

## EXPLANATION OF THE TENDER DOCUMENTATION N. 1

**Name of the Contracting Authority** | **AL INVEST Břidličná, a.s.**  
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Name of the Public Contract | **ALFAGEN - EQUIPMENT FOR CASTING BILLETS FROM ALUMINIUM AND ITS ALLOYS**

Overview of Explanations of the Tender Documentation		
Explanation No.	Date	Content
1	12.06.2024	Requests and Explanations No. 1 – 307

In accordance with Article 14 of the Tender Documentation the Contracting Authority hereby communicates the explanation of the Tender Documentation:

Request by the Participant for explanation of the Tender Documentation				Explanation of the Contracting Authority
No.	Reference to the Tender Documentation if any		Wording of the request	
	Document title + page	Relevant text of the document		
1	Annex_3_TD_Technical_specifications ; page 6	1.1 Place of business, Project site	Site specifications ??? Average parameters / Max. parameters ....	The site is located in Břidličná in Czech Republic. The altitude is 535 metres above sea level.
2	Annex_3_TD_Technical_specifications ; page 8	2037/2000/EC – Ozone depleting substances	Not relevant	If it is not relevant you can ignore it, the tender documentation is general for all AL INVEST tenders Some we will not accepting any Fluorine containing gasses.
3	Annex_3_TD_Technical_specifications ; page 8	Guidelines for Handling Molten Aluminum (Available Online)	Please send link	See Annex_10_TD
4	Annex_3_TD_Technical_specifications ; page 9	Casting water system	Only water regulation. It does not make sense, that each party provides a complete water system with treatment.	Accept this point - Take over point (TOP) to contractor shall be understood like flange in front of water control system of casting equipment.
5	Annex_3_TD_Technical_specifications ; page 9	Furnace integration	Not included. Acc. To document annex 2 draft contract .... "control of tilting furnace from casting equipment..."	See definition in chapter 2.2.13 of this document.  There is not a specific section detailing the aspects of furnace integration. The primary points are addressed on an Ad Hoc basis, in the molten distribution section.  In normal conditions, the furnace TOP is within 1 meter past the joint. Final dimension to be fixed within engineering phase.

				<p>We expect the supplier of the treatment and casting side to work with the furnace supplier amicably.</p> <p>As the customer, we expect the furnace supplier to provide a hydraulic control signal, connecting the hydraulic control side with the casting automation so that during casting, the metal level is stable, and that when the casting process is interrupted, the furnace hydraulic tilting control is activated.</p> <p>We also expect the furnace supplier and the casting machine supplier use a common metal level sensor supplier and model.</p> <p>We also expect the furnace supplier to provide a secondary metal level signal, separate of the control system to highlight a Hi-Hi and a Low-Low level. This signal being generated by two electrical probes, at differing elevations continuously energized so that when the low-low electrode is in contact the metal conducts the electrical signal away from the Hi-Hi probe. Conversely, when the Lo-Lo probe is energized and the metal contacts the Hi-Hi probe, the electrical circuit is complete and the furnace tilts back</p>
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				outside the automation or control program.
6	Annex_3_TD_Technical_specifications ; page 9	Communication with the parent system	Not encompassing included: please define details.	See definition in chapter 2.7 of this document. This is not the point where negotiation should take place however, we expect the SCADA (Supervisory Control And Data Acquisition) portion of the caster and the material preparation or downstream portion of the caster suppliers scope to communicate with the Alinvest MES.
7	Annex_3_TD_Technical_specifications ; page 9	Compliance with hygienic limits upon occurrence of all hygienic factors which may affect the employees' health and their risk level for the personal health during particular shift (Act No. 258/2000 Coll., as amended, namely Section 37 on the Protection of Public Health and implementing provisions).	Please clarify local standards	This is not the point where negotiation should take place. We expect you, as a potential supplier to be familiar with all CE aspects common to the EU and the Hygienic Limits noted without needing to make a call out, line by line.
8	Annex_3_TD_Technical_specifications ; page 10	Design, purchase of materials, manufacturing, assembling, inspection, painting, packaging, transportation, erection and commissioning supervision, performance tests, performance guarantee, training, and manuals.	█ does not give ANY "guarantee" only warranties.	Again, this is merely the Scope of Work section, not the place for specific negotiation. Only for clarity an equipment warranty, is a written guarantee, issued by the supplier to the purchaser of an article promising to repair or replace if necessary within a specific period of time.  In the context of this document, we agree then that your warranty is, that the equipment is sold as promised or represented, fit for

				purpose and to the acceptance standards presented.
9	Annex_3_TD_Technical_specifications ; page 10	Estimated places with elevated noise level (above acoustic pressure level L 82 dB - measured at a height of 1.2 m above the floor )	Leq <82 dB(A) under "free field condition" is generally ok with following exception: At packaging and discharge magazines, structure borne sounds (billets touching) are emitted.	Permanent noise must be under 82 dB, short peaks over the 82 dB are accepted Please define peak level and time of peaks in the Tender (hereinafter referred to also as the „offer“). This is not a point of negotiation yet, this is a list of the items which you must include in your offer. Your offer, may contain a layout of your intended supply with the acoustic pressure levels at the typically high points so we may discuss the mitigation which we must provide on our side, including the costs for said mitigation.
10	Annex_3_TD_Technical_specifications ; page 10	data shall be understood as basic information – but fitting 90 % to final values confirmed during basic engineering) - minimum content:	Approx. 80 % preciseness	Accepted
11	Annex_3_TD_Technical_specifications ; page 10	Estimated HVAC requirements (electric equipment, gas, vapours, chips exhaust, etc.),	Not included, because not data is available.	Not accepted – must be available (reference from a similar project is as well accepted.)
12	Annex_3_TD_Technical_specifications ; page 10	<ul style="list-style-type: none"> <li>Estimated installed electrical power and calculation of electrical energy consumption per metric ton production (kWh/t ),</li> </ul>	No data available.	Not accepted – must be available – could be calculated for each diameter and alloy
13	Annex_3_TD_Technical_specifications ; page 10	<ul style="list-style-type: none"> <li>Estimated installed electrical power and calculation of electrical energy consumption per metric ton production (kWh/t ),</li> </ul>	Prefered preheating solution (casting system)	Not accepted – must be available – could be calculated for each diameter and alloy
14	Annex_3_TD_Technical_specifications ; page 10	<ul style="list-style-type: none"> <li>Single line diagram</li> </ul>	Not available for tender; will be provided at a later stage.	Provide in the offer reference from the similar project
15	Annex_3_TD_Technical_specifications ; page 10	<ul style="list-style-type: none"> <li>OPEX costs per produced MT – split into: <ul style="list-style-type: none"> <li>- Energy costs</li> <li>- Consumable costs</li> </ul> </li> </ul>	Cannot be provided, because it depends on the customer side conditions.	Provide in the offer reference from the similar project

		- Maintenance costs		
16	Annex_3_TD_Technical_specifications ; page 10	• Capital spares (part of commercial offer)	Are defined after engineering.	Provide in the offer reference from the similar project
17	Annex_3_TD_Technical_specifications ; page 10	• Wear parts, consumables required for the first 6 months of production	Is only possible, if the production mix is known.	Please define for production mix: - 2 months 54 mm alloy 6082 - 2 months 64 mm alloy 6082 + 6110 - 2 months 100 mm alloy 6110
18	Annex_3_TD_Technical_specifications ; page 11	Using the forklift truck with a charging bucket, the operator drive the charge into the melting furnace (18 t).	Note: capacity seems too small. 5 t/h melt have to be provided continuously over many hours.	Chapter 2.1 is only description for current status of existing AIB (= Contracting Authority, hereinafter referred to also as AIB) installed technology – not relevant for the offer
19	Annex_3_TD_Technical_specifications ; page 11	A liquid metal with a temperature of 720 °C comes off the furnace	Note: most likely too cold; outlet temperature: > 760 °C will be needed; depends on furnace philosophy At TOP to degasser approx. 750 °C. ACHTUNG [REDACTED] ... i glaub de 720 is melting furnace temperature !!	Chapter 2.1 is only description for current status of existing AIB installed technology – not relevant for the offer
20	Annex_3_TD_Technical_specifications ; page 11	The liquid metal is then processed in the refining unit where the melt is being refined (using the injected refining salts).	Note: no refining unit will be provided	Chapter 2.1 is only description for current status of existing AIB installed technology – not relevant for the offer
21	Annex_3_TD_Technical_specifications ; page 11	A liquid metal with a temperature of 720 °C comes off the casting furnace.	See other note.	Chapter 2.1 is only description for current status of existing AIB installed technology – not relevant for the offer
22	Annex_3_TD_Technical_specifications ; page 11	The melt continues through metal distribution system to degassing unit and filtration unit where it get rid of impurities.	Rod feeder in front of the filter?	Chapter 2.1 is only description for current status of existing AIB installed technology – not relevant for the offer
23	Annex_3_TD_Technical_specifications ; page 11	The supervisor must be present at the installation site (from 8 am to 6 pm on weekdays and from 8 am to 12 noon on Saturdays	Working time is 10 h per day; 6 day a week (Monday to Saturday)	Accepted

24	Annex_3_TD_Technical_specifications ; page 11	Whenever the supervisor is absent from the installation site, he/she must be available on his/her phone for consultation (24/7).	Not acceptable clause.	Supervisor must be available on his/her phone for consultation ((from 8 am to 6 pm on weekdays and from 8 am to 12 noon on Saturdays).
25	Annex_3_TD_Technical_specifications ; page 11	Furthermore, the Contractor is responsible for commissioning the entire working site, so that the whole line is fully functional.	Supervisor for commissioning: Yes; work force by Alinvest (this will support start of production)	Accepted
26	Annex_3_TD_Technical_specifications ; page 11	The technical specification must define all the requirements for the line, such as: take over points, layout, building foundations (loads, pits, etc.), climatic conditions and requirements set out by the relevant occupational health and safety standards, so that the line is allowed to be put into operation.	Please define.	Climate conditions: Local of site operation (Břidlična) is or should be well known to the Contractor.
27	Annex_3_TD_Technical_specifications ; page 12	The line must comply with the noise and hygienic limits (with technological load).	Please define and specify. Is not clear, what is meant.	We believe that the common hygienic limits, refer to acoustic pressure levels, (Sound) commonly measured in Decibels. We request that you identify the positions where the acoustic pressure levels are the highest so we can provide a mitigation strategy.
28	Annex_3_TD_Technical_specifications ; page 12	The limit of the acoustic pressure level LA must not exceed 82 dB in the place where the operator will move (measured at a height of 1.2 m above the floor).	Leq <82 dB(A) under "free field condition" is generally ok with following exception: At packaging and discharge magazines, structure borne sounds (billets touching) are emitted.	Pernament noise must be under 82 dB, short peaks over the 82 dB are accepted Please define peak level and time of peaks
29	Annex_3_TD_Technical_specifications ; page 12	First, Hydrogen, is removed in a first order reactor where argon and sometimes minute amounts of chlorine is distributed via a stirred impeller in a heated box with molten aluminum flowing counterflow the bubbles.	No counterflow	Perhaps you could detail in your offer the flow path direction .
30	Annex_3_TD_Technical_specifications ; page 12	Finally, inclusions are separated from the molten stream via a unique tortuous path filter commonly referred to in the industry as a Ceramic Foam Filter (CFF).	particles	Inclusions are commonly found in the liquid, Particles are found in solids.

31	Annex_3_TD_Technical_specifications ; page 12	<ul style="list-style-type: none"> <li>Customer intends to peel the cast surface and this internally generated scrap material will be a minor portion of the material being re-charged back into the melting furnaces.</li> </ul>	Please clarify: is chip treatment needed?	Yes, chip treatment is scope of customers supply See chapter 2.2.11
32	Annex_3_TD_Technical_specifications ; page 12	<ul style="list-style-type: none"> <li>Customer intends to peel the cast surface and this internally generated scrap material will be a minor portion of the material being re-charged back into the melting furnaces.</li> </ul>	Spänebehandlung?	Yes, chip treatment is scope of customers supply See chapter 2.2.11
33	Annex_3_TD_Technical_specifications ; page 13	<ul style="list-style-type: none"> <li>Range of the molten metal process temperatures: 680–790 °C</li> </ul>	Not clear. Contradicts previous chapters and does not make technical sense.	Is only range, process temperature as per alloy
34	Annex_3_TD_Technical_specifications ; page 13	<ul style="list-style-type: none"> <li>Cast billet diameter: minimum Ø 40 –125 mm</li> </ul>	>48 mm: 48-130 mm is possible	Accepted
35	Annex_3_TD_Technical_specifications ; page 13	<ul style="list-style-type: none"> <li>Base configuration (cast diameter): Ø 58 Ø 68±2,5 mm/ Ø 104±2,5mm</li> </ul>	±2,5 mm?	Casted diameter will be in range 65,5 - 70,5 mm and 101,5 - 106,5 mm. Exact diameter will be define at kick-off meeting
36	Annex_3_TD_Technical_specifications ; page 13	<ul style="list-style-type: none"> <li>Shortest possible scrap cut length during casting: 3000 mm</li> </ul>	Shortest (minimum) scrap length: 3000 mm accepted.	Accepted
37	Annex_3_TD_Technical_specifications ; page 13	<ul style="list-style-type: none"> <li>Cutting accuracy: +6 / -0 mm</li> </ul>	+/- 15 mm	Not accepted - The definition is required by final customer
38	Annex_3_TD_Technical_specifications ; page 13	<ul style="list-style-type: none"> <li>Contractor to deliver with the production calculation based on 5 casting diameters ( Ø 40, 58, 68, 104, 125 mm) with corresponding with following data</li> </ul>	40 mm is excluded	Accepted. Removing the 40 diameter does not violate the specification Please deliver a calculation of casted diameter 48 mm
39	Annex_3_TD_Technical_specifications ; page 13	- Casting rate , final diameter (t/h)	Production rate?	Yes, this is a typographic error, please present the t/h expected for the different sizes. - as per casting diameter (not peeled) - as per casting diameter peeled produced
40	Annex_3_TD_Technical_specifications ; page 13	This is the preliminary projected floor plan of the hall section, indicating the area intended for the process (Fig. 1)	Are really two melting furnaces and one casting furnaces planed? Please consider	Final decision is not done yet, but we consider two melting furnaces and one casting furnace



			pathways for forklift, workers and transport of final product 6 m.	AIB is limited to available space. Access via overhead crane has been considered in the equipment design in area, where fork lift access is not possible.
41	Annex_3_TD_Technical_specifications ; page 14	<ul style="list-style-type: none"> <li>• Tilting of furnace as per needed melt level in the molten distribution system</li> </ul>	Not in scope included. Furnace supplier must regulate the tilting of the furnace according to desired melt level in launder.	<p>Agreed: Hydraulic regulation of furnace tilting is done by furnace control system. But signal interface between casting line and tilting furnace has to be considered.</p> <p>We expect the supplier of the treatment and casting side to work with the furnace supplier amicably.</p> <p>As the customer, we expect the furnace supplier to provide a hydraulic control signal, connecting the hydraulic control side with the casting automation so that during casting, the metal level is stable, and that when the casting process is interrupted, the furnace hydraulic tilting control is activated.</p> <p>We also expect the furnace supplier and the casting machine supplier use a common metal level sensor supplier and model.</p> <p>We also expect the furnace supplier to provide a secondary metal level signal, separate of the control system to highlight a Hi-Hi and a Low-</p>

