



PURCHASE CONTRACT

This purchase contract ("Contract") was concluded pursuant to Sec. 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: prof. Jan Řídký, DrSc. – director

("Client"); and

- (2) **DELONG INSTRUMENTS a.s.**

with its registered office at: Palackého třída 3019/153b, Královo pole, 612 00 Brno

registration No.: 469 03 879

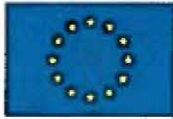
represented by: Ing. Tomáš Papírek, member of the board of directors (*člen představenstva*)

("Supplier").

(The Client and the Supplier are hereinafter jointly referred to as "Parties" and individually as "Party".)

WHEREAS

- (A) The Client is a public contracting authority and the beneficiary of grants of the Ministry of Education, Youth and Sports of the Czech Republic for projects „*ELI: Extreme Light Infrastructure*“ and „*ELI: Phase 2*“ ("Projects"), within the Operational Programme Research and Development for Innovations and Operational Programme Research, Development and Education (hereinafter the "Operational Programmes").
- (B) For the successful realization of the Projects it is necessary to purchase the Object of Purchase (as defined below) in accordance with the Act No. 137/2006 Coll., on public procurement, and binding rules of the Operational Programmes.
- (C) The Supplier's bid for the public procurement titled "*Vacuum compressor of PW laser pulses for the ELI-Beamlines L3 system*," whose purpose was to procure the Object of Purchase (hereinafter the "Bid" and "Public Procurement"), was selected by the Client as the most suitable and relevant parts thereof describing the Delivery (as defined

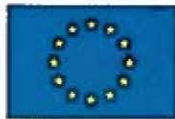


below) from the technical and quality perspective form Annex 4 (Supplier's Bid) to this Contract.

IT WAS AGREED AS FOLLOWS:

1. BASIC PROVISIONS

- 1.1 Under this Contract the Supplier shall design, manufacture, test, deliver, handover to the Client and install at the Client's facility a vacuum laser pulse Compressor and a Beam Injector for the ELI-Beamlines L3 high-average power short-pulse PW laser, including large optomechanical mounts and the control systems, as specified in Annex 1 (Summary of Deliverables, Time Schedule and Payments), Annex 2 (Detailed Technical Specifications) and Annex 3 (Quality and Verification Plan) to this Contract ("Object of Purchase") and shall transfer to the Client ownership right to the Object of Purchase, and the Client shall take over the Object of Purchase and shall pay the Supplier the Purchase Price (as defined below), all under the terms and conditions stipulated herein.
- 1.2 Under this Contract the Supplier shall specifically carry out following major activities ("Activities"):
- a) Develop a detailed schedule of project activities and all corresponding quality plans and work procedures;
 - b) Develop a detailed engineering drawings and detailed 3D model based on the preliminary design drawings and 3D model supplied by the Client, provide structural verification of the compressor chamber, elaborate design of specific details, develop Failure Mode and Effect Analysis;
 - c) Develop production (manufacturing) drawings for major components of the Compressor and Beam Injector;
 - d) Manufacture, assembly and factory test the compressor vacuum vessel and the internal optical table, including functional verification of the vacuum control system, manufacture, assemble and factory test Beam Injector System;
 - e) Transport, install at ELI-Beamlines and verify performance of the Compressor vacuum vessel and of the internal optical table, and of the Beam Injector;
 - f) Manufacture, assembly and factory test the optomechanical mounts, including the motion controls, deliver to ELI-Beamlines and verify performance of these mounts;
 - g) If activated, deliver the optional components according to Annex 1 (Summary of Deliverables, Time Schedule and Payments); (hereinafter "Option 1: Optional components")
 - h) Provide additional post-installation technical support on a call-off basis, up to 30 man-days according to Annex 1 (Summary of Deliverables, Time Schedule and Payments); (hereinafter "Option 2: Optional post-installation technical support")



- i) Provide extra technical optomechanical design and/or electronic control system design works, on a call-off basis, up to 80 man-days according to Annex 1 (*Summary of Deliverables, Time Schedule and Payments*); (hereinafter "Option 3: Optional design works")
- j) Carry out transport of the compressor vacuum chamber including related components through ELI-Beamlines laser building to the L3 laser hall, positioning and bolting to the floor as described in Annex 1 hereto (D6 Deliverable description) according to Annex 1 (*Summary of Deliverables, Time Schedule and Payments*); (hereinafter "Option 4: Optional transport of the compressor vacuum chamber"),

(Options 1, 2, 3 a 4 hereinafter together as the "Options"),

(The Object of Purchase and the Activities are hereinafter jointly referred to as the "Delivery".)

- 1.3 The Supplier promises to the Client that if for the fulfilment of the requirements of the Client under this Contract or the proper operation of the Object of Purchase are necessary other deliveries and activities not expressly mentioned in this Contract, the Supplier shall procure such deliveries or shall carry out such activities at its own expense without any effect on the Purchase Price.
- 1.4 During the performance of this Contract, the Client is entitled to further specify or clarify the requirements stipulated in Annex 2 (*Detailed Technical Specification*). Such further specifications can be requested by the Client no later than one month before the scheduled completion of the D3 Deliverable, with the exception of the vacuum control system where further specifications can be requested to up to one month before the scheduled completion of the D5 Deliverable, and for optomechanical mounts where further specifications can be requested to up to two months before the scheduled completion of the D8 Deliverable. These further specifications shall be binding for the Supplier. Under this provision, the Client is not entitled to substantially change the existing requirements stipulated in Annex 2 (*Detailed Technical Specifications*). Should any request for change result in increase of Purchase Price such request is binding for the Supplier only if the Purchase Price modification is agreed between Parties and such modification is in accordance with the Act No. 137/2006 Coll., on public procurement, and binding rules of the Operational Programmes.
- 1.5 The Object of Purchase and its components and parts shall be delivered new (i.e. not remanufactured).
- 1.6 The final cleaning of the vacuum components and testing of vacuum performance, integration of vacuum chambers with internal optomechanical assembly, and integration of the instrumentation with critical control systems shall not be performed by a subcontractor.



- 1.7 The Supplier shall deliver the Object of Purchase and provide the Activities in accordance with the Deliverables defined in Annex 1 (*Summary of Deliverables, Time Schedule and Payments*).

2. SUPPLIER'S DUTIES

- 2.1 The Supplier shall ensure that the Object of Purchase complies with all technical specifications and performance requirements stipulated in Annex 2 (*Detailed Technical Specifications*). The Supplier is responsible that the Object of Purchase and/or its subsystems meet valid safety, technical and quality Czech and EU standards.
- 2.2 During the performance of this Contract the Supplier proceeds independently, unless hereunder stated otherwise. If the Supplier receives instructions from the Client, the Supplier shall follow such instructions unless these are against the law or in contradiction to this Contract. If the Supplier finds out or should have found out by exercising professional care that the instructions are inappropriate or contradicting valid Czech or EU standards or are in contradiction to this Contract, then the Supplier must notify the Client.

