See the notice on TED website

Iodáil, an-Bologna: Astronomical and optical instruments
OJ S 52/2023 14/03/2023
Fógra faisnéise roimh ré
Soláthairtí

Bunús dlí:
Treoir 2014/24/AE

Alt I: Údarás conarthachta

I.1. Ainm agus seoltaí

Ainm oifigiúil: INAF OAS
Seoladh poist: via Gobetti 93/3
Baile: Bologna
Cód NUTS: IT Italia
Cód poist: 40129
Tír: An Iodáil
Teagmhálaí: PAOLO CILIEGI
Ríomhphost: paolo.ciliegi@inaf.it
Seoladh/seoltaí idirlín:
Príomhsheoladh: https://www.oas.inaf.it/en/
Seoladh phróifíl an cheannaitheora: http://wwwmorfeo.oabo.inaf.it/

I.3. Cumarsáid

Tá na doiciméid soláthair ar fáil ionas gur féidir rochtain dhíreach lán gan srianadh, saor in aisce a fháil orthu ag: http://wwwmorfeo.oabo.inaf.it/index.php/infoaspherical/
Is féidir tuilleadh faisnéise a fháil ó an seoladh thuasluaite

I.4. An cineál údaráis chonarthachta

Cineál eile: Research Institute

I.5. Príomhghníomhaíocht

Gníomhaíocht eile: Research

Alt II: Cuspóir

II.1. Raon feidhme an tsoláthair

II.1.1. Teideal

Preliminary Information Note for MORFEO ASPHERICAL MIRRORS procurement

II.1.2. Príomhchód CPV

38630000 Astronomical and optical instruments

II.1.3. An cineál conartha

Soláthairtí

II.1.4. Cur síos achomair

ELT (Extremely Large Telescope) is the world’s largest telescope (39m diameter) under construction by ESO (https://elt.eso.org/) at Cerro Armazones in Chile. ELT is considered worldwide to be one of the highest priorities in ground based astronomy. MORFEO (

http://wwwmorfeo.oabo.inaf.it/), as a first generation ELT instrument, will help compensate for the distortion of light caused by turbulence in the Earth's atmosphere. MORFEO is a Multi-Conjugate Adaptive Optics (MCAO) module that will allow spatially uniform adaptive optics compensation over a large field of view (about 1 arcmin2) with high sky coverage. Wavefront sensing is performed by six Laser Guide Stars (LGS) and three Natural Guide Stars (NGS), for the measurement of high and low-order wavefront perturbations respectively.
This preliminary information note will describe general requirements and conditions for the final design and the manufacturing of the MORFEO ASPHERICAL MIRRORS

II.1.5. Luach iomlán measta

II.1.6. Faisnéis faoi bhearta

Tá an conradh seo roinnte ina bhearta: níl

II.2. Cur síos

II.2.3. Láthair feidhmíochta

Cód NUTS: ITH55 Bologna
Príomhshuíomh nó príomhláthair na feidhmíochta: The MORFEO ASPHERICAL MIRRORS must be delivered to the Integration Hall in Bologna at the INAF OAS Institute (Via Gobetti 93 /3, Bologna, Italy).

II.2.4. Cur síos ar an soláthar

1. The call will cover the procurement of the two aspherical mirrors (M7M and M8M) and will comprise the final design plus manufacturing, assembly, integration and verification in operational conditions. The verification should be preferably performed by testing in a representative environment. Verification by analysis could be acceptable, if agreed with the customer. Finally, the two aspherical mirrors will be tested at the company premises and delivered at the integration hall in Europe (Bologna, Italy). The transition between the final design phase and the manufacturing phase will be subject to internal and external constraints (technical verification and acceptance of the Final Design by MORFEO Consortium and ESO plus funds availability).
2. Assuming as T0 the date of the Kick Off Meeting with the selected contractor, the Final Design Phase shall end within 8 months from T0 while the delivery of the two aspherical mirrors at the Bologna Integration Hall shall take place within 18 months from the closure of the related Final Design Review (FDR).
3. All the ESO standards for ELT instrumentation will be applied to the projects.
Optics:
4. The clear aperture of the first aspherical mirror (hereafter M7M) will be about 1190 mm, with a concave curvature radius around 35m. The surface aspherical coefficients are given in standard Noll notation (RMS Zernike coefficients, units are mm): Z6=1.33808E-02; Z7=9. 15126E-03; Z9=3.88534E-04; Z11=8.19550E-04; Z12=3.21440E-05.
5. The clear aperture of the second aspherical mirror (hereafter M8M) will be about 1230 mm, with a concave curvature radius around 38.5m. The surface aspherical coefficients are given in standard Noll notation (RMS Zernike coefficients, units are mm): Z6=6.04576E-02; Z7=6. 01545E-03; Z9=1.76372E-04; Z11=3.59100E-04; Z12=3.84119E-06.
6. The M7M and M8M substrates shall be Zerodur (or a glass with equivalent thermo-mechanical properties).
7. M7M and M8M shall be coated with high reflectivity in visible and near infrared wavelengths (550-2500 nm) (Silver Protected).
8. M7M and M8M must allow for a periodical recoating and must allow for a periodical cleaning (keeping the required accuracies and performances specified hereby).

