescope. Once constructed, the TMT telescope will have a 30-meter primary mirror and be the largest ground-based, optical telescope in the Northern hemisphere.

With its preferred site located on Maunakea in Hawaii, TMT is one of three extremely large telescopes under construction in the world. Building such a telescope is a major challenge. Engineers must design and build large moving structures capable of holding the telescope's different mirrors in place with nanometric precision.

After being chosen to design the secondary mirror support system and positioner, AMOS is now selected to develop another critical part of the telescope: the tertiary mirror support system and positioner assembly, known as the "M3SSPA." This system consists of a large mount that carries and orients the M3 mirror. Located on a tower emerging from the center of the 30-meter primary mirror support structure, the tertiary mirror captures the light reflected by the secondary mirror at the top of the telescope, and transmits it towards one of the two Nasmyth platforms on the side of the telescope, where the scientific instruments are located.

The M3SSPA system is composed of two elements:

- A system to support the 3.6x2.5-meter elliptic flat tertiary mirror and ensure that the mirror's surface keeps its optimal shape with a precision in the order of a fraction of a micrometer
- A positioning mechanism allowing the mirror to direct the beam with a high precision towards the telescope instruments and to flip 180° so as to illuminate the instruments on one or the other side of the telescope, depending on the observations to be made.

"We are excited to initiate the work on this second major TMT subsystem. TIO's requirements are challenging but AMOS was selected from a number of leading-edge competitors because of our demonstrated reliability and the strength of our proposed plans to develop the M3SSPA. We look forward to getting started," said Xavier Verians, AMOS' Business Development Director.

About TIO: TIO's members are the California Institute of Technology, University of California, the National Institutes of Natural Sciences of Japan, the Department of Science and Technology of India, and the National Research Council of Canada. The Association of Universities for Research in Astronomy is an associate member. Major funding has been provided by the Gordon and Betty Moore Foundation. The National Science Foundation has provided funding for recent design and development work.

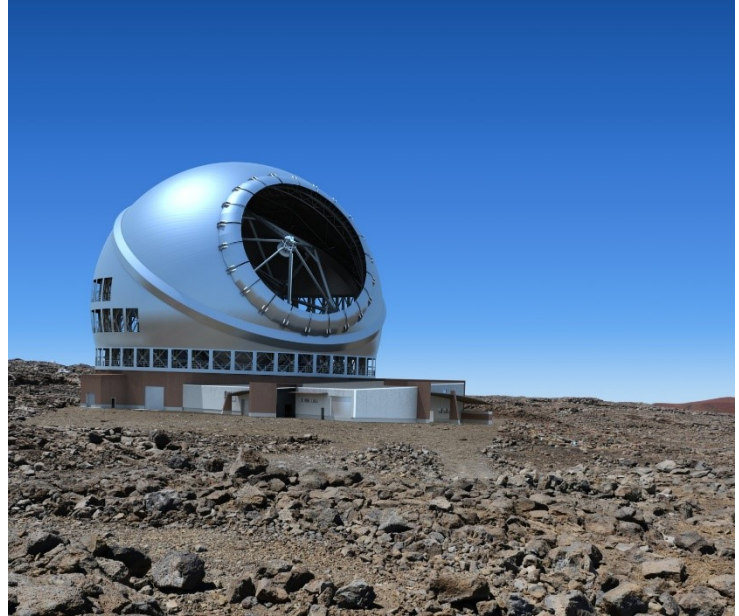
This material is based upon work supported by the National Science Foundation under Cooperative Agreement No. 2331108. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