				Low level. This signal being generated by two electrical probes, at differing elevations continuously energized so that when the low-low electrode is in contact the metal conducts the electrical signal away from the Hi-Hi probe. Conversely, when the Lo-Lo probe is energized and the metal contacts the Hi-Hi probe, the electrical circuit is complete and the furnace tilts back outside the automation or control program.
42	Annex_3_TD_Technical_specifications ; page 14	Releasing into dross bin in case too cold melt.	Dross and drain bins are not included. Sizes and dimensions are provided.	Accepted
43	Annex_3_TD_Technical_specifications ; page 14	- Degasser set values	As recipe value okay; however without measurement of starting conditions of for example hydrogen content, final content can not be assured. NOTE: NO Hydrogen measurement is included.	Agreed: Hydrogen measurement is not in AIB scope. It is considered that during commissioning regular measurements will be performed within Customers (AIB) scope. We will have our own hydrogen measurement equipment. As you are supplying the de gasser with your system, we are familiar with the Pyrotek SNIF (but you can use any other supplier of degasser, which is in compliance with technical specification), we assume your system operates similar. We are concerned about your degasser as your earlier note of the molten flow being concurrent with the gas bubble flow, but that will need to a

				subject of your production warranty to Alinvest.
44	Annex_3_TD_Technical_specifications ; page 14	<ul style="list-style-type: none"> <li>• Dynamic melt intermix model for batch change during casting sequence.</li> </ul>	Only assessment over ideal and simplified process could be included. No verification of real process.	It is considered that during commissioning regular measurements will be performed within Customers (AIB) scope Model / parameter has to be open for further tuning by AIB for optimization.
45	Annex_3_TD_Technical_specifications ; page 14	Only the highest quality (High Alumina and low Silica) materials should be used while maintaining a healthy balance with thermal conductivity as material choices will earmark the type of inclusions generated in the metal distribution system and thermal losses in the system.	Not accepted: In aluminium industry commonly "fused silica is used" for the lining, and microporous panels (calcium silicate basis) for insulation. High Alumina is mainly used in steel industry.	<p>Please take exception to this in your offer.</p> <p>Note though that the highest quality troughing materials used in the industry are High Alumina and Low Silica.</p> <p>Fused Silica is a significant step down in quality from what we have asked for.</p> <p>FYI, the glass or fused silica shot in the fused silica roughing materials reacts with the magnesium in the molten metal, forming a complex magnesium silicide which is very difficult to trouble shoot at the customer's site.</p>
46	Annex_3_TD_Technical_specifications ; page 15	- We prefer hot air high velocity launder pre-heating for our system as the typical heated launder cover systems are an extra maintenance item and the energy consumed during heating distracts us from our goal of reduced electrical needs.	Small launders, highly insulated with heated covers will be used. These are energysaving, enable proper pre-heating and have low maintenance. For deeper sections hot air blowers for pre-heating are used.	At that point please describe with diagram your trough cross section and how your heaters are used.

47	Annex_3_TD_Technical_specifications ; page 15	We prefer integration of smaller CX launders , with hot air blowing as a pre-heat system when needed .	What is a CX launder?	<p>We prefer smaller Cross Section (CX) metal flow troughs.</p> <p>As an industry which is concerned with GHG generation and so molten delivered to dump bins to help balance molten temperature is not encouraged as this material must be re-melted.</p> <p>Smaller Cross Sectioned (CX) troughs typically have higher metal flow velocities which lose less heat, after the furnace so that the furnace temperature during casting can be less than 720 C.</p>
48	Annex_3_TD_Technical_specifications ; page 15	We prefer integration of smaller CX launders , with hot air blowing as a pre-heat system when needed .	"hot air blower" will be used where meaningful.	Accepted
49	Annex_3_TD_Technical_specifications ; page 15	- The proposed system shall consist of individual modules/sections that can be removed and replaced as complete units without disturbance of the remaining section.:	Details not available for tendering; details with furnace have to be clear before. In general, standardization is used where it makes sense. A blanket recourse to a modular system does not appear to make sense, as it does not meet the requirements of the individual channel sections.	<p>Your supply, begins 1.0 meters after the holding furnace, a straight portion of the trough. From that TOP, you control the details and thus should be prepared to tender.</p> <p>Final number of modules, sections will be fixed within engineering phase</p> <p>We are concerned about your comment on the modular trough section approach. Modern trough systems, all use modular sections which are easily replaced when the trough sections are damaged or in</p>

				your case, when the silica fit is exposed.
50	Annex_3_TD_Technical_specifications ; page 15	- The following is a list of Drawings, Standards and SPI's having pertinent information and details for this portion of the project .	Please define drawings and what are SPI's	Serial Peripheral Interface (SPI), a common term used in in process control and automation systems.
51	Annex_3_TD_Technical_specifications ; page 15	- Guidelines for Handling Molten Metal (available online).	Please provide link.	See Annex_10_TD
52	Annex_3_TD_Technical_specifications ; page 15	- Metal Flow velocity in launder between holding furnaces and casting unit shall be less than 9.8 m/min, but greater than 7.0 m/min at any point (applicable for straight, corner or angled sections).	Restriction and definition only makes limited sense and is not accepted by [REDACTED]: < 10 m/min is maintained in the stationary state. At approx. 80 % fill level, the speed is approx. 5 m/min. // Deviations may occur depending on the channel segment. Not valid for channel filling or emptying (outside stationary conditions). For filling ... metal flow speed up to 100-150mm/s	This velocity, is an industry standard design, which has been introduced to help companies minimize the temperature losses, after the furnace to the casting machine. The value presented in our specification, is intended for steady state operation. We acknowledge that the start of the cast, the flow velocity is higher but the reduced Cross Section (CX) minimizes not only the temperature but also the flow needed during fill.  If you desire to ignore this specification, please take exception of the point, then present real temperature data from your lower velocity trough, so that we may understand your thermal losses which we will have to overcome by burning more fossil fuels, generating more GHG.  Perhaps your design has a filling velocity of 125 mm/sec, 7.5 meters

				<p>per minute. Our focus, is on the steady state condition.</p> <p>When designing the trough, at steady state of 7.0-9.8 meters per minute, the flow remains in the laminar flow region.</p>
53	Annex_3_TD_Technical_specifications ; page 15	Nominal metal level in launder shall be 50 mm from top of refractory between the holding furnace and the casting unit. Nominal metal level shall be 200 mm at casting unit.	Delete clause, it is not meaningful. Metal level depends on position of launder; absolute definition does not make sense. Max level: 40 mm from top of refractory lining: (only for stationary state).	<p>Sorry but we cannot delete this clause.</p> <p>Max level: 40 mm from top of refractory lining is acceptable</p> <p>Please note, this is a maximum level, during operation, we may operate with a 75 mm or a 100 mm distance from the molten metal to the top of the refractory.</p>
54	Annex_3_TD_Technical_specifications ; page 15	Nominal metal level in launder shall be 50 mm from top of refractory between the holding furnace and the casting unit. Nominal metal level shall be 200 mm at casting unit.	Delete clause, restriction not meaningful. Nominal metal level in tundish: Range will be approx. 250-350 mm	Please take exception to our desired level of 200 mm. Please note that the 300 mm level will generate more dump bin losses, and take away from our GHG target.
55	Annex_3_TD_Technical_specifications ; page 15	Minimum corner radius of any refractory section shall be 300 mm.	Clarification: Value is not meaningful.	The 300 mm radius is an industry minimum for trough design. We are aware that many refractory suppliers prefer abrupt joints without radius, but we aspire to make a very high quality, low inclusion product. Furnace processing for particles (The correct term as both soft and hard particles are present), inclusion removal during degassing and filtration are designed with this aim.

				<p>An abrupt joint, will introduce turbulence and inclusions.</p> <p>I think that you would always want your customers to produce a superior product and would want to adopt these features in your design.</p>
56	Annex_3_TD_Technical_specifications ; page 15	Laundry system shall be designed in modules . Module lengths shall be a maximum of 2 meters.	Not accepted: as stated, only where it makes senses.	Target should be easy exchangeable in case needed.
57	Annex_3_TD_Technical_specifications ; page 15	Laundry system shall be designed in modules . Module lengths shall be a maximum of 2 meters.	Not accepted. Standardization is result of engineering.	Target should be easy exchangeable in case needed.
58	Annex_3_TD_Technical_specifications ; page 15	Laundry Sections shall be easily removable from overall assembly for maintenance.	Steel structure will be fixed on hall floor. Prefabricated laundry inserts can be removed and replaced.	Accepted.
59	Annex_3_TD_Technical_specifications ; page 16	- Any change of laundry profile shall use an angle of no more than 30 degrees.	Delete restriction: Limitation is technically not meaningful - laundry length will be longer.	The laundry only changes profile, at the entrance and exit transition pieces to the de gasser and the filter. The 30 degree expectation is in this specification so that the flow entrance and exit effects are minimized. Please note that when the angle of change is high, an oxide on the metal surface can be submerged by a vortex created at the transition to entrance point. Final arrangement with possible angle has to fit with layout and available space.
60	Annex_3_TD_Technical_specifications ; page 16	Joints between refractory shall use 9.5 to 12.5 mm Inconel woven rope for sealing .	No [redacted] standard --> very expensive! [redacted] Standard: compressed fiber blanket for sealing	Please note that the compressed fiber blanket is a silica material and the silica will react with the molten aluminum and create inclusions in our customers product.

				Applying a glue or refractory repair mastic, over the blanket, is not the best choice as the moisture in this repair material will bubble and create oxide-inclusions which are swept away in the trough.
61	Annex_3_TD_Technical_specifications ; page 16	- The laundering system Take Over Point (TOP) is generally within one meter length of the furnace knuckle or joint. The system generally interfaces with the degasser and the filter prior to connecting to the casting system.	Please explain meaning of text. The launders are part of the casting system, so the statements are not meaningful.	This is not a negotiation point. We are clarifying to you that your trough TOP is one meter from the holding furnace and the trough delivers metal to the degasser, removes metal from the degasser and delivers the metal to the filter. After the filter, the trough delivers the metal to the casting machine.
62	Annex_3_TD_Technical_specifications ; page 16	The system shall include 5 pneumatic or hydraulic metal control dams at the following locations:	Final decision during engineering phase. For example it could look the following way: 2 shutters for entrance CFF; 2 shutters exit CCF; 2 shutters draining CCF; 1 shutter T-piece; 1 shutter casting start;	Agreed. Proposed number is only a estimate – final number as per need defined during engineering phase without cost impact.
63	Annex_3_TD_Technical_specifications ; page 16	- Exit of the furnace joint, generally within 2 meters of the joint.	Not included in scope: For what reason?	Agreed - The first shutter and metal level sensor is typically supplied by the furnace supplier. If you want to take this over, we can remove this from the furnace specification but that is up to you.
64	Annex_3_TD_Technical_specifications ; page 16	Furnace to degasser: +2 mm/meter - Degasser to filter entry: +2 mm/meter	Delete clause: An absolute general specification is not meaningful. Details during engineering.	Values to be understood indicative. Finalization during engineering phase. These trough slopes must be understood with purchase as we want all the trough metal from the invert of the degasser to flow back to the furnace at the end of the cast. If the trough invert slope is omitted and you use a negative slope, then



				the end of cast metal will flow into a dump bin, hurting out GHG number.
65	Annex_3_TD_Technical_specifications ; page 16	- Filter exit to casting equipment: -1 mm/meter	Delete clause: Not meaningful; details during engineering	Values to be understood indicative. Finalization during engineering phase.
66	Annex_3_TD_Technical_specifications ; page 16	Metal shall flow back to furnace from the filter entry launder invert in the event of a controlled end of cast .	Design intention is okay, but this depends on TOP with furnace. Formulation has to be modified. TBDF during engineering.	Agreed – details to be defined in engineering, but base remains: Return of melt to the furnace at end of cast.
67	Annex_3_TD_Technical_specifications ; page 16	Total launder volume shall be presented with the offer to enable Customer to interface with the furnace contractor to manage the metal flow in the event of an upset condition.	Only pre-liminary information (approximate quantities). TBDF during engineering	Preliminary information is acceptable. Please include the tundish.
68	Annex_3_TD_Technical_specifications ; page 16	Hot Air Blower (Pre Heat) for Straight modules and Joining Points - Hot air blowers, heat difficult areas in the metals distribution system without exposing the refractory to a direct flame.	Different system will be used. See above. No flames. TBDF during engineering	The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided. Please provide electrical load for preheating by counter question (= new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation.)
69	Annex_3_TD_Technical_specifications ; page 16	Metal Level Sensors - Steady State metal level sensors are highly accurate and generate a reliable signal which is needed to control the furnace and the processing and metal treatment equipment.	Sensor for furnace tilting has to be done by furnace supplier and has to be in proximity of TOP furnace.	Accepted
70	Annex_3_TD_Technical_specifications ; page 16	- One sensor at the exit of the furnace before the degasser	Not included	Accepted
71	Annex_3_TD_Technical_specifications ; page 16	-	Additional sensor for casting start	Accepted
72	Annex_3_TD_Technical_specifications ; page 16	Low/High Level Sensors at the furnace - This special type of probe sensor, offers redundancy at the start of the cast to ensure enough metal static pressure is available to properly fill the launder to the CFF.	Not part of scope; shall be done by furnace supplier	Accepted

