



FZU

Institute of Physics
of the Czech
Academy of Sciences

PURCHASE CONTRACT

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

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

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

registration no.: 68378271

registered: register of public research institutions kept by MEYS

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

("Buyer"); and

(2) **VALLVIK DESIGN spol. s r.o.**

with its registered office at: Palackého 143, 664 59 Telnice

registration no.: 03352293

represented by: Lucie Sinl, the director

enrolled in the commercial register kept by District court in Hradec Králové, item B 3416

("Seller").

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

WHEREAS

The Seller's bid for the tender procedure entitled "**Internal Monolithic Chassis of L4 10PW Compressor_TP19_701**", whose purpose was to procure the Object of Purchase as defined below ("**Tender Procedure**"), was selected by the Buyer as the most advantageous.

IT WAS AGREED AS FOLLOWS:

1. BASIC PROVISIONS

Under this Contract the Seller shall manufacture and deliver to the Buyer segments of three large aluminium chassis that are described in Annex 1 (*Technical Specification*) to this Contract

in the required quality and with the properties described therein (“**Object of Purchase**”) and shall transfer to the Buyer ownership right to the Object of Purchase, and the Buyer shall take over the Object of Purchase and shall pay the Seller the Purchase Price (as defined below), all under the terms and conditions stipulated in this Contract.

The subject-matter of this contract shall be performed by the Seller in the following deliverables (described in detail in art. 6.3 of Annex 1 hereto):

- a) Preparation of the manufacturing documentation approved by the Buyer for all three chassis
- b) Manufacturing and delivery of the North chassis
- c) Manufacturing and delivery of the Central chassis
- d) Manufacturing and delivery of the South chassis

The Seller must not start manufacturing the chassis before approval of the manufacturing documentation by the Buyer.

2. **THE PLACE OF DELIVERY**

The place of delivery is at the address: Fyzikální ústav AV ČR v.v.i/ELI Beamlines research centre, Průmyslová 835, 252 41 Dolní Břežany.

3. **THE TIME OF DELIVERY**

The Seller shall perform the individual deliverables in the following terms:

- a) **Delivery of the manufacturing documentation** for the Buyer’s approval – within **1 month** from the conclusion of this Contract

The Buyer shall provide a statement (approval or any comments) on the manufacturing documentation submitted by the Seller within 5 business days from receiving it. Potential necessity of implementation of any comments of the Buyer does not postpone the below listed deadlines for manufacturing of the chassis if the above deadline is met by the Buyer. If the deadline for provision of the statement is not met by the Buyer the below deadlines extend accordingly.

- b) Manufacturing and **delivery of the North chassis** to the place of delivery - within **4 months** from the conclusion of this Contract
- c) Manufacturing and **delivery of the Central chassis** to the place of delivery - within **5 months** from the conclusion of this Contract
- d) Manufacturing and **delivery of the South chassis** to the place of delivery - within **7 months** from the conclusion of this Contract

4. **THE OWNERSHIP RIGHT**

The ownership right to the respective parts of the Object of Purchase shall pass to the Buyer upon the execution of the acceptance protocol (art. 7 hereof).



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5. **PRICE AND PAYMENT TERMS**

- 5.1 The total purchase price for the Object of Purchase is **5 790 000,- CZK** ("**Purchase Price**") without value added tax ("**VAT**"). VAT will be paid in accordance with the applicable legal regulations.
- 5.2 The Purchase Price cannot be exceeded and includes all costs and expenses of the Seller related to the performance of this Contract. The Purchase Price includes, among others, all expenses related to the manufacture, transport, handover of the Object of Purchase, proper level of insurance, customs (if applicable), warranty service and any other costs and expenses needed for the due performance hereof.
- 5.3 The Purchase Price shall be invoiced by the Seller in the below listed instalments. The Seller is entitled to invoice the Buyer with:
- a) **25% of the Purchase Price upon approval of the manufacturing documentation** by the Buyer
 - b) **25% of the Purchase Price upon acceptance of the North chassis** by the Buyer in the place of delivery
 - c) **25% of the Purchase Price upon acceptance of the Central chassis** by the Buyer in the place of delivery
 - d) **25% of the Purchase Price upon acceptance of the South chassis** by the Buyer in the place of delivery
- 5.4 The Purchase Price for the Object of Purchase shall be paid on the basis of tax documents – invoices, to the account of the Seller designated in the invoices.
- 5.5 The Buyer shall pay duly issued invoices within 30 days from their receipt. If an invoice stipulates shorter due period such due period may be disregarded by the Buyer and the amount invoiced paid in accordance with this Contract. The invoices shall be issued only in the electronic form and delivered to the email address: efaktury@fzu.cz
- 5.6 The invoice issued by the Seller as a tax document must contain all information required by the applicable laws of the Czech Republic. If the Seller is unaware of the Czech law requirements the Buyer shall advise him on issuing an eligible invoice. Invoices issued by the Seller shall contain also the following information:
- Registration number of this Contract, which the Buyer shall communicate to the Seller based on Seller's request before the issuance of the invoice.
- 5.7 In case that an invoice does not meet the requirements mentioned above, the Buyer is entitled to return it to the Seller during its due period and this shall not be considered as a default. The new due period shall begin from the receipt of the supplemented or corrected invoice to the Buyer.

