



EUROPEAN UNION
European Structural and Investing Funds
Operational Programme Research,
Development and Education



Purchase Contract

pursuant to Section 2079 et seq. of Act No. 89/2012 Coll., the Civil Code, as amended (hereinafter the “**Civil Code**”)

I. THE PARTIES:

1. Buyer:

Fyzikální ústav AV ČR, v. v. i.

(Institute of Physics of the Czech Academy of Sciences, public research institution)

with its principal office at Praha 8, Na Slovance 2, PSČ 182 00, Czech republic

represented by: RNDr. Michael Prouza, Ph.D., the Director

Registered in the Registry of public research institutions kept by the Ministry of Education, Youth and Sports of the Czech Republic

Id. No.: 68378271

Tax Id. No.: CZ68378271

(hereinafter the “**Buyer**”)

and

2. Seller:

OptiXs, s. r. o.

with its principal office at Křivoklátská 37, 199 00 Prague 9 Czech Republic

represented by: Ing. Marin Klečka, statutory representative

Id. No. (if any): 02016770

Tax Id. No. (if any): CZ02016770

(Hereinafter the “**Seller**”; the Buyer and the Seller are hereinafter jointly referred to as the “**Parties**” and each of them individually as a “**Party**”).

enter, on the present day, month and year, into this Purchase Contract (hereinafter the “**Contract**”)

II. Fundamental Provisions:

- 2.1 The Buyer is a beneficiary of a subsidy granted by the Ministry of Education, Youth and Sports of the Czech Republic within the Operational Programme “Research, Development and Education”.
- 2.2 The Seller has been awarded the public contract entitled “**L4f Transport Mirror Substrates TP20_039**” (hereinafter the “**Public Contract**”).

III. Subject of the Contract

- 3.1 Under this Contract the Seller shall design, manufacture and deliver to the Buyer uncoated mirror substrates denoted as L4f Fold Mirrors and L4f Leaky Fold Mirrors as specified herein and under the conditions stipulated herein including Annexes to this Contract, especially Annex No 1 Requirements Specification Document (hereinafter the “**RSD**”).



Any final uncoated mirror substrate delivered under this Contract is hereinafter referred to also each as the “**Substrate**” and together as the “**Substrates**”. The fused silica blanks (to be purchased from a subsupplier) which will be further processed by the Seller into the final Substrates are in this contract called the “**Blanks**”.

- 3.2 The Buyer shall take over the Substrates with all the required documentation and pay the Purchase Price for them to the Seller as specified in Art. V. hereof.

Firm scope of this Contract

- 3.3 Under this Contract the Seller shall design, manufacture and deliver to the Buyer **five L4f Fold Mirrors** and **two L4f Leaky Fold Mirrors**.

Call option

- 3.4 Under this Contract the Seller shall manufacture and deliver to the Buyer another **up to ten L4f Fold Mirrors** and **up to three L4f Leaky Fold Mirrors** if the Buyer requests the Seller to do so (activation of the option).

Where it is needed in this Contract to distinguish between the Substrates to be delivered within the firm scope of this Contract and those delivered under the call option, the former shall be referred to as the “**Firm Scope Substrates**” and the latter as the “**Optional Substrates**”.

The Buyer is entitled to request the delivery of the Optional Substrates by means of a written notice (an order) within three years from conclusion of this Contract. The Buyer is entitled:

- a) to order any number of the Optional Substrates (and any combination of the L4f Fold Mirrors and L4f Leaky Fold Mirrors) anytime during the three-year period;
- b) not to order any Optional Substrates; the Buyer is bound to order no minimum number of Optional Substrates.

IV. Risk of Loss and Ownership Title

The risk of loss or damage to the Substrates shall pass to the Buyer upon their delivery to the Place of Delivery (upon offloading from the means of transport designated by the Seller).

The ownership title to each individual Substrate shall pass to the Buyer upon provision of the final instalment of the Purchase Price to the Seller related to the individual Substrate.

V. Purchase Price and Payment Terms

- 5.1 The purchase prices for the Firm Scope Substrates and for the Optional Substrates are set forth in annex No 2 hereto Prices (hereinafter also the “**Prices**”).
- 5.2 All prices stipulated in this Contract are exclusive of VAT payable in the EU that will be paid by the Buyer in the Czech Republic.
- 5.3 The Seller, if applicable, is responsible for clearing the Substrates both for export from the country of origin and for import to the EU (export and import customs formalities and financial duties). The Buyer shall provide all needed assistance and carry out activities needed for completion of import procedures. The Buyer shall formally apply that the Substrates are admitted to the EU free of import financial duties (customs) if the law of the European Union provides for such admission.
- 5.4 The Prices for Substrates set out in Art. 5.1 hereof:
- a) include all costs related to the performance of the subject-matter of this Contract of which the Seller knew or should have known including all manufacturing costs, costs of transport, packaging, proper level of insurance and any other direct or indirect costs needed to perform this Contract duly and in time (but excluding VAT payable in the EU);
 - b) are maximum permissible prices and are independent of the development of any costs and prices and currency exchange rates.
- 5.5 The Seller is entitled to invoice the Total price for the Firm Scope Substrates (Annex No 2, Item C) as follows:
- 30 % upon Qualified Design approval of both types of the Substrates;