73	Annex_3_TD_Technical_specifications ; page 16	Low/High Level Sensor at the CFF exit Invert Launder Dam	Define: what is meant with low/high?	Contact probes
74	Annex_3_TD_Technical_specifications ; page 16	This special type of probe sensor, offers redundancy at the start of the cast to ensure enough metal static pressure is available to properly fill the casting equipment.	Text is not meaningful.	The contact probe is used as a redundant indicator so that the Tundish is not over flowed with metal.
75	Annex_3_TD_Technical_specifications ; page 16	One at furnace TOP: Exit of the furnace joint, generally within 2 meters of the joint. For what reason.	Not included: shall be done by furnace supplier	Accepted
76	Annex_3_TD_Technical_specifications ; page 17	Launder steelwork shall be coated with high heat powder coat or equivalent. Stainless steel components need not be coated.	Alutherm coating will be used.	Alutherm is acceptable with the trough steel.  Not with the metal exposed portions of the HDC. This should be wisechem E212
77	Annex_3_TD_Technical_specifications ; page 17	The Contractor shall guarantee the performance of the system	Wording: warantee	An equipment warranty, is a written guarantee, issued by the supplier to the purchases of an article promising to repair or replace if necessary within a specific period of time.  In the context of this document, we agree then that your warranty is, that the equipment is sold as promised or represented.
78	Annex_3_TD_Technical_specifications ; page 17	Acceptance by Customer shall be based on tests upon completion of the commissioning of the system .	what should this test or acceptance look like	Acceptance is: - No leaks - 40 mm elevation above the metal level in the trough. Steel temperature - Metal temperature, Furnace to HCM shall not exceed 20 C, 10 minutes into the cast.
79	Annex_3_TD_Technical_specifications ; page 17	Temperature shall be taken at the end of the cast, just prior to end of cast sequence.	For warranty verification - acceptance?	See above.

80	Annex_3_TD_Technical_specifications ; page 17	Freeboard in all areas of the launder shall not be less than 50 mm .	Please clarify: see above; target value approx. 40 mm from above.	Already agreed on max. 40 mm.
81	Annex_3_TD_Technical_specifications ; page 17	Melt differential temperature measured at furnace TOP and at casting equipment shall not exceed 20 °C .	Target value of 20 °C is okay. However, temperature difference will depend on TOP furnace, launder lengths, type of degasser, filter used, casting rate. ■ will not warrant a specific temperature target drop for unknown conditions.	Design has to fit for this temperature drop.
82	Annex_3_TD_Technical_specifications ; page 17	- Qty n – Dual Variable Speed Rod Feeders - Qty n – Rod Feed Drive Stands - Qty n – De-Coiling Spools - Qty n – Coil Racks	Delete clause or define: "n"	Accepted – „n“ shall be exchanged with „set of“.
83	Annex_3_TD_Technical_specifications ; page 17	The De-Coiling Spool with the rod coil will then be positioned onto a coil rack with the rotary axis in either the vertical or horizontal orientation via crane or lift truck.	Different technical solution: Spool remains on position; rod will be placed onto spool (at machine).	Accepted.
84	Annex_3_TD_Technical_specifications ; page 18	- Supports and rod guides to be designed and supplied by others; vendor to provide mounting patterns and loading diagrams.	Not clear what is meant: The rod feeder is supplied complete. Handling support for the coils is not included.	Accepted.
85	Annex_3_TD_Technical_specifications ; page 18	- Feeders drive capable of pulling rod from the reel up to 6 meters away and pushing the rod through a 1” stainless steel pipe 5 meters long with one (1) 45-degree x minimum 300 mm radius bend and one (1) 90-degree x minimum 300 mm radius bend.	Delete clause. Not meaningful: AlTiB wire is very soft, so a radius that is too tight can cause the feed mechanism to stop working (feed rollers slip). The wire feed unit should be positioned close to the casting launder, then ■ assures a feeding design that works reliably.	Accepted. Design need to ensure refining rod without rod jams, rod tangles which interrupt the function.
86	Annex_3_TD_Technical_specifications ; page 18	- Adjustable feed force.	Delete clause: not meaningful; for what reason?	Adjustable Feed force is an option with some rod feeder providers where depending on the strength of the rod, the force of the rod contact teeth, can be varied to accept harder rods and softer rods.
87	Annex_3_TD_Technical_specifications ; page 18	- Interconnecting Electrical Cabling for Power and Control between variable speed drive and drive motor (30 meters maximum distance).	Please clarify: why is here a restriction?	We prefer the power cable be a factory length, without temporary terminal clips – where applicable.

				In case not possible maintenance access to terminal box has to be ensured.
88	Annex_3_TD_Technical_specifications ; page 18	- Connection plugs for all supplied devices.	Please clarify: why?	Professional plugs on the power cable as terminal clips will fail from time to time.
89	Annex_3_TD_Technical_specifications ; page 18	<ul style="list-style-type: none"> <li>• De-coiling Spools</li> <li>- Reel with low friction bearings for holding and dispensing up to 450 kg coil of 9 mm rod.</li> <li>- Bearing friction not to exceed 1kg at coil O.D. throughout life of the coil.</li> </ul>	Delete clause.	These sections are intended to ensure your feeder does not free spool and make a tangled mess.
90	Annex_3_TD_Technical_specifications ; page 18	- Raising bubbles, collect or scavenge additional inclusions on the surface of the bubbles and provide a minor but important role in further inclusion removal of our entire process.	particles	In this case, we are focused on Inclusions. The greater concern originates from your earlier comment where the metal flow, in the mixing chamber does not flow opposite the direction of the raising degassing bubble.
91	Annex_3_TD_Technical_specifications ; page 19	- Gas panel & associated controls for mixing argon / chlorine	Not included in scope.	The system shall be capable of 99,5% Argon and 0,05% chlorine. The mixing panel is mandatory in this case.
92	Annex_3_TD_Technical_specifications ; page 19	<ul style="list-style-type: none"> <li>- Rotor Maintenance Stand</li> <li>- Operator Maintenance and operation platform, giving access to the degasser and the cover</li> </ul>	<p>Drawings can be provided.</p> <p>Shall the maintenance platforms be included in the quotation?</p>	We prefer delivery of drawings of rotor maintenance stand, operator maintenance and operation platform by Contractor and local manufacturing of rotor maintenance stand, operator maintenance and operation platform by AIB.
93	Annex_3_TD_Technical_specifications ; page 19	- Burner and Flames EN 746, EN 1539 (available online).	Not applicable	Accepted
94	Annex_3_TD_Technical_specifications ; page 19	Effluents TA Luft 2002 (available online).	<p>TBC: 15g Cl<sub>2</sub>/h &gt;&gt; Nasswäscher. Nachdem es vom Degasser in den Ofenabgasstrom geht könnte das interessant werden.</p> <p>Statement Pyrotek: not applicable</p>	This amount of Chlorine indicates that your system is capable of mixing Chlorine, earlier comment.

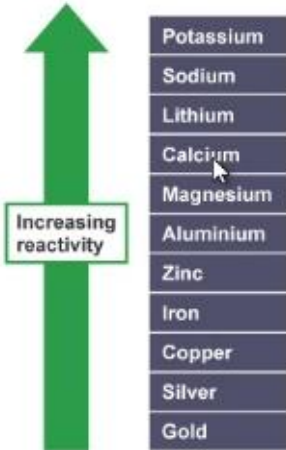
95	Annex_3_TD_Technical_specifications ; page 19	Customer Powder and Dust Explosion Hazard Specification	More input what is the concern/ request. In principle there is no significant/critical dust creation which can cause an explosion	That is correct, this level of Chlorine should not make troublesome powders. Please ensure the chlorine is turned off during idle or when not casting as a degasser saturated with chlorine will create troublesome particles.
96	Annex_3_TD_Technical_specifications ; page 19	Guidelines for Handling Molten Metal (available online).	Please provide link.	See above.
97	Annex_3_TD_Technical_specifications ; page 19	Metal flow rate range for degassing varies per cast line. The degasser should be sized accordingly.	Please define scope: how many lines?	We are asking that your degasser be sized to properly degass all of the sizes and quantities.
98	Annex_3_TD_Technical_specifications ; page 19	Process temperatures: between 600 °C minimum – 740 °C maximum, depending on alloy family processed.	Not meaningful. Ts = 660 °C; >661 up to approx. 750 °C	This is important, because the materials which contain the heaters, (Immersion tube or heater block) enter a material transition sensitivity starting in the low 600 C. We want no controlled heating elements in this range.
99	Annex_3_TD_Technical_specifications ; page 19	Process gases available at site: argon, chlorine, nitrogen , and compressed air.	Should not be used	Accepted (nitrogen not be used).
100	Annex_3_TD_Technical_specifications ; page 19	Degasser must be capable of shutting off chlorine and argon to a broken rotor or redistributing chlorine to other rotors.	Only one rotor is used.	Accepted
101	Annex_3_TD_Technical_specifications ; page 19	- The system shall comply with current technical norms requirements, while operating with Stoichiometric input of Chlorine for alkali metal removal, as follows: - 0.003 to 0.020 kg of HCL per ton of Al processed.	Giving a guarantee for this value without a corresponding refining target is not acceptable. How much HCL is created depends mainly on the chlorine % adding. How much CL2 needs to be added at the degasser depends on the metal cleanliness coming from upstream and final target levels. It can be adjusted to hit the requested removal target (which is not set yet) or adjusted to hit the max. HCL levels.	As hydrogen is targeted, less so the alkali elements, we will ask for a solid reduction of 75% thru the degasser.

			<p>We don't look for numbers above 0,02 kg/ton. But this is limiting the treatment by nature. Hitting both the same time doesn't work with the chemistry rules.</p> <p>As more chambers are existing as bigger is the window for leveling this - but this can't be in the interest to use a larger degasser for keeping HCL emissions under control. The upstream furnace treatment must be efficient enough to avoid to come into trouble at the degassing stage with adding so much chlorine that HCL limits are exceeded.</p>	
102	Annex_3_TD_Technical_specifications ; page 19	Maximum of 0.004 kg dust (particles emissions) per ton of Al processed.	<p>Clarify: how would the verification be done? Note: Dust creation can't be guaranteed as this depends on the metal cleanliness coming from upstream. This is out of the control of the degassing unit. Which particle is finally ending as solid salt swimming on top and which is light enough to be transported by the vent can't be determined.</p>	The chlorine level you propose, should not create harmful powders. This may be removed.
103	Annex_3_TD_Technical_specifications ; page 19	<p>- Specific Argon input shall be 0.3 – 0.4 liters per kg of aluminum treated.</p> <p>The Contractor can provide an option for utilization of Salt vs. Chlorine if documentation can be provided of previous trials and results with regards to qty and type of salt used.</p>	Can't be guaranteed that simple as the need of inert gas depends on inlet and target values. According to the specs below it should be within this window but will not be guaranteed.	I do not think we are asking for a warranty or guarantee, with the Argon flow. We are asking for a Hydrogen reduction target. See System Performance.
104	Annex_3_TD_Technical_specifications ; page 19	The Contractor can provide an option for utilization of Salt vs. Chlorine if documentation can be provided of previous trials and results with regards to qty and type of salt used.	using flux at the degassing stage is not the best solution. The possible amount of fused flux (e.g. Promag = $KMgCl_3$ ) is limited as it needs to be ensured that the whole refining agent has reacted ahead of the filter as the flux is liquid and is not caught by the filter if not reacted. Adding Chlorine has no negative side effects and will react for sure with something and doesn't stay in the melt.	<p>Some of the new generation of degaussers use salt. While salt is our preference, we will accept Chlorine.</p> <p>Chlorine disadvantages your offer, as the hazards of using Chlorine are high.</p>