6. **SELLER'S DUTIES**

- 6.1 The Seller shall ensure that the Object of Purchase is in compliance with this Contract including all its annexes and applicable legal (e.g. safety), technical and quality norms.
- 6.2 During the performance of this Contract the Seller proceeds independently. If the Seller receives instructions from the Buyer, the Seller shall follow such instructions unless these are against the law or in contradiction to this Contract. If the Seller finds out or should have found out if professional care was exercised that the instructions are for any reason inappropriate or illegal or in contradiction to this Contract, then the Seller must notify the Buyer.
- 6.3 All things necessary for the performance of this Contract shall be procured the Seller.

7. **ACCEPTANCE OF THE OBJECT OF PURCHASE**

- 7.1 Acceptance of the Object of Purchase shall be realized by individual deliverables on the basis of an acceptance protocol under the conditions stipulated in Annex 1 hereto.
- 7.2 If parts of the Object of Purchase forming one deliverable do not meet requirements of this Contract, the Buyer is entitled to refuse to accept the deliverable. In such a case the Seller shall remedy the deficiencies within ten (10) working days, unless Parties agree other deadline. The Buyer is entitled (but not obliged) to accept the deliverable despite the above mentioned deficiencies, in particular if such deficiencies do not prevent the Buyer from the proper operation of the Object of Purchase. In such a case the Seller and the Buyer shall list the deficiencies in the acceptance protocol, including the manner and the date of their removal (remedy). If the Parties do not reach agreement in the protocol regarding the date of the removal, the Seller shall remove the deficiencies within ten (10) working days.

8. **WARRANTY**

- 8.1 The Seller hereby provides a warranty of quality of the Object of Purchase for the period of 24 months.
- 8.2 The warranty period shall begin on the day of acceptance of any deliverable for the parts forming the deliverable or on the day of removal of the last defect in a particular deliverable.
- 8.3 The Seller shall remove defects for which they are responsible that occur during the warranty period free of charge.
- 8.4 If the Buyer ascertains a defect of the Object of Purchase during the warranty period, the Buyer shall notify such defect without undue delay to the Seller. Defects may be notified on the last day of warranty period, at the latest.
- 8.5 The Buyer notifies defects in writing via e-mail. The Seller shall accept notifications of defects on the following e-mail address: psinl@vallvikdesign.cz
- 8.6 In the notification the Buyer shall describe the defect and the requested manner of removal of the defect. The Parties shall agree on the manner of the defect removal. If the Parties do not reach the agreement, the Buyer has the right to:



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- a) request removal of the defect by the delivery of new Object of Purchase or its individual parts, or
- b) request removal of the defect by repair, or
- c) request adequate discount from the Purchase Price.

The choice among the above mentioned rights belongs to the Buyer. However, in case of a removable defect that occurs for the first time the Buyer shall not request removal of the defect by delivery of new Object of Purchase or its individual parts.

- 8.7 The Seller shall remove the defect within 10 working days. In cases where it is not possible for objective reasons proven to the Buyer by the Seller the Parties shall agree on another sufficient deadline.
- 8.8 Parties shall execute a protocol on the removal of the defect, which shall contain the description of the defect and the confirmation that the defect was removed. The warranty period of all the parts forming the respective deliverable shall be extended by a period of time that elapses between the notification of the defect until its removal in cases where the Buyer was prevented from using the parts forming the respective deliverables for their intended purpose because of the defect.
- 8.9 In case that the Seller does not remove the defect within stipulated time or if the Seller refuses to remove the defect, then the Buyer is entitled to remove the defect at their own costs and the Seller shall reimburse these costs within 10 days after the Buyer's request to do so.
- 8.10 The warranty does not cover defects caused by unprofessional manipulation or by the failure to follow Seller's instructions for the operation and maintenance of the Object of Purchase.

9. **PENALTIES**

- 9.1 If the Seller is in delay regarding the timely completion of the deliverables listed in art. 1 letter (b) or (c) hereof the Seller shall pay to the Buyer starting with the 16th day of delay a contractual penalty in the amount of 0.1% from the price/ value of the respective deliverable (excl. VAT) for each (even commenced) day of delay.
- 9.2 If the Seller is in delay regarding the timely completion of the deliverable listed in art. 1 letter (d) hereof the Seller shall pay to the Buyer starting with the 16th day of delay a contractual penalty in the amount of 0.2% from the price/ value of the deliverable (excl. VAT) for each (even commenced) day of delay.
- 9.3 If the Seller is in delay with removal of a defect of the Object of Purchase that prevents the Buyer from using any of the chassis for intended use, the Seller shall pay to the Buyer a contractual penalty in the amount of 1500 CZK for each (even commenced) day of delay.

- 9.4 If the Seller is in delay with removal of a defect of the Object of Purchase that does not prevent the Buyer from using any of the chassis for intended use, the Seller shall pay to the Buyer a contractual penalty in the amount of 500 CZK for each (even commenced) day of delay.
- 9.5 The Supplier shall pay contractual penalties within fifteen (15) days from the day, on which the Buyer enumerated its claims. The payment of contractual penalties shall not affect the right of the Buyer to damages in the amount in which such damages exceed the contractual penalty.
- 9.6 Total amount of contractual penalties under art. 9.1 and 9.2 hereof that the Buyer is entitled to claim for late delivery of the respective deliverables shall not exceed 5 % of the Purchase Price excl VAT.
- 9.7 The Buyer is entitled to unilaterally set off claims arising from the contractual penalties against the claim of the Seller for the payment of the Purchase Price.