For more information on TIO: <https://www.tmt.org/>

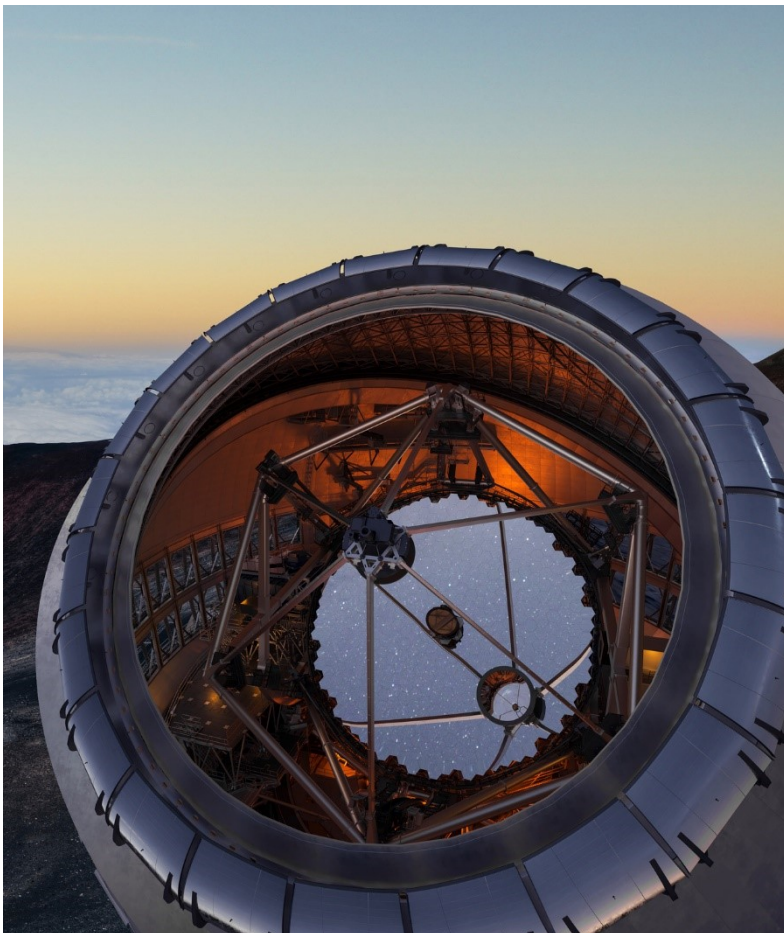
## A few pics



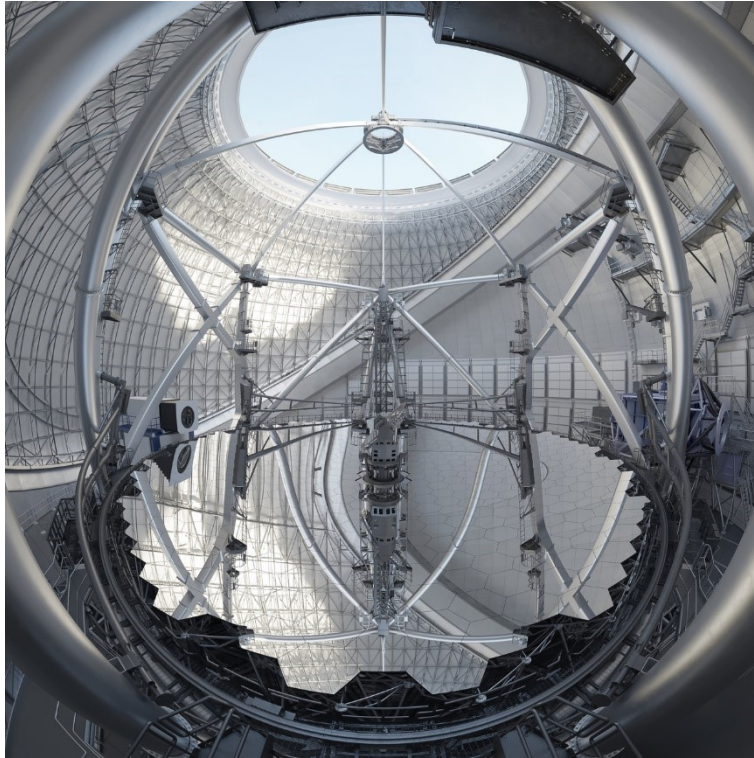
Artistic rendering of the Thirty-Meter Telescope  
(Credit: TIO)



Artistic rendering of the Thirty-Meter Telescope (Credit: TIO)



Artistic rendering of TMT at sunset (Credit: TIO)