- 20 % upon documented takeover and acceptance of the Blanks needed for manufacture of the Firm Scope Substrates from a subsupplier;
the Seller is entitled to invoice a proportional part of this instalment after a completed takeover of any Blank;
- 40% upon the acceptance of the Firm Scope Substrates by the Buyer (Art. 8.2 hereof);
the Seller is entitled to invoice a proportional part of this instalment after a completed acceptance of any Firm Scope Substrate;
- 10 % upon the issuance of a delivery note confirming delivery of the Firm Scope Substrates to the Place of Delivery free of damage caused in transport;
the Seller is entitled to invoice a proportional part of this instalment after a confirmed delivery of any Firm Scope Substrate to the Place of Delivery.

5.6 The Seller is entitled to invoice the price for each Optional Substrate as follows:

- 40% upon a Blank order;
- 50% upon execution of the acceptance protocol for the Optional Substrate by the Parties (Art. 8.2 hereof);
- 10 % upon the issuance of a delivery note confirming delivery of the Optional Substrate to the Place of Delivery free of damage caused in transport.

5.7 The instalments of Prices for the Substrates shall be paid based on tax documents – invoices, to the account of the Seller designated in the invoice. Invoices shall be payable within thirty (30) days from their delivery to the Buyer (hereinafter the "**Maturity Period**"). If the Seller indicates any shorter maturity period in an invoice, such other period is deemed irrelevant and the period set out herein applies. Payment of the invoiced amount is considered executed on the date of its remitting to the Seller's account. In conformity with the applicable tax regulations of the Czech Republic, the tax documents – invoices issued by the Seller hereunder shall include particularly the following details:

- a) the business name/designation and registered office of the Buyer
- b) the tax identification number of the Buyer
- c) the business name/designation and registered office of the Seller
- d) the tax identification number of the Seller
- e) the registration number of the tax document
- f) the scope and object of the taxable supply
- g) the date of issue of the tax document
- h) the date of the supply or the date of acceptance of the consideration, whichever is earlier, if it differs from the date of issue of the tax document
- i) the price of the supply
- j) a declaration that the invoiced performance is provided for the purposes of the "Advanced Research Using High Intensity Laser Produced Photons and Particles" project, reg. No. CZ.02.1.01/0.0/0.0/16_019/0000789 or any other project in accordance with instructions provided by the Buyer in advance

and must also be in conformity with any double taxation treaties applicable to this Contract.

5.8 Invoices shall be submitted to the Buyer only in the electronic form to the email address: efaktury@fzu.cz

VI. Manufacturing Deadlines

6.1. The Seller shall design and manufacture the **Firm Scope Substrates** so that they are ready (including all documentation needed for verification) for acceptance at the Seller's site:

- a) **Four L4f Fold Mirrors and one L4f Leaky Fold Mirror within 12 months** from the signature of this Contract and



- b) **One L4f Fold Mirror and one L4f Leaky Fold Mirror within 20 months** from the signature of this Contract but not sooner than on **January 31st 2023**.
- 6.2. The Seller shall design and manufacture any Optional Substrate so that it is ready (including all documentation needed for verification) for acceptance at the Seller's site **within 1 year from receipt of an order of the Substrate by the Seller**. If the Buyer documents (e.g. by subcontractors' quotes) that it is impossible to meet the deadline stipulated in the preceding sentence, the Buyer shall agree on a longer term.

VII. Place of Delivery

The place of delivery shall be the ELI Beamlines facility, Za Radnicí 836, ZIP 252 41, Dolní Břežany, district Prague-west, the Czech Republic (hereinafter the "**Place of Delivery**").

If the Buyer contracts a coating provider (contracted to coat the uncoated Substrates) before commencement of transport of Substrates or of an individual Substrate to the Place of Delivery, the Seller commits to negotiate with the Buyer on terms and conditions under which the Substrate or Substrates will be delivered directly to the coating provider. The new terms and conditions (including adequate price adjustment), if agreed to by the Parties, shall take form of an amendment to this Contract. The new place of delivery agreed in the amendment shall be regarded as the Place of Delivery under this Contract.

VIII. Production Phasing, Acceptance and Transport of the Substrates

8.1 Qualification of Design

The Seller shall submit to the Buyer manufacturing drawings and other documentation and information in line with art. 5.1.1 of Annex No 1 hereto (RSD) for approval before manufacture of the Firm Scope Substrates.

The Buyer shall provide a statement (approval or any comments) on the manufacturing drawings and related documentation and information submitted by the Seller within 10 business days from receiving them. Potential necessity of implementation of any comments of the Buyer does not postpone the manufacturing deadlines stipulated hereby if the Buyer meets the 10-business-day deadline. Should the deadline for provision of the statement not be met by the Buyer, the manufacturing deadlines extend accordingly.

The Seller shall manufacture the Optional Substrates based on already approved manufacturing drawings of the Firm Scope Substrates and other documentation and information.

8.2 Manufacture and Acceptance

The Buyer shall accept the Substrates (or any Substrate separately) at the Seller's site if the Substrates comply with all requirements stipulated herein and the results of the verification process are documented through documentation requested under this Contract. In such a case, the Buyer shall provide the Seller with an acceptance protocol and the Seller shall without undue delay start the transport of the Substrates to the Place of Delivery. The acceptance protocol might be also drafted by the Seller and submitted to the Buyer for approval.

The Seller shall employ best effort practices to minimize subsurface damage of the final mirror surfaces.

8.3 Delivery of the Substrates

The inspection of the Substrates in terms of potential damage incurred during transport shall be carried out by the Buyer immediately after the delivery of the Substrates to the Place of Delivery. The Buyer shall confirm due delivery of the Substrates to the Place of Delivery to the Seller within 5 days or to a carrier designated by the Seller, if delivered free of transport damage, by issuing a delivery note.

IX. Nonconformities of the Substrates and Warranty Claims

- 9.1 A Substrate shall be deemed non-conformant if it does not conform to the requirements stipulated herein. The Seller shall be liable for (i) any nonconformities in the Substrates at the time of their acceptance, (ii) nonconformities (damage) in the Substrates caused during transport to the Place of Delivery and (iii) for nonconformities that occur in the Substrates during the entire warranty period (quality guarantee).

Nonconformities Detected during Acceptance Procedure



- 9.2 The Buyer is not obliged to accept the Substrates if there are any nonconformities in them. However, the Buyer is entitled based on its discretion to accept the Substrates despite there are nonconformities in them if (i) the removal of the nonconformities does not require acquisition of a new Blank and (ii) the Buyer presents a nonconformity removal schedule under which the nonconformities are to be removed with all reasonable expedition and promptly. The deadline for removing the nonconformities shall be agreed in the acceptance protocol. If the Seller removes the nonconformities within the agreed deadline, the respective Substrate is deemed to be manufactured in time in accordance with art. 6.1 or 6.2 hereof. If the Seller fails to remove the nonconformities within the agreed deadline, the acceptance becomes invalid and the Seller is deemed to be in breach of art. 6.1 or 6.2 hereof from the day the respective manufacturing deadline has expired.
- 9.3 The Buyer is also entitled based on its discretion to accept the Substrates despite there are nonconformities in them without removing the nonconformities if the Parties agree on an adequate price discount.
- 9.4 Acceptance of a Substrate does not prevent the Buyer from making a later claim for removal of a hidden nonconformity (that was present in the Substrate at the time of acceptance but could not have been detected during the acceptance procedure due to the nature of the verification methods). In such a case, Art. 9.8 – 9.10. hereof apply.

Nonconformities Caused during Transport

- 9.5 If a nonconformity is detected by inspection of the Substrates in the Place of Delivery, the nonconformity shall be documented and immediately reported to the Seller. Articles 9.8 – 9.10. hereof apply on the nonconformity removal. The Buyer is also entitled based on its discretion to accept the non-conformant Substrate as is in line with Art. 9.3 hereof.
- 9.6 Issuance of a delivery note confirming delivery of a Substrate free of damage caused in transport does not prevent the Buyer from making a later claim for removal of a hidden nonconformity (that was present in a Substrate at the time of the inspection but could not have been detected during the inspection due to the nature of the available inspection methods). In such a case, Art. 9.8 – 9.10. hereof apply.

Warranty (Quality Guarantee)

- 9.7 The Seller provides the warranty of quality for each Substrate for a period of 3 months from the date of due delivery of the Substrate to the Place of Delivery (the day of issuance of the delivery note is the first day of the warranty period). The Buyer shall raise a warranty claim against the Seller without undue delay after detecting a nonconformity, but not later than on the last day of the warranty period, by means of a written notice sent to the Seller's authorised representative for technical matters set out herein.
- 9.8 The Seller shall remove the nonconformity for which it is responsible free of charge.
- 9.9 The Seller undertakes to remove any nonconformity within a deadline agreed with the Buyer. If the Parties do not reach an agreement, the Seller shall remove the nonconformity (i) within six months and (ii) in case the removal requires acquisition of a new Blank, the nonconformity shall be removed within 1 year from raising the warranty claim.
- 9.10 The Parties shall execute a record on removal of the nonconformity, in which they shall confirm that the nonconformity has been removed.
- 9.11 The warranty shall not apply to nonconformities caused by non-compliance with written rules of operation and maintenance of the Substrates provided by the Seller, manipulation errors or by normal wear and tear.

X. Penalties, vis major circumstances and liability limitation

Penalties

- 10.1 If the Seller is in delay with due finalization of manufacturing of any Firm Scope Substrate within the manufacturing deadline stipulated in Art. 6.1 hereof, the Seller shall pay to the Buyer a contractual penalty for delay in the amount of 0,01% of the Total price for the Firm Scope Substrates (Annex No 2, Item C) (without VAT) per each delayed Firm Scope Substrate for every (even commenced) day of delay.



If the Seller is in delay with due finalization of manufacturing of any Optional Substrate within the manufacturing deadline stipulated in Art. 6.2 hereof, the Seller shall pay to the Buyer a contractual penalty for delay in the amount of 0,01% of the price of the Optional Substrate (Annex No 2, Item D or E) (without VAT) for every (even commenced) day of delay.

- 10.2 The total contractual penalty for delay with due finalization of manufacturing of one Firm Scope Substrate shall not exceed 1% of the Total price for the Firm Scope Substrates (Annex No 2, Item C) (without VAT). Thus, the total contractual penalty for delay with due finalization of manufacturing of the Firm Scope Substrates shall not exceed 7% of the Total price for the Firm Scope Substrates (without VAT).

The total contractual penalty for delay with due finalization of manufacturing of one Optional Substrate shall not exceed 3% of the price of the Optional Substrate (Annex No 2, Item D or E) (without VAT).

- 10.3 If the Seller is in delay with the removal of a nonconformity in case of hidden nonconformities (Art. 9.4 or 9.6) or a warranty claim (Art. 9.7), the Seller shall pay to the Buyer a contractual penalty for delay in the amount of 20€ for every (even commenced) day of delay.

- 10.4 The total contractual penalties for delay with removal of nonconformities under this Contract shall not exceed 15 000€.

- 10.5 The Seller shall pay contractual penalties within fifteen (15) days from the day, on which the Buyer enumerated their claim. The payment by the Seller of contractual penalties for delay to which the Buyer is entitled under this Art. X hereof shall be the sole indemnification due by the Seller to the Buyer because of such delay. The Buyer has the right to terminate the present Contract for default of the Seller in application of the Art. 11.2 iii) hereof or to terminate an order for default of the Seller in application of the Art. 11.3.

- 10.6 The Buyer is entitled to unilaterally set off claims arising from the contractual penalties against the claim of the Seller for payment of any price due under this Contract after agreement by the Parties on the amount of penalties due by the Seller. The Buyer is not obliged to take into account objections of the Seller raised against the enumeration of the contractual penalties should the Seller fail to document, within 30 days from receipt of the notice of penalties, that the application of penalties is groundless or that it is not liable for the delays.

Vis major circumstances

- 10.7 Circumstances constituting vis major shall be deemed to have been constituted by such circumstances / obstacles which arose independently of the will of the obliged Party, and which prevent fulfilment of that Party's obligation, provided that it could not be reasonably expected that the obliged Party could overcome or avert this obstacle or its consequences, and furthermore that such Party could foresee such obstacle when it entered into the respective covenants. Vis major shall not be constituted by obstacles that arose only after the obliged Party was in default with fulfilment of its obligations, or which arose in connection with its economic situation.

In addition and for the sake of clarity, the Parties agree that any particular effects or impacts on the Seller or his performance under this Contract of the Covid-19 epidemic that meet the conditions set out above in this Art. 10.7 will be considered as vis major cases despite the fact of the existence of the epidemic outbreak on the date of the signature of this Contract.

- 10.8 Should a situation occur, which a Party could reasonably consider to constitute vis major, and which could affect fulfilment of its obligations hereunder, such Party shall as soon as possible notify the other Party and attempt to continue in its performance hereunder in a reasonable degree. Simultaneously, such Party shall inform the other of any and all its proposals, including alternative modes of performance, however, without consent of the other Party, it shall not proceed to effect such alternative performance.



- 10.9 If a situation constituting vis major occurs, the deadlines imposed hereunder shall be extended by the period of the documented duration of the said vis major. The obliged Party shall properly document to the other Party the start and the finish of the vis major period.

Covid_19 clause

- 10.10 Contractual penalties stipulated in Art. 10.1 and 10.3 above do not apply if the delay on the side of the Seller is caused by documented impacts of the covid_19 outbreak on the Seller that could not have been reasonably foreseen and which can be overcome only with unreasonable additional effort or costs. Every such impact must be documented by the Seller, mainly the cause, when it occurred and how long it lasted.

PET-G containers unavailability

- 10.11 Should the PET-G containers as specified herein not be available to the Seller for any reason (or should they be available only subject to unreasonable effort or costs), the Parties shall agree on an adequate substitute product.

Liability limitation

- 10.12 Except in case of any damage or injury to a property or to a human health or life, gross negligence, or wilful misconduct shall the Seller's liability be limited to the aggregate amount of this Contract. The Seller shall not be liable for indirect damages such as loss of business and loss of profit.

XI. Termination of the Contract

- 11.1 This Contract may be terminated by withdrawal from the Contract on the grounds stipulated by law or in the Contract.
- 11.2 The Buyer is entitled to withdraw from the Contract without any penalty from Seller in any of the following cases:
- i) material breach of the Contract is committed by the Seller and the Seller has not remedied such breach within 3 months (or another longer period agreed to by the Buyer if to remedy the breach in 3 months is impossible for reasons documented by the Seller) following the sending of a written notice by the Buyer;
 - ii) insolvency proceedings are initiated against the Seller's assets;
 - iii) the Seller is in delay with the delivery of any Firm Scope Substrate by more than 6 months.
- 11.3 The Buyer is entitled to withdraw from an order of Optional Substrate(s) (Art. 3.4 hereof) without any penalty from the Seller (with the effect of the order cancelled but the Contract remaining valid) in case of delay with the delivery of the Optional Substrate(s) ordered by the respective order that exceeds 6 months.
- 11.4 The Seller is entitled to withdraw from the Contract without any penalty from Buyer in the event of material breach of the Contract by the Buyer.

Termination of the Contract for vis major

- 11.5 Either Party is entitled to withdraw from the Contract without any penalty in case of a vis major event (Art. 10.7 hereof) related to the delivery of the Firm Scope Substrates that lasts more than six months. The right to withdraw under this Art. 11.5 for a persisting vis major event can be executed by either Party only until documented take over and acceptance of the first Blank from a subsupplier by the Seller.

Partial termination of the Contract for vis major

- 11.6 Either Party is entitled to partially withdraw from this Contract (i.e. from the respective order) without any penalty in relation to the manufacturing and delivery of any of the Optional Substrates in case of a vis major event (Art. 10.7 hereof) that lasts more than six months. The right to withdraw under this Art. 11.6 for a persisting vis major event can be executed by either Party only until documented take over and acceptance of the Blank for the manufacture of the Optional Substrate from a subsupplier by the Seller.

XII. Representatives, Notices

- 12.1 The Seller has appointed the following authorised representative for communication with the Buyer in technical



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matters:

Ing. Martin Klečka

E-mail: klecka@optixs.cz, tel.: +420 607 014 278

- 12.2 The Buyer has appointed the following authorised representative for communication with the Seller in technical matters:

Dr. Daniel Kramer, e-mail: Daniel.Kramer@eli-beams.eu, tel.: +420 266 051 423.

XIII. Choice of Law and disputes resolution

- 13.1 This Contract and all the legal relationships arising out of it shall be governed by the laws of the Czech Republic.
- 13.2 The Parties acknowledge and note that the provisions of the Czech Civil Code shall apply in matters that are not explicitly regulated by this Contract.
- 13.3 Any and all disputes arising out of this Contract or the legal relationships connected with the Contract shall be resolved by the Parties by mutual negotiations. In the event that any dispute cannot be resolved by negotiations within sixty (60) days, the dispute shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with the said Rules. The Emergency Arbitrator Provisions shall not apply.

Arbitration proceedings place: Berlin (Germany)

Language: English

Constitution of the arbitral tribunal: sole arbitrator

Proceedings costs: each Party shall bear its own proceedings and legal representation costs, no success based reimbursements.

XIV. Export Control

In the event that the supply of the Substrates is under an applicable law subject to an end-user statement regarding use, an export license or any other similar administrative measure, the Buyer shall provide needed cooperation to meet the legal requirements and comply with the applicable rules. However, the Buyer must always remain entitled to use the Substrates for the operation of the ELI Beamlines research centre in the Czech Republic. Any resale of Substrates is subject to written approval of the Seller.

XV. SOCIAL, ECOLOGICAL AND INNOVATIVE ASPECTS

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 Seller 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 Seller 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 Seller shall select the solution/process that is the most innovative.

XVI. Final provisions

- 16.1. The Buyer hereby declares that it is not with respect to the subject hereof an entrepreneur and that the subject



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of the Contract doesn't fall within the scope of any of its entrepreneurial activities.

- 16.2. The Contract represents the entire and comprehensive agreement between the Buyer and the Seller.
- 16.3. In the event that any of the provisions of this contract shall later be shown or determined to be invalid, ineffective or unenforceable, then such invalidity, ineffectiveness or unenforceability shall not cause invalidity, ineffectiveness or unenforceability of the Contract as a whole. In such event the Parties undertake without undue delay to replace after mutual agreement such invalid, ineffective or unenforceable provision of the Contract by a new provision, that in the extent permitted by the laws and regulations of the Czech Republic, relates as closely as possible to the intentions of the Parties to the Contract at the time of creation hereof.
- 16.4. 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.
- 16.5. This Contract may be changed or supplemented solely by means of numbered supplements in writing, furnished with the details of time and place and signed by duly authorised representatives of the Parties.
- 16.6. The following Annexes form integral part of the Contract:
Annex No. 1: Requirements Specification Document
Annex No. 2: Prices
- 16.7. The Parties, manifesting their consent with its entire contents, affirm the Contract with their signature.

For: Fyzikální ústav AV ČR, v. v. i.

For: OptiXs, s. r. o.

Name: RNDr. Michael Prouza, Ph.D.
Title: Director

Name: Ing. Marin Klečka
Title: Statutory representative



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Annex No. 1 Requirements Specification Document

Confidentiality Level	<i>BL - Restricted for internal use</i>	TC ID / Revision	00275941/E
Document Status	<i>Document Released</i>	Document No.	N/A
WBS code	<i>4.3.0.0 – Beam Transport</i>		
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Project branch	<i>Engineering & Scientific documents (E&S)</i>		
Document Type	<i>Specification (SP)</i>		

[RSD product category C]

L4f Transport Mirror Substrates

TP20_039



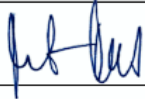
Keywords

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	Position	Name
Responsible person	Chief Optical Designer of Laser Technology	Daniel Kramer
Prepared by	Chief Optical Designer of Laser Technology	Daniel Kramer

<i>RSS TC ID/revision</i>	<i>RSS - Date of Creation</i>	<i>RSS - Date of Last Modification</i>	<i>Systems Engineer</i>
021611/A.001	24.8.2020	24.8.2020	Amélie Grudinová
021611/A.002	2.9.2020	2.9.2020	Amélie Grudinová
021611/A.003	9.4.2021	9.4.2021	Amélie Grudinová

Reviewed By			
<i>Name (Reviewer)</i>	<i>Position</i>	<i>Date</i>	<i>Signature</i>
Mojmír Havlík	Optical designer	Informed	
Stefan Weber	RP5 / RP6 Team Leader	Acknowledged via AWC	
Radek Toman	Lawyer	Informed	
Viktor Fedosov	SE and Planning Group Leader	Acknowledged via AWC	
Veronika Olšovcová	Safety Team Manager	Informed	
Lucie Kaletusová	Clean Rooms Specialist	Informed	
Ladislav Půst	Manager Installation of Technology	Acknowledged via AWC	
Roman Kuřátko	Facility Manager	Informed	

Approved by			
<i>Name (Approver)</i>	<i>Position</i>	<i>Date</i>	<i>Signature</i>
Bedřich Rus	Scientific Coordinator of Laser Technology (RP1)	13.4.2021	

Revision History / Change Log				
<i>Change No.</i>	<i>Made by</i>	<i>Date</i>	<i>Change description, Pages, Chapters</i>	<i>TC rev.</i>
1	Daniel Kramer	20.8.2020	Draft creation	A
2	Amélie Grudinová	24.8.2020	Version for review	B
3	Amélie Grudinová	2.9.2020	Final version	C
4	Amélie Grudinová	14.9.2020	Final version, signed	D
5	Amélie Grudinová Radek Toman Daniel Kramer	08.04.2021	Updated interferometric reports to match drawings, OM3 file updated to rev.05	E

Table of Content

1. Introduction	4
1.1. Purpose	4
1.2. Scope	4
1.3. Terms, Definitions and Abbreviations	4
1.4. Reference Documents	4
1.5. References to Standards	5
2. Functional, Performance and Design Requirements	5
2.1. General Requirements	5
2.2. Marking	6
3. Environmental Requirements	6
3.1. Transportation Requirements	6
3.2. Packaging Requirements	7
4. Quality Control	7
4.1. Quality Reports (QRs)	7
4.2. Documentation and Data Control	8
4.3. Non-Conformity Control System	8
5. Verification Requirements for the Supplier	8
5.1. Phasing of the Delivery	9
5.1.1. Qualification of Design	9
5.1.2. Manufacturing	10
5.1.3. Acceptance	10

1. Introduction

1.1. Purpose

This Requirements Specification Document (RSD) lists the technical requirements and constraints on product applying in RA1 Program of the ELI project. This can lead to the identification of product interfaces with the ELI science based technology and ELI building facility. This RSD also acts as the parent document for the technical requirements that need to be addressed in lower level design description documents.

1.2. Scope

This RSD contains all of the technical requirements: functional, performance, operational & design, transportation, safety & quality requirements for the following product: **Transport Mirror Substrates (TP20_039)**, further referenced as **Mirror Substrates**.

The product is an integral part of the standalone **L4 10 PW Laser System Beam Transport**. This product is registered in the PBS software under the following PBS code: **RA1.L4BT.E34F.O.UFM**.

In addition to the requirements specified in this RSD, the mirror substrates shall comply completely with the requirements given in the Reference documents [see chapter 1.4].