10. **RIGHT OF WITHDRAWAL**

- 10.1 The Buyer is entitled to withdraw from this Contract without any penalties, if any of the following circumstances occurs:
- a) the Seller is in delay with the fulfilment of this Contract and such delay lasts more than 3 months; or
 - b) the insolvency proceeding is initiated against the Seller.
- 10.2 Both Parties are entitled to withdraw from the contract also in the cases stipulated by the law.

11. **FINAL PROVISIONS**

- 11.1 This Contract is governed by the laws of the Czech Republic, especially by the Civil Code.
- 11.2 All disputes arising out of this Contract or out of legal relations connected with this Contract shall be preferable 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.
- 11.3 All modifications and supplements of this Contract must be in writing.
- 11.4 If any provision of this Contract is invalid or ineffective, the Parties commit to change this Contract in such a way that the invalid or ineffective provision is replaced with a new provision that is valid and effective and to the maximum possible extent correspond to the original invalid or ineffective provision.
- 11.5 This Contract is executed in four (4) counterparts and every Party shall receive two (2) counterparts.
- 11.6 An integral part of this Contract is Annex 1 (*Technical Specification*).
- 11.7 This Contract shall become effective on the day of its publication in the register of contracts according to the applicable law.



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IN WITNESS WHEREOF attach Parties their signatures:

Buyer

Signature: _____

Name: RNDr. Michael Prouza, Ph.D.

Position: director

Seller

Signature: _____

Name: Lucie Sinl

Position: director

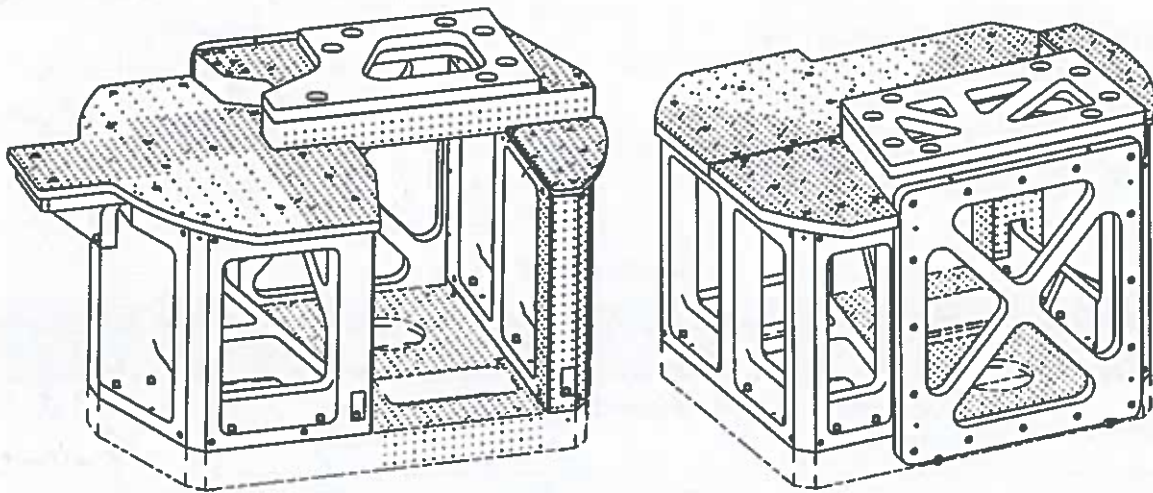
ANNEX 1
TECHNICAL SPECIFICATION

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Document Status	<i>Document Released</i>	Document No.	N/A
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PBS code	RA1.L4.CMP1.OMC.IMS		
Project branch	<i>Engineering & Scientific documents (E&S)</i>		
Document Type	<i>Specification (SP)</i>		

[RSD product category C]

Internal monolithic chassis of L4 10PW compressor

TP19_701







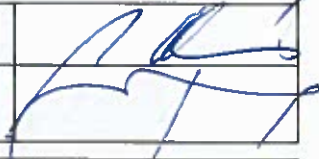
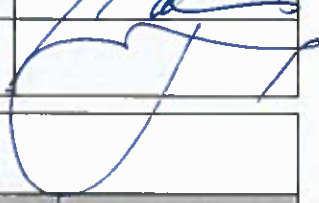
Keywords

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	Position	Name
Responsible person	Scientific Coordinator of Laser Technology (RP1)	Bedřich Rus
Prepared by	Scientific Coordinator of Laser Technology (RP1) Senior Optomechanical Designer	Bedřich Rus Petr Brabenec

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Reviewed By

Name (Reviewer)	Position	Date	Signature
David Snopek	Senior Optomechanical Designer	3.6.2019	
Jakub Jandourek	Infrastructure technology coordinator		NOTICE
Ladislav Půst	Manager installation of technology		NOTICE
Lukáš Brabec	Group Leader of Vacuum and Cryogenics	3.6.2019	
Martin Laub	Chief Engineer	3.6.2019	
Pavel Bakule	Deputy RP1 Leader	3.6.2019	
Roman Kuřátko	Facility Manager		NOTICE
Veronika Olšovcová	Safety Coordinator	4.6.2019	
Viktor Fedosov	SE & Planning group leader; Quality Manager	3.6.2019	

Approved by

Name (Approver)	Position	Date	Signature
Bedřich Rus	Scientific Coordinator of Laser Technology (RP1)	3.6.2019	

Change No.

Change No.	Made by	Date	Change description, Pages, Chapters	TC rev.
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2	P. Tůma	24.5.2019	RSD version for internal review	B
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1. Introduction

1.1. Purpose

This Requirements Specification Document (RSD) lists the technical requirements and constraints on a product related to the RA1 programme of the ELI Beamlines project. This can lead to identification of the product interfaces with the ELI Beamlines science-based technology and ELI Beamlines building facility. This RSD also acts as the parent document for technical requirements that are addressed in lower level design description documents (see chapter 1.4).