3. CLIENT'S CONFIDENTIAL INFORMATION

- 3.1 For the purposes of detailed design and manufacture, the Client may provide to the Contractor conceptual drawings, 3D model, schemes and other materials related to the Object of Purchase, which are of confidential nature and which will be labelled as "Confidential and Proprietary" ("Client's Confidential Information"). The Supplier acknowledges that the Client's Confidential Information is of proprietary and confidential nature and that such information might be protected under laws that cover industrial or other intellectual property and that disclosure of such information may cause damage or other harm to the Client. The Supplier may use the Client's Confidential Information only and solely for the purposes of the fulfilment of this Contract, i.e. for the manufacture and assembly of the Object of Purchase for the Client.
- 3.2 The Supplier must ensure that Client's Confidential Information will be accessed only by persons (e.g. employees and/or subcontractors) that need such access for the fulfilment of this Contract. The Supplier shall take all reasonable steps to ensure that the Client's Confidential Information will not be accessed by any third party and/or by any unauthorized person.
- 3.3 Should the Supplier breach any of his duties stipulated in this Article 3 the Client is entitled to charge him with contractual penalty in the amount of 4 000 EUR for each case of such breach.

4. DESIGN AND MANUFACTURE OF THE OBJECT OF PURCHASE

- 4.1 The detailed engineering drawings developed by the Supplier in the Deliverable D2 must comply with the requirements of this Contract and shall be approved by the Client prior to proceeding to elaboration of the production (manufacture) drawings. If the



Client suggests modifications to these drawings, the Supplier shall incorporate such modifications or shall explain in writing the reason for refusing to incorporate them.

4.2 The Supplier must act in such a way that this Contract is performed in time and in due manner.

5. LICENCE OF THE SUPPLIER

5.1 If any part of the Delivery forms an object protected by intellectual property rights laws and/or forms the related know-how, the Supplier grants to the Client a right to use such part of the Delivery, including related documentation ("Supplier's Proprietary Information") in the original or modified version ("Licence") for the purposes listed in Art. 5.3.

5.2 The License is granted:

- a) royalty free worldwide;
- b) for the period of validity of the rights to each of the licensed intellectual property objects, which applies adequately to the related know-how

5.3 The Licence includes the right to use the Object of Purchase for purposes of the Projects as defined by grant decisions issued within the Operational Programmes and comprises particularly the right to use the Object of Purchase for research and development activities including necessary modifications to the Object of Purchase including software and limited handover of necessary documentation upon signature of a non-disclosure agreement to third parties for the purposes of operation, servicing and further development of the Object of Purchase.

5.4 This granted License also includes the Supplier's permission to the Client to modify and/or alter and/or otherwise change any part of the Supplier's Proprietary Information; either by itself or with assistance of any third party. This permission shall apply *mutatis mutandis* to the Supplier's entitlement to combine and/or merge any part of the Supplier's Proprietary Information with any other work; either by itself or with assistance of any third party.

5.5 The Client is entitled to transfer/ assign the License on any third party if the ownership of International Laser Research Facility ELI Beamlines shall pass on such third party. The Client shall inform the Supplier within undue delay thereabout. The Client is entitled to grant wholly or partially the License to any third party (sublicense) if the right to use the Object of Purchase is granted to such third party.

5.6 The Client is s not required to use the Licence, unless the maintaining of the right depends on the exercise thereof.

5.7 The Supplier hereby represents and warrants to the Client that:

- a) is entitled to use and enforce all intellectual property rights to the Supplier's Proprietary Information, in order to be ensured that the Client may use the Supplier's Proprietary Information properly and without any interference; and



b) is entitled to grant License to the Client in the extent specified in this Contract.

5.8 If the Licence is endangered or infringed, the Client shall inform the Supplier accordingly without undue delay after ascertaining this fact. The Supplier shall provide the Client with cooperation to ensure the legal protection of the Licence. It is hereby explicitly agreed that the Supplier shall give the Client consent to enforce the industrial property rights and/or related know-how rights covered by the License.

6. MONITORING AND IMPLEMENTATION OF THE INSPECTION PLAN

6.1 The Supplier undertakes to enable the Client exercising inspections of the performance of this Contract. For this purpose, the Supplier shall provide to the Client all information regarding the status of the design and manufacture of the Object of Purchase at the request of the Client, anytime during performance of this Contract.

6.2 The Supplier shall provide to the Client all cooperation, assistance and information that the Client needs for the purposes of full evaluation of the status of the design or manufacture of the Object of Purchase.

6.3 If the Client, especially during an inspection, ascertains any breach of the Supplier's duties under this Contract, the Client shall notify in written the Supplier of such breaches. The Supplier has to respond to such notification and suggest, in appropriate detail, remedying the deficiencies, within fourteen (14) calendar days, unless the Parties agree otherwise.

6.4 Each Party shall invite the other Party to attend a meeting in writing at least 14 calendar days in advance. The Parties may upon mutual agreement replace meetings in person by other forms of communication, as long as they agree on such in writing. Each Party shall bear its expenditures related to their participation in meetings at the other Party's facility; however, cost which would arise due to error, faulty performance or breach of contractual provisions of the Parties shall be borne by that Party which caused it.

6.5 The Supplier shall follow the Quality and Verification Plan according to Annex 3 (Quality and Verification Plan) and shall invite the Client at least 14 calendar days in advance to participate in all relevant activities of this Plan.

6.6 If the Client does not participate in an inspection and/or verification activity according to Annex 3 (Quality and Verification Plan) at the date communicated in accordance with Art. 6.5 the Supplier is not entitled to carry out respective activities in absence of the Client. However, in such a case the Supplier is not in delay with delivery of the corresponding Deliverable and subsequent Deliverables with proven dependency on the corresponding Deliverable and delivery periods of such Deliverables shall be extended by the time of the Client's delay, unless the Parties agree otherwise.



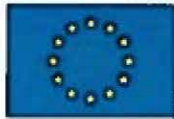
7. THE PLACE AND TIME OF DELIVERY

The place of delivery shall be the International Research Laser Facility ELI-Beamlines located in Dolní Břežany (Central Bohemia), Czech Republic (hereinafter also "ELI Beamlines" or "ELI Beamlines site").

- 7.1 The Supplier shall perform individual Deliverables in terms stipulated in Annex 1 (*Summary of Deliverables, Time Schedule and Payments*).
- 7.2 The Supplier shall carry out performance and verification tests of the major subsystems of the Object of Purchase at his premises (factory acceptance tests), in relation with Deliverables D4, D5 and D8, on the dates agreed with the Client in accordance with Art. 6.5, according to Annex 3 (*Quality and Verification Plan*).
- 7.3 The Supplier shall deliver, install, assemble, test and handover the Object of Purchase at the ELI-Beamlines site, in the extent stipulated in Annex 1 (*Summary of Deliverables, Time Schedule and Payments*). The Client shall provide to the Supplier for this purpose necessary cooperation.
- 7.4 Prior to transport and installation of the individual subsystems of the Object of Purchase related to Deliverables D6, D7 and D9 the Supplier (at the request of the Client) shall inspect the ELI-Beamlines premises for installation of the respective parts of the Object of Purchase, in order to verify readiness of the premises for installation of the Object of Purchase.
- 7.5 For the purpose of determination of individual deadlines stipulated hereby the Commencement Day shall be the day upon ten calendar days after the Contract is concluded (i.e. signed by the second of the Parties).