1.3. Terms, Definitions and Abbreviations

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

Abbreviation	Meaning
CA	Contracting Authority (Institute of Physics AV CR, v. v. i.)
ELI	Extreme Light Infrastructure
QR	Quality Report
RA1	Research Activity 1
RMS	Root Mean Square
RSD	Requirements Specification Document
VCD	Verification Control Document

1.4. Reference Documents

Number of doc.	Title of Document/File
RD-01	00275941_E-3.4_Drawings_for_L4f_mirror_substrates.rar

Detailed list of drawings included within **RD-01** archive:

Drawing Name	Drawing Number	Sheets	File format
L4f fold mirror	44cOM0020_rev1	1	PDF
L4f leaky fold mirror	44cOM0030_rev5	1	PDF

1.5. References to Standards

If this document includes references to standards or technical documents the CA allows/permits also another equal solution to be offered. If the Supplier offers another equal solution the CA shall not reject its bid, once the Supplier by appropriate means in the bid proves that the offered supplies, services or works meet in an equivalent manner the requirements including references to standards or technical documents.

2. Functional, Performance and Design Requirements

Functional, performance and design requirements for the **Mirror Substrates** are summarized within reference drawing **RD-01** (see chapter 1.4).

2.1. General Requirements

REQ-030624/A

The Supplier shall deliver within the firm scope of delivery the number of **Mirror Substrates** given in **Table 1**:

Table 1 – number of elements to be delivered

Drawing Number	Mirror Substrate Type	Pieces required
44cOM0020_rev1	L4f Fold Mirror	5
44cOM0030_rev5	L4f Leaky Fold Mirror	2

REQ-031168/A

The Supplier shall deliver within the optional scope of delivery the number of **Mirror Substrates** stated in the contract.

REQ-030625/A

The Supplier shall provide the manufacturing drawings for the **Mirror Substrates** in conformity with reference document **RD-01** (see chapter 1.4) for the review as agreed with the CA.

NOTE: It is not necessary to disclose any proprietary information but to make sure all the requirements related to production from this RSD were correctly taken into account.

REQ-030626/A

The parameters of the uncoated **L4f Fold Mirrors** shall correspond to the requirements given in the reference document **RD-01** (Drawing Number 44cOM0020_rev1; see chapter 1.4).

REQ-030627/A

The parameters of the uncoated **L4f Leaky Fold Mirrors** shall correspond to the requirements given in the referenced document **RD-01** (Drawing Number 44cOM0030_rev5; see chapter 1.4).

2.2. Marking

REQ-030628/A

Each **Mirror Substrate** delivered within the firm scope shall be marked according to the reference document **RD-01**. Alternative marking method can be agreed with CA. The serial numbers and mirror names are listed in Table 2.

Table 2: names and serial numbers for marking

Element type	Element #	Name	Serial number
L4f Fold Mirror	1	44cOM0020	20080336
L4f Fold Mirror	2	43OM0040	20080338
L4f Fold Mirror	3	43OM0050	20080339
L4f Fold Mirror	4	44cOM0060	20080340
L4f Fold Mirror	5	44cOM0020_II	20080341
L4f Leaky Fold Mirror	6	44cOM0030	20080337
L4f Leaky Fold Mirror	7	44cOM0030_II	20080342

REQ-031169/A

Each optional Mirror Substrate shall be marked according to instructions provided by the CA upon written order of the substrate.

3. Environmental Requirements

REQ-030629/A

The Supplier and the CA shall agree on the cleaning method to clean **Mirror Substrates** without decreasing their properties and to avoid contamination of 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).

3.1. Transportation Requirements

REQ-030630

The transportation to the final destination of the **Mirror Substrates** shall be conducted by the Supplier within the time stipulated in the contract.

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

3.2. Packaging Requirements

REQ-030631/A

All the **Mirror Substrates** shall be cleaned and packed in a clean environment of Class 6 according to ČSN EN ISO 14644 (equivalent to ISO 14644) or cleaner.

NOTE: Regarding the referred to standard/s or technical documents the CA allows/permits also another equal solution to be offered.

REQ-030632/A

Each **Mirror Substrate** shall be placed in a separate PET-G container preventing damage, degradation and contamination. The PET-G containers shall be packed in a minimum of two plies separate clean packaging and placed in a sufficiently padded box for transport. Transport boxes shall contain tilt and shock sensors

4. Quality Control

4.1. Quality Reports (QRs)

REQ-030633/A

For each uncoated **L4f Fold Mirror**, the Supplier shall perform the following tests of product quality and provide corresponding **specific quality reports (I - V)**:

- I. S-D report listing the main defects;
- II. Microroughness report from center and 1 corner;
- III. Dimensional report listing main dimensions;
- IV. Substrate material report;
- V. Interferometric report of surface flatness over the clear aperture including wavefront slope error at normal incidence. Subaperture measurement is possible for spatial periods smaller than 6 mm;

REQ-030634/A

For each uncoated **L4f Leaky Fold Mirror**, the Supplier shall perform the following tests of product quality and provide corresponding **specific quality reports (I - VI)**:

- I. S-D report listing the main defects;
- II. Microroughness report from center and 1 corner;
- III. Dimensional report listing main dimensions;
- IV. Substrate material report;
- V. Inteferometric report of surface flatness over the clear aperture including wavefront slope error at normal incidence.

Subaperture interferograms are possible for spatial periods smaller than 6 mm;

- VI. Interferometric report of transmitted wavefront through the clear aperture at 45° incidence. Wavefront measurement at normal incidence can be agreed with CA. Subaperture measurement is possible for spatial periods smaller than 6 mm;

4.2. Documentation and Data Control

REQ-030635/A

For each **Mirror Substrate** the Supplier shall provide a Declaration of Conformity (or the equivalent document) with technical requirements defined by the product RSD and ensure completeness of the products.

REQ-030636/A

The Supplier shall use following data formats:

- *.dat (Zygo MX compatible binary file format for interferograms)
- *.JPG, *.PDF/A, *.HTML
- 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
- presentations *.ppt, *.pptx; OpenDocument Format

REQ-030637/A

The Supplier shall provide following type of documents:

- 3D model (if available);
- 2D manufacturing drawings;
- Printable format for text documents;
- Binary format for interferometric data readable by Zygo MX Software

4.3. Non-Conformity Control System

REQ-030638/A

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

5. Verification Requirements for the Supplier

The verification process will be performed by the Supplier to demonstrate that the **Mirror Substrates** meet the specified requirements of the CA.

5.1. Phasing of the Delivery

This chapter is intended to briefly summarize basic milestones of the Contract delivery. These milestones represent gates (checkpoints) where the quality of the delivery is to 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**

5.1.1. Qualification of Design

Summary of what has to be provided by Supplier in terms of documentation (QRs and manufacturing drawings) before starting the manufacturing. The goal is to verify the **manufacturing drawings**.

Output of this phase is **Qualified Design**.

REQ-031135/A

The Supplier shall present to the CA the following documents for approval:

- detailed procedures related to the testing during Manufacturing phase;
- final manufacturing drawings and metrology layout (see REQ-030636/A and REQ-030637/A). No proprietary information shall be revealed to the CA on the drawings.

REQ-030640/A

Before the ending of Qualified Design phase the Supplier shall provide following information that shall be agreed by the CA:

- structure and content of quality reports (see REQ-030633/A, REQ-030634/A);
- **HOW** and **WHEN** each of the technical requirements related to the final product will be verified (through QR, see REQ-030633/A, REQ-030634/A).

REQ-030641/A

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

- detailed procedures related to the testing during Manufacturing phase;
- common non-conformance control system (see REQ-030638/A).

5.1.2. Manufacturing

The goal is to demonstrate that the manufactured products meet the specified technical requirements (RSD) of the CA.

This quality gate concerns primarily:

- **Testing at Supplier's site** (factory testing);
- **Packaging**

Output of this phase is the **Final Product**.

REQ-030642/A

The results of verification within the Manufacturing phase shall be recorded by the Supplier in corresponding QRs (see REQ-030633/A, REQ-030634) and provided to the CA for approval (see chapter 4.2).

5.1.3. Acceptance

The Acceptance phase (as defined in the Contract) shall demonstrate the following:

- Final products have been successfully verified and this process has been documented in an appropriate way through QRs (see REQ-030633/A, REQ-030634);
- All detected non-conformities have been solved in accordance with REQ-030638/A;
- Final products are free of fabrication errors.

Output of this phase is a **Final Verified Product**.

In case of successful acceptance phase the CA shall provide to the Supplier signed acceptance protocol.

In case of unsuccessful acceptance stage the CA shall provide to the Supplier Non-Conformity Report (NCR) and ELI non-conformity control process shall be applied (see REQ-030638/A).

REQ-030643/A

Verification process shall be carried out by the Supplier and it is successfully completed when the final products comply with all specifications and the results of this process are documented in an appropriate way through QRs (see REQ-030633/A, REQ-030634).

NOTE: Acceptance will be carried out by the CA (or if required, representatives/contractors appointed by the CA) on the final products at the Supplier's site.



Annex No. 2 Prices

Item	Description of the Item	Price in USD excl. VAT
Firm scope:		
A	Non-recurring engineering costs + Manufacturing costs for 5 L4f Fold Mirrors	[vypuštěno]
A1	Non-recurring engineering costs only	[vypuštěno]
B	Non-recurring engineering costs + Manufacturing costs for 2 L4f Leaky Fold Mirrors	[vypuštěno]
B1	Non-recurring engineering costs only	[vypuštěno]
C	Total price for Firm Scope Substrates (= item A + item B)	[vypuštěno]
Call option:		
D	Price for 1 extra L4f Fold Mirror	[vypuštěno]
E	Price for 1 extra L4f Leaky Fold Mirror	[vypuštěno]
Total Bid Price:		
1	Total price for Firm Scope Substrates (= item C)	[vypuštěno]
2	Total price for 10 Optional L4f Fold Mirrors (= item D above x 10)	[vypuštěno]
3	Total price for 3 Optional L4f Leaky Fold Mirrors (= item E above x 3)	[vypuštěno]
4	Total Bid Price	2 599 915,00