1.2. Scope

This Requirements Specification Document (RSD) states and describes the technical requirements for fabrication of the vacuum internal monolithic chassis of the L4 10 PW compressor which is an integral part of the overall L4 laser system of ELI Beamlines and is registered in the PBS database under the following PBS code: RA1.L4.CMP1.OMC.IMS

This RSD contains all of the technical requirements: functional, performance and design, delivery, safety and quality requirements for the following products (tender number: TP19_701): Internal Monolithic Chassis of L4 Compressor ("Chassis" in further text). In addition to the requirements specified hereinafter, all parts of the chassis shall fully comply with the drawings provided in the Reference Documents (see below RD-01, chapter 1.4).

Required part of the supply is manufacture of parts of three large aluminium chassis, see Figures 1, 2, and 3, which are rigid structures for supporting all optomechanical mounts inside each of the towers of the vacuum compressor of the L4 10PW laser. The chassis are assembled from a few large monolithic parts designed to feature high mechanical stability. Each chassis will be sitting on a rigid monolithic isolation platform which is mechanically de-coupled from the vacuum chamber body by means of bellow units integrated into the supporting legs.

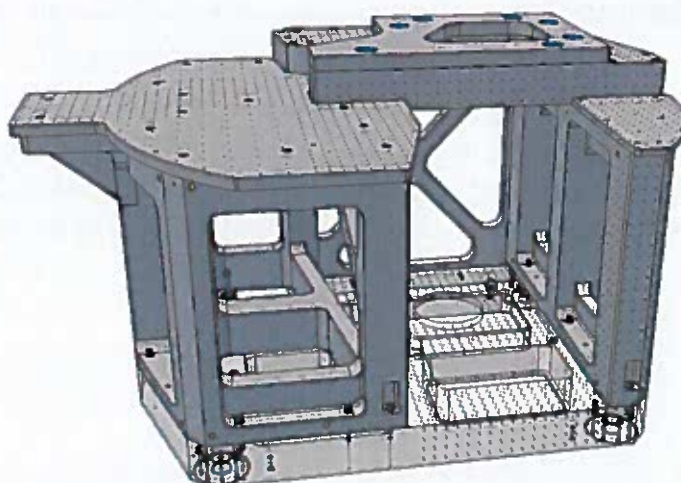


Figure 1: Assembly of the North chassis, sitting on a supporting platform (represented in light grey). The chassis is assembled from three main structural parts (two vertical frames and a connecting "bridge"), and five additional parts including two large optical tables with tapped holes. The maximum dimensions of the North chassis (L x W x H) are 2944 x 1970 x 1445 mm, the total weight is about 3 500 kg.

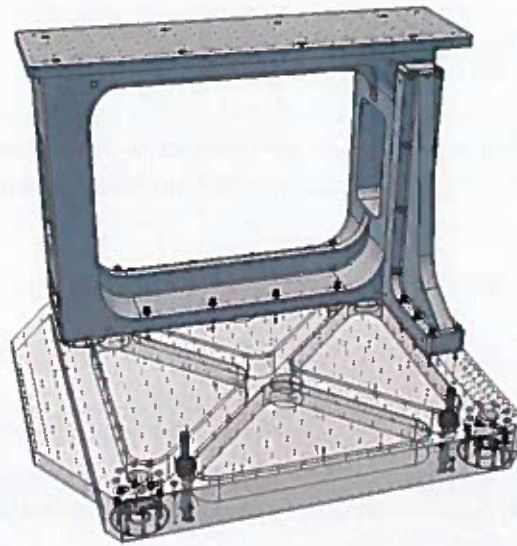


Figure 2: Assembly of the Central chasis, sitting on the supporting platform (represented in light grey). The chasis contains one main structural part (vertical frame) and two additional parts (a massive reinforcing rib and an optical table). The maximum dimensions of the Central chasis (L x W x H) are 2330 x 1870 x 1400 mm, the total weight is about 1 600 kg.

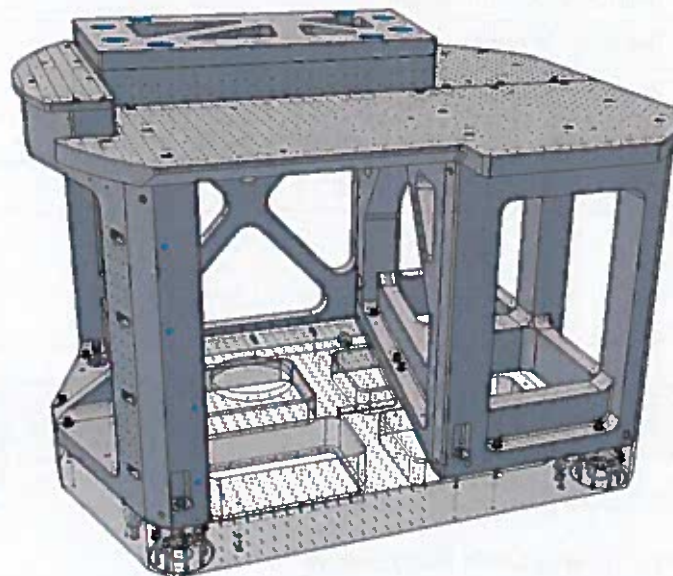


Figure 3: Assembly of the South chasis, sitting on a supporting platform (represented in light grey). The chasis is assembled from three main structural parts (two vertical frames and a connecting "bridge"), and seven additional parts including three large optical tables with tapped holes. The maximum dimensions of the Central chasis (L x W x H) are 2450 x 2050 x 1540 mm, the total weight is about 3 500 kg.