8. PRICE AND PAYMENT TERMS

- 8.1 The total purchase price for the Delivery excluding Options is 41 178 000,- Czech Crowns (CZK) without value added tax ("VAT") ("Purchase Price"). The Purchase Price represents the Supplier's binding maximum price as offered in the Supplier's Bid. The Purchase Price consists of the price for the Object of Purchase and Activities excluding price of Options as stipulated in the Bid. VAT shall be imposed on top of all payments made hereunder according to valid legislation.
- 8.2 The Purchase Price and prices of Options cannot be exceeded.
- 8.3 The Purchase Price includes all costs and expenses of the Supplier related to the performance of this Contract excluding Options. The Purchase Price include especially all expenses related to the design, manufacture, assembly, factory testing, delivery, installation, on-site performance verification at ELI-Beamlines and handover of the Object of Purchase, costs of the Licence, insurance, warranty service and any other costs and expenses connected with the performance of this Contract excluding Options. Similar provisions shall *mutatis mutandis* apply for the prices of Options.
- 8.4 The Purchase Price and prices of Options may be changed only in accordance with the Act No. 137/2006 Coll., on public procurement, as amended.



- 8.5 The Purchase Price and prices of Options shall be paid on the basis of tax documents – invoices, to the account of the Supplier designated in the invoice. The Purchase Price shall be paid following the payment schedule set in Annex 1 (*Summary of Deliverables, Time Schedule and Payments*). The prices of Options shall be paid according to Annex 1. The Supplier is entitled to issue any invoice no sooner than on the moment the corresponding part of the Delivery, i.e. the Deliverable or Option, is duly delivered to and accepted by the Client in accordance with this Contract, as regards the Deliverables namely with its Art. 9.2 and/or 9.4.
- 8.6 The Client 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 Client's account on behalf of the Supplier's account.
- 8.7 The invoice issued by the Supplier as a tax document must contain all information required by the applicable laws of the Czech Republic. Invoices issued by the Supplier in accordance with this Contract shall contain in particular following information:
- a) name and registered office of the Client,
 - b) tax identification number of the Client,
 - c) name and registered office of the Supplier,
 - d) tax identification number of the Supplier,
 - e) registration number of the tax document,
 - f) Quantity (extent) and nature of performance supplied or services rendered (including the reference to this Contract),
 - g) the date of issue of the tax document,
 - h) the date of the supply of goods or services or the date of the payment on account, whichever comes sooner, in so far as they differ from the date of issue of the tax document – invoice,
 - i) due date,
 - j) the price,
 - k) registration number of this Contract, which the Client shall communicate to the Supplier based on Supplier's request before the issuance of the invoice,
 - l) declaration that the performance of the Contract is for the purposes of Projects,
- and must comply with the double tax avoidance agreements, if applicable.
- 8.8 In case that the invoice shall not contain the above mentioned information, the Client is entitled to return it to the Supplier 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 Client.



8.9 Last invoice of every calendar year must be delivered to the Client no later than December 15 of that calendar year.

9. ACCEPTANCE OF DELIVERABLES AND HANDOVER OF THE OBJECT OF PURCHASE

9.1 Upon receiving technical reports related to Deliverables D1, D2, D3, D4, D5 and D8 the Client shall provide the Supplier within 10 working days with his comments to the submitted reports. The Supplier shall be obliged to take the Client's comments into account, i.e. the Supplier shall accept all justified and materially correct comments and requirements for changes made by the Client. Should the Supplier consider some of the comments or requirements made by the Client as materially incorrect or unacceptable, the Supplier shall specify in writing his reasons for refusing to accept them. The Supplier will produce final technical report containing all justified and materially correct comments and requirements for changes raised by the Client.

9.2 Should the final technical reports related to the Deliverables D1, D2, D3, D4, D5 and D8 comply with the requirements of the Client and contain essentials as set forth herein the Client shall issue to the Supplier, without undue delay, a confirmation on the due execution of the corresponding Deliverable (hereinafter the "Deliverable Acceptance Protocol"). Notwithstanding to it the Client shall not be obliged to verify the correctness of all calculations and/or technical solution details during the course of the acceptance of the Deliverables relating to the detailed design and fabrication process (D2, D3, D4, D5 and D8). Acceptance of these individual Deliverables D2, D3, D4, D5 and D8 does not release the Supplier from his liability for the technical compliance and completeness of the entire Delivery.

9.3 Should it be necessary to modify any part of the already accepted Deliverable in order to meet the parameters expected of the Deliverables D6, D7 and D9, the Supplier undertakes to perform such modifications and accepts that the costs related thereto are included in the Purchase Price.

9.4 Handover and takeover of the Object of Purchase related to Deliverables D6, D7 and D9 shall be realized on the basis of a handover protocol, which shall contain following information ("Handover Protocol"):

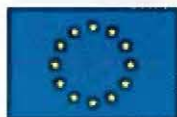
- a) identification of the Supplier, Client and subcontractors, if there are any;
- b) description of the corresponding Deliverable;
- c) declaration of the Client that he received from the Supplier all technical information related to the corresponding Deliverable;
- d) statement of the Client on acceptance of the corresponding Deliverable; and
- e) date of the signature.

9.5 The Handover Protocol must contain the following annexes, which shall be provided by the Supplier:

- a) list of items (accessories) handed over in the corresponding Deliverable;



- b) protocols with full results of all design and/or manufacturing inspection and performance verification testing, carried out according to Annex 3 (Quality and Verification Plan);
 - c) drawings, 3D models, software codes and other contractually required information corresponding to the specific Deliverable; and declaration of the Supplier that the respective Deliverable being part of the Object of Purchase is in accordance with this Contract, applicable laws and technical norms.
- 9.6 In case of deficiencies (i.e. defects and backlogs) of the delivered subsystems related to Deliverables D6, D7 and D9, e.g. if the Supplier does not hand over to the Client all the above mentioned documents, or if the respective Deliverable does not meet the Requirements Specifications according to Annex 2 (Detailed Technical Specifications), the Client is entitled to refuse the takeover of that Deliverable. Whenever technically possible the Supplier shall remedy the deficiencies within ten (10) working days, unless Parties agree otherwise; however these periods do not imply that the Supplier is not in delay with delivery of any Deliverable. The Client is entitled at his discretion (but not obliged) to take over the respective Deliverable despite the above mentioned deficiencies, in particular if such deficiencies do not prevent the Client in the proper operation of the Object of Purchase. In such a case the Supplier and the Client shall list the deficiencies in the Handover Protocol, including the manner and the date of their removal (remedy). If the Parties do not reach agreement in the Handover Protocol regarding the date of the removal (particularly due to the fact that period of 10 working days is technically impossible) , the Supplier shall remove the deficiencies within ten (10) working days. Till the remedy of the deficiencies the Client shall be entitled to postpone the payment up to the amount corresponding to the significance of the deficiency.
- 9.7 Upon completion of Deliverables D6, D7 and D9, namely when the delivered subsystems are fully complying with the requirements of Annex 2 (Detailed Technical Specifications) the Client shall issue to the Supplier, without undue delay, a confirmation on the due execution of the respective Delivery (hereinafter the "Delivery Acceptance Protocol").
10. **THE OWNERSHIP RIGHT**
- The ownership right to the subsystems of the Object of Purchase, corresponding to the Deliverables D6, D7 and D9, shall pass to the Client upon its handover and takeover confirmed by the signature of the Handover Protocol by both Parties. The Handover Protocol will be signed for the compressor vessel and the internal optical table upon completing Deliverable D6, for the Beam Injector System and the vacuum control system upon completing Deliverable D7, and for the optomechanical mounts and the motion control system upon completing Deliverable D9.