105	Annex_3_TD_Technical_specifications ; page 20	- At chlorine input above 0.25 %, the chlorine shall be distributed equally across all rotors except the last (downstream) rotor which maintains 0.25 % Cl <sub>2</sub> or optionally no chlorine.	Only one rotor will be provided: max 5 % chlorine	Please plan on less than 0.5% chlorine, targeting 0.25%.
106	Annex_3_TD_Technical_specifications ; page 20	- If chlorine is used, a suitable external storage containment building shall be provided with an appropriate gas scrubber to process any inadvertent chlorine leaks during cylinder change out and operation. - Chlorine in use shall be located on a scale or series of load cells to help alarm and notify the operator if a leak is detected.	Not included: Not in scope; [REDACTED] prefers no Cl; however target limits of Na, K, Li depend on customer requirements; Influenced mainly by primary stock (scrap).	Agreed – AIB is responsible for storage.
107	Annex_3_TD_Technical_specifications ; page 20	Chlorine in use shall be located on a scale or series of load cells to help alarm and notify the operator if a leak is detected.	Scope of customer	AIB will provide a Chlorine Storage and control booth, but your offer would appear stronger to others using your degasser.
108	Annex_3_TD_Technical_specifications ; page 20	- System shall have the ability to raise the static metal temperature at a rate of 20 °C/hr.	Please define side conditions. Is the value meant during casting stop, a filled box?	This means we expect the heater in the degasser to be able to heat the molten a maximum temperature of 20 C per hour when the degasser is in idle mode.
109	Annex_3_TD_Technical_specifications ; page 20	- System shall be able to maintain metal temperature with ± 3 °C.	Please clarify: during casting stop, a filled box?	During Casting
110	Annex_3_TD_Technical_specifications ; page 20	- There must be a safety lock to protect the operator from the Lid.	There is a mechanical safety latch preventing an unexpected travel down of the lid.	Accepted
111	Annex_3_TD_Technical_specifications ; page 20	• Gas Mixing Panel (Degasser Specific)	Chlorine mixing station must be located in a secured area; ventilation and safety values are in scope of the customer.	Accepted
112	Annex_3_TD_Technical_specifications ; page 20	- Panel must have the ability to be ventilated to location away from work environment.	Not in our scope.	Accepted
113	Annex_3_TD_Technical_specifications ; page 20	- Cl <sub>2</sub> leak detection system.	In the Cl <sub>2</sub> panel. Another detector suggested for the room, in scope of customer.	Accepted

114	Annex_3_TD_Technical_specifications ; page 20	The Contractor shall guarantee the performance of the system.	Wording: warantee	<p>Again, this is merely the Scope of Work section, not the place for specific negotiation. Only for clarity an equipment warranty, is a written guarantee, issued by the supplier to the purchases of an article promising to repair or replace if necessary within a specific period of time.</p> <p>In the context of this document, we agree then that your warranty is, that the equipment is sold as promised or represented, fit for purpose and to the acceptance standards presented.</p>
115	Annex_3_TD_Technical_specifications ; page 20	- Efficiency of Hydrogen removal shall be minimum of 75 %. With a target post degasser value of 0,13 cm <sup>3</sup> /100 g AL, at a temperature greater than 690 °C – but less than 705 °C.	This request is too universal. We offer Seventy-Five (75%) percent efficiency down to a lower limit of: ≤0.13 cc/100 gr. for alloys contain ≤ 1% Mg and ≤0.13 cc/100 gr. for alloys containing > 1% Mg	The expectation listed is consistent with your comment.
116	Annex_3_TD_Technical_specifications ; page 21	Unit shall demonstrate an inclusion removal rate of 30-35 % based on Alcan PoDFA measurements of the incoming and outgoing metal stream at steady state flow.	Not acceptable for acceptance criteria. This is quality management of the customer. Mainly not related to equipment, but operating conditions. PoDFA tests are not included. Wording needs to be adjusted “...of all non-wetted inclusions greater than 15 microns.”	AIB will provide all PoDFA equipment and analysis. We will accept your suggestion of 30-35 % reduction in inclusions greater than 15 microns.
117	Annex_3_TD_Technical_specifications ; page 21	Unit shall demonstrate removal of 50 – 70 % of Na & Ca at stoichiometric chlorine input based on OES measurements of incoming vs. outgoing metal stream at steady state flow. Li removal to be determined & agreed by Contractor and customer.	<ul style="list-style-type: none"> <li>Not acceptable because there is no way to put a reduction number on the removal on alkali metals using only stoichiometric additions of chlorine. Even if most of the chlorine does react - it will not reduce the HCL as, a lot of the salts, when they come in contact with air will turn to HCL.</li> </ul>	We are asking that your degasser will react and remove 50-70 % of the Na. Now, if your degasser operates with metal flowing in the direction of the raising bubbles, then we understand you not being able to provide this.



			<p>Simplified: Chlorine is not reacting only with the unwanted elements - it is reacting with "everything it touches". This is preferred based on the hierarchy of the elements shown in the picture.</p>  <p>For example chlorine reacts also with Magnesium and form Mg-Chlorine and not only with Na, Cl., etc... The reactivity is higher but not working one-by-one... Once getting to the surface it might oxidize and form HCL.</p> <ul style="list-style-type: none"> <li>• Li removal to be determined &amp; agreed by Contractor and customer.</li> </ul> <p>à Lithium is usually no problem at remelters</p>	<p>The metal flow, in the degasser is key to proper operation. we do not feel that your system, with metal flowing the same direction as the raising bubble.</p> <p>The degasser should operate in line with first order chemical reaction kinetics.</p> <p>The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided. Please confirm by counter question the direction of molten flow with a diagram to be clear if we are in line (= new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation).</p>
118	Annex_3_TD_Technical_specifications ; page 21	Similar requirements for Na & Ca are required if Salt is utilized instead of Chlorine.	<p>See above: Promag is OK upstream but we prefer chlorine use at the degasser as giving the best results w/o side reactions of the carrier salt at the latest stage where the adding of flux is very limited to ensure that the reaction had finished ahead of leaving the degasser</p>	<p>As per previous points we have confirmed your degasser uses chlorine and not salt.</p>

119	Annex_3_TD_Technical_specifications ; page 24	<p>Customer to accept the system:</p> <ul style="list-style-type: none"> <li>- Unit(s) shall be capable of filtering molten aluminum within the stated metal flow ranges and casting duration times utilizing 70ppi filters with molten metal head differential not exceeding 25 mm. Failure to maintain this head differential as a result of the pre-heat or priming mechanism in any one of five (5) consecutive casts during the first three (3) days of commissioning shall result in a re-start of the system acceptance scheme. Failure to meet this will trigger a reset of this acceptance scheme and the contractor commissioning costs shall not be billed to the Customer.</li> </ul>	<p>Not acceptable. Delete clause. No acceptance criteria. Delete clause. It is not meaningful to define 25 mm.</p>	<p>This is the acceptance criteria.</p> <p>25 mm is the difference in metal level when the filter is primed, 5 consecutive casts. The filter anticipated should not have a problem with this metric.</p>
120	Annex_3_TD_Technical_specifications ; page 24	<ul style="list-style-type: none"> <li>-Unit shall demonstrate when measured by PoDFA.</li> <li>- Demonstrate 90 % or better inclusion removal, 85 % of the time. On all PoDFA measurements when prepared with the wet method. 90 % or better inclusion removal, on 85 % of the samples taken during steady state casting (150-5000 mm in length) measurements of the incoming and outgoing metal stream.</li> <li>- Demonstrate during steady state casting (150-5000 mm in length) a post filter metal level oscillation not more than 10 mm over a 5-minute period. Incoming metal level variances from the tilting furnace hydraulics removed-filtered.</li> <li>- Demonstrate an average PoDFA post filter during steady state casting (150-5000 mm in length) to the casting center with a PoDFA count of less than 0.003 mm/kg. Titanium Borides excluded. This means that given the data on the table from the various incumbents, we would need to: <ul style="list-style-type: none"> <li>- Use oversized filter tiles which lower the Superficial Velocity to capture a greater percentage of inclusions less than 10 microns.</li> <li>- The partner in this project will present their proposal with a common aim in this endeavor, forward in contrast to a proposal from the rear view. Doing so, releases us from the capabilities of the customary supply, that which has been used in the past to “What we want to deliver in the future”. Because we believe that the ability to deliver a truly amazing</li> </ul> </li> </ul>	<p>As stated: no PoDFA; not acceptable as acceptance criteria clause. Delete!</p> <p>Excluded: [REDACTED] will provide a filter solution for 70 PPI filter; no warranties on inclusion removal. [REDACTED] will not perform ANY PoDFA measurement.</p>	<p>Inclusion removal has to be demonstrated - AIB will provide the PoDFA equipment. As warranty in this case is not accepted, we propose to Contractor involvement in the design and sub-contractor discussion, but equipment has be part of Contractors scope.</p>

		Forging Stock, from a high percentage of recycle material is in-fact out future		
121	Annex_3_TD_Technical_specifications ; page 25	<p>- Once the molten metal enters the casting equipment, the molten immediately flows into each mold position through a "mouse hole" passage. A few seconds after the mold adequately fills all cavities, the starting heads are retracted from their initial position as false bottom of the mold, pulling the embryonic butt from the mold onto the casting conveyor</p>	<p>Statement not clear: "mouse hole" embryonic butt?</p> <p>Suggestion: Delete clause.</p>	<p>The „Mouse hole“ is the molten metal passage, providing a conduit from the Tundish to the mold header.</p> <p>This statement is only a statement of clarity, explaining the process and must not be deleted.</p>
122	Annex_3_TD_Technical_specifications ; page 25	<p>- Casting Machine – The casting machine is a complex mechanism which receives molten metal from the distribution launder, transferring to the casting equipment, thru the thimbles and into the mold cavity where solidification takes place. At the start of the cast, a false bottom-starting head enters the mold cavity and after the initial flush of molten is solidified in the mold, the false bottom is withdrawn horizontally onto the conveyance system which is comprised of a pinch roller which captures the starting head-billet against the conveyor. After a suitable period, the starting heads are separated from the billet and the flying saw separates the butt portion of the cast billet so that the starting head support bar (bait bar) is separated from the conveyance system. Over time, as casting continues, the saw performs a cut to length function when the desired billet length is met.</p>	<p>Wording not clear; please define.</p>	<p>The thimble is the refractory component, which contains the mouse hole. Perhaps you might show (by counter question = new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation) a metal delivery cross section to clarify the terminology.</p>
123	Annex_3_TD_Technical_specifications ; page 25	<p>- Mold Lubrication Distributor – Lubrication delivery to the mold, across the compliment of molds at a given and prescribed flow at pressure is key across the compliment of molds casting for a producer to be successful. Hydraulic line loss, given the increasing line length side to side must be uniform to deliver a uniform oil pressure behind the graphite</p>	<p>Delete clause: specification not meaningful.</p>	<p>This shall not be deleted. Certainly your lubrication system has a valve or metering device to vary the oil pressure, mold to mold. In the event a particular strand is terminated, this valve should be closed in order to not contaminate the oil system and</p>

		ring. The oil must have a provision to terminate oil flow to an inoperable mold position.		upset the flow pressure to the adjacent molds.
124	Annex_3_TD_Technical_specifications ; page 25	The water must also immediately terminate in the event of a bleed out, without requiring a human to approach the mold or the backside of the casting equipment where a bubble may escape back into the molten metal.	Not possible. Manual (human) intervention necessary.	Please explain in the offer safety condition of human in case of necessary stoppage of a strand in case of bleed out.
125	Annex_3_TD_Technical_specifications ; page 26	- Scrap Conveyor – Saw chips must be quickly removed after collection in the lower half of the saw motion is key to maintaining a sharp caroffere tip, and not back dragging the cut, creating an unwarranted vibration in the product which terminates at the mold with a surface defect.	Scrap vacuum system is offered for saw chips; no "scrap conveyor"; text hast to be modified.	Accepted
126	Annex_3_TD_Technical_specifications ; page 26	- Product Withdraw Mechanism – The as cast billet surface contains water and oil which can be slippery and thus the clamping force, if used must assist with a uniform as cast billet removal velocity across the billets being cast.	Delete; not matching offered system.	Specify the system in the technical offer
127	Annex_3_TD_Technical_specifications ; page 26	- Working Platform with Stairs – The operator must be able to traverse, side to side to service the entire breadth of the cast products.	Delete: "to service the entire breadth of the cast products."	The access is needed to all equipment, specify in the offer how the entire breadth of the casted product will be service
128	Annex_3_TD_Technical_specifications ; page 26	- Pneumatic Control and Distribution – dams (automatic controlled with manual override possibility) are pneumatically operated, to ensure operation in the event of a power failure.	For approx. 5 min after power failure to stop casting and train system	Accepted
129	Annex_3_TD_Technical_specifications ; page 26	- Sufficient set of casting equipment for smooth continuous operation has to be secured by the Contractor (base: 1 x in operation = casting, 1 x in preparation for next casting)	Two mould sets for each diameter will be offered; three tundish in total.	Accepted
130	Annex_3_TD_Technical_specifications ; page 26	- Sufficient sets as per diameter for smooth continuous operation has to be secured by the Contractor (= at less as possible time between stop and new start of casting with same diameter).	See comment above. Redundant information.	Accepted
131	Annex_3_TD_Technical_specifications ; page 26	- Consumables for 6 months operations has to be part of base delivery of Contractor.	Product mix has to be defined.	Please define in the offer for production mix: - 2 months 54 mm alloy 6082 - 2 months 64 mm alloy 6082 + 6110 - 2 months 100 mm alloy 6110

132	Annex_3_TD_Technical_specifications ; page 27	- The structure shall be fabricated and assembled in the Contractor's workshop, as so much reasonably practical, using full penetration welds by welders trained and certified by local authority, prior to delivery.	Will not be directly fabricated; also sub-suppliers will be used. Restriction is not meaningful.	Accepted
133	Annex_3_TD_Technical_specifications ; page 27	- After welding, the fabricated assembly shall be stress relieved.	Delete clause.	Tension shall be removed from the weldings. Calculate with it in the offer.
134	Annex_3_TD_Technical_specifications ; page 27	- The molten metal spill sections shall be fabricated from structural steel grade S235J2 or equivalent.	Splash guards are out of stainless steel 1.4301 or coated with carbonline.	Accepted
135	Annex_3_TD_Technical_specifications ; page 27	- He structure shall be adequately reinforced against buckling using heavy-duty channel sections.	Text is not understandable. Explain.	The structure must be rigid enough by using reinforced parts to avoid damaging by for example hitting
136	Annex_3_TD_Technical_specifications ; page 27	- All steel components, in the molten splash area shall be painted with an approved explosion protection paint.	Accepted; but see text above.	Accepted
137	Annex_3_TD_Technical_specifications ; page 27	- All oil delivery lines shall be stainless, without any copper ferrule or fittings.	Not possible for our system	Not clear where is the issue. Stainless steel piping is mandatory for whole equipment. The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided. Please explain by counter question (= new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation).
138	Annex_3_TD_Technical_specifications ; page 27	- Water delivery lines to the mold shall have remote normally closed valves in the event of a power outage.	Delete clause; not meaningful.	Please describe power outage situation in the offer
139	Annex_3_TD_Technical_specifications ; page 27	- All utilities serving the machine shall have lockable shutoff valves upstream of all operating valves and/or components to provide "zero energy state" immediately downstream.	Question: A valve in meaning of LOTO?	At TOP to each utility connected to the casting equipment has to be lockable shutoff valve – Mandory.
140	Annex_3_TD_Technical_specifications ; page 27	- All machine assemblies shall be pre-piped to the machine boundary with single point connections.	What does this means?	We expect you to pre-pipe all pipes and fittings as much as possible in your workshop.