MECHANICS
9. The mass of each opto-mechanic (optic + mounting), shall be within the following values : M7M 300 kg, M8M 32 kg
10 The system presents mechanical constraints: the mechanical envelope must be such that: the frontal area is limited by the optical clear aperture + 20% and the depth (distance between the optical vertex and the mechanical interface to the Main support structure) is between 0.2 and 0.25m.
11 The mechanical interface of the optomechanics (mirror + mounting) shall be kinematic (to guarantee repeatability behavior) and will be specified in the call for tender (actual baseline is sphere cylinder plane).
12 The interfacing material will be steel.
13 The lowest eigenfrequency of any of the optomechanics shall be higher than 21Hz (31Hz goal).
ENVIROMENTS
14 The representative temperature will be 9°C, the operational range shall be granted from 0° to 15°C
15 M7M will have a nominal working inclination with respect to gravity vector of about 142 degrees (reflecting surface facing upward). M8M will have a nominal working inclination with respect to gravity vector of about 61 degrees (reflecting surface facing downward).
16 Air pressure to be considered shall be 1045 mbar for Europe integration and 712mbar for Chilean operational environment.
17 The assemblies shall survive earthquake loads of roughly 3.6g in any direction.

II.2.14. Faisnéis bhreise

Additional info can be requested within 30 days from the publication of this Note by email to procurement.maory@inaf.it. The questions (in an anonymous form) and the relative answer will be publicly available at http://wwwmorfeo.oabo.inaf.it/index.php/infoaspherical-faq/ with due advance with respect to the publication of the Call for Tender. No response nor expression of interest is expected.

II.3. Dáta measta fhoilsiú an fhógra conartha

30/06/2023

Alt IV: Nós imeachta

IV.1. Cur síos

IV.1.8. Faisnéis faoi Chomhaontú Soláthair Rialtais (GPA)

Tá an soláthar cumhdaithe ag an gComhaontas Soláthair Rialtais: tá

Alt VI: Faisnéis chomhlántach

VI.3. Faisnéis bhreise

Performances:
18 M7M and M8M radius of curvature shall have an accuracy of +/-0.1% with a precision (knowledge error) of +/-0.03%.
19 M7M astigmatism RMS coefficients (Noll Z5, Z6) shall have an accuracy of 40 nm with a precision of 40 nm.
20 M8M astigmatism RMS coefficients (Noll Z5, Z6) shall have an accuracy of 40 nm and 180 nm respectively, with a precision of 40 nm.
21 M7M and M8M coma RMS coefficients (Noll Z7, Z8) shall have an accuracy of 15 nm.

22 M7M and M8M trefoil RMS coefficients (Noll Z9, Z10) shall have an accuracy of 5 nm.
23 M7M and M8M spherical aberration RMS coefficient (Noll Z11) shall have an accuracy of 5 nm.
24 The M7M and M8M overall budget for Zernike RMS coefficients Z12-Z36 (Noll) is 20 nm (assuming flat spectrum).
25 Above Zernike coefficient Z36 the allowed error is specified as PSD [m^3]:
PSD=A/f^B for 4<f<200
PSD = const for f<4
where PSD m^3, f [1/m], A [m^2 m^(1-B)]
M7M and M8M coefficients are A=5e(-16) and B=2.5.
26 The M7M and M8M micro-roughness shall be less than 2nm.
27 Each of M7M and M8M shall have five Spherical Mounted Retroreflector (nest holders), referenced to its optical axis within the following tolerances (including all possible error): Tx +- 0.5 mm Ty +- 0.5 mm Tz +- 1 mm rx +- 0.5 arcmin ry +- 0.5 arcmin rz +- 5 arcmin
28 The preferable position is around the mirror glass edge and will be agreed with the customer in the design phase.
29 The position of the SMRs must be referenced also with respect to the kinematics interfaces.
30 All the above has to be verified with optics and mechanics integrated and in operational conditions.
31 Variations induced by temperature to the above specifications shall be either measured or estimated via analysis. Uncertainty due to this estimation shall be included in the error budget.
Optical dummy:
32 The supplier shall provide (as a preliminary delivery, possibly a few weeks after FDR closure) non-optical dummies of each mirror for preliminary installation and mechanical interface verification. The non-optical dummies will preserve, with respect to the real ones:
· volume
· mechanical interface to the structure
· handling points
· COG, with a maximum error of 1cm distance
· mass
· position of SMR
Handling:
33 The supplier shall provide covers with guides for both mirrors.
34 The supplier shall provide proper handling tools for the opto-mechanics handling (for the unpacking).
35 Unpacking and reassembly procedure shall be agreed with the customer and proper training shall be performed by the vendor.
36 Packing equipment shall be compliant with ESO standard.
The publication of the Call is expected Q2/Q3 2023.

VI.5. Dáta seolta an fhógra seo

09/03/2023