11. WARRANTY

- 11.1 The Supplier shall provide a warranty of quality of the Delivery for the period of two (2) years upon its handover, except the turbomolecular pumps, vacuum valves (TMPs) and other equipment specified in Annex 2 for which the warranty period is defined differently therein. If on the warranty list or other document submitted by the Supplier the warranty period is of longer duration, then this longer warranty period shall have priority over the period stated in this Contract.
- 11.2 The warranty period for each part of Delivery consisting of Deliverable D6, D7 and D9 shall begin on the day of the signature of the corresponding Handover Protocol by both Parties. If the Handover Protocol lists any deficiencies, the warranty period shall begin on the day, which follows the day, in which the last deficiency was removed.
- 11.3 The Supplier shall remove defects for which he is responsible according hereto that occur during the warranty period free of charge and in the terms stipulated in this Contract. The Supplier shall bear all the expenses (e.g. travelling, accommodation expenses and price of equipment rental or purchase) related with removal of the defects.
- 11.4 If the Client ascertains a defect of the Delivery during the warranty period, the Client shall notify such defect without undue delay to the Supplier. Defects may be notified on the last day of warranty period, at the latest.
- 11.5 The Client notifies defects in writing via e-mail. The Supplier shall accept notifications of defects on the following e-mail address: service@dicomps.com. The Supplier shall confirm receipt of the notification within five working days.
- 11.6 In the notification the Client shall describe the defect and the manner of removal of the defect. The Client has the right to:
- a) ask for the removal of the defect by the delivery of a replacement individual part that may be required,
 - b) ask for the removal of the defect by repair, or
 - c) ask for the adequate reduction of the price, i.e. the Purchase Price or the price of Option, particularly in case of irremovable defects.
- 11.7 The Supplier shall remove the defect within 21 calendar days from its notification, unless Parties agree otherwise. The Client shall agree an extended deadline for defect removal with the Supplier if the Supplier submits evidence (e.g. subcontractors bid etc.) that removal of the defect within 21 calendar days is impossible for objective reasons (i.e. independent of the will of the Supplier), or if technical nature of the defect makes not possible its removal within 21 calendar days.
- 11.8 The Supplier shall remove the defect within terms stipulated in this Contract even if the notification of the defect is in his opinion unjustified. In such a case the Supplier is entitled to ask for reimbursement of the costs of removal of the defect. If Parties disagree on whether the notification of the defect is justified or not, the Client shall ask



an expert for opinion. If the expert considers the notification to be unjustified, then the Client shall reimburse the Supplier for verifiably and effectively incurred costs of removal of the defect.

- 11.9 Parties shall sign 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 the period of time that elapses between the notification of the defect and its removal.
- 11.10 In case that the Supplier does not remove the defect within the stipulated or mutually agreed period or if the Supplier refuses to remove the defect, then the Client is entitled to remove the defect at his own costs and the Supplier shall reimburse these costs within 30 days after the Client's request to do so. In such a case the existing warranty remains intact.

12. REPRESENTATIONS AND WARRANTIES OF THE SUPPLIER

12.1 The Supplier represents and warrants to the Client that

- a) he possesses all professional qualifications to provide the Delivery, has all the professional prerequisites necessary for the proper fulfilment of this Contract and is able to carry out activities foreseen hereunder with the due care, skill and knowledge of well-experienced experts in his particular professional field,
- b) is fully authorized to perform this Contract, and
- c) there are no obstacles on his side that would preclude him from the due performance of this Contract.

12.2 The Supplier is aware of the importance to the Client of the fulfilment of this Contract in terms of quality, performance and schedule. In the event of a failure by the Supplier to meet them (e.g. in case of delay with delivery of Deliverables and/or in the case if the Object of Purchase does not meet the performance requirements), substantial damage may arise to the Client.

13. PENALTIES

- 13.1 If the Supplier is in delay with the Deliverables D1, D2, and D3 for more than two months, the Supplier shall pay to the Client a contractual penalty in the amount of 0.05% of the Purchase Price for every even incomplete day of delay.
- 13.2 If the Supplier is in delay with the Deliverables D6, D7 and D9, the Supplier shall pay to the Client a contractual penalty in the amount of 0.1% of the Purchase Price for every even incomplete day of delay.
- 13.3 If the Supplier is in default with the removal of a defect of the Delivery preventing the Client from proper operation of the Object of Purchase, the Supplier shall pay to the Client a contractual penalty in the amount of 0.05% of the Purchase Price for every even incomplete day of delay. In case of defects that do not prevent the Client from



proper operation of the Object of Purchase the contractual penalty shall amount to 0.02% of the Purchase Price for every even incomplete day of delay.

- 13.4 The Supplier shall pay any of the contractual penalties charged under this Contract within thirty (30) days from the day, on which the Client enumerated its claim for the contractual penalty. The payment of contractual penalties shall not affect the right of the Client to damages in the extent in which such damages exceed the contractual penalty, thus the Client shall be entitled to claim the exceeding damages.
- 13.5 Total amount of contractual penalties for delay with delivery of Deliverables D6, D7 and D9 shall not exceed 2% of the Purchase Price in relation to each Deliverable D6, D7 and D9, i.e. in total 6 % of the Purchase Price.
- 13.6 The Client is entitled to unilaterally set off claims arising from the contractual penalties against the claim of the Supplier for the payment of the Purchase Price or prices of Options.

14. RIGHT OF WITHDRAWAL AND VIS MAJOR

- 14.1 The Client is entitled to withdraw from this Contract without any penalties, if any of the following circumstances occur:
- a) the Supplier breaches this Contract in a substantial manner;
 - b) the Supplier fails to follow the mandatory activities of the Quality and Verification Plan, stipulated in Annex 3, and/or does not allow the Client to inspect the Supplier's premises for the purposes of ascertaining status of fulfilment of the Contract;
 - c) the Supplier is in delay with any contractual Deliverable stipulated in Annex 1 for a period exceeding 3 (three) calendar months, except where the delay has been caused by the Client;
 - d) results of the factory testing, even after third testing attempt, do not meet the requirements stipulated in Annex 2 (Detailed technical specifications);
 - e) the expenses or the part of the expenses that will arise on the basis of this Contract will be found by the Provider of the funding of the Projects or other control body as ineligible;
 - f) the Client loses funding for the realization of the Projects;
 - g) the insolvency proceeding is initiated against the Supplier; or
 - h) the Client ascertains that the Supplier 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.
- 14.2 The Supplier is entitled to withdraw from this Contract in the following cases:
- a) the Client breaches this Contract in a substantial manner;



- b) the Client is in delay with the payment of any Deliverable for a period longer than 3 calendar months; or
 - c) the Client refuses his attendance at the respective activities of the Quality and Verification Plan, stipulated in Annex 3.
- 14.3 The act of withdrawal from the Contract shall become effective on the day of delivery of the notification in writing from one Party to the other with consequences of the Contract termination effective in the "ex tunc" regime.
- 14.4 Circumstances precluding liability 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. Liability cannot be precluded 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. The effects precluding liability shall be limited to the period during which the obstacles causing these effects persist.
- 14.5 Should a situation occur, which a Party could reasonably consider to constitute vis major (force majeure), and which could affect fulfilment of its obligations hereunder, such Party shall immediately notify the other Party and attempt to continue in its performance hereunder in a reasonable degree. Simultaneously, such Party shall inform the other one of any and all its proposals, including alternative modes of performance, however, without the other Party's consent, the Party shall not proceed to carry out such alternative performance. If a situation constituting vis major occurs, the deadlines imposed hereunder shall be extended by the period of the duration of the said vis major.
15. **SPECIAL PROVISIONS**
- The Supplier undertakes, under the terms and conditions hereof, in accordance with instructions issued by the Client, to
- a) Archive all written material prepared in connection with fulfilment of this Contract so that its compliance with the archiving principles required within the framework of the Operational Programmes and to provide access to the Client to these archived documents until 2025. The Client shall be entitled to take possession of these documents after ten years from the completion of the performance hereunder from the Supplier free of charge;
 - b) Cooperate during financial inspections carried out in accordance with Act No. 320/2001 Coll., on Financial Inspections, as amended, i.e. among others to allow the Ministry of Education, Youth and Sports of the Czech Republic to access also those portions of the Supplier's Bid submitted within the Public Procurement, the Contract and related documents which may be protected by special legal regulation, given that all requirements set forth by legal regulation with respect to



the manner of executing such inspections will have been observed; the Supplier shall bind any of its sub-contractors to comply with this obligation accordingly;

- c) Enable observance of any publicity obligations stemming from the rules of Operational programmes; and
- d) Provide to the Client yearly reports on sub-contractors to enable the Client to fulfil its obligations pursuant to Sec. 147a of the Act. No. 137/2006 Coll., on Public Procurement, as amended.

16. CONFIDENTIALITY

Parties shall not disclose information that shall become available to them in connection with this Contract and its performance and whose disclosure could harm the other Party. Duties of the Client ensuing for the applicable legal regulations remain unaffected.

17. REPRESENTATIVES OF THE PARTIES

17.1 The Supplier appoints following representatives for the communication with the Client:

In technical matters:

Name: Ing. Tomáš Bejdák

E-mail: tomas.bejdak@dicomps.com

Tel.: +420 549 123 506

In contractual matters:

Name: Ing. Tomáš Papírek

E-mail: tomas.papirek@dicomps.com

Tel.: +420 549 123 507

17.2 The Client appoints following representatives for the communication with the Supplier:

In technical matters:

Name: Ing. Bedřich Rus, PhD.

E-mail: rus@fzu.cz

Tel: +420 266 051 251, +420 603 570 558

In contractual matters:

Name: prof. Jan Řídký, DrSc.

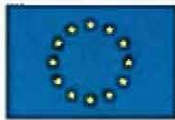
E-mail: ridky@fzu.cz

Tel.: +420 266 052 121



18. FINAL PROVISIONS

- 18.1** This Contract is governed by the laws of the Czech Republic, especially by the Civil Code.
- 18.2** 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.
- 18.3** The Supplier takes into account that the Client is not in relation to this Contract an entrepreneur, nor the subject matter of this Contract is connected with the business activities of the Client.
- 18.4** The Supplier is not entitled to set off any of its claims or his debtor's claims against the Client's claims. The Supplier is not entitled to transfer its claims against the Client that arose on the basis or in connection with this Contract on third parties. The Supplier is not entitled to transfer rights and duties from this Contract or its part on third parties.
- 18.5** All modifications and supplements of this Contract must be in writing.
- 18.6** If any of provisions of this Contract are invalid or ineffective, then such invalidity, ineffectiveness or unenforceability shall not cause the invalidity, ineffectiveness, or unenforceability hereof as a whole and 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 as well as most closely reflects the intentions of the Contracting parties at the time of conclusion hereof, to an extent permitted by the laws and regulations of the Czech Republic.
- 18.7** If any Party breaches any duty under this Contract and knows or should have known about such breach, it shall notify it to the other Party and shall warn such Party of possible consequences of the breach.
- 18.8** This Contract is executed in four (4) counterparts and every Party shall receive two (2) counterparts.
- 18.9** An integral part of this Contract is Annex 1 (*Summary of Deliverables, Time Schedule and Payments*), Annex 2 (*Detailed Technical Specifications*), Annex 3 (*Quality and Verification Plan*) and Annex 4 (*Supplier's Bid*). In case of any discrepancy between the provisions of this Contract and the provisions of its Annexes the provisions of this Contract shall prevail, except for the provisions of Annex 4 containing conditions and specifications that are more favourable to the Client (i.e. higher technical specification values and/or more technically advanced or demanding solutions etc.), in which case such provisions of Annex 4 shall prevail. In case of any discrepancy between the provisions of Annexes the provisions containing conditions and specifications that are more favourable to the Client (i.e. higher technical specification values and/or more technically advanced or demanding solutions etc.) shall prevail.
- 18.10** This Contract shall be valid and effective on the date of the signature of both Parties.



IN WITNESS WHEREOF attach Parties their handwritten signatures:

Client

Signature: 

Name: prof. Jan Řídký, DrSc.

Position: director

Date: 23.12.2015

Supplier

Signature: 

Name: Ing. Tomáš Papírek

Position: member of the board of directors (*člen představenstva*)

Date: 22.12.2015



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



MINISTRY OF EDUCATION,
YOUTH AND SPORTS

ANNEX 1

SUMMARY OF DELIVERABLES, TIME SCHEDULE AND PAYMENTS

Annex No. 1
Summary of Deliverables,
Time Schedule and Payments

*Vacuum compressor and beam injector of PW laser pulses
 for the ELI-Beamlines L3 laser system [TP14-094]*

TC ID/Revision: 00121616/B
 Confidentiality: BL - Restricted for internal use
 WBS code: 3.3
 PBS code: RA1.L3.HAPL.CMP

| Deliverable | Description | Completion | Payment |
|-------------|--|--|---------|
| D1 | Detailed schedule of project activities and all corresponding Quality and Verification Plans, and of work procedures | 1 month and 15 days | 10% |
| D2 | Development of FZU concept design and 3D model and production of detailed engineering drawings for components and subsystems. Verification of structural performance of compressor chamber. Risk assessment and failure modes and effect analysis. | D2A 3 months and 15 days D2B 5 months | 20% |
| D3 | Preparation of production drawings for manufacture of principal fabrications | D3A 5 months and 15 days D3B 6 months and 15 days | 20% |
| D4 | Manufacturing, assembly and factory testing of the compressor vacuum vessel and of the internal optical table | 14 months and 15 days | 10% |
| D5 | Manufacturing, assembly and factory testing of the beam injector system | 16 months | 10% |
| D6 | Transport and installation of the compressor vacuum vessel and of the internal optical table at ELI-Beamlines. Compressor control systems on-site integration, testing and Client staff training. | 16 months | 10% |
| D7 | Transport and installation of the beam injector at ELI-Beamlines. Beam injector control systems on-site integration, testing and Client staff training. | 18 months | 10% |
| D8 | Manufacturing, assembly and factory testing of large optomechanical mounts | 18 months | 5% |
| D9 | Delivery of large optomechanical mounts to ELI-Beamlines | 19 months | 5% |

I. Contractual Deliverables description

1. Deliverable D1: Detailed schedule of project activities and all corresponding quality plans and work procedures

The supplier to whom the Public Contract will be awarded (hereinafter the "Supplier") shall provide a detailed schedule of all project activities; by which is meant a schedule that defines all the activities necessary to individually define, produce or procure and deliver every component within the scope of supply. All activities shall be resourced, allocated start / finish times and linked with relevant dependencies. The amount of detail should be sufficient to identify the longest path of activities through the entire program, thus providing confidence in the overall programme for Deliverables. The scheduled activities shall not be restricted to those of the Supplier but shall include all relevant activities of sub-suppliers, the Client or relevant third parties.

Also within the first month following the Commencement Day, the Supplier shall provide a draft set of Quality and Verification Plans and associated Work Procedures detailing all the work activities and processes required for the design, procurement, fabrication, assembly and test of all products to be supplied under the contract. This shall include aspects such as design review, inspection, analysis and test procedures (Verification Plan), and configuration management, material traceability, cleanliness control, welding procedures and qualifications (Quality Plan). The provided draft set of Quality and Verification Plans shall incorporate as a minimum all required activities listed in Annex 3 (*Quality and Verification Plan*).

Completion: 1 month and 15 days after Commencement Day

2. Deliverable D2: Development of detailed engineering drawings and structural verification of compressor chamber

a) The Supplier shall develop detailed engineering drawings based on the preliminary design drawings and 3D model supplied by the Client. These detailed engineering drawings produced by the Supplier will be used in the next step (D3) to make production drawings. The purpose of the detailed engineering drawings is to complete the Client's preliminary design with all necessary mechanical details and to optimize the overall design with respect to the technologies and fabrication methods that will be employed for manufacturing.

b) A part of this Deliverable D2 will be elaboration of specific details, such as:

- Closing mechanism of the large chamber side doors (including e.g. hinges) or alternative means of opening these side doors
- Lifting mechanism / lifting points of the end and top doors of the chamber
- Access bridge, handrails and ladders (complying with valid CZ/EU safety standards)
- Relief holes in the optical table and optomechanical mounts to avoid trapped air pockets
- Internal (vacuum) and external (on the outer surface) cable trays on the compressor and on the beam injector
- Mechanisms for transporting the compressor components to their final location in the ELI-Beamlines facility, and for assembling and installation of the vacuum vessel, of the internal optical table, and of the beam injector and other subsystems in the clean L3 laser hall (ISO Class 7 cleanliness) of ELI-Beamlines
- Determination of material thicknesses, configuration of stiffening ribs, nozzles and flanges, weld locations and details, surface finishes and other such matters necessary to optimize for fabrication.

c) The Supplier shall verify the stiffness and vibrational properties of the developed detailed design of the compressor vessel and major optomechanical structures and fixtures by means of FEA (Finite Element Analysis) simulations. The acceptable limit of deformations under application of vacuum (stiffness) and vibrational criteria

are included in the detailed specification of performance requirements in Annex 2 of the Tender. Analysis of the concept design made by the Client shows that the specified requirements are realistic. The calculations shall also provide evidence of the factor of safety against structural collapse of the compressor chamber under vacuum and when subjected to overpressure up to a value limited by means of a passive safety device (e.g. bursting disk). Similar, though less elaborate, calculations shall be supplied for the beam injector vacuum envelope. Results of the analysis shall be provided by Supplier to Client for review. Status of appropriate requirements to be verified by the analysis shall be tracked by the Verification Control Document (VCD), see Annex No. 3, Section 2 (Verification Requirements for Supplier, and shall be the basis for acceptance of D2.

d) A brief technical report shall be provided by the Supplier that lists all the significant changes and enhancements between the FZU concept design and the agreed detail design. For each change there shall be a brief description of the reason for change and justification of the selected solution. This will provide a means of checking that no important features of the concept design have been inadvertently lost or corrupted.

e) The Supplier shall provide an updated detailed 3D model of the compressor chamber and the beam injector with its associated components and sub-assemblies, showing the finally agreed configuration.

It is recognized that the lead-time for the Compressor will be longer than the Beam Injector so to even out the effort the Deliverable completion dates are staggered:

Completion: D2A Compressor 3 months and 15 days after Commencement Day
D2B Beam Injector 5 months after Commencement Day

3. Deliverable D3: Preparation of production (manufacturing) drawings for major components

Based on the results of Deliverable D2 the Supplier shall provide a full set of final production drawings (including 3D model) for all components that will be manufactured under this contract. The Supplier shall also produce associated documentation to these drawings that will include a detailed plan of verification by testing and detailed description of the testing procedures and instrumentation.

As lead times differ widely for various components Deliverable D3 is specifically applicable to the major fabricated components listed below:

- Compressor Chamber body and all parts welded to the chamber;
- All purpose-made doors and closures;
- The internal optical table including support structure and legs;
- Beam Injector vacuum envelope.

The Supplier shall provide final Quality and Verification Plan for the above components and the manufacturing drawings and other documentation will be reviewed by the Client, with reference to these Quality and Verification Plan.

As part of this Deliverable the Supplier shall provide an installation plan of the Compressor assembly at the ELI-Beamlines site.

As part of this Deliverable the Supplier shall also develop detailed engineering drawings of the individual optomechanics and their supporting structure based on the preliminary design drawings and 3D model supplied by the Client. These detailed engineering drawings will be submitted to the Client for approval along with the Beam Injector production drawings.

The provided documentation shall be reviewed by Client by means of Critical Design Review (CDR) process and its results will be recorded in a CDR Report. The verification of the Design shall be considered complete when the Client and the Supplier mutually agree that, on the basis of the CDR Report and on the basis of the Verification

Control Document (VCD) that all corresponding requirements related to the Design were closed out and that all associated verification objectives were fully achieved. The status of the requirements verified in the Review of Design shall be tracked by the Verification Control Document (VCD), see Annex No. 3, Section 2 (Verification Requirements for Supplier) and shall be the basis for acceptance of the Design.

The Supplier shall further submit a timetable of individual major steps in the manufacturing process related to D4, D5 and D8. The Client reserves the right to witness verification and testing of the individual components and subsystems at the Supplier's premises at any of the indicated steps in the manufacturing process, and to monitor implementation of the contract.

Recognizing that the lead-time for the Compressor will be longer than the Beam Injector the Deliverable completion dates are again staggered:

| | | |
|--------------------|--------------------------|--|
| <u>Completion:</u> | <u>D3A Compressor</u> | <u>5 months and 15 days after Commencement Day</u> |
| | <u>D3B Beam Injector</u> | <u>6 months and 15 days after Commencement Day</u> |

4. Deliverable D4: Manufacturing, assembly and factory testing of the compressor vacuum vessel and of the internal optical table

The Supplier shall manufacture the compressor vacuum vessel including the doors and flanges, the internal optical table, and all elements of interconnection of these subsystems, in line with the documentation produced within the D3A Deliverable. Completion of individual major steps of the manufacturing process will be witnessed by the Client according to the Quality Plan developed in Deliverable D3.

After finishing the individual phases of fabrication and cleaning, the Supplier shall install the compressor chamber in ISO Class 7 or better cleanroom at his premises, where all assembly operations will be made. Upon assembling the individual components and sub-systems this phase shall verify key parameters of the compressor assembly, namely:

- Vacuum performance and ability to achieve a pressure of 10^{-6} mbar within no more than 10 hours, 5×10^{-7} mbar in time comparable to 48 hours and then maintain this vacuum for a further 48 hours;
- Stability of the compressor chamber structure during pump down, quantitative measurements of deformations of the vacuum chamber body;
- Validation of the vacuum cleanliness (contaminants-free vacuum) by mass spectroscopy measurements and by another independent verification technique provided by the Client (e.g. sol-gel technique and/or microbalance);
- Determination of the leak rate of the assembled chamber with doors, port covers, blank flanges and isolation valves fitted;
- Mechanical stability of the internal optical bench in different states of the system, especially upon pump down from atmospheric pressure to low pressure (verified for example by sighting a mirror with a high precision auto-collimator);
- Functioning of integrated vacuum control system (VCS) with the Compressor.

The verification of the compressor assembly performance shall be made according to the Verification Plan. The results of this performance verification and testing will be a Protocol on Factory Testing of the Compressor Chamber and of the Internal Optical Table. The verification shall be considered complete when the Client and the Supplier mutually agree that, on the basis of the VCD and of the Protocol on Factory Testing of the Compressor Chamber and of the Internal Optical Table, all corresponding requirements were closed out and the associated verification objectives were fully achieved. The status of the requirements verified in this phase of Inspection and Testing shall be tracked by the Verification Control Document (VCD), see Annex No. 3, Section 2 (Verification Requirements for Supplier) and shall be the basis for acceptance of D4.

Completion: 14 months and 15 days after Commencement Day

5. Deliverable D5: Manufacturing, assembly and factory testing of the Beam Injector system

The Supplier shall manufacture all components of the Beam Injector, in line with the documentation produced within the D3B Deliverable. Completion of individual major steps of the manufacturing process will be witnessed by the Client according to the Quality Plan developed in Deliverable D3.

After finishing the individual phases of fabrication and cleaning of the Beam Injector components, the Supplier will install the Beam Injector in ISO Class 7 or better cleanroom at his premises, where all assembly operations will be made. Upon assembling the individual components and sub-systems this phase shall validate key parameters of the Beam Injector assembly, namely:

- Vacuum performance and ability to achieve a pressure of 10^{-7} mbar within no more than 6 hours, 10^{-7} mbar in time comparable to 48 hours and then maintain it for a further 48 hours;
- Mechanical stability of the final L3 beam steering mirror support during pump down of the Beam Injector chamber from atmospheric pressure to low pressure (by method as for optical table), quantitative measurements of deformations of this mirror-supporting chamber;
- Validation of the vacuum cleanliness (contaminants-free vacuum) by mass spectroscopy measurements and by another independent verification technique provided by the Client (e.g. sol-gel technique and/or microbalance);
- Determination of the leak rate of the assembled Beam Injector with flanges and isolation valves fitted;
- If Contractual Option of the water-cooled beam dump is activated, operation of the beam dump cooling system to verify absence of induced vibrations;
- Functioning of integrated vacuum control system (VCS) with the Beam Injector.

The verification of the Beam Injector performance shall be made according to the Verification Plan. The results of this performance verification and testing will be a Protocol on Factory Testing of the Beam Injector. The verification shall be considered complete when the Client and the Supplier mutually agree that, on the basis of the VCD and of the Protocol on Factory Testing of the Beam Injector, all corresponding requirements were closed out and the associated verification objectives fully achieved. The status of the requirements verified in this phase shall be tracked by the Verification Control Document (VCD), see Annex No. 3, Section 2 (Verification Requirements for Supplier) and shall be the basis for acceptance of D5.

Completion: 16 months after Commencement Day

6. Deliverable D6: Transport of the vacuum vessel and internal optical table and installation at ELI-Beamlines

The Supplier shall prepare for transport of the compressor vacuum chamber, the internal optical table, all elements interconnecting the vessel and the table, and all vacuum tubing necessary for connecting the chamber to the ELI-Beamlines vacuum circuits. The compressor vessel and components of the optical bench shall be packed separately.

For the duration of its transport the vacuum chamber shall be hermetically sealed under dry air or nitrogen. The initial wrapping of all parts shall be in multiple layers of plastic film (as sheet or bags) of type specifically for use in contamination controlled areas. This clean conditions wrapping will be further enclosed in robust outer packaging and transport crates as necessary for protection and handling during shipping to the ELI-Beamlines site.

The Supplier will transport the components to the ELI-Beamlines facility and will remain responsible for them (with appropriate insurance cover) until acceptance of D6. Offloading of the Compressor at the building entrance will probably require a mobile crane on hire. Other packages can be offloaded by fork lift truck. Without activation of the Contractual option 4 (Optional transport of the compressor vacuum chamber) the transport of the compressor from the ELI-Beamlines entrance through the building right up to the point of fixing down at the operational location in the L3 hall will be carried out by the Client, under Supplier's supervision. Transport through the Laser Building will involve the use of a goods lift to transition between floors and in order to fit in the lift the maximum dimensions of the chamber body (in its transport configuration) must not exceed 5.5 m (*length*)



x 5.1 m (*width*) x 2.98 m (*height*) and its weight must not exceed 10 tons. Movement through corridors and rooms will require wheels, rollers or air skates fitted to a suitable support structure, whose design and supply will be within the scope of the Supplier, as will be any floor surface protection or load spreading sheets.

At the ELI-Beamlines site, the vessel and its components will be received in a cleanroom of ISO Class 7.

Without activation of the Contractual option 4 (Optional transport of the compressor vacuum chamber) the compressor will be positioned and bolted to the floor of the L3 hall by the Client, under Supplier's supervision. Once positioned and bolted to the floor in the L3 laser hall, an enclosure of ISO Class 5 will be installed around the compressor chamber to reduce the risk of internal contamination during the subsequent installation of optomechanical equipment and their integration and alignment. This enclosure will be designed, procured and installed by the Client.

The Supplier shall connect the compressor chamber to the ELI-Beamlines primary vacuum circuits and the chamber will be pumped down. A vacuum performance equal to or better than that reported in the D4, Protocol on Factory Testing of the Compressor Chamber and of the Internal Optical Table, shall be demonstrated.

An electric overhead travelling crane with a capacity of 5 tons is installed in the L3 Laser Hall above the area where the compressor will be installed. However, no reliance shall be placed on using this crane for installation of the Compressor Chamber or the Internal Optical Table.

The compressor chamber shall be positioned in the L3 hall, with respect to the local coordinate system, with a tolerance of +/- 1 mm. This positioning will be referenced to patterns centered on the flanges of the input and output beam windows of the chamber.

The Supplier shall ensure proper integration of the internal optical table with the compressor in the L3 hall of ELI-Beamlines, and alignment of these components with respect to the L3 Hall coordinate system. Details of this procedure shall be the subject of agreement between the Client and the Supplier.

The optical table shall be positioned, with respect to the L3 hall local coordinate system, with an accuracy of +/- 0.5 mm for height and +/- 0.5 mm in the horizontal plane.

The Supplier shall integrate and test the compressor vacuum control system (VCS). Details of this procedure will be the subject of agreement between the Client and the Supplier.

All required performance verification and testing associated with installation of the compressor chamber and integration of the internal optical table in the L3 hall of ELI-Beamlines shall be made according to the Verification Plan. The results of this performance verification and testing will be a Protocol on Installation of the compressor chamber and integration of the internal optical table in the L3 hall of the ELI-Beamlines facility. The status of requirements verified in this phase shall be tracked by the Verification Control Document (VCD), see Annex No. 3, Section 2 (Verification Requirements for Supplier) and shall be the basis for acceptance of D6.

Completion: 16 months after Commencement Day

7. Deliverable D7: Transport and installation of the beam injector at ELI-Beamlines

The Supplier shall package the Beam injector, its sub-assemblies, and all vacuum tubing necessary for its connection to the ELI-Beamlines vacuum circuits in a similar way to that described in D6. For the purpose of the transport to ELI-Beamlines site the Beam Injector vessel shall be hermetically sealed under dry air or nitrogen.

The Supplier shall transport the above mentioned components to the ELI-Beamlines facility.

At the ELI-Beamlines site, the Supplier shall move the Beam Injector through the Laser Building, in similar fashion to the Compressor, to be positioned and bolted to the floor in the L3 laser hall, which is a cleanroom of ISO Class 7. An enclosure of ISO Class 5 will be installed around the Beam Injector to reduce contamination during the subsequent integration and alignment. This enclosure will be designed, procured and installed by the Client.

The Supplier shall connect the Beam Injector to the ELI-Beamlines primary vacuum circuits and the Beam Injector will be pumped down. Vacuum level equal to or better than that reported in the D5, Protocol on Testing of the Beam Injector, shall be achieved.

The Supplier shall test functioning of the Vacuum Control System (VCS) with the compressor and beam injector fully integrated. Details of this procedure will be the subject of agreement between the Client and the Supplier.

All required performance verification and testing associated with installation of the Beam Injector in the L3 hall of ELI-Beamlines shall be made according to the Verification Plan. The results of this performance verification and testing will be a Protocol on Installation of the Beam Injector in the L3 hall of the ELI-Beamlines facility. The status of requirements verified in this phase be tracked by the Verification Control Document (VCD), see Annex No. 3, Section 2 (Verification Requirements for Supplier) and shall be the basis for acceptance of D7.

Completion: 18 months after Commencement Day

8. Deliverable D8: Manufacturing, assembly and factory testing of large optomechanical mounts

The Supplier shall develop production drawings and full 3D model of all vacuum optomechanical mounts being subject of this contract, in line with the documentation produced within the D3 Deliverable. The Supplier shall manufacture the mounts. Completion of individual major steps of the design and manufacturing process will be witnessed by the Client according to the Quality Plan, developed in Deliverable D3. The Supplier shall install the integrated optomechanical components in an ISO Class 5 or better cleanroom at his premises, where all assembly operations and testing shall be made. The Supplier shall integrate the mechanical components of the mounts with the respective manual and electrical actuators and other sensors. Upon integration with vacuum-compatible cabling and connectors, all electrically actuated optomechanical mounts shall be connected to corresponding electronic drivers.

The Supplier shall provide all equipment for the required testing of the optomechanical mounts.

The Supplier shall validate key performance parameters of the mounts at their works, first on air then in vacuum, namely:

- Demonstration of precision on individual movements of the mounts, achievement of required minimal step, demonstration of stability of each mount
- Vacuum testing showing ability to achieve pressure 10^{-7} mbar
- Validation of the vacuum cleanliness (contaminants-free vacuum) by mass spectroscopy measurements
- Determination of the outgassing rate of each mount
- Functioning of the motion control system with all electrical actuators.

The verification of the optomechanical mounts performance shall be made according to the Verification Plan. The results of this performance verification and testing will be a Protocol on Factory Testing of the optomechanical mounts. The status of requirements verified in this phase shall be tracked by the Verification Control Document (VCD), see Annex No. 3, Section 2 (Verification Requirements for Supplier) and shall be basis for acceptance of D8.

Completion: 18 months after Commencement Day

9. Deliverable D9: Delivery of large optomechanical mounts to ELI-Beamlines

The Supplier shall pack the optomechanical mounts and all related equipment (wiring, connectors, drivers, etc.). All mounts and components that will be installed in vacuum shall be hermetically sealed under dry air or nitrogen.

The Supplier shall transport the optomechanical mounts to the ELI-Beamlines facility.

On the ELI-Beamlines site, the mounts will be unpacked by Supplier in ISO Class 5 cleanroom, and shall first be tested in air according to the Protocol on Factory Testing of the optomechanical mounts delivered in D8 and then



correspondingly tested in vacuum after installation in the Compressor. The Supplier shall test functioning of the motion control system with all electrical actuators, with the optomechanics integrated in the compressor and beam injector, and under vacuum conditions.

All required tests associated with on-site verification of the delivered optomechanics shall be identified in the Verification Plan. The results of this deliverable will be a Protocol on Delivery of the optomechanical mounts to the ELI-Beamlines facility. The status of requirements verified in this phase shall be tracked by the Verification Control Document (VCD), see Annex No. 3, Section 2 (Verification Requirements for Supplier) and shall be the basis for acceptance of D9.

Completion: 19 months after Commencement Day

II. Contractual options

Contractual option 1 (Optional components)

The following components are agreed as contractual option herewith. Some of the components may be necessary for the factory testing of the Compressor and Beam Injector systems. The Client is entitled to order of these optional components at his full discretion before or at the time of acceptance of the D3 reports. Price of optional components is stipulated separately by the Bid and shall be paid if any optional component is required at the time of their delivery to the Supplier (hand over protocol confirming receipt of the components free of defects to be submitted to the Client as a condition of the payment) or to the Client.

- 2 pieces of pendulum vacuum valves DN400 ISO-K equipped by optical sapphire window with diameter 75 mm
- 2 flanges DN400 for optical windows and/or viewport to be mounted on the chamber body
- Water-cooled beam dump unit for the Beam Injector, according to the provided drawings in Annex 2
- Vertical vacuum section of the Beam Injector for housing the cryogenic segment
- Additional 8 pieces of optomechanical mounts (e.g. for diagnostic beams) for optics with clear aperture smaller than 75 mm
- Additional 1 piece of a 6-axis optomechanical mount for an off-axis parabolic mirror with maximum clear aperture 250x250 mm

Contractual option 2 (Optional post-installation technical support)

The following services are agreed as contractual option herewith. The Client is entitled to require provision of post-installation technical support. The Client is entitled (but has no duty to do so) to ask the Supplier for the support at its full discretion within first year after final acceptance of the Object of Purchase. Detailed conditions of provision of the support (extent, time of provision, profession of specialists etc.) shall be agreed between Contractual parties. However, the Supplier will commence provision of the support no later than 10 working days after written request by the Client. The price of optional support (as man-day price) is stipulated separately by the Bid and shall be paid if any optional support is provided after its due provision.

Contractual option 3 (Optional design works)

The following services are agreed as contractual option herewith. The Client is entitled to require provision of optional design works. The Client is entitled (but has no duty to do so) to ask the Supplier for the services at its full discretion before or at the time of acceptance of the D8 Deliverable. Detailed conditions of provision of the services (extent, subject matter of design works etc.) shall be agreed between Contractual parties. However, the Supplier will commence provision of the support no later than 10 working days after written request by the Client. The price of optional services (as man-day price) is stipulated separately by the Bid and shall be paid if any optional services are provided after their due provision.

Contractual option 4 (Optional transport of the compressor vacuum chamber)

The following services are agreed as contractual option herewith. The Client is entitled to require the Supplier to carry out transport of the compressor vacuum chamber including related components through ELI-Beamlines laser building to the L3 laser hall, positioning and bolting to the floor as described herein (D6 Deliverable description). The Client is entitled (but has no duty to do so) to ask the Supplier to exercise the option at its full discretion before or at the time of acceptance of the D5 Deliverable. Detailed conditions of the transport shall be agreed between Contractual parties before commencement of the transport. The price of the optional transport is stipulated separately by the Bid and shall be paid together with payment for Deliverable D6 if the optional transport was duly provided.