Each of the three chasis will be assembled from a few massive parts machined from aluminium alloy EN AW 5083. The raw material for manufacturing (machining) of all parts shall be cast and free of any defects and/or inhomogeneities (see requirements below).

Fasteners, i.e. pins, bolts and washers, which will be used to assemble the chassis, are not required part of the supply.

The chassis will be operating in high-cleanliness vacuum, at nominal pressure 10^{-7} mbar. All holes made in the chassis have therefore to be vented, as indicated in the drawings.

The following tables provide a summary of the contractual requirements. The total scope of the contract comprises all the requirements stated or implied in the foregoing text, whether or not included in this summary.

1.3. Terms, Definitions and Abbreviations

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

Abbreviation	Meaning
CA	Contracting Authority
FZÚ	Institute of Physics AS CR, v. v. i., in Czech Fyzikální ústav AVČR. v. v. i.
ELI	Extreme Light Infrastructure
RA1	Research activity 1
L x W x H	Length x Width x Height
L4c	Identification code of hall
DN	Diameter Nominal
RSD	Requirements Specification Document
TC ID	Team Center IDentifier (unique identifier number)
VCD	Verification Control Document

1.4. Reference Documents

Number of document	Title of Document/ File
RD-01	00222391_A_Drawing_package-L4_Compressor_monolithic_chassis_TP19_701

Detailed list of drawings included within RD-01 archive:

Drawing No	Filename	Sheets	File format
043-05-50	Chassis_of_South_tower	1	PDF
043-05-51	Chassis_of_Central_tower	1	PDF
043-05-52	Chassis_of_North_tower	1	PDF

1.5. References to standards

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

2.1. Raw material requirements

REQ-027220/A

The chassis shall be made from aluminium alloy EN AW 5083, cast, without internal stress, with natural hardness.

Verification method: R – Review, I - Inspection

REQ-027221/A

The Supplier shall provide Certificate of Origin specifying manufacturer, composition of the alloy and details of the cast process, for each blank used.

Verification method: R – Review

REQ-027222/A

The raw material shall be homogeneous and free of residual cavities.

Verification method: R – Review, I - Inspection

2.2. Requirements for machining

REQ-027223/A

The chassis shall be manufactured in accordance with the requirements described herein and the reference drawings **RD-01** (see chapter 1.4).

NOTE: The manufacturing of the chassis shall be started only after approval of the manufacturing drawings by the CA (see REQ-027254/A).

Verification method: R – Review, T – Test, I – inspection

REQ-027224/A

All outer surfaces of the chassis shall be machined resulting in surface quality of Ra 0.8 μm or better.

Verification method: I – inspection, T - Test

REQ-027225/A

All internal surfaces or internal poorly accessible surfaces of the chassis shall be machined to provide surface quality of Ra 3.2 μm or better.

Verification method: I - inspection, T - Test

REQ-027226/A

All parts of the chassis shall be machined with a precision ± 0.1 mm or better for any dimension smaller than or equal to 100 mm, and with a precision ± 0.3 mm for dimensions over 100 mm, unless the corresponding drawings state otherwise (see **RD-01**; chapter 1.4).

Verification method: I – inspection, T - Test

REQ-027227/A

All edges of the chassis shall be machine cut by $0.5 \times 45^\circ$, unless stated otherwise on the corresponding drawings (see **RD-01**; chapter 1.4).

Verification method: I - inspection

REQ-027228/A

All holes of the chassis shall be free of burrs or the edges shall be rounded. The same shall apply also at intersections inside the drilled holes.

Verification method: I - inspection

REQ-027229/A

The surface of all parts of the chassis shall be milled.

NOTE: Grinding, polishing, sand blasting or any other surface treatment is not allowed.

Verification method: I - inspection

REQ-027230/A

No parts of the chassis shall exhibit any visible surface defects, such as scratches, digs, bumps (from clamping in the manufacturing process), etc.

Verification method: I - inspection

REQ-027231/A

All threads shall be cut tapped.

NOTE: It is not allowed making threads by forming.

Verification method: I - inspection

REQ-027232/A

The tapped holes shall be free of any pushed material around the hole. All tapped holes shall be terminated by a suitably tapered recess.

Verification method: I - inspection

REQ-027233/A

All threaded holes and all holes with H7 tolerance class (for pins) shall be checked by a calibre.

Verification method: I - inspection

REQ-027234/A

The manufactured parts, including all holes, shall be completely free of machining chips.

Verification method: I - inspection

REQ-027235/A

The Supplier shall verify all dimensions of the manufactured pieces, defined in the drawings (see RD-01; chapter 1.4). The results of tests shall be submitted in the form of test protocols (see REQ-027250/A).

Verification method: R – Review, T – test

3. Cleaning, Packaging and Delivery Requirements

REQ-027236/A

The transportation to the final destination of all parts of the chassis shall be conducted by the Supplier.

Verification method: I - inspection

REQ-027237/A

All finished parts shall be degreased by thorough cleaning, paying attention to each hole, by water high-pressure (>100 bar) washer, using 2% solution of Brulin 1990GD at 65-70°C. Immediately after, without letting the surface dry, the parts shall be rinsed with demineralized water and dried clean with a clean room cloth to avoid leaving traces of water drops.