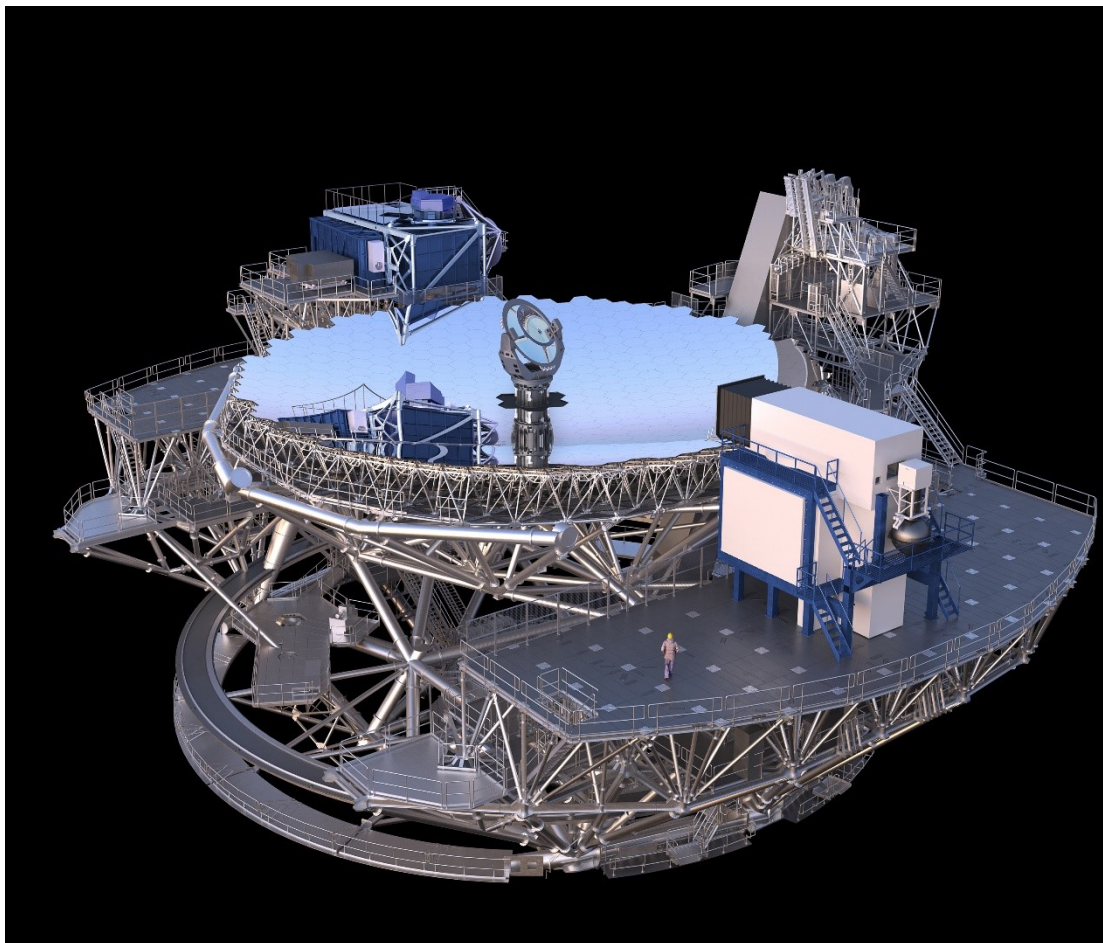


TMT Bird's-eye view with the M2 system on the top of the structure  
(Credit: TIO)



M3 Support System and Positioner Assembly (M3SSPA)





Partial view of TMT showing the M3SSPA above the segmented primary mirror and the two large Nasmyth platforms holding the multiple instruments. (Credit: TIO)

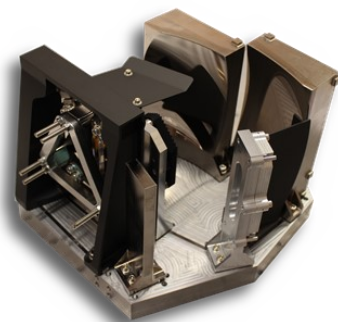
## AMOS in a nutshell

Located in Belgium, AMOS has been designing and building high-precision optical and mechanical equipment for almost 40 years. Its main products are telescopes for professional astronomy, ground-based or space-based optical systems, spacecraft test facilities and high precision mechanical equipment. AMOS is one of the world leaders for telescopes from 2 to 4m in diameter and a European leader for space optics.

The company has a large customer base in Europe (such as ESA, ESO, AIRBUS DEFENSE & SPACE, THALES ALENIA SPACE, OHB), as well as in the United States of America (such as AURA, NMT, TMT, GMT, etc.), in India (ISRO, PRL, ARIES, etc.), and recently started to expand into markets such as Turkey.

Among its flagship achievements are the four auxiliary telescopes of the VLTi in Chile, the DAG telescope in Turkey, the Mount Abu telescope in India, system engineering for the Extremely Large Telescope of ESO, but also most of the Gaia's mirrors, optical components on many European meteorological or Earth Observation satellites such as the different generations of Meteosat and the Sentinels, a spectrometer on the Indian lunar probe Chandrayaan II, a presence on the Mars Express, Juno, Bepi-Columbo probes or even in the James Webb Space Telescope.

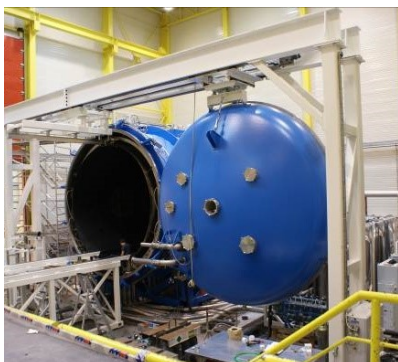
Today, AMOS employs more than 100 highly qualified engineers, technicians and workers. Thanks to its expertise and its ability to design and manufacture in-house, AMOS remains one of the few Belgian integrators capable of managing, internally or with local subcontractors, a whole project from A to Z. From design and initial computations, through plans, manufacturing, assembly and testing in-house, to logistics and to installation on site. All with technologies as different as mechanics, optics, thermics or electronics, but also with various materials, vacuum levels, welding types, and assembly technologies.



Spectrometer of the ELOIS  
hyperspectral camera



ATS (Auxiliary Telescope Systems),  
"mobile" telescopes of the VLTi in Chile (Cerro Paranal)



Thermal-vacuum Test Facility  
for VSSC (ISRO)

More info:

[www.amos.be](http://www.amos.be)

<https://www.linkedin.com/company/amos/>

Contact:

Mr. Xavier VERIANS  
Business Development Director  
[xavier.verians@amos.be](mailto:xavier.verians@amos.be)  
+32 4 361 40 40