

## Questions and Answers related to the Call for Tenders – Photon transport of the CUBES beamline at Elettra 2.0

*Questions received on the 25.02.2026*

### Question n. 1

Regarding the exit slits (ES): Which is the admissible error of the position of the centre during the opening from 10 to 1000  $\mu\text{m}$ ?

### Reply n. 1

We understand this question as asking how symmetrically the slits should open. The error in the vertical (dispersive direction) of the slit centre must be less than 20% of the slit opening.

### Question n. 2

Regarding the filters (F): May we ask you the size of these filters? Shall we consider the size of the beam on these filters about 5 mm of diameter?

### Reply n. 2

5 mm may be sufficient as the beam size is less than 1 mm at this point. 10 mm may be better to allow freedom to move to a different area of the filter, for example to avoid a contaminated spot after long use, etc.

### Question n. 3

We have already asked this question, but we would clarify again our request regarding the drivers, controllers and software (TANGO): what is provided by CERIC? Control software (TANGO) for piezo? Control software (TANGO) for stepper motors? YAMS for stepper motors? Controllers for piezo? These questions regard the PFM since we understood that for monochromator is requested a specific control software. Pag.8 Par.2.3 Responsibilities of CERIC mentions: "Drivers, controllers and control software of the motors".

### Reply n. 3

- Case A: 2-phase stepper motors (preferred). CERIC provides **controllers** (YAMS) and a corresponding **simple TANGO device** that includes only basic operations like moving the motor to a position with a defined speed and acceleration. Supplier provides motors, **PGM TANGO device** (tuning photon energy, PG selection, recalculation of encoders' reading to energy and back...), and (optionally) **PFM TANGO device** (positioning of the PFM, recalculation of encoders' reading to x/y/z/pitch/roll/yaw and back...).
- Case B: piezo with controllers listed in sub-annex 3E: CERIC provides only the **simple TANGO** device described above. Supplier provides controllers and **PGM/PFM TANGO** devices described above.
- Case C: piezo with controllers not listed in sub-annex 3E: Supplier provides **controllers** and **all TANGO devices**.

### Question n. 4

If we need to supply the drivers and controllers and you are going to supply the software TANGO, are you going to provide us the control software in order to move the motors and perform the FAT?

### Reply n. 4

CERIC will provide control software for motors supplied by the contractor, provided that the type of motor is agreed before purchase.

In Case A of the reply to question 3 above CERIC will provide 1 controller YAMS with a simple TANGO device, computer and training for FATs, as described in sub-annex 3D, Chapter 7. In Case B CERIC will provide only the simple TANGO device for piezo controllers.

**Question n. 5**

Regarding the optic elements (mirrors and gratings): do you want to perform the Optical Test and checks listed on par. 2.10 only at Elettra metrology room? Since we will perform before the same test at the supplier facility, do you need to attend also the same test at supplier facility?

**Reply n. 5**

In the call for tender Annex 3, section 2.6, it is written that for Factory Acceptance Tests "CERIC reserves the right to actively participate in the acceptance tests at the Contractor`s premises." As stated in Annex 3, section 2.10, "All optical elements (mirrors and gratings) must be accompanied by laboratory measurements certifying the required characteristics." If the laboratory measurements are not done at the Contractor`s premises, CERIC does not reserve the right to participate.

The optical elements will be checked by the Elettra metrology team.

The sentence in the first paragraph of Annex 3, section 2.10 "The costs and organization of transport to and from Elettra are borne by the Contractor" refers to the second last sentence of Annex 3, section 2.10, and regarding tests at Elettra "One or more representatives of CERIC will be able to attend the tests." The costs incurred refer to the possibility that the supplier sends the optics to CERIC for tests at Elettra and wishes them to be sent back to the factory; and the costs of attendance by staff of the supplier at the Elettra tests.

**Question n. 6**

Regarding the mirrors: the qualified suppliers suggest to use binding layer of Cr while from the specification is detailed no Cr interlayer. The reason is: if no binding layer is accepted, the supplier cannot guarantee correct adhesion of the gold coating. The coating then needs to be excluded from warranty claims. Alternative Materials could be Nickel as a binding layer. Which is your decision? Can we use binding layer of Cr? Or do we use Nickel as a binding layer?

**Reply n. 6**

As stated in Annex 3, section 3.2: "Any interlayer between the Si block and Au coating should be avoided if possible, and if deemed to be necessary, must be discussed with the purchaser." In other words, it is possible to propose an interlayer, and if the quotation is accepted, the contractor must discuss this with CERIC before proceeding. From experience, we know that if the interlayer and gold coating are not applied correctly, the interlayer metal produces sharp absorption features in the transmitted light, for example at the Cr L<sub>2,3</sub> edge.

**Question n. 7**

Sub-Annex 3A – list of suggested components. In this list it is mentioned a turbopumping station only for the PFM. Each vacuum chamber is equipped with ion pump to be supplied; do you request also the pre-pumping station to be supplied for each chamber?

**Reply n. 7**

No. The pre-pumping system for the PFM will also be used for other chambers.

**Question n. 8**

Specials and spare parts. It is requested at least one spare parts for the "critical" components. What do you mean for "critical"? long period for supply?

**Reply n. 8**

"Critical" means that the spare part is necessary for the functioning of the beamline, is subject to wear and tear, and either requires a long time for supply, or is a non-standard part with one or very few suppliers.

**Question n. 9**

Annex-4-DRAFT-CONTRACT; 1.10 Terms of Invoicing: 20% T0+5 at approval of the optical elements and layout. What do you mean for "layout"? Optic layout? Or complete layout of the beamline (general mechanical assembly)? Can we propose a different term of payment, in case?

**Reply n. 9**

See Annex 3, section 3.1, first paragraph. Tenderers are invited to use the supplied information, and if desired, suggest "improved options". In the suggested timetable, at T0+5, it is expected that the tenderer has verified that their design is feasible and within specifications, choices have been made where options are available (for example,

lamellar or blazed gratings), possible improvements have been included and a general drawing has been made. Again, as indicated in the suggested timetable, at this point of the project, a 3D drawing is not required, the phases of the installation, etc are not required.

The contractor can submit a modified timetable, and the quality of the timetable will be taken into account when evaluating tenders. Up to 10 points are allocated for "delivery time, time schedule, completeness and quality of documentation."

The payment terms are defined in the tender documents. However, CERIC is open to minor adjustments of the invoicing milestones (e.g., separating optics delivery from final assembly) provided they are technically justified and agreed upon during the contract finalization phase.

#### **Question n. 10**

*"Invoicing occurs at delivery. The invoice must include only the portion of the goods delivered and that can be deployed."* Could you confirm that we can deliver parts of the total supply and invoice only these parts? For example: can we deliver the optic elements (mirrors and gratings) and invoice only the optic elements? In this case FAT and SAT how is it considered? (question n.5: only SAT at ELETTRA or also FAT at supplier site?)

#### **Reply n. 10**

The site acceptance test for the optical elements consists of the measurements by the Elettra metrology lab. The question about factory acceptance tests for the optical elements is answered above.

CERIC will accept the metrology tests performed at the Elettra optics laboratory as the Site Acceptance Test (SAT) for the optical elements. This allows for the invoicing of the corresponding fraction of the payment upon successful completion of these tests.

#### **Question n. 11**

Can we ask a delay of the deadline in order to receive all quotation from our suppliers?

#### **Reply n. 11**

As written in the Invitation To Tender, page4, "CERIC-ERIC reserves the right to make changes in the procurement timetable."

To allow bidders sufficient time to finalize quotations from subcontractors, **the deadline for submission is extended to 14.04.2026.**

---

Prof. Andrew Harrison  
Executive Director CERIC-ERIC