NOTE: The CA permits also another equivalent degreasing solution and /or cleaning procedure to be offered, however, the equivalence shall be approved in written by the CA.

Verification method: R – Review

REQ-027238/A

All the cleaned parts of the chassis shall be wrapped in two plies separate clean packaging for transport. The layers shall ensure mechanical protection of parts during transport.

Verification method: R – Review, I - inspection

REQ-027239/A

The Supplier shall allow the CA supervising the activities related to the cleaning, packaging and transportation.

NOTE: Any acts of supervision shall not mean that the CA assumes additional liability of any kind exceeding its liabilities according to the contract.

Verification method: R - review

4. Safety Requirements

REQ-027240/A

The Supplier shall supply a Declaration of Conformity or any other equivalent document legally recognized and accepted in the Czech Republic for each product type if the appropriate legislation determines the Supplier's obligation to have a Declaration of Conformity (or the equivalent document) for the purposes of a Product sale in the Czech Republic to fulfil the requirements of 2001/95/EC directive or applicable Czech law.

Verification method: I - inspection

5. Quality requirements

5.1. Documentation and data control

REQ-027241/A

The Supplier shall supply the following relevant manufacturing documents:

- all manufacturing drawings, 3D model and design supporting documentation approved by the CA (see REQ-027254/A);
- full technical documentation on the delivered Product (e.g. storage, installation, safe operation and maintenance instructions);
- all "requests for deviation/waiver from requirements described herein" approved by the CA (see REQ-027244/A).

Verification method: R – review, I - inspection

REQ-027242/A

The Supplier shall use following data formats:

- *.JPG, *.PNG, *.TIFF, *.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

Verification method: Not To Be Tracked within VCD

REQ-027243/A

Documentation shall be supplied in the following formats: hardcopy and PDF.

Verification method: Not To Be Tracked within VCD

5.2. Nonconformity control system

REQ-027244/A

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

Verification method: Not To Be Tracked within VCD

6. Verification requirements for the Supplier

The verification process will be performed by the Supplier to demonstrate that the chassis meet the requirements specified by the CA.

6.1. General requirements

REQ-027245/A

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

1. **Verification planning** (via VCD, see section 6.2.3);
2. **Verification execution and reporting** (see sections 6.2.2 and 6.3);
3. **Verification control and close-out** (see section 6.3.3).

Verification method: R - review

REQ-027246/A

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

1. **Review; Verification via Review (R)** shall consist of using approved records (examples of such approved records are design documents and reports, technical descriptions, and engineering drawings, manuals and accompanying operation documentation) or evidence that unambiguously shows that the requirement is met.
2. **Inspection; Verification via Inspection (I)** shall consist of visual examination of the manufactured and/or assembled product, i.e. its physical characteristics proving that the specific requirements have been met.
3. **Test (including functional demonstration); Verification via Test (T)** shall consist of measuring product performance and functions under realistic operating conditions.

Verification method: Not To Be Tracked within VCD

6.2. Verification documentation

6.2.1. General requirements

REQ-027247/A

The Supplier shall establish and maintain the system of verification process documentation (see REQ-027248/A).

Verification method: Not To Be Tracked within VCD

REQ-027248/A

Verification documentation shall consist of following basic types of documents:

- **Verification reports** (see section 6.2.2);
- **VCD, Verification Control Document** (see section 6.2.3).

Verification method: Not To Be Tracked within VCD

6.2.2. Verification reports (VRs)

REQ-027249/A

The results of the review of documentation/reports and the inspection of the chassis shall be tracked in the VCD (see section 6.2.3).

Verification method: R - review

REQ-027250/A

The results of the tests shall be documented in the appropriate test protocols and tracked in the VCD (see section 6.2.3).

Verification method: R - review

6.2.3. Verification Control Document (VCD)

The Verification Control Document (VCD) lists the requirements to be verified with the selected methods at the defined stages. The VCD is a living document which shall be used throughout the entire Contract delivery and its phases (see section 6.3 Phasing of the delivery). The VCD provides traceability during delivery phases (Qualification of Design, Manufacturing, Acceptance, etc.).

The VCD represents a formal tool of communication between the Supplier and the CA (formal record, reporting tool).

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

REQ-027251/A

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

NOTE 1: Guidelines for VCD preparation will be provided by the CA.

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

Verification method: R - review

REQ-027252/A

In the VCD the Supplier shall specify **HOW** and **WHEN** each requirement is planned to be verified.

Verification method: R - review

6.3. Phasing of the delivery

This section 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*):

- **Approval of manufacturing documentation;**
- **Manufacturing and delivery;**
- **Acceptance (performed by the CA).**

6.3.1. Approval of manufacturing documentation

Summary of what shall be provided by the Supplier in terms of documentation (technical documentation including manufacturing drawings and design supporting documentation) before starting the manufacturing. The goal is to verify the **manufacturing drawings**.

Output of this phase is **Final set of manufacturing drawings and agreed scope of technical documentation**.

REQ-027253/A

Before completion of the manufacturing documentation phase the Supplier shall provide following information that shall be agreed by the CA:

- structure and content of the test protocols (see REQ-027250/A);
- structure and content of the VCD if the Supplier accommodated the VCD provided by the CA (see section 6.2.3).

Verification method: R - review

REQ-027254/A

Before completion of the manufacturing documentation phase the Supplier and the CA shall agree on:

- final manufacturing drawings provided by the Supplier;
- detailed procedures related to the testing and cleaning during Manufacturing phase (see sections 6.3.2);
- common nonconformity control system (see REQ-027244/A).

Verification method: R - review

6.3.2. Manufacturing and delivery

The goal is to demonstrate that the manufactured part of the chassis meet all requirements specified herein. This quality gate concerns primarily:

- **Inspection of the parts;**
- **Testing at the Supplier's site (factory testing);**
- **Cleaning, packaging and delivery.**

Output of this phase is the **Verified and Delivered chassis**.

REQ-027255/A

The results of the Manufacturing phase of verification shall be recorded by the Supplier in the test protocols (see REQ-027250/A) and overall results (including review of documentation/reports and inspection of the chassis) shall be recorded in the VCD (see section 6.2.3).

Verification method: R - review

REQ-027256/A

The final issue of the VCD shall be submitted to the CA after the approval of the last report before delivery.

Verification method: R - review

6.3.3. Acceptance

Acceptance will be carried out by the CA upon delivery of the chassis not obviously damaged during transport (see sections 3 and 6.3.2).

The basis for acceptance will be completed VCD summarizing the overall verification results together with relevant documentation supporting the verification (i.e. VRs, approved manufacturing drawings and 3D model, technical documentation and etc.).

In case of successful acceptance phase the CA will provide to the Supplier signed acceptance protocol. In case of unsuccessful acceptance stage the CA will provide to the Supplier Nonconformity Report (NCR) and process in accordance with REQ-027244/A shall be applied.

REQ-027257/A

The Acceptance phase shall demonstrate the following:

- All finished parts of the chassis have been successfully verified by the Supplier and the results of this process have been documented in an appropriate way through VRs (see section 6.2.2) and VCD (see section 6.2.3);
- All detected nonconformities have been solved in accordance with REQ-027244/A;
- All finished parts of the chassis are free of fabrication errors and are ready for the intended operational use.

Verification method: Not To Be Tracked within VCD

7. ANNEX - Overview of drawings package

The overviews of drawings package related to the Internal Monolithic Chassis of the L4 Compressor included within the RD-01 archive (see chapter 1.4) are shown in chapters 7.1, 7.2 and 7.3 below.

Requirement TC ID / Revision	Requirement text	Verified by	Verification Method	Close-out		VPD Verification Planning Document	VRD Verification Record Document	Comments
				Yes	No			
019263/A:(L4) Internal monolithic chassis of L4 10PW compressor_TP19_701								
2. Functional, Performance and Design requirements								
2.1. Raw material requirements								
REQ-027220/A	The chassis shall be made from aluminum alloy EN AW 5083, cast, without internal stress, with natural hardness.	Supplier	R - review, I - inspection					
REQ-027221/A	The Supplier shall provide Certificate of Origin specifying manufacturer, composition of the alloy and details of the cast process, for each blank used.	Supplier	R - review					
REQ-027222/A	The raw material shall be homogeneous and free of residual cavities.	Supplier	R - review, I - inspection					
2.2. Requirements for machining								
REQ-027223/A	The chassis shall be manufactured in accordance with the requirements described herein and the reference drawings RD-01 (see chapter 1.4). NOTE: The manufacturing of the chassis shall be started only after approval of the manufacturing drawings by the CA (see REQ-027254/A).	Supplier	R - review, T - test, I - inspection					
REQ-027224/A	All outer surfaces of the chassis shall be machined resulting in surface quality of Ra 0.8 µm or better.	Supplier	I - inspection, T - test					
REQ-027225/A	All internal surfaces or internal poorly accessible surfaces of the chassis shall be machined to provide surface quality of Ra 3.2 µm or better.	Supplier	I - inspection, T - test					
REQ-027226/A	All parts of the chassis shall be machined with a precision ± 0.1 mm or better for any dimension smaller than or equal to 100 mm, and with a precision ± 0.3 mm for dimensions over 100 mm, unless the corresponding drawings state otherwise (see RD-01, chapter 1.4).	Supplier	I - inspection, T - test					
REQ-027227/A	All edges of the chassis shall be machine cut by 0.5x45°, unless stated otherwise on the corresponding drawings (see RD-01, chapter 1.4).	Supplier	I - inspection					
REQ-027228/A	All holes of the chassis shall be free of burrs or the edges shall be rounded. The same shall apply also at intersections inside the drilled holes.	Supplier	I - inspection					
REQ-027229/A	The surface of all parts of the chassis shall be milled. NOTE: Grinding, polishing, sand blasting or any other surface treatment is not allowed.	Supplier	I - inspection					
REQ-027230/A	No parts of the chassis shall exhibit any visible surface defects, such as scratches, digs, bumps (from clamping in the manufacturing process), etc.	Supplier	I - inspection					
REQ-027231/A	All threads shall be cut tapped. NOTE: It is not allowed making threads by forming.	Supplier	I - inspection					
REQ-027232/A	The tapped holes shall be free of any pushed material around the hole. All tapped holes shall be terminated by a suitably tapered recess.	Supplier	I - inspection					
REQ-027233/A	All threaded holes and all holes with H7 tolerance class (for pins) shall be checked by a calibre.	Supplier	I - inspection					
REQ-027234/A	The manufactured parts, including all holes, shall be completely free of machining chips.	Supplier	I - inspection					
REQ-027235/A	The Supplier shall verify all dimensions of the manufactured pieces, defined in the drawings (see RD-01; chapter 1.4). The results of tests shall be submitted in the form of test protocols (see REQ-027250/A).	Supplier	R - review, T - test					
3. Cleaning, Packaging and Delivery Requirements								
REQ-027236/A	The transportation to the final destination of all parts of the chassis shall be conducted by the Supplier.	Supplier	I - inspection					