141	Annex_3_TD_Technical_specifications ; page 27	Drawings shall also indicate tie-in points for interconnecting piping between Contractor provided components.	Delete clause: ■ will specify all TOP to customer in detail.	Please forward TOP definitions.
142	Annex_3_TD_Technical_specifications ; page 27	- Absolutely no hydraulic or electrical lines may be located below metal level in the proximity of the launder, casting equipment or mold.	Proposal: electrical lines will be covered and protected directly under launder; so these are secured.	Not accepted – electrical and hydraulic lines shall not be located below metal level in the proximity of the launder
143	Annex_3_TD_Technical_specifications ; page 27	and return to home position considering 5 m/min. casting speed.	Delete clause; timing in responsibility of ■; no interference for scrapping to process chain.	Accepted
144	Annex_3_TD_Technical_specifications ; page 28	- Mold body - Fasteners w/ spares - Ceramic ring w/ spares - Ceramic clamp ring w/ spares - Graphite w/ spares - Refractory release agent	■ system is offered; not matching	List has to be understood as indicative. Final arrangement as per Contractors equipment design.
145	Annex_3_TD_Technical_specifications ; page 28	- Molds shall be manufactured from suitable 6082 or other 6xxx alloys.	This is ■ system definition (secret)	Equipment has to be designed for group of alloys as stated in the specification.
146	Annex_3_TD_Technical_specifications ; page 28	- Water and oil passage ways shall be free of burrs.	Not possible; ■ system is different; delete clause	Accepted
147	Annex_3_TD_Technical_specifications ; page 28	- Mold-graphic casting surface shall have a suitable taper and be polished in the direction of the cast. - Molds	Not meaningful; ■ system is different; delete clause	Description has to be understood as indicative. Final arrangement as per Contractors equipment design.
148	Annex_3_TD_Technical_specifications ; page 28	- Water holes shall be deburred at the exit of the hole to minimize any exit effects.	Not possible; delete clause	Description has to be understood as indicative. Final arrangement as per Contractors equipment design.
149	Annex_3_TD_Technical_specifications ; page 28	- Weep Holes shall be provided in the casting equipment shell and bottom to allow water vapor from the refractory to escape during casting equipment dry out. Weep Holes need to be threaded for M12 bolts. The Weep Holes should not be more than 1 m apart. After dryout the weep holes shall be plugged and welded closed. - Contractor is to minimize the use of silica fiber materials, (Blanket or Paper) in the metal distribution system.	Delete clause; ■ system is different: Cross section of insulation allows vapor to escape without any issue to the top.	Description has to be understood as indicative. Final arrangement as per Contractors equipment design.

150	Annex_3_TD_Technical_specifications ; page 28	<ul style="list-style-type: none"> <li>- Support plate shall be annealed after rough cut, prior to machining.</li> <li>- Support plate shall be machined/surface ground flat and parallel within 50 microns.</li> </ul>	<p>█ does not accept this clause.</p>	<p>The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided. Please specify your proposal by the counter question (= new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation).</p>
151	Annex_3_TD_Technical_specifications ; page 28	<ul style="list-style-type: none"> <li>- The starting bar, with heads attached must be able to locate the starting head in the mold cavity +/- 2mm.</li> <li>- The starting head to mold gap must be small enough to ensure no splash back or water entering the cavity, during mold fill.</li> <li>- It is preferred that the outer periphery of the starting head, or the portion which engages in the mold incorporates a high temperature O Ring.</li> </ul>	<p>█ system is different.</p>	<p>Description has to be understood as indicative. Final arrangement as per Contractors equipment design.</p>
152	Annex_3_TD_Technical_specifications ; page 29	<ul style="list-style-type: none"> <li>- Water Tank Shall have a capacity required for at least 7 days of casting.</li> <li>- Minimum Water Flow requirement at casting pit = 1000 L/min.</li> <li>- Maximum Water Flow requirement at casting pit = 1500 L/min.</li> <li>(* calculation based on water temperature of 35 °C)</li> </ul>	<p>This would be for the 125 mm diameter approx. 13.000 m3; water basin is not in our scope</p> <p>Minimum flow does not match to █ system;</p> <p>Comment: Regulation is responsibility of █; Customer has to provide TOP according specification XXX; approx. 20 to 100 m3/h; regulation +/- 10 % accuracy</p>	<p>Please define in the offer standard water and casting pit requirements.</p>
153	Annex_3_TD_Technical_specifications ; page 29	<ul style="list-style-type: none"> <li>- Hot Wells / Cold Wells / Cooling Towers.</li> <li>- Strainers required for the removal of large debris.</li> <li>- Both Hot Wells and Cold Wells are to be covered with plate or some other material that is not transparent to prevent contamination from entering the water system.</li> </ul>	<p>Not in █ scope.</p>	<p>Accepted</p>

154	Annex_3_TD_Technical_specifications ; page 29	- Contractor to provide typical process water speed, casting speed and water temperature increase so a cooling tower can be specified by Customer.	Casting parameters according to recipe; Design quantities are know - 3-5 t/h casting; rest is physic.	Point misunderstood Customer has to specify requirements for designing cooling tower
155	Annex_3_TD_Technical_specifications ; page 30	- Emergency Water System shall have a normally closed valve which is power open which automatically shuts off when power is interrupted a 65 % of the steady state flow.	Formulation wrong: During casting valve is closed; if a power loss happens, the valve opens.	Point misunderstood In emergency state the flowrate should be ensured on a stable condition
156	Annex_3_TD_Technical_specifications ; page 30	<ul style="list-style-type: none"> <li>• Make-Up Water Supply</li> <li>- The recommended water Chemistry for the make-up water supply is: <ul style="list-style-type: none"> <li>- Calcium (as CaCO3) = 45 ppm</li> <li>- Alkalinity = 40 ppm</li> <li>- Sulfate &lt; 10 ppm</li> <li>- Chloride &lt; 10 ppm</li> <li>- Conductivity &lt;2 00 mmhos</li> <li>- pH = 8.0 – 8.5</li> </ul> </li> </ul>	No water treatment offered; customer supply	Accepted
157	Annex_3_TD_Technical_specifications ; page 30-31	<ul style="list-style-type: none"> <li>• Filtration <ul style="list-style-type: none"> <li>- Automatic self-cleaning Water strainer.</li> <li>- Cooling water supply filter.</li> <li>- Backwash valve with actuator.</li> <li>- Differential pressure transmitter (4-20 mA signal to PLC).</li> <li>- Pressure gauges.</li> <li>- PLC controlled and monitored.</li> </ul> </li> <li>• Chemical Treatment <ul style="list-style-type: none"> <li>- The chemical treatment program shall consist of a scale inhibitor, a corrosion inhibitor, a polymeric dispersant, and bromine for microbiological control.</li> <li>- The system shall only use non-oxidizing biocides in case of emergency. Non-oxidizing biocides negatively impact quenchibility.</li> <li>- Customer will use their water treatment facility to manage their water treatment needs.</li> <li>- pH to be controlled utilizing a sulfuric acid feed system.</li> </ul> </li> <li>• Water Quality Monitoring System <ul style="list-style-type: none"> <li>- System shall include:</li> </ul> </li> </ul>	Not included in [REDACTED] scope.	Accepted



		<ul style="list-style-type: none"> <li>- Calcium and alkalinity analyzers</li> <li>- pH monitors and control.</li> <li>- System shall automatically measure <ul style="list-style-type: none"> <li>- pH</li> <li>- Conductivity</li> <li>- Corrosion Rate</li> <li>- Turbidity</li> <li>- Strainer Backwash</li> <li>- Blowdown Volume</li> <li>- CT Makeup Volume</li> </ul> </li> <li>- All signals to be linked with caster system so alarming is activated when water quality is lost. Add contractor to supply orifice plates for emergency water flow setting.</li> </ul>		
158	Annex_3_TD_Technical_specifications ; page 31	<ul style="list-style-type: none"> <li>• Water Control Systems</li> </ul>	<p>████ will offered matching system: details up to █████; not relevant for contract. Suggestion: delete details</p>	The general points as per the Customers requirements
159	Annex_3_TD_Technical_specifications ; page 31	- Each system must provide casting water to a billet casting station consisting of following different strands and diameter combinations for a machine casting xx billets 40 - 125 mm in diameter.	50 to 130 mm	Accepted 48 – 130 mm As already mentioned as point 36 of this document
160	Annex_3_TD_Technical_specifications ; page 31	- The system must maintain start water flow and run water flow within $\pm 5\%$ of the set point.	+/- 3 m3/h possible in steady state;	Regulation accuracy must be relative ( $\pm\%$ ) not absolute. Absolute value is not accepted by AIB as very much depending on the range.
161	Annex_3_TD_Technical_specifications ; page 31	- Failsafe design	Please specify.	As per industrial safety standards
162	Annex_3_TD_Technical_specifications ; page 32	- Briquetting processing line for chips (from peeling, sawing etc.) to ensure full recycling of waste material during cutting, peeling and any other kind of material usable for back charging into the melting furnace.	Chip treatment can be offered; should be an extra point in contract; not part of peeling machine	As per specification chapter 2.2.11 of Annex_3_TD
163	Annex_3_TD_Technical_specifications ; page 32	The additional saw is not scope of Contractor supply.	Space and other TOP information have to be provided; if these are not available, it is not possible to consider details.	Engineering has to be include in general scope of supply, but additional saw is not part of this supply

164	Annex_3_TD_Technical_specifications ; page 33	In case of stoppage of the peeling machine during ongoing casting operation a by-pass of the peeling machine must be considered.	Possible as extra; shall it be considered? Is space available?	Kindly explain in the offer situation – handling of billets during ongoing casting in case of peeling machine failure
165	Annex_3_TD_Technical_specifications ; page 33	Possibility of re-charge respective billets in suitable moment (casting stoppage etc.) must be ensured to process these billets accordingly.	Just possible for same quantities of billets. Max bundle weight 2500 kg	Accepted
166	Annex_3_TD_Technical_specifications ; page 33	In case of stoppage of the testing equipment during ongoing casting operation a by-pass must be considered. Possibility of re-charge respective billets in suitable moment (casting stoppage etc.) must be ensured to process these billets accordingly.	As stated possible for extra charge; is the space available?	Kindly explain in the offer situation – handling of billets during ongoing casting in case of testing equipment failure
167	Annex_3_TD_Technical_specifications ; page 33	- The testing equipment must check the internal defects by means of ultrasonic testing (UST). Each billet must be tested at UT comply with ASTM 2375-08, Acceptance Class AA, pulse echo method, vertical/radial acoustic radiation, phased array technology, surface quality. – parameter as specified in Annex 3_1_TS_Guaranteed_parameters_of_billets	<p><b>Test task</b> Ultrasonic Phased Array testing for inspection for internal defects (defects open to surface cannot reliably detected)</p> <p><b>Sensitivity</b> FBH 2,0 mm with static calibration Min. FBH 1,2 mm under static conditions These test sensitivities are typical values which can be achieved for a sufficient signal-to-noise ratio (&gt; 10 dB). The material properties (as acoustic properties, grain size, and surface condition) may have an impact on the final sensitivity. Additionally, the bar straightness and the guiding accuracy of the linear bar transport are important factors.</p> <p><b>Dynamic testing</b> Based on ASTM B594 class A (table 1) for single discontinuities (dynamic test performance to be validated with reference bars with axially drilled holes).</p> <p><b>Dead zones</b> 2,0 mm in volume</p> <p><b>Untested ends</b> <math>\varnothing</math> 40–84: <math>\leq</math> 20 mm <math>\varnothing</math> 84–130: <math>\leq</math> 30 mm</p> <p>This specification is based on well known US suppliers.</p>	According to Annex_3_1_TD Class A is acceptable

168	Annex_3_TD_Technical_specifications ; page 33	- Briquetting line for chips from peeling machine is fed into a shredder following directing charing into a centrifuge. Further mixing chips from flying saw or other processes collecting into a filter (oil separation) with connected hopper to final briquetting (press) machine. Size of capacity need to fit with operation parameter of the casting line.	See note; should be an extra point	Part of supply of the Contractor
169	Annex_3_TD_Technical_specifications ; page 33	- Automatic grease lubrication	Just for greasing points with lunbrication interval < 3 months	Accepted
170	Annex_3_TD_Technical_specifications ; page 33	- Change of cutting tool and insert position during running operation has to be demonstrated without impacting running casting operation. Acceptable value is less than 4,5 minutes.d	Generally below 10 min; Caroffere tip change is without impact on casting process, if second tool holder is bought.	Accepted, Contactor has to ensure no impact on production flow
171	Annex_3_TD_Technical_specifications ; page 34	Individual layers of billets must be separated with cardboard separators.	Without carboard. Cardboards need to be placed manually by operator	Not accepted, cardboards are mandatory, but could be placed by an operator
172	Annex_3_TD_Technical_specifications ; page 34	The front side of the billet package must be fitted with a label.	Is it possible tp place the label on the left and right side of the bundle, we would suggest to fix it with the strap, like a pendant	Each package has to be labeled on both foreheads – two labels for each package
173	Annex_3_TD_Technical_specifications ; page 34	. The finished billet packages will be transferred by an overhead crane or a forklift truck.	By customer	Accepted
174	Annex_3_TD_Technical_specifications ; page 34	Laths (wood boards), cardboard separators	No cardboard If placed by operator OK for us!	cardboards are mandatory, but could be placed by an operator
175	Annex_3_TD_Technical_specifications ; page 34-35	2.2.13 Furnace integration • Intent - The Contractor will be responsible for the integration of tilting furnace(s). The furnaces will be fitted with a PN/PN coupler for communication on the operation, process and safety level. The communication between the casting line and the furnace will take place via the Profinet line. - The Contractor of the casting line is responsible for defining of parameters which are needed for smooth operation of whole casting process such as: Flow rate of the melt, temperature of the melt, melt level in launders... • Guaranteed parameters	Not ■ scope; refer to furnace supplier.	See point 5 of this document Guaranteed parameters means parameters which will Customer guarantee to the Contractor (as inlet parameters)

		<ul style="list-style-type: none"> <li>- Melt from the furnace(s) with a specified chemical composition (see Annex 3_1_Guaranteed_parameters_of_billets)</li> <li>- Melt level in the launders will be maintained by means of furnace tilting within the range of <math>\pm 5</math> mm. The melt level in the launders will be monitored by the Contractor of the casting line.</li> <li>- Melt flow rate at the furnace output 3-5 t/h</li> <li>- Hydrogen content in the melt max. 0,50 cm<sup>3</sup>/100g</li> <li>- PoDFA 0,45 mm<sup>2</sup>/kg</li> </ul>		
176	Annex_3_TD_Technical_specifications ; page 36	- Any kind of special test or inspection equipment required to ensure full tested and prepared equipment for operation has to be in scope of Contractor.	Delete; redundancy.	Accepted
177	Annex_3_TD_Technical_specifications ; page 36	- Flying Saw Chip Exhaust System – Chip briquetting will be needed given the chip generation rates with this machine. Any reduction in saw blade tooth face will reduce material loss.	Add extra point chips treatment.	Chip / briquetting equipment has to be understood as base Contractor scope.
178	Annex_3_TD_Technical_specifications ; page 36	<ul style="list-style-type: none"> <li>• Stands</li> <li>- Contractor shall provide basic engineering and where is required detail engineering drawings for any kind of equipment (for example degasser or mold or casting equipment, etc.), which enables Customer local purchase and manufacturing.</li> </ul>	Be consistent.	Accepted
179	Annex_3_TD_Technical_specifications ; page 36	• The Contractor shall provide all revised or new drawings and documentation required for installation and maintaining the equipment <b>in editable format.</b>	Not acceptable.	Editable form is mandatory
180	Annex_3_TD_Technical_specifications ; page 36	• Risk analysis,	It is not in scope.	Risk analysis of Contractors scope base –This is base in EU.
181	Annex_3_TD_Technical_specifications ; page 36	• Technical protocol (specifying name of equipment, type of equipment, serial nr., weight, main dimensions),	Not available. █ should be no problem ?	Mandatory
182	Annex_3_TD_Technical_specifications ; page 36	• List of spare parts for mechanics, hydraulics, pneumatics and electrical systems <b>with a catalogue</b> nr., for min 2 years,	Without catalogue I think they mean part number or part list number	Yes, it means part number

183	Annex_3_TD_Technical_specifications ; page 37	<ul style="list-style-type: none"> <li>For Automation, the Contractor shall provide PLC Configuration, Hardware and Software Specifications, and technical &amp; schematic wiring diagram. (including existing panel) PLC control software in editable and open form</li> </ul>	Safety program is password locked, for handover of the password the customer takes the full risk when changing something in the safety program	Accepted
184	Annex_3_TD_Technical_specifications ; page 37	<ul style="list-style-type: none"> <li>The Contractor shall provide the "As Built / As Commissioned" editable, electronic drawings and documentation, with one hard copy, no later than 3 weeks after completion of the project. The Contractor shall provide detailed fabrication drawings of all non-commercial parts utilized in the fabrication and installation of equipment within the Contractor's scope of supply. All standard commercial parts are to be specified on respective assembly drawings, and in O &amp; M manuals in sufficient detail to permit direct purchase from third party contractors.</li> </ul>	<p>Topic was covered above. Should only be covered once. Hard copies are not practicable anymore; not all information will be provided editable,...</p> <p>We will supply, Assembly group drawings with part lists and drawings for wear parts which have contact to the material.</p>	Even if not practical anymore, but 3 sets of Hardcopy has to be provided: 1 set of operation team 1 set for maintenance team 1 set for project team
185	Annex_3_TD_Technical_specifications ; page 37	<ul style="list-style-type: none"> <li>Any components currently covered by patents must be identified and appropriate patent # must be listed.</li> </ul>	Not possible.	Kindly identify every consumable and spare part which is covered by patent with patent number
186	Annex_3_TD_Technical_specifications ; page 38	<ul style="list-style-type: none"> <li>Noise - sources, amount of emissions (technical data), proposal of a possible method of limitation</li> </ul>	Regarding noise emission see statement in the before sections.	<p>Permanent noise must be under 82 dB, short peaks over the 82 dB are accepted</p> <p>Please define peak level and time of peaks.</p> <p>This is not a point of negotiation yet, this is a list of the items which you must include in your offer. Your offer, may contain a layout of your intended supply with the acoustic pressure levels at the typically high points so we may discuss the mitigation which we must provide on our side, including the costs for said mitigation.</p>
187	Annex_3_TD_Technical_specifications ; page 39	2.3.5 Documents for installation of the Equipment	Was already covered. See above.	Accepted

		<ul style="list-style-type: none"> <li>• engineering and design documentation containing the Detail Design documentation elaborated in details necessary for performance of the subject matter of the Contract;</li> <li>• all documentation needed for proper construction, installation, erection, commissioning, operation, maintenance and repairs of the Equipment;</li> <li>• detailed assembly, installation, erection, commissioning, operation and maintenance manuals for each appropriate unit of the Equipment; and</li> <li>• implementation documentation to the extent necessary for the needs of the tender procedure under the Subsidy Program (including measuring technology, preparations for assembly, requirements for measurement accuracy, etc.) and assembly</li> </ul>		
188	Annex_3_TD_Technical_specifications ; page 39	<p>2.3.6 Final Documentation</p> <ul style="list-style-type: none"> <li>• mechanical drawing documents for parts, sub-assemblies and assemblies, in PDF and DWG format,</li> <li>• electronic drawing documents in E-Plan format, version 2.9 or later and in PDF format</li> <li>• pneumatic line diagram in PDF and DWG format,</li> <li>• hydraulic line diagram in PDF and DWG format</li> <li>• operation and maintenance manual, hard copy (3x) and digital form, in Czech and English,</li> <li>• BOM for spare parts in PDF and XLS format (indicating the type identification, ordering number, manufacturer, standard, dimension, lead time, etc.),</li> <li>• BOM for wear parts in PDF and XLS format (indicating the name, ordering number, manufacturer, standard, dimension, lead time, etc.),</li> <li>• maintenance, inspection and revision plan in Czech – based on the government resolution No. 378/2001 Coll. Section 2</li> <li>• calibration sheets and recommended calibration intervals</li> <li>• leak test reports for compressed air, gas and industrial water</li> <li>• safety circuit function verification report</li> </ul>	Only information according statement above, not editable, PDF. Details have to be agreed.	DWG is mandatory.

		<ul style="list-style-type: none"> <li>• electrical equipment verification test report pursuant to Czech national standard ČSN EN 60204-1 ED.3 (initial inspection of electrical parts)</li> <li>• certificates, CE declaration of conformity</li> <li>• risk analysis according to ČSN EN ISO 12100</li> <li>• data sheets and certificates for the materials used</li> <li>• installation logbook</li> <li>• SW backup (source codes must be supplied for the PLC control system, visualisation e.g. WinCC, control of frequency converters, hydraulics, etc.), source codes must be in English</li> <li>• other documents necessary for the operation of the line</li> <li>• list of necessary workshop equipment for mold preparation and cleaning</li> </ul>		
189	Annex_3_TD_Technical_specifications ; page 40	<ul style="list-style-type: none"> <li>• preliminary operation and maintenance manual, <b>hard copy (3x)</b> and digital form, in Czech – due date before the operation and maintenance operator training</li> </ul>	No hardcopy. Online documentation, or on USB stick	3 x hardcopy is min. mandatory
190	Annex_3_TD_Technical_specifications ; page 41	<ul style="list-style-type: none"> <li>• All hydraulic tanks shall be of stainless steel. Pump-tank level interlocks shall have safety switches and analog for measuring/monitoring temperature shall be provided.</li> <li>• Necessary test kit for proportional and servo valves will be provided as per the relevant system.</li> </ul>	Our standard is steel base. Steel tank with drain pan according to WHG	Stainless has to be considered.
191	Annex_3_TD_Technical_specifications ; page 41	<ul style="list-style-type: none"> <li>• For each type of pump (circulation, feeding, pressure pump) one hot stand by pump has to be considered.</li> </ul>	Possible but extra costs	Accepted, kindly calculate with it in the offer
192	Annex_3_TD_Technical_specifications ; page 42	<ul style="list-style-type: none"> <li>• All hydraulic cylinders need to be equipped with 2 pressure transducer measurements for measuring A and B side of respective cylinder. Analog type with 4-20 mA signal to automation system with local display.</li> </ul>	If it makes sense	Full diagnostic via control system need to be ensured.
193	Annex_3_TD_Technical_specifications ; page 42	<ul style="list-style-type: none"> <li>• All hydraulic valve &amp; cylinder ports to be BSPP standard</li> </ul>	Non conformity with above statements; however is acceptable.	Please follow this point
194	Annex_3_TD_Technical_specifications ; page 43	<ul style="list-style-type: none"> <li>• On valves stands, tables function block diagram has to be mounted by using stainless steel plate - engraved.</li> </ul>	Stainless steel is not our standard.	Stainless steel to ensure long readability (no corrosion).

195	Annex_3_TD_Technical_specifications ; page 43	<ul style="list-style-type: none"> <li>At all components (pumps, valves, instruments etc.) stainless steel plate (engraved) has to be mounted displaying reference code on respective installed steel frames, table, stands etc.</li> </ul>	Stainless steel is not our standard.	Stainless steel to ensure long readability (no corrosion).
196	Annex_3_TD_Technical_specifications ; page 46	Power for all Level 1 and Level 2 automation equipment, process AC drives and all communication/electronic/microprocessor equipment and field devices (instruments, sensors, etc.) for whole Contractor and its Sub-Contractor scope (= it is not allowed to install several UPS as per Contractors scope split) shall be provided from an uninterruptible power supply (UPS) system with a minimum 30 minute battery backup provided by the Contractor.	Not ■ standard: can be included; will lead to price increase.	The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided. Kindly explain by counter question (= new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation) the situation during blackout without UPS.
197	Annex_3_TD_Technical_specifications ; page 46	<ul style="list-style-type: none"> <li>Sufficient space around each machine</li> </ul>	... As far as possible	Space need to ensure operation and maintenance access.
198	Annex_3_TD_Technical_specifications ; page 46	UPS	Not in scope	UPS has to ensure that control system (PLC/HMI) is still under power with powered with field devices for monitoring. To avoid misunderstanding UPS shall not power 400 VAC for motor, pumps...
199	Annex_3_TD_Technical_specifications ; page 46	<ul style="list-style-type: none"> <li>As mentioned earlier, one central control room for centralized operation is envisaged in the shop control room building.</li> </ul>	Do you need one central control room? Currently it is not planned to included it in the scope. Is enough space available?	Contractor is providing an engineering for the Operator cabin (central control room) – AIB is supplying/installing. HMI at operator cabin is in Contractors scope.
200	Annex_3_TD_Technical_specifications ; page 46	During engineering Risk assessment study shall be elaborated according to requirements of norm ČSN EN ISO 12100.	OEN Standard is EN ISO 12100	The same standard



201	Annex_3_TD_Technical_specifications ; page 46	Study shall define requirements to 'Safety Integrity Level' (ČSN EN ISO 13849-1)	OEN Standard will be EN ISO 13849-1	The same standard
202	Annex_3_TD_Technical_specifications ; page 46	and 'Performance Levels' (ČSN EN 62061).	OEN Standard will be EN 62061	The same standard
203	Annex_3_TD_Technical_specifications ; page 47	a) Medium voltage electrical cabinets are within the scope of the Customer. Monitoring and remote control of this electrical cabinet to the indoor substation will be the responsibility of the Customer. b) The Contractor will only be responsible for monitoring (status of disconnecter, circuit breaker, consumption, etc.) of this electrical cabinet for local maintenance purposes. The Customer shall provide the Contractor with the bus interface. Monitoring will be designed using a simple schematic in a level 1 system accessible on the control panel (HMI)	Questions for AI Invest: Is it understood correctly? We should read and display the status of the medium voltage. Control of this is not.	This is just general specification, medium voltage is not part of your scope Please see chapter 2.5.1 – definition TOP
204	Annex_3_TD_Technical_specifications ; page 47	• Medium/low voltage transformers (or, potentially, another transformer)	why to supply a medium/low voltage transformer, when all electrical TOPs are low voltage supplies?	Please see chapter 2.5.1 – definition of TOP
205	Annex_3_TD_Technical_specifications ; page 47	b) Each transformer MV/0,42kV or shall be connected to the independent power distribution switchboards. c) For back up purpose will be incoming section of power distribution switchboards interlocked with another power distribution switchboard (with automatic coupling section). The switchboard shall be provided with automatic incoming feeder transfer in case of breakout of main feeder from transformer.	Clarification needed: various TOP for 400 VAC are defined; why is there transformer medium-voltage needed?	Please see chapter 2.5.1 – definition of TOP
206	Annex_3_TD_Technical_specifications ; page 48	j) All feeders will be equipped with a pull-out circuit breaker and motor charging and will also have remote control (PLC) capability from a Level 1 HMI.	No such feeder required. Not in scope.	Accepted
207	Annex_3_TD_Technical_specifications ; page 48	o) All feeders shall ensure safety and galvanic outage with possibilities lock in outage status for example by fuse disconnecter or lock on circuit breaker. Equipment has to meet safety norm of Customer.	Please clarify: Not understood. Galvanic isolation should be deleted here. Disconnectors yes, but galvanically isolating the power transmission here makes no sense.	Galvanic isolation only for 400 VAC feeders. For rest of low voltage feeders not applicable.

208	Annex_3_TD_Technical_specifications ; page 48	a) The asynchronous motor with cage shall be designed, manufactured and tested according to IEC 60034.	Test executed according internal standard and not according to IEC 60034	It should be in accordance with IEC 60034
209	Annex_3_TD_Technical_specifications ; page 48	The motors shall be continuous duty, totally enclosed, fan cooled (TEFC), IP54 rated (IP55 for a pump motor), Class F insulated with temperature rise limited to Class B at 100% load.	We have to verify, if it is possible.	Verify
210	Annex_3_TD_Technical_specifications ; page 48	e) Built-in Pt100 temperature sensors	Also other types are used. Motors will be temperature controlled.	Motors should be temperature controlled by Pt100, please use this type
211	Annex_3_TD_Technical_specifications ; page 49	This also applies to all fan IDs (primary/secondary) regardless of voltage level.	Clarify meaning of fan ID.	Not applicable
212	Annex_3_TD_Technical_specifications ; page 49	b) The short circuit current level is 50 kA for 1 second.	If possible.	Mandatory
213	Annex_3_TD_Technical_specifications ; page 49	f) All feeders shall provide safety and galvanic failure	See above; what is a galvanic failure?	Wording not correct: Galvanic disconnection has to be ensured at each 400 VAC feeder (as already stated at item 228).
214	Annex_3_TD_Technical_specifications ; page 49	h) A device measuring voltage, current, power consumption etc. shall be installed on the input part - connected via a bus system to the PLC and indicated on the HMI level 1.	Not ■■■ standard; is not included	Mandatory
215	Annex_3_TD_Technical_specifications ; page 49	i) All feeders will be equipped with a pull-out circuit breaker and motor charging and will also have remote control (PLC) capability from a Level 1 HMI.	Not ■■■ standard; is not included	The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided. Please specify your standard by counter question (= new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation).
216	Annex_3_TD_Technical_specifications ; page 49	j) Motor output feeders of 15 kW and above must have an ammeter.	Not ■■■ standard; is not included	Mandatory
217	Annex_3_TD_Technical_specifications ; page 50	n) The Contractor must bear in mind that it is not possible to connect several auxiliary contacts for power supplies,	Clarification: Each auxiliary contact must be connected individually? More input modules	Max. fast diagnostic via control system (PLC/HMI) has to be ensured.

		contactors and similar items in series to the respective PLC/Remote IO digital inputs. Each auxiliary contact must have a separate PLC/Remote IO digital input.	are required for the PLC. Will lead to price increase.	Serial connection of aux. contacts give only a general information about a „failure of a power supply“ – Separate connection detailed defined message ensuring fast diagnostic and respective reaction.
218	Annex_3_TD_Technical_specifications ; page 50	c) If necessary, the active front end must be mains regenerative (no braking resistance).	If this option is needed, it will increase the price.	General statement: Should be analyzed by Contractor, where it makes sense and a benefit is visible. Else not required.
219	Annex_3_TD_Technical_specifications ; page 50	a) The main control console in the control room must accommodate HMI terminals. The control console to be equipped with all necessary control switches, buttons, signal lamps, joysticks, etc. As required for control of the entire line, it must be of the fully enclosed floor mounted type, dust and pest proof, with vertical sides and sloped tops	If this option is needed, it will increase the price. Same for us	Operator cabin (AIB scope as per Contractors basic engineering). HMI at operator cabin with required push button(s), emergency stop(s) as per Contractors requirement within Contractors scope.
220	Annex_3_TD_Technical_specifications ; page 50	The top of the control console shall be stainless steel plate.	Stainless steel lead to price increase.	Stainless.
221	Annex_3_TD_Technical_specifications ; page 50	e) For all drives, a local control/pushbutton station (LPBS) shall be provided and shall be located in the vicinity of the relevant equipment .	Especially for servo drives not possible. Quite often not necessary and not our standard. Therefore in common excluded.	Local operation for maintenance / test purpose as to be considered where applicable.
222	Annex_3_TD_Technical_specifications ; page 50	LPBSs for non-reversible drives that are controlled via a Level 1 automation system shall be equipped with 'Start', 'Stop' and 'Emergency Stop' buttons	Emergency stop button in senseful.	Agreed.
223	Annex_3_TD_Technical_specifications ; page 51	The enclosure for the local control pulpits must be stainless steel	If stainless is needed, this would increase the price.	Stainless.
224	Annex_3_TD_Technical_specifications ; page 51	The top of the control console shall also be made of stainless steel.	If stainless is needed, this would increase the price.	Stainless.
225	Annex_3_TD_Technical_specifications ; page 51	<ul style="list-style-type: none"> <li>Uninterruptable power supply (UPS)</li> </ul>	Typically not foreseen, has a high price impact. Price is not available on short notice.	At minimum operating system, input/output cards, invertors must be running during blackout, technology should not be powered by UPS

226	Annex_3_TD_Technical_specifications ; page 52	Cable sizes shall be designed and standardized during the design phase, taking into account the following properties :	This restriction can cause extra costs	Not clear what is meant with „restriction“. As mentioned „Cable sizes shall be designed and standardized <b>during the design phase</b> “
227	Annex_3_TD_Technical_specifications ; page 52	d) When there are three or four cores in a cable, one core must be spare and when more than four cores are used, there must be 20 % of spare cores.	Does not make sense in such common way. For data cable yes, but not for signal cables to sensors, motors and so on. Is not state of the art.	Not applicable for: - 400 / 230 VAC cables - Signal cables with short distance (up to 5 m) between local junction box and final position = easy exchange in case of a single wire breakage. Applicable: - for signal cables with length over 5 m or where fast exchange is not possible.
228	Annex_3_TD_Technical_specifications ; page 53	f) The hot zone (for example around furnace(s), launders, casting area) must have heat resistant power	The cables can stand the heat and will be protected additionally with flame retardant hoses. There will be not used special heat resistant cables.	Usually in hot area Si type cables are used. Final design as per Contractors engineering, but during commissioning conditions will be measured by AIB via thermo-camera. In case type of cable not suitable, Contractor has to exchange on their costs.
229	Annex_3_TD_Technical_specifications ; page 53	j) All bus and network cables are to be measured and an inspection protocol is to be provided.	Is not our standard, can be done, leads to a price increase.	During site installation work cables will be measured to ensure isolation status – this is normal international practise.
230	Annex_3_TD_Technical_specifications ; page 53	m) Low level signal instrumentation wiring shall be Teflon insulated (150 °C to 200°C).	Not our standard. If it is required due the location, it will be a wiring fitting to this situation.	Final design as per Contractors engineering, but during commissioning conditions will be measured by AIB via thermo-camera. In case type of cable not suitable, Contractor has to exchange on their costs.

231	Annex_3_TD_Technical_specifications ; page 53	n) Thermocouple extension wire shall be type PLTC, PVC / PVC with overall shield, type KX.	At the moment refused due to not knowing exactly this type.	Kindly use this type where it is possible
232	Annex_3_TD_Technical_specifications ; page 53	o) Thermocouple extension wire for high temperature areas shall be type FEP / TEP insulated cable.	At the moment refused due to not knowing exactly this type.	Kindly use this type where it is possible
233	Annex_3_TD_Technical_specifications ; page 53	q) All communication or networking cable, if utilized near or around high temperatures shall be plenum rated.	Please clarify: what is a plenum cable?	Definition can be googled on Internet. To make simple: Type of network cable at hot area need to fit accordingly.
234	Annex_3_TD_Technical_specifications ; page 54	<p>Protection against lightning (section for BD purpose) Lightning protection must be provided wherever necessary. The separate grounding system for lightning protection shall be complete with grounding electrodes, grounding conductors and accessories as required by the standard.</p> <p>Illumination system (section for BD purpose) Illumination system shall be in SELLER scope for all building which in scope of turnkey. It means especially: - Indoor lighting - Outdoor lighting - Emergency lighting Number of lamp and intensity of lighting shall be according norm for concrete space. LED type of lamp will be preferably used.</p> <p>Maintenance socket distribution (section for BD purpose) For new buildings and equipment will be installed socket box 400 VAC with one socket 63 A, one socket 32 A and four socket 16 A. Number of sockets will such that it can be without problem make maintenance and repair of all installed equipment, piping, building, infrastructure etc.</p> <p>Fire signalization (section for BD purpose) To the new building with dispatch center will be installed new central exchange. Number and location of fire signalization sensors will be implemented according norm and fire brigade.</p>	Not included in the scope of delivery.	Maybe not clear understood: Basic data grounding, lighting, HVAC, maintenance sockets, etc for Contractor's equipment scope has to be provided by Contractor (how else?) to AIB as base for design of the building etc. Scope is within AIB.

		<p>Telecommunication and data distribution (section for BD purpose) For new buildings and equipment will be installed new IP telecommunications and data distribution systems, especially to the pulpits, dispatch centers, maintenance rooms, operation rooms, electric rooms, social building, and offices.</p> <p>Intercommunication System (section for BD purpose) An intercommunication system will be provided for the whole plant with a sufficient number of communication units in the production areas, electric rooms, hydraulic stations, civil rooms/buildings, at each gate, at local control boxes etc.</p>		
235	Annex_3_TD_Technical_specifications ; page 55	Door lock type for "2bit 5 mm key "	This type is selected by ■■■.	Accepted.
236	Annex_3_TD_Technical_specifications ; page 56	Door lock type for "8 mm triangle key" - Select which one	Not selected.	Accepted.
237	Annex_3_TD_Technical_specifications ; page 56	<ul style="list-style-type: none"> <li>The design of the instrumentation system must be based on the latest technology and spare parts and service support must be available.</li> </ul>	HARD, IO-link instruments are not used.	Accepted.
238	Annex_3_TD_Technical_specifications ; page 56	Each motion device shall be equipped with <b>two</b> digital absolute encoders with data communication.	Possible, but high impact on price: all motion sensors are redundant.	We your statement: „all motion sensors are redundant“.
239	Annex_3_TD_Technical_specifications ; page 56	Each motion device shall be equipped with <b>two</b> digital <b>absolute</b> encoders with data communication.	Not included: A rotary movement (motor with speed measurement) is also a motion device and no absolute encoders are used here!	Accepted.
240	Annex_3_TD_Technical_specifications ; page 56	<ul style="list-style-type: none"> <li>Gas and Electric energy metering shall be accurate to 0.5 % unless otherwise specified in the specific equipment specification.</li> </ul>	Value is not warranted.	Agreed – not warranted, but accuracy has to be ensured.
241	Annex_3_TD_Technical_specifications ; page 56	<ul style="list-style-type: none"> <li>For any fan, continuous vibration measurement at minimum four points using acceleration type sensors with locally mounted transmitters for 4-20 mA DC signal outputs for PLC based system.</li> </ul>	Not clear: Probably referring to large fans, but the way it is written, acceleration sensors are to be fitted to every fan and that is nonsense.	Accepted – vibration measurement only on big fans – not applicable in this case.

242	Annex_3_TD_Technical_specifications ; page 56	<ul style="list-style-type: none"> <li>The body of the control and shut-off valves shall be stainless steel.</li> </ul>	Has to be clarified; not ■ standard	Stainless has to be considered.
243	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>Field mounted gauges shall be phenolic or stainless steel construction and have 100 mm diameter dial. Remote seal gauges shall include stainless steel diaphragm and suitable fill fluid for the application. Fluorocarbons or flammable fill fluids will not be permitted.</li> </ul>	Possible; not ■ standard; price impact	Pipes has to be stainless. Gauges can be different material as long as not in heat/water impacted area installed.
244	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>All impulse lines, instrument air lines and fittings and accessories shall be of stainless steel. Impulse lines/instrument air lines shall have 2 mm thickness</li> </ul>	Not our standard.	Pipes has to be stainless.
245	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>All control valves (pneumatic, hydraulic, ...) need to send back actual position for movement / position monitoring.</li> </ul>	Everywhere where possible.	Accepted – in case not possible Contractor shall inform AIB during engineering where and why not possible.
246	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>All transmitters must have an integrated type divider.</li> </ul>	Please clarify: what is a type divider?	Delete.
247	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>The leakage class of all safety shut-off valves shall be Class VI.</li> </ul>	Please define class VI, what is that?	Cancel
248	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>All control and shut-off valves shall have a handwheel for emergency operation.</li> </ul>	Not our standard; if needed it will cause a price increase.	Mandatory at emergency valves.
249	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>All impulse lines and fittings and accessories shall be of stainless steel. Impulse lines/instrument air lines shall have 2 mm thickness.</li> </ul>	Not our standard; not everything in stainless steel.	Stainless
250	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>Hydraulic filter (differential pressure) monitoring shall be analogue (4-20 mA) with local display.</li> </ul>	Yes if possible.	4 – 20 mA signal is mandatory to ensure monitoring on HMI (trend) of value instead of YES/NO status. Level of status for OK/Clogged shall be set in control system.
251	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>Lubrication line pressure switches and pressure switches for other systems shall be analogue (4-20 mA) with local display.</li> </ul>	Yes if possible.	4 – 20 mA signal is mandatory to ensure monitoring on HMI (trend) of value instead of YES/NO status. Level of status for OK/pressure not reached shall be set in control system.

252	Annex_3_TD_Technical_specifications ; page 57	<ul style="list-style-type: none"> <li>Water or any kind of media (compressed air etc.) filter (differential pressure) monitoring shall be analogue (4-20 mA) with local display.</li> </ul>	Yes if possible.	4 – 20 mA signal is mandatory to ensure monitoring on HMI (trend) of value instead of YES/NO status. Level of status for OK/Clogged shall be set in control system.
253	Annex_3_TD_Technical_specifications ; page 58	on the PC monitor in the control room .	Not in our scope.	Operator cabin (control room) is in AIB scope, but HMI is in Contractors scope.
254	Annex_3_TD_Technical_specifications ; page 58	Inputs and permissions to the individual program levels will be accessible according to the rights defined by the Customer.	Customer and supplier together	Part of engineering phase.
255	Annex_3_TD_Technical_specifications ; page 58	The system will store all technical-technological data and this data can be recalled, printed and further processed at any time. The control system will allow:	Not in our scope. If really needed it will cause price increase.	Printing not required, but main technological data should be available on the HMI system.
256	Annex_3_TD_Technical_specifications ; page 58	<ul style="list-style-type: none"> <li>monitoring and automatic testing of the control automaton, including sensors and actuators</li> </ul>	Automatic tests are limited.	Automatic tests where applicable and possible. To be finalized with Contractor during engineering.
257	Annex_3_TD_Technical_specifications ; page 59	<p>b) Each PLC must have a power supply module and a CPU communication module.</p> <p>c) Safety circuits shall be designed using the SAFETY PLC.</p> <p>d) Each bus system must be designed as "circular" (circular closed topology). A bus system within a single electrical box does not need to have a closed topology.</p> <p>e) Active online bus diagnostics must be maintained. Each station/device connected to the relevant bus system must be visible with the maximum possible online diagnostic information (status/fault message or warning code).</p> <p>f) At frequency converters full bus communication data (commands, set points, actual values, status/fault or warning code) has to be visible on HMI.</p> <p>g) Remote input/output units connecting inputs/outputs in different areas of the casting line.</p> <p>h) Input/output modules must have active online diagnostics.</p>	Is not ■■■ standard, if really needed it causes price increase.	Mandatory. Max diagnostic at control system (PLC/HMI) is a base standard in industry to ensure fast/quick reaching AND remote information avoiding long stoppage due to missing information.



		i) For signals from field devices (sensors, instruments etc.) online hardware diagnostic (wire breakage detection, etc.) has to be installed (usage of respective DI/DO/AI/AO card).		
258	Annex_3_TD_Technical_specifications ; page 59	c) Safety circuits shall be designed using the SAFETY PLC.	We dont have a seperate safety PLC, we use a S7 1500 F	Accepted
259	Annex_3_TD_Technical_specifications ; page 59	k) Two (2) Nos. portable laptop type programming terminal for the PLCs mentioned above with all required system software packages and accessories (cables etc.).	To be charged additionally, if needed.	Not understanding why not included! All required system software for control system (PLC/HMI) or related systems (frequency converter etc.) has to be handed over to ensure AIB operation/maintenance (for example in case of necessary exchange of CPU for reloading of the application software etc.) – including all required accessories (cables, adapter etc.) No. of laptop can be reduced to min. 1 piece.
260	Annex_3_TD_Technical_specifications ; page 59	l) Monitor for servers, HMI operator stations, etc. must have a 27" widescreen (state-of-the-art); minimum screen resolution of 1920 x 1200.	Operator station on control pulpits have only 22"	Accepted. Size shall be as per state of art available in time of equipment ordering.
261	Annex_3_TD_Technical_specifications ; page 59	m) The Web Remote HMI client system will be accessible from the "Customer's" network. The Customer will hand over the user access list to the Contractor during the project processing.	Not included in our scope.	Specify and calculate in the offer
262	Annex_3_TD_Technical_specifications ; page 59	n) Production views, diagnostic views, maintenance views, trend views and historical data must be accessible on Web Remote clients.	Is not our standard, there are not web remote clients.	Specify and calculate in the offer
263	Annex_3_TD_Technical_specifications ; page 59	o) The operating system for PC-based HMI units must be Windows-based. The system shall be equipped with standard software packages such as multi-program executive routines, protocol formats, compilers, assemblers, editors and utility packages. The required application software licences shall be included.	Not in scope.	Software licences for all supplied computers, laptops, control system(s) is in Contractors scope.

264	Annex_3_TD_Technical_specifications ; page 59	p) Additional software, e.g. antivirus, communication, MS office etc., necessary for the implementation of the functions and completeness of the system must be included.	Not in our scope, therefore this software is not in our scope.	In case of any Microsoft based computer within scope antivirus program has to be ensured. Detailed to be specified within engineering.
265	Annex_3_TD_Technical_specifications ; page 60	w) Establishment of links / communications including supply of communication cable and required integration into L1 automation system as well as necessary hardware and software amongst the following systems: - BUYER's automation system (where is required) and Incoming material handling system (ferro-alloy and lime transportation system). Control of the belt system from the respective dumping station(s) up to bunkers shall be full within automation system. Respective bus communication / signal interface to dumping station(s) to be considered. - BUYER's Substation Automation system.	Communication equipment to buyer's system must be supplied by the buyer. Cannot be in our scope.	Agreed. Hardware TOP point (switch/port) to be defined during engineering phase. Software implementation at control system and HMI has to be considered by Contractor.
266	Annex_3_TD_Technical_specifications ; page 60	x) There must be 3 independent Ethernet levels.	Out standard is to have local networks for each subsupplier and then communicating with each other via PN/PN coupler. Other network must be supplied by the buyer.	General statement. Communication to other systems (furnace, overall plant systems) has to be considered.
267	Annex_3_TD_Technical_specifications ; page 60	z) All monitors must be of the same type/manufacturer to ensure interchangeability between different clients and different levels (level 1 or 2).	Cost extra due to different standards of subsupplier.	Equipment standardization is mandatory to avoid too many systems and spare parts.
268	Annex_3_TD_Technical_specifications ; page 60	but full integration to overall plant HMI system has to be considered = full communication and integration of status / alarm / values to overall PLC / HMI to ensure central monitoring.	Not our standard, can be realized for surcharge.	Contractor has to ensure on their control system integration of all sub-packages. It is accepted to have separate HMI for respective sub-package, but main information as started as to be available on central HMI for the whole Contractors scope.
269	Annex_3_TD_Technical_specifications ; page 60	cc) Level 1 automation shall have features to enable and predict proactive preventive maintenance requirements. Such as the view of operating hours of engines, pumps,	Not our standard; is excluded.	Has to be considered as normal state of art standard. Monitoring of motor hours, cycle monitoring etc. with

		fatigue cycles (e.g. for cylinder movement, valve operation, ...) etc., coupled with warning messages (e.g. for preventive inspection, seal replacement, lubrication, oil check, ...).		connected messages is base in state of art industry.
270	Annex_3_TD_Technical_specifications ; page 61	gg) Ethernet network panels for Servers / client stations with related required equipment like network switch / FO patch panels / other required network accessories / UPS circuit breakers with front and back side doors to be placed in respective rooms. Connection from network panels to respective working place / desk shall be done with respective cable connection (for example KVM or similar). Inside of each network panel has to be space reserve for minimum 2 additional computers for Customer purpose. <b>At control room one complete empty network panel shall be available with respective power sockets and network accessories.</b>	Control room and its equipment will not be supplied. See above.	Control room is AIB scope, but equipment like HMI station, requirement network equipment is at Contractors scope.
271	Annex_3_TD_Technical_specifications ; page 61	ii) Each individual control desk shall be equipped with CCTV, Intercom, telephone	Excluded from scope	Base data required from Contractor. Equipment AIB scope.
272	Annex_3_TD_Technical_specifications ; page 61	<ul style="list-style-type: none"> <li>The Level 1 automation system shall provide both process control and drive control/interlock functions for the complete casting line (from furnace TOP up to packing equipment), including operation and status monitoring of all drives, pumps, fans, valves, etc.</li> </ul>	No central station; not foreseen.	See as per point 288.
273	Annex_3_TD_Technical_specifications ; page 61	<ul style="list-style-type: none"> <li>The configuration of the automation system must be designed to achieve the following operating modes:</li> </ul>	Modes to be clarified and will be mutually agreed.	To be agreed during engineering phase.
274	Annex_3_TD_Technical_specifications ; page 61	Everything must be recorded in the level 1 historical archive - HMI.	No long term archive. Only standard alarm history of WinCC Advanced.	Please see Annex_5 – control system
275	Annex_3_TD_Technical_specifications ; page 61	a) Casting line operation (from furnace TOP up to packing line) and monitoring	Not our standard, can be done for price increase.	Overall HMI screen of whole Contractor scope has to be considered. Detail information can be as per sub-contractor system. Alarming/Warning for all systems to be collected to the main HMI system.

276	Annex_3_TD_Technical_specifications ; page 62	d) System configuration and PLC programming	Not on HMI. Not our standard, will lead to price increase.	System configuration shall be included not PLC programming
277	Annex_3_TD_Technical_specifications ; page 62	i) Diagnostic alarms and event monitoring.	Not our standard, will lead price increase	Specify and calculate in the offer
278	Annex_3_TD_Technical_specifications ; page 62	k) Ability to filter alarms by device / alarm level / area.	Not foreseen	Mandatory to ensure fast diagnostic – normal industrial standard.
279	Annex_3_TD_Technical_specifications ; page 62	n) Real-time server database.	Not our standard, can be done for extra cost.	Part of HMI system
280	Annex_3_TD_Technical_specifications ; page 62	o) Possibility of remote Internet access for troubleshooting, software upgrade, data analysis.	Not our standard, can be done for extra cost.	Possibility of remote access for troubleshooting, software upgrade, data analysis - mandatory
281	Annex_3_TD_Technical_specifications ; page 62	• Diagnostic screens for level 1 maintenance diagnostics - The HMI must display, among other things:	Not our standard, can be done for extra cost.	Diagnostic – state of art.
282	Annex_3_TD_Technical_specifications ; page 62	i) Operating hour counters for motors, pumps etc. (with counter reset function).	Clarification for which equipment it is needed. Price increase.	Diagnostic – state of art (monitoring of running hours, cycles etc. is normal industrial standard).
283	Annex_3_TD_Technical_specifications ; page 63	i) Data backup i. Historical data shall be available at the HMI operator station for at least 180 working days ii. Availability of historical data for a minimum of 2 years on an external storage device	Not our standard; can be done for price increase.	Specify and calculate the offer
284	Annex_3_TD_Technical_specifications ; page 63	k) Ethernet switch Minimum of 40 % free (unused) ports per Ethernet switch (after commissioning)	Okay, not our standard, price increase.	Please calculate with it in the offer
285	Annex_3_TD_Technical_specifications ; page 64	2.7.4 Others	Definetly not included: The effort involved cannot be estimated in this way. Charging according to actual costs.	AIB scope, but coordination of network address etc. is required to ensure overall AIB plant network integration.
286	Annex_3_TD_Technical_specifications ; page 67	... Designs of all the devices/systems/items, as mentioned in this specification and set out for proper functioning/operation of the system.	Proper function is warranted, but not all details as mentioned.	Accepted
287	Annex_3_TD_Technical_specifications ; page 67	• Designing the pipeline/lines, fittings, valves and other accessories for the utility lines and water supply system within the faucets, including the pipe supports.	No water supply system is included in scope.	Accepted

288	Annex_3_TD_Technical_specifications ; page 68	<ul style="list-style-type: none"> <li>• Contractor to submit a list of Preliminary Recommended Spare Parts based on historical Mean Time Between Failures (MTBF) data along with ABC ranking and criticality ranking.</li> </ul>	No accurate data available. A spare part list according to our experience will be handed over.	Accepted
289	Annex_3_TD_Technical_specifications ; page 69	<ul style="list-style-type: none"> <li>• The Contractor's area of competence includes: supervision and necessary technical assistance during installation, testing, commissioning of the line and putting into operation, including performance tests of all the devices, machines and equipment,</li> </ul>	A clear definition of the performance test is necessary. Only items of scope supply will be included.	See contract for work
290	Annex_3_TD_Technical_specifications ; page 69	<ul style="list-style-type: none"> <li>• The Contractor's area of competence includes but is not limited to: <ul style="list-style-type: none"> <li>- Supervision over the assembly staff, assistance and instructions given to the same for proper interpretation and use of project specifications, drawings, specific technical documents for the installation company within the competences of the Contractor.</li> <li>- Preparation of project specifications, procedures and supervision of the performance of dimensional checks, adjustment checks, welding procedures, non-destructive tests, pressure tests, leakage tests, corrosion-proof treatment etc.</li> <li>- Planning, supervision and technical assistance for cold and hot tests, commissioning and testing of guaranteed power parameters.</li> </ul> </li> </ul>	Not acceptable in this form. Has to be discussed.	<p>The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided.</p> <p>Kindly make a suggestion and give your proposal by counter question (= new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation).</p>
291	Annex_3_TD_Technical_specifications ; page 69	<ul style="list-style-type: none"> <li>• 3D model documents must be submitted for the line, depicting the as-built status in which it was handed over to the Customer. In its offer, the Contractor should state which kind of 3D software is planned to be used for this project. This information is important for the Contracting Authority so that it is able to obtain compatible software which it will use for loading the 3D models submitted by the Contractor.</li> </ul>	Only simplified models and drawings are provided: Intellectual property of [REDACTED]	Accepted
292	Annex_3_TD_Technical_specifications ; page 70	(3.8) The Contractor's scope of activities includes preparation of tender documentation concerning the installation of the line as designed by the Contractor.	Not included: [REDACTED] will provide information on needed work force and qualification details for installation.	Accepted

293	Annex_3_TD_Technical_specifