



INVITATION TO SUBMIT A BID

for the small size public procurement

„*Deformable mirror for FSYNC*”

TP22_016”

(“**Public Procurement**”) that is to be concluded in the procedure according to the Rules for applicants and beneficiaries (“**Rules**”) under the Research, Development and Education Operational Programme.

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| Name of the contracting authority: | Institute of Physics of Academy of Sciences of the Czech Republic, public research institution |
| Registered office: | Na Slovance 2, Praha 8, PSČ: 182 21 |
| Identification No.: | 68378271 |
| Tax Identification No.: | CZ68378271 |
| Person authorized to act on behalf of the contracting authority: | RNDr. Michael Prouza, Ph.D., director |
| Contact person: | Michal Razým |
| Telephone: | +420 608 467 163 |
| E-mail: | Michal.Razym@eli-beams.eu |

(“**Contracting Authority**”)

1. GENERAL INFORMATION

The subject matter of the Public Contract shall be funded from Research, Development and Education Operational Programme.

- 1.1 The Contracting Authority does not follow the rules for public procurements set out in the act no. 134/2016 Coll., on public contracts awarding (“**Act**”), because the Public procurement is considered a small size public procurement within the meaning of Section 27 of the Act.
- 1.2 However, the award procedure is subject to Rules due to the fact that the Public Procurement is financed from the Research, Development and Education Operational Programme.



- 1.3 If the Contracting Authority uses references to the Act, it means that the Contracting Authority shall proceed analogically in relation to the Act. However, these links to the Act do not imply that the Public Procurement is awarded in accordance with the Act.

2. PUBLIC PROCUREMENT SPECIFICATION

- 2.1 The subject matter of this Public Procurement for supplies is the supply of a set of four crystals with accessories in accordance with the technical specification, which forms annex No. 3 hereto and under the contract, which forms annex No. 1 hereto (“**Product**”).
- 2.2 The bidder shall include in its bid the description of the offered Product, so that the Contracting Authority may verify that its technical requirements are met.
- 2.3 The maximum permissible total bid price for the Product is **2 000 000 CZK excl. VAT**.

3. THE TIME AND PLACE OF DELIVERY

- 3.1 The time of delivery is stipulated in the contract, which forms annex No. 2 hereto.
- 3.2 The place of delivery is: ELI Beamlines research centre, Průmyslová 836, post code 252 41, Dolní Břežany, Czech Republic.

4. BUSINESS AND PAYMENT TERMS

- 4.1 Business and payments terms and conditions for performing the Public Procurement are contained in the binding draft of the contract that forms Annex 2 hereto. After the most suitable bid placed within the Public Procurement is selected, the Contracting Authority will conclude with the selected bidder the contract attached hereto as the binding draft contract with only missing parts completed in accordance with the selected bid (identification data of the selected bidder, price, etc.).
- 4.2 The bidder does not have to include the completed contract in its bid. By submitting its bid the bidder expresses its unconditional consent with wording of the contract, which will be concluded after this procedure is completed.
- 4.3 If the bidder includes in its bid any additional business or legal terms or any reference thereto or the draft contract modified in any way, such additional or contrary terms shall be deemed irrelevant and the Contracting Authority will request that the bidder concludes the contract in line with art. 4.1 hereof.
- 4.4 If the selected bidder refuses to conclude the contract for Public Procurement performance in line with art. 4.1 hereof the Contract Authority will conclude the contract with a bidder on the second, third or other places always under the condition that all the bidders with higher ranking refused to conclude the contract.



5. THE DATE AND PLACE OF THE SUBMISSION OF BIDS

- 5.1 Bids must be submitted to the address: **Fyzikální ústav AV ČR, v. v. i. - ELI, DEP. 95 – Michal Razým, Za Radnicí 835, Dolní Břežany, post code: 252 41, Czech Republic, on 4. 10. 2022 until 13:00** at the latest.
- 5.2 Bids may be supplied by post, courier, or personally to the above mentioned address in working days between 8-15 hours. On the last day of the period for the submission for bids the bids may be submitted until **13:00** o'clock.

6. ADDITIONAL INFORMATION

- 6.1 The supplier is entitled to require in written form explanations regarding the tender conditions from the Contracting Authority. The written request must be received by the Contracting Authority no later than 4 working days before the deadline for submission of bids.
- 6.2 The Contracting Authority sends explanations regarding the tender condition and possibly related documents no later than 2 working days after receiving written request from the supplier. If the request from the supplier is not delivered in time and despite this fact the Contracting Authority decides to provide explanations regarding the tender conditions, then the time limit in the preceding sentence does not need to be observed by the Contracting Authority.
- 6.3 The explanations regarding the tender conditions (including the exact wording of the request of the supplier) shall be provided to all suppliers at the same time and sent in the same manner as this invitation.
- 6.4 The Contracting Authority is entitled to provide explanations regarding the tender conditions without prior request. In such cases the Contracting Authority proceeds analogically according to the preceding paragraphs.
- 6.5 The Contracting Authority may modify the tender conditions before the deadline for submission of bids elapses. The modification has to be notified to the suppliers in the same manner as the tender conditions that was the subject of modification. If the Contracting Authority through explanations of the tender conditions makes modification of the tender conditions and the nature of the such modification requires it, the Contracting Authority shall adequately extend the deadline for the submission of bids. In the event such a modifications, which may extend the range of potential bidders, the Contracting Authority will extend the deadline so that the potential bidders have the entire length of the original deadline for the submission of bid.

7. EVALUATION CRITERIA

- 7.1 Bids shall be evaluated on the basis of the lowest bid price criterion.
- 7.2 In the case that two or more bids contain the same lowest bid price, the time of the submission of the bid shall be a decisive element, i.e. the bid that was submitted earlier shall have priority over the bid that was submitted later.



8. **BID PRICE**

- 8.1 The Bidder shall stipulate the total bid price in the bid cover sheet in the structure requested therein.
- 8.2 The total bid price is the maximum price that cannot be exceeded and shall include all costs that the bidder shall incur during the performance of the Public Procurement.
- 8.3 The total bid price must not exceed the amount set out in Art. 2.3 hereof. Should the total bid price of any bidder exceed the referred to limit, the bidder will be excluded from this Public Procurement procedure.

9. **FORMAL BID REQUIREMENTS**

- 9.1 All bids must be submitted in writing in duly sealed envelope designated by the identification data of the bidder. The envelope must be designated by inscription “**DO NOT OPEN**” and by title of the Public Procurement „Deformable mirror for FSYNC TP22_016”. On the envelope shall be address to which the Contracting Authority may send information regarding the Public Procurement.
- 9.2 The bid shall contain identification data of the bidder. This requirement is fulfilled by filling the cover sheet of the bid, which forms Annex 1 hereto.
- 9.3 The bid must be submitted in Czech, Slovak or English language. This requirement is fulfilled if documents that by its nature cannot be in the required language are at least translated into one of the required languages.
- 9.4 The Contracting Authority recommends that all parts of the bid are secured against unauthorized manipulation (e.g. bound by string and sealed), so that additional documents cannot be inserted nor any pages removed. The bid must be clearly readable, without any crossed words or other discrepancies.
- 9.5 The bidder must submit a bid in its original (paper) form.
- 9.6 If the bid is submitted jointly by more bidders (joint bid), a contact person authorized to represent all such bidders must be designated in the bid.
- 9.7 The bids must be structured in the following manner:
- a) **Cover sheet (Bid sheet)**
Bidders shall fill in cover sheet annexed hereto
 - b) **The detailed enough description of the offered Product**
Recommendation
c) *Bidders may (despite the signed contract is not a mandatory part of the bid – see art. 4.2 hereof) include into their bids 4 counterparts of signed and completed contract to speed up the process of its conclusion for the case the bidder is selected*



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10. **FINAL PROVISIONS**

- 10.1 The Contracting Authority is entitled to cancel the award procedure anytime prior to the signature of the contract.
- 10.2 The Contracting Authority does not allow alternative bids.
- 10.3 The Contracting Authority is entitled to change or supplement the provisions of this invitation.
- 10.4 The bidders shall bear all their costs connected with their participation in the award procedure initiated by this invitation.
- 10.5 The Contracting Authority reserves the right to publish/ distribute a notice on Public Procurement awarding conclusions in the same way as this Invitation to bid.

11. **LIST OF ANNEXES**

- a) Annex 1 (Cover sheet)
- b) Annex 2 (Draft of the contract)
- c) Annex 3 (Technical specification)

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RNDr. Michael Prouza, Ph.D., director

22. 09. 2022

Fyzikální ústav AV ČR
veřejná výzkumná instituce
182 21 Praha 8, Na Slovance 2
- 1 -



ANNEX 1

COVER SHEET OF THE BID (BID SHEET)

Public procurement title: Deformable mirror for FSYNC TP22_016

Contracting Authority: Fyzikální ústav AV ČR, v.v.i.
Registered office: Na Slovance 2, 182 21 Praha 8
Registration No.: 68378271

Person authorized to act on behalf of the bidder: RNDr. Michael Prouza, Ph.D., director

Contact person: Michal Razým

Telephone: +420 608 67 163

E-mail: Michal.razym@eli-beams.eu

Bidder:

Registered office:

Identification No.:

Person authorized to act on behalf of the bidder:

Contact person:

Contact address:

Telephone:

E-mail:

Bid price and information needed for contract completion:

Total bid price: _____ EUR excl. VAT

Defects notification email address: _____

By submitting this bid the bidder expresses its consent with binding draft contract of the Contracting Authority annexed to Invitation to bid for this Public Procurement and commits to conclude the contract with the Contracting Authority, if this bid is selected as the most suitable one.

In _____ on _____

 Company name
 Authorised representative signature



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ANNEX 2

DRAFT OF THE CONTRACT



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PURCHASE CONTRACT

This purchase contract ("**Contract**") was concluded pursuant to section 2079 *et seq.* of the act no. 89/2012 Coll., Civil Code ("**Civil Code**"), on the day, month and year stated below by and between:

- (1) **Institute of Physics of the Academy of Sciences of the Czech Republic, a public research institution,**

with its registered office at: Na Slovance 2, Praha 8, PSČ: 182 21,

registration no.: 68378271,

represented by: RNDr. Michael Prouza, Ph.D. – director

("Buyer"); and

- (2) [to be filled in]

with its registered office at: [to be filled in],

registration no.: [to be filled in],

represented by: [to be filled in]

("Seller").

(The Buyer and the Seller are hereinafter jointly referred to as "**Parties**" and individually as "**Party**".)

WHEREAS

- (A) The Buyer is a public contracting authority and the beneficiary of public grants for projects within the Operational Programme Research, Development and Education.
- (B) For the successful realization of projects it is necessary to purchase the Object of Purchase (as defined below) in accordance with the act no. 134/2016 Coll., on public procurement, and Rules for the Selection of Suppliers within the Operational Programme Research, Development and Education.
- (C) The Seller wishes to provide the Object of Purchase to the Buyer for consideration.
- (D) The Seller's bid for the public procurement entitled "*Deformable mirror for FSYNC TP22_016*", whose purpose was to procure the Object of Purchase ("**Public Procurement**"), was selected by the Buyer as the most suitable.

IT WAS AGREED AS FOLLOWS:



1. BASIC PROVISIONS

1.1 Under this Contract the Seller shall hand over to the Buyer a product that is described in Annex 1 (*Technical Specification*) to this Contract in the quality and with the properties described therein (“**Object of Purchase**”) and shall transfer to the Buyer ownership right to the Object of Purchase, and the Buyer shall take over the Object of Purchase and shall pay the Seller the Purchase Price (as defined below), all under the terms and conditions stipulated in this Contract.

1.2 Under this Contract the Seller shall also:

- a) prepare drawings of the Object of Purchase as further described in Annex 1 (Technical Specification);
- b) provide all materials needed for the manufacturing of the Object of Purchase;
- c) manufacture, inspect, clean and test the Object of Purchase;
- d) transport the Object of Purchase to the place of delivery; the delivery terms are DAP Fyzikální ústav AV ČR v.v.i/ELI beamlines, Průmyslová 836, 252 41 Dolní Břežany, Czech Republic
- e) carry out other activities specified in Annex 1 (Technical Specification) and
- f) cooperate with the Buyer during the performance of this Contract

(“**Related Activities**”).

1.3 The Object of Purchase (all of its parts) shall be new (not remanufactured).

2. THE PLACE OF DELIVERY

2.1 The place of delivery is ELI beamlines facility at the address Průmyslová 836, post code 252 41, Dolní Břežany, Czech Republic or any other address in Dolní Břežany, Czech Republic, which the Buyer communicated to the Seller prior to the delivery of the Object of Purchase.

2.2 Delivery conditions not governed by this Contract shall be governed by DAP Incoterms, however in a case of any discrepancy between the provisions of this Contract and DAP Incoterms, the provisions of this Contract shall prevail. DAP Incoterms shall not apply to acquisition of ownership right of the Object of the Purchase.

3. THE TIME OF DELIVERY

3.1 The Seller shall deliver the Object of Purchase within 32 weeks from the effectiveness of this Contract. The Object of Purchase is considered delivered once the acceptance protocol according to the article 7.5 of this contract is signed. The Seller is entitled to deliver the Object of Purchase earlier, if the Buyer agrees to it. The Buyer is entitled to postpone the



delivery time by up to another 3 months if the premises at the place of delivery are not due to construction reasons prepared for acceptance of the Object of Purchase.

- 3.2 At the request of the Seller, the fulfillment date can be extended by the time for which the Seller or Seller's supplier is unable to fulfill this Contract in time due to circumstances that occurred independently of its will and which are difficult to predict (e.g. measures in connection with covid-19 or war in Ukraine). In the application, the Seller shall state the facts and attach documents (evidence) that are important for the assessment of whether the conditions for the extension are met, unless they are generally known facts or publicly available information. However, this does not affect the right of the Buyer to withdraw from this Contract in accordance with the Article 10.

4. **THE OWNERSHIP RIGHT**

The ownership right to the Object of Purchase shall be transferred to the Buyer upon the signature of the acceptance protocol by both Parties.

5. **PRICE AND PAYMENT TERMS**

- 5.1 The purchase price for the Object of Purchase is [to be filled in] EUR ("**Purchase Price**"). VAT will be paid in accordance with the applicable legal regulations.
- 5.2 The Purchase Price cannot be exceeded and includes all costs and expenses of the Seller related to the performance of this Contract. The Purchase Price includes, among others, all expenses related to the handover and acceptance of the Object of Purchase, costs of copyright, insurance, customs, warranty service and any other costs and expenses connected with the performance of this Contract.
- 5.3 The Purchase Price for the Object of Purchase shall be paid on the basis of a tax document – invoice, to the account of the Seller designated in the invoice. The Purchase Price shall be paid in the following manner:
- a) 30% of the Purchase Price shall be paid after the Buyer approves Qualified Design (as defined in Annex 1) of the Object of Purchase; and
 - b) 70% of the Purchase Price shall be paid after the signature of the acceptance protocol as defined in article 7.5 of this contract. The copy of the acceptance protocol shall be attached to the invoice.
- 5.4 The Buyer shall realize payments on the basis of duly issued invoices within 30 days from their receipt. The invoice shall be considered to be paid for on the day when the invoiced amount is deducted from the Buyer's account on behalf of the Seller's account.
- 5.5 The invoice issued by the Seller as a tax document must contain all information required by the applicable laws of the Czech Republic. Invoices issued by the Seller in accordance with this Contract shall contain in particular following information:
- a) name and registered office of the Buyer,



- b) tax identification number of the Buyer,
- c) name and registered office of the Seller,
- d) tax identification number of the Seller,
- e) registration number of the tax document,
- f) scope of the performance (including the reference to this Contract),
- g) the date of the issue of the tax document,
- h) the date of the fulfilment of the Contract,
- i) Purchase Price,
- j) registration number of this Contract, which the Buyer shall communicate to the Seller based on Seller's request before the issuance of the invoice.

5.6 In case that the invoice shall not contain the above mentioned information, the Buyer is entitled to return it to the Seller during its maturity period and this shall not be considered as a default. The new maturity period shall begin from the receipt of the supplemented or corrected invoice to the Buyer.

6. SELLER'S DUTIES

6.1 The Seller shall ensure that the Object of Purchase is in compliance with this Contract including all its annexes and applicable legal (e.g. safety), technical and quality norms.

6.2 During the performance of this Contract the Seller proceeds independently. If the Seller receives instructions from the Buyer, the Seller shall follow such instructions unless these are against the law or in contradiction to this Contract. If the Seller finds out or should have found out if professional care was exercised that the instructions are for any reason inappropriate or illegal or in contradiction to this Contract, then the Seller must notify the Buyer.

6.3 If this Contract (including Annex 1) states that the Seller and the Buyer shall agree on certain matter or issue and such agreement is not reached, then the Seller must follow Buyer's decision on this matter or issue.

6.4 All things necessary for the performance of this Contract shall procure the Seller, unless this Contract stipulates otherwise.

7. HANDOVER AND TAKEOVER OF THE OBJECT OF PURCHASE

7.1 Prior to the handover and takeover of the Object of Purchase the Seller shall test the Object of Purchase in accordance with Annex 1 (*Technical Specification*) to this Contract.

7.2 Handover and takeover of the Object of Purchase shall be realized on the basis of an acceptance protocol.



- 7.3 The Object of Purchase shall be delivered to the place of delivery within 28 weeks from the conclusion of this Contract and installed, verified and handed over by the Buyer within 32 weeks from the conclusion of this Contract.
- 7.4 The Object of Purchase shall be delivered to the Buyer along with delivery note or other similar document confirming the delivery. By delivering the Object of Purchase to the place of delivery the Buyer only takes custody of the Object of Purchase (i.e. the Buyer does not accept the Object of Purchase).
- 7.5 The acceptance of the Object of Purchase shall be realized after installation and final verification on the basis of an acceptance protocol in accordance with Annex 1.
- 7.6 If the Object of Purchase does not meet requirements stipulated in this Contract, the Buyer is entitled to refuse the takeover of such Object(s) of Purchase. In such a case the Seller shall remedy the deficiencies within ten (10) working days, unless Parties agree otherwise. The Buyer is entitled (but not obliged) to takeover the Object(s) of Purchase despite the above mentioned deficiencies, in particular if such deficiencies do not prevent the Buyer in the proper operation of the Object(s) of Purchase. In such a case the Seller and the Buyer shall list the deficiencies in the acceptance protocol, including the manner and the date of their removal (remedy). If the Parties do not reach agreement in the acceptance protocol regarding the date of the removal, the Seller shall remove the deficiencies within ten (10) working days.

8. WARRANTY

- 8.1 The Seller shall provide a warranty of quality of the Object of Purchase for the period of 12 months. If any document of the Seller states the warranty of longer duration in relation to the Object of Purchase, then such warranty of longer duration shall be applied instead.
- 8.2 The warranty period shall begin on the day of the signature of the acceptance protocol by both Parties. If the acceptance protocol lists any deficiencies, the warranty period shall begin on the day, which follows the day, in which the last deficiency was removed.
- 8.3 If the Buyer ascertains a defect of the Object of Purchase during the warranty period, the Buyer shall notify such defect without undue delay to the Seller. Defects may be notified on the last day of warranty period, at the latest.
- 8.4 The Buyer notifies defects in writing via e-mail. The Seller shall accept notifications of defects on the following e-mail address: [to be filled in]. The Seller shall confirm within 24 hours from the receipt of the notification.
- 8.5 In the notification the Buyer shall describe the defect. The Buyer has the right to:
- a) ask for the removal of the defect by the delivery of new Object(s) of Purchase or its individual parts, or
 - b) ask for the removal of the defect by repair, or



c) ask for the reasonable reduction of the Purchase Price.

The choice among the above mentioned rights belongs to the Seller. The Buyer is also entitled to withdraw from this Contract, if by delivering the Object of Purchase with such defects this Contract is substantially breached.

- 8.6 The Seller shall remove defects that occur during the warranty period free of charge within 4 months from their notification, unless Parties due to the nature of the defect agree on the shorter or longer period of time.
- 8.7 Parties shall execute a protocol on the removal of the defect, which shall contain the description of the defect and the confirmation that the defect was removed. The warranty period shall be extended by a period of time that elapses between the notification of the defect until its removal.
- 8.8 In case that the Seller does not remove the defect within stipulated time or if the Seller refuses to remove the defect, then the Buyer is entitled to remove the defect at his own costs and the Seller shall reimburse these costs within 10 days after the Buyer's request to do so.
- 8.9 The warranty does not cover defects caused by unprofessional manipulation or by the failure to follow Seller's instructions for the operation and maintenance of the Object of Purchase.

9. **PENALTIES**

- 9.1 If the Seller is in default regarding the delivery of the Object of Purchase, i.e. the Seller breaches its duty to perform this Contract in time and due manner, the Seller shall pay to the Buyer a contractual penalty in the amount of 0.05% from the Purchase Price (excl. VAT) for each (even commenced) day of default.
- 9.2 If the Seller is in delay with the removal of the defect, the Seller shall pay to the Buyer a contractual penalty in the amount of 0,05 % of the Purchase Price for every (even commenced) day of delay.
- 9.3 The Seller shall pay contractual penalties within fifteen (15) days from the day, on which the Buyer enumerated its claims. The payment of contractual penalties shall not affect the right of the Buyer to damages even to the extent to which such damages exceeds the contractual penalty.
- 9.4 Total amount of contractual penalties that the Buyer is entitled to claim shall not exceed 5 % of the Purchase Price.
- 9.5 The Buyer is entitled to unilaterally set off claims arising from the contractual penalties against the claim of the Seller for the payment of the Purchase Price.



10. RIGHT OF WITHDRAWAL

10.1 The Buyer is entitled to withdraw from this Contract without any penalties, if any of the following circumstances occur:

- a) the Seller shall be in delay with the fulfilment of this Contract and such delay lasts more than 12 weeks;
- b) The Object of Purchase during testing does not fulfil the requirements stipulated in this Contract, in particular in Annex 1 (*Technical Specification*) and the deficiencies cannot be remedied;
- c) the insolvency proceeding is initiated against the Seller; or
- d) the Buyer ascertains that the Seller provided in its bid for the Public Procurement information or documents that do not correspond to the reality and that had or could have had impact on the result of the tendering procedure, which preceded the conclusion of this Contract.

11. PUBLICITY

Parties are aware that this Contract shall be published in the register of contracts in accordance with the Act no. 340/2015 Coll., on the Register of Contracts.

12. ECOLOGICAL, SOCIAL AND INNOVATIVE ASPECTS OF THIS CONTRACT

The Buyer aims to conclude contracts with suppliers that take into account and implement the principles of social responsibility, ecological sustainability and innovation. Therefore, the Supplier shall ensure that:

- a) this Contract shall be fulfilled only by persons that are employed in accordance with the applicable legal regulations (no illegal or child workers);
- b) while performing this Contract, all applicable health and safety regulations and rules at work place are observed;
- c) all persons performing this Contract are employed under fair and non-discriminatory working conditions;
- d) if presented with different manners of fulfilling this Contract, the Supplier shall select the solution/process that is in accordance with the principles governing nature conservation and nature protection, ecological sustainability and ecological waste management; and
- e) if presented with different manners of fulfilling this Contract, the Supplier shall select the solution/process that is the most innovative.



13. REPRESENTATIVES OF THE PARTIES

13.1 The Seller appoints following representatives for the communication with the Buyer:

In technical matters:

Name: [to be filled in]

E-mail: [to be filled in]

Tel.: [to be filled in]

In contractual matters:

Name: [to be filled in]

E-mail: [to be filled in]

Tel.: [to be filled in]

13.2 The Buyer appoints following representatives for the communication with the Seller:

In technical matters:

Jméno: Jakub Novák

E-mail: jakub.novak@eli-beams.eu

The appointed representatives of the Buyer are entitled to communicate with the Seller regarding all technical aspects of this Contract including issuing all the approvals foreseen by this Contract and signing the acceptance protocol. The appointed representatives of the Buyer are not entitled to change or supplement this Contract.

14. SPECIAL PROVISIONS

By signing this Contract, the Seller becomes a person that must cooperate during the finance control within the meaning of Section 2 letter e) of the act no. 320/2001 Coll., on finance control in the public administration, and shall provide to the Directing Body of the Operational Programme Research, Development and Education or other control bodies access to all parts of the bid, Contract or other documents that are related to the legal relationship formed by this Contract. This duty also covers documents that are subject to the protection in accordance with other acts (business secrets, secret information, etc.) provided that control bodies fulfil requirements stipulated by these acts. The Seller shall secure that all its subcontractors are also obliged to cooperate with control bodies in the above stipulated extent. The possibility of effective control must be preserved until the year 2033.



15. FINAL PROVISIONS

- 15.1 This Contract is governed by the laws of the Czech Republic, especially by the Civil Code.
- 15.2 All disputes arising out of this Contract or out of legal relations connected with this Contract shall be preferably settled by a mutual negotiation. In case that the dispute is not settled within sixty (60) days, such dispute shall be decided by courts of the Czech Republic in the procedure initiated by one of the Parties.
- 15.3 The Seller is not entitled to set off any of its claims or his debtor's claims against the Buyer's claims. The Seller is not entitled to transfer its claims against Buyer that arose on the basis or in connection with this Contract on third parties. The Seller is not entitled to transfer rights and duties from this Contract or its part on third parties.
- 15.4 All modifications and supplements of this Contract must be in writing.
- 15.5 If any of provisions of this Contract are invalid or ineffective, the Parties are bound to change this Contract in such a way that the invalid or ineffective provision is replaced by a new provision that is valid and effective and to the maximum possible extent correspond to the original invalid or ineffective provision.
- 15.6 This Contract is executed in four (4) counterparts and every Party shall receive two (2) counterparts.
- 15.7 An integral part of this Contract is Annex 1 (*Technical Specification*). If Annex 1 (*Technical Specification*) uses the term "Contracting Authority" or "contracting authority" it means Buyer. If Annex 1 (*Technical Specification*) uses the term "Supplier" or "supplier" it means Seller.
- 15.8 This Contract shall be valid on the date of the signature of both Parties and effective on the day, on which it was published in the register of contracts within the meaning of the Act no. 340/2015 Coll., on the Register of Contracts.
- 15.9 The Buyer makes the Seller aware that the Buyer is going to transfer the ELI Beamlines research facility (as of today owned and operated by the Buyer) to the Extreme Light Infrastructure ERIC (ELI ERIC). The Extreme Light Infrastructure ERIC (ELI ERIC) is a legal person set up under the Regulation (EC) No 723/2009 and it is the future long term owner and operator of the ELI Beamlines facility. The Seller by entering this Contract agrees that the Buyer is entitled to assign all rights and obligations from this Contract to Extreme Light Infrastructure ERIC (ELI ERIC) without further consent of the Seller (The Parties consider this to be a consent of the Seller within the meaning of the Section 1895 of the Civil Code). The Buyer shall inform the Seller on the completed assignment without undue delay and in accordance with Section 1897 of the Civil Code, the assignment shall become effective at the moment of its notification to the Seller.



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IN WITNESS WHEREOF attach Parties their handwritten signatures:

Buyer

Signature: _____

Name: RNDr. Michael Prouza, Ph.D.

Position: director

Date:

Seller

Signature: _____

Name:

Position:

Date:



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ANNEX 1
TECHNICAL SPECIFICATION
(REQUIREMENTS SPECIFICATION DOCUMENT FOR THE PUBLIC
PROCUREMENT)



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ANNEX 3

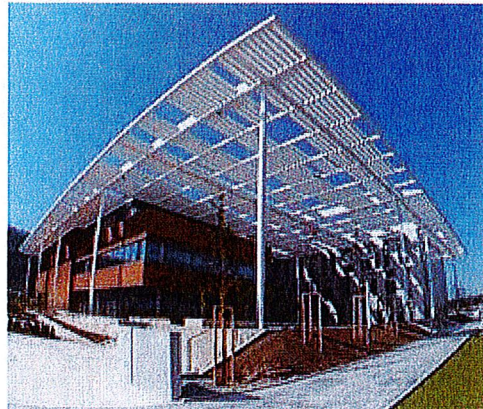
TECHNICAL SPECIFICATION

| | | | |
|------------------------------|---|-------------------------|------------|
| Confidentiality Level | <i>BL - Restricted for internal use</i> | TC ID / Revision | 00338060/C |
| Document Status | <i>Document Released</i> | Document No. | N/A |
| WBS code | <i>3.1 - L1 System</i> | | |
| PBS code | <i>RA1.L1.L1_2.BT.DM</i> | | |
| Project branch | <i>Engineering & Scientific documents (E&S)</i> | | |
| Document Type | <i>Specification (SP)</i> | | |

[RSD product category C]

Deformable mirror for FSYNC

TP22_016

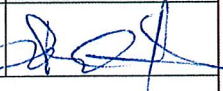


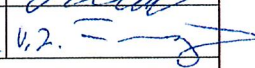
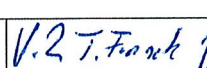



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1. Introduction

1.1. Purpose

This Requirements Specification Document (RSD) lists the technical requirements and constraints on a deformable mirror for the L1_2 beamline under the ADONIS FSYNC project.

1.2. Scope

This RSD contains functional, performance and design, delivery, safety, and quality requirements for the following product (Tender number TP22_016): **Deformable mirror for FSYNC** for use in the L1 laser.

The deformable mirror (DM) will be used for matching wavefronts of L1.1 (after the fourth OPCPA stage) and L1.2 output for efficient coherent combination. This DM is registered in the PBS database under the following PBS code: *RA1.L1.L1_2.BT.DM*.

The DM shall operate on air with a Gaussian beam with pulses with energy of up to 15 mJ, 1 kHz repetition rate, pulse duration of 3 ps and bandwidth between 740 – 950 nm. The angle of incidence (AOI) shall be 45°. The DM shall not lose its setting when it is powered off. As part of the delivery shall be also one spare mirror membrane with identical parameters as the one in the DM adjusted for a direct replacement. Detailed information on the beam and mirror performance and the spare membrane are given in Chapter 2.

1.3. Terms, Definitions and Abbreviations

For the purpose of this document, the following abbreviated terms are applied:

| Abbreviation | Meaning |
|--------------|---|
| A | Analysis (as verification methods) |
| AAp | Active Aperture of the deformable mirror |
| AOI | Angle of the Incidence |
| CA | Contracting Authority (Institute of Physics CAS) |
| DM | Deformable mirror |
| ELI | Extreme Light Infrastructure |
| FTR | Factory Test Report |
| GDD | Group Delay Dispersion |
| I | Inspection (as verification method) |
| LIDT | Laser Induce Damage Threshold |
| NCR | Nonconformity Report |
| OASys | Commercial adaptive optics software produced by Phasics |
| R | Review (as verification methods) |
| RA1 | Research Activity 1 |
| RSD | Requirements Specification Document |
| SDK | Software Development Kit |
| T | Test (as verification methods) |
| VCD | Verification Control Document |

1.4. References to Standards

If this document includes references to standards or standardized/ standardizing technical documents the CA allows/permits also another equivalent solution to be offered.

2. Functional, Performance and Design requirements

Functional, performance and design requirements for the Deformable mirror (DM) for FSYNC and procedures for FTR to be performed are described in this document below.

REQ-034812/A

The Supplier shall supply **one DM system** and **one spare mirror membrane** according to the specifications below.

Verification method: I - inspection

REQ-034813/A

The DM shall be able to fulfill all the requirements from this chapter with the **laser beam with parameters** listed in Table 1 below.

Verification method: R - review, T - test

REQ-034814/A

Angle of incidence of the DM shall be 45 deg. The mirror membrane dimensions and the distribution of actuators shall be accommodated to this AOI.

Verification method: R - review, I - inspection

REQ-034815/A

The DM **parameters** shall correspond to Table 2 below.

Verification method: R - review, T - test, I - inspection

REQ-034816/A

The spare membrane shall have an identical coating and physical properties as the membrane used in the DM and it shall fulfill the same requirements according to table 2 when installed in the DM.

Verification method: R - review, T - test, I - inspection

REQ-034817/A

The Supplier shall provide as part of the bid the calculated design performance of the mirror coating demonstrating reflectance and dispersion at the given operational wavelength range of the mirror installed in the DM and the spare membrane (see Table 2).

Verification method: A - analysis, R - review (as part of bid evaluation)

REQ-034818/A

Part of the delivery shall be a 19" Control Rack integrating controllers for all actuators and providing communication to an external PC (provided by the CA) via an Ethernet interface.

NOTE: Other interface types are not acceptable.

Verification method: R – review (as part of bid evaluation), I – inspection

REQ-034819/A

The Control Rack shall be fully compatible with the OASys adaptive optics control software (provided by the CA). The Control Rack shall also be controllable using custom software (developed by the CA), communicating directly with the Control Rack over Ethernet via a simple command set. A Windows 10, which the CA already has and uses, compatible SDK and full documentation of the command set shall be provided.

Verification method: R – review (as part of bid evaluation), T - test

REQ-034820/A

The Control Rack shall be provided with a simple HTTP web server with which to check the basic status of the device and to view and configure the IP address settings of the main control interface. Via this web interface, it shall be possible to configure the Control Rack to have any valid, fixed IPv4 address, subnet mask and gateway, as required.

Verification method: R – review (as part of bid evaluation), T - test

| Parameter | Specified value |
|--------------------|--|
| Central wavelength | 850 nm |
| Bandwidth | 740 nm - 950 nm |
| Repetition rate | 1 kHz |
| Beam polarization | Vertical, S-pol |
| Beam shape | Gaussian |
| Pulse energy | 15 mJ or less |
| Pulse duration | 3 ps |
| Beam size | Compatible with 2" optics; can be adjusted after agreement with the CA |
| Environment | Air |

Table 1: L1.2 laser parameters at the DM location

| # | Parameter | Specified value | Comment/Note |
|----|--|---|---|
| 1 | Clear aperture where coated membrane shall meet all specifications | $\varnothing 60 \times 42 \text{ mm}^2$ | Can be smaller if performance of the DM meets all the requirements |
| 2 | Active aperture (AAp) where actuator pattern shall be optimized | $\varnothing 42 \times 30 \text{ mm}^2$ | Can be smaller if performance of the DM meets all the requirements |
| 3 | Minimal amount of actuators | 35 | To be optimized for the Gaussian beam footprint on the AAp mirror surface |
| 4 | Coating | Dielectric or enhanced Ag (Ag + dielectric) | |
| 5 | Minimal bandwidth | 740 – 950 nm | |
| 6 | Reflectivity S-pol / P-pol | > 99.5 % | Over the specified bandwidth |
| 7 | LIDT | > 0.2 J/cm ² | 10000-on-1 t < 3 ps |
| 8 | GDD | -50 fs ² < GDD < 50 fs ² | Over the specified bandwidth |
| 9 | Maximum power-off change | <10 nm RMS over 1h | Surface shape to be identical to the powered state. Temperature drift subtracted |
| 10 | Actuator pattern | Optimized for the first 14 Zernike polynomials | Simulation results to be provided by the Supplier and discussed with CA before the start of manufacturing |
| 11 | Baseline surface sag (flattening) | Flat with RMS $\leq 10 \text{ nm}$ | Over AAp |
| 12 | Correction range for 45 deg astigmatism | $\geq \pm 15 \text{ }\mu\text{m}$ | Relative residual to flat sag <25 nm RMS |
| 13 | Correction range for horizontal and vertical defocus | $\geq \pm 15 \text{ }\mu\text{m}$ | Relative residual to flat sag <25 nm RMS |
| 14 | Correction range for coma | $\geq 5 \text{ }\mu\text{m}$ | Relative residual to flat sag <25 nm RMS |
| 15 | Capability to tailor the focal spot intensity distribution | Any desired shape compatible with REQ # 10, 11, 12, 13 and 14 | |
| 16 | Tip / tilt adjustment | mechanical | |
| 17 | Length of cables to a control unit | $\geq 5 \text{ m}$ | |
| 18 | Beam height | 100 mm | Measured from the table to the center of the AAp |
| 19 | Position of the connectors | Back or side plane | To be agreed with CA |

Table 2: Specifications and requirements for the DM

3. Environmental requirements

REQ-034821/A

The Supplier and the CA shall agree on the cleaning method to clean the DM without decreasing the DM's properties and to avoid contamination of the clean space.

NOTE: The cleaning methods may use high gas flow (dry air) and specialized chemical cleaning liquids (i.e. methanol, isopropyl alcohol, deionized water).

Verification method: R – review

REQ-034822/A

The DM shall satisfy the parameters given in Table 2 at the temperature of 20 deg. C and maintain them within the temperature range of ± 1 deg. C.

Verification method: T - test

4. Delivery requirements

REQ-034823/A

The packaging and transportation of all the components to the CA site at Dolní Břežany shall be conducted by the Supplier.

NOTE 1: The Supplier is fully responsible for the delivery of the undamaged DM.

NOTE 2: The bid price will be considered by the CA as the final price, including transportation cost.

NOTE 3: The DM will be installed by the CA. The Supplier will provide all necessary documentation detailing procedures for safe and proper installation and, if required, technical remote support and consultation.

Verification method: I – inspection

REQ-034824/A

All the components of the delivery shall be cleaned and packaged in the clean environment of class 7 according to ČSN EN ISO 14644 (equivalent to EN ISO 14644) or cleaner.

Verification method: I – inspection

5. Safety requirements

5.1. General Safety Requirements

REQ-034825/A

The Supplier shall supply a Declaration of Conformity (DoC) for each product type. The DoC shall declare compliance in part with:

- Act No. 176/2008 Coll., as amended (2006/42/EC);
- Act No. 118/2016 Coll., as amended (2014/35/EU);
- Act No. 117/2016 Coll., as amended (2014/30/EU);
- the other relevant EU/EC regulation and ISO standards.

Compliance with these obligations shall be demonstrated by the (EU/EC) DoC and the CE/CCZ marking.

Verification method: I – inspection

5.2. Machine Safety Requirements

REQ-034826/A

The DM shall have internal detection and protection against, or be inherently resistant to sustaining damage from the following modes:

1. Sudden loss of external power on any supply;
2. Sudden loss of any external control signal or interface;
3. Overvoltage or overcurrent of internal power supplies;
4. Short-circuit or disconnection of any actuator output.

Verification method: R – review

6. Quality control

6.1. Factory test reports

REQ-034827/A

The Supplier shall perform tests of the **DM system and the spare membrane** and provide corresponding factory test reports (I - V):

- I. Measured reflectivity curve over the bandwidth specified in table 2 at s and p polarization;
- II. LIDT report of the same coating type on the same substrate material by the same coating supplier.
- III. Interferometric or high-resolution wavefront measurement of clear aperture after flattening normal to the surface. Use angle interferometry has to be discussed with CA if required by the coating. If stitching is needed, a procedure must be approved by the CA. The minimum resolution is 1 mm of the full usable aperture of table 2.
- IV. Table summarizing RMS residuals and RMS slope errors of first 21 Zernike polynomials;

- V. Measured GDD curve over the bandwidth specified in table 2 at s and p polarization.

Verification method: R – review

6.2. Documentation and data control

REQ-034828/A

The Supplier shall supply the following relevant manufacturing documents:

- **Full technical documentation and factory test reports** (see chapters 6.1 and 6.5.1), including raw data where available;
- storage, cleaning, operation and maintenance instructions;
- description of cable wires or connector pins;
- user manual for the software /communication protocols.

NOTE: The scope of this documentation shall be agreed with the CA.

Verification method: I – inspection

REQ-034829/A

The Supplier shall use the following data formats:

- *.dat (Zygo binary file format for interferograms)
- *.JPG, *.PDF/A, *.HTML, *.ppt, *.pptx
- CAD 2D: *.dwg
- CAD 3D: *.stp; *.ste; *.step or other 3D CAD formats agreed with the CA
- text processors *.doc, *.docx, OpenDocument Format
- spreadsheet processors *.xls, *.xlsx, OpenDocument Format

Verification method: Not To Be Tracked within VCD

REQ-034830/A

The Supplier shall establish and maintain a nonconformity control system compatible with ČSN EN ISO 9001 (equivalent to EN ISO 9001).

Verification method: Not To Be Tracked within VCD

7. Verification Requirements for the Supplier

The verification process will be performed by the Supplier to demonstrate that the **DM system** meets the specified requirements of the CA.

7.1. General Requirements

REQ-034831/A

The Supplier shall assign clear responsibility for the implementation of the verification process including the following activities:

1. **Verification planning** (via VCD, see chapter 7.2);
2. **Verification execution and reporting** (chapter 7.3);
3. **Verification control and close-out** (chapters 7.2 and 7.3.3).

Verification method: Not To Be Tracked within VCD

REQ-034832/A

Verification shall be accomplished by the Supplier through one or more of the following verification methods:

1. **Review**; Verification via Review (**R**) shall consist of using approved records (i.e. design documents and reports, technical descriptions, engineering drawings, manuals and accompanying operation documentation) or evidence unambiguously showing that the requirement has been met.
2. **Inspection**; Verification via Inspection (**I**) shall consist of visual determination of physical characteristics including photographs taken by the Supplier and sent to the CA proving that the specific requirements have been met.
3. **Test** (including **functional demonstration**); Verification via Test (**T**) shall consist of measuring product performance and functions under realistic operating conditions. When the test objectives include the demonstration of qualitative operational performance (functional demonstration), the execution shall be observed and results recorded.
4. **Analysis**; Verification via Analysis (**A**) shall consist of performing theoretical or empirical evaluations (e.g. mathematical models, calculations, etc.).

Verification method: Not To Be Tracked within VCD

REQ-034833/A

The results of the analysis shall be documented in the corresponding Analysis or Simulation Report and tracked in the VCD (chapter 7.2).

NOTE: The content of the report shall be agreed with CA.

Verification method: R – review

REQ-034834/A

The results of the test and functional demonstration shall be documented in the corresponding FTRs (see chapter 6.1) and tracked in the VCD (see chapter 7.2).

NOTE: The analysis of data derived from testing shall be an integral part of the test and the results included in the test report.

Verification method: R – review

REQ-034835/A

The results of review and inspection shall be tracked in the VCD.

Verification method: R – review

7.2. Verification Control Document (VCD)

The **VCD** is a living document which shall be used throughout the entire Contract delivery and its phases (see chapter 7.3 Phasing of the delivery). The **VCD** provides traceability during delivery phases (Qualification of Design, Manufacturing, Acceptance, etc.). The **VCD** represents a formal tool of communication between the Supplier and the CA (formal record, reporting tool).

The **VCD** will be provided by the CA and it can be accommodated to the Supplier's needs.

REQ-034836/A

The Supplier shall provide a Verification Control Document (VCD) for the reviews as agreed with the CA.

NOTE 1: The CA can provide the Guidelines for the VCD preparation.

NOTE 2: The form of the VCD will be agreed between the CA and the Supplier based on the best commercial praxis used by the Supplier.

*NOTE3: The VCD specifies **HOW** and **WHEN** each requirement is planned to be verified, when it was actually verified.*

Verification method: R – review

7.3. Phasing of the delivery

This chapter is intended to briefly summarize the basic milestones of the contract delivery. These milestones represent gates (checkpoints) where the quality of the delivery shall be evaluated.

Delivery shall not proceed past these gates unless their satisfactory accomplishment is approved by the CA.

Delivery lifecycle shall contain at least the following phases (quality gates):

- **Qualification of Design;**
- **Manufacturing;**
- **Acceptance.**

7.3.1. Qualification of Design

Summary of what has to be provided by the Supplier in terms of documentation (calculated design performance, manufacturing drawings, layouts and system's interface, etc.) before starting the manufacturing. The goal is to verify the **manufacturing drawings and design supporting documentation**.

The output of this phase is **Qualified Design**.

REQ-034837/A

Before the ending of the Qualified Design phase the Supplier shall provide the structure and content of FTRs (see chapter 6.1) and the content of the VCD ready to be implemented (see chapter 7.2).

Verification method: R – review

REQ-034838/A

Before the ending of the Qualified Design phase the Supplier and the CA shall agree on:

- final manufacturing drawings provided by the Supplier (see REQ-034828/A);
- exact layout of the actuators based on the Supplier's analysis (see **Table 2, item 10**);
- detailed procedures related to the testing during the manufacturing phase.

Verification method: R – review

7.3.2. Manufacturing

The goal is to demonstrate that the manufactured DM system meets the specified technical requirements (RSD) of the CA.

This quality gate concerns primarily:

- **Inspection of manufactured and assembled product;**
- **Testing at the Supplier's site (factory testing);**
- **Cleaning and Packaging;**

The output of this phase is the **Verified Final Product**.

REQ-034839/A

The results of the Manufacturing phase of verification shall be recorded by the Supplier in the corresponding **FTRs** (or in other test reports, if not specified in chapter 6.1) and provided to the CA for approval.

NOTE1: The approval will be given if all the relevant requirements are met.

NOTE2: The results of all the tests shall be given strictly in units which are used to define the requirements in chapter 2.

Verification method: R – review

REQ-034840/A

The final issue of the VCD shall be submitted to the CA after the approval of the last report and before starting the Acceptance phase (see chapter 7.3.3).

Verification method: R – review

7.3.3. Acceptance

The Acceptance phase shall demonstrate the following:

- Final delivered and installed **DM system** has been successfully verified and this process has been documented in an appropriate way through FTR and VCD (see chapters 6.1 and 7.2);
- All detected nonconformities have been solved in accordance with REQ-034830/A;
- Final **DM system** and **spare membrane** are free of fabrication errors.

In case of a successful acceptance phase, the CA will provide the Supplier with a signed acceptance protocol. In case of an unsuccessful acceptance stage, the CA shall provide to the Supplier the Nonconformity Report (NCR) and the process in accordance with REQ-034830/A shall be applied.

REQ-034841/A

The verification process shall be carried out by the Supplier and it is successfully completed when the final **DM system** complies with all specifications and the results of this process are documented in an appropriate way through the FTRs and VCD (chapters 6.1 and 7.2).

*NOTE1: Acceptance will be carried out by the CA (or if required, representatives/contractors appointed by the CA) on the final delivered and at ELI installed **DM system**.*

*NOTE2: In the acceptance phase, the final verification of the **DM system** and required documentation will be carried out by the CA within 4 weeks after the issuing of the latest Handover/takeover protocol.*

Verification method: Not To Be Tracked within VCD