Requirement TC ID / Revision	Requirement text	Verified by	Verification Method	Close-out		VPD Verification Planning Document	VRD Verification Record Document	Comments
				Yes	No			
019263/A;(L4) Internal monolithic chassis of L4 10PW compressor_TP19_701								
REQ-027237/A	All finished parts shall be degreased by thorough cleaning, paying attention to each hole, by water high-pressure (>100 bar) washer, using 2% solution of Brulin 1990GD at 65-70°C. Immediately after, without letting the surface dry, the parts shall be rinsed with demineralized water and dried clean with a clean room cloth to avoid leaving traces of water drops. NOTE: The CA permits also another equivalent degreasing solution and /or cleaning procedure to be offered, however, the equivalence shall be approved in written by the CA.	Supplier	R - review					
REQ-027238/A	All the cleaned parts of the chassis shall be wrapped in two plies separate clean packaging for transport. The layers shall ensure mechanical protection of parts during transport.	Supplier	R - review, I - inspection					
REQ-027239/A	The Supplier shall allow the CA supervising the activities related to the cleaning, packaging and transportation. NOTE: Any acts of supervision shall not mean that the CA assumes additional liability of any kind exceeding its liabilities according to the contract.	Supplier	R - review					
4. Safety Requirements								
REQ-027240/A	The Supplier shall supply a Declaration of Conformity or any other equivalent document legally recognized and accepted in the Czech Republic for each product type if the appropriate legislation determines the Supplier's obligation to have a Declaration of Conformity (or the equivalent document) for the purposes of a Product sale in the Czech Republic to fulfil the requirements of 2001/95/EC directive or applicable Czech law.	Supplier	I - inspection					
5. Quality requirements								
5.1. Documentation and data control								
REQ-027241/A	The Supplier shall supply the following relevant manufacturing documents: all manufacturing drawings, 3D model and design supporting documentation approved by the CA (see REQ-027254/A); full technical documentation on the delivered Product (e.g. storage, installation, safe operation and maintenance instructions); all "requests for deviation/waiver from requirements described herein" approved by the CA (see REQ-027244/A).	Supplier	R - review, I - inspection					
6. Verification requirements for the Supplier								
6.1. General requirements								
REQ-027245/A	The Supplier shall assign clear responsibility for the implementation of the verification process including the following activities: Verification planning (via VCD, see section 6.2.3); Verification execution and reporting (see sections 6.2.2 and 6.3); Verification control and close-out (see section 6.3.3).	Supplier	R - review					
6.2. Verification documentation								
6.2.2. Verification reports (VRs)								
REQ-027249/A	The results of the review of documentation/reports and the inspection of the chassis shall be tracked in the VCD (see section 6.2.3).	Supplier	R - review					
REQ-027250/A	The results of the tests shall be documented in the appropriate test protocols and tracked in the VCD (see section 6.2.3).	Supplier	R - review					
6.2.3. Verification Control Document (VCD)								
REQ-027251/A	The Supplier shall provide a Verification Control Document (VCD) for the reviews as agreed with the CA. NOTE 1: Guidelines for VCD preparation will be provided by the CA. NOTE 2: The form of VCD will be agreed between the CA and the Supplier based on the best commercial praxis used by the Supplier.	Supplier	R - review					
REQ-027252/A	In the VCD the Supplier shall specify HOW and WHEN each requirement is planned to be verified.	Supplier	R - review					

Requirement TC ID / Revision	Requirement text	Verified by	Verification Method	Close-out		VPD Verification Planning Document	VRD Verification Record Document	Comments
				Yes	No			
019263/A;(L4) Internal monolithic chassis of L4 10PW compressor_TP19_701								
REQ-027253/A	Before completion of the manufacturing documentation phase the Supplier shall provide following information that shall be agreed by the CA:structure and content of the test protocols (see REQ-027250/A);structure and content of the VCD if the Supplier accommodated the VCD provided by the CA (see section 6.2.3).	Supplier	R - review					
REQ-027254/A	Before completion of the manufacturing documentation phase the Supplier and the CA shall agree on:final manufacturing drawings provided by the Supplier;detailed procedures related to the testing and cleaning during Manufacturing phase (see sections 6.3.2);common nonconformity control system (see REQ-027244/A).	Supplier	R - review					
6.3. Phasing of the delivery								
6.3.2. Manufacturing and delivery								
REQ-027255/A	The results of the Manufacturing phase of verification shall be recorded by the Supplier in the test protocols (see REQ-027250/A) and overall results (including review of documentation/reports and inspection of the chassis) shall be recorded in the VCD (see section 6.2.3).	Supplier	R - review					
REQ-027256/A	The final issue of the VCD shall be submitted to the CA after the approval of the last report before delivery	Supplier	R - review					
6.3.3. Acceptance								
REQ-027257/A	The Acceptance phase shall demonstrate the following:All finished parts of the chassis have been successfully verified by the Supplier and the results of this process have been documented in an appropriate way through VRs (see section 6.2.2) and VCD (see section 6.2.3);All detected nonconformities have been solved in accordance with REQ-027244/A;All finished parts of the chassis are free of fabrication errors and are ready for the intended operational use.	CA	Final CA verification			Related documentation IDs: (of all documentation above)	Verification date:	Name of the CA representative and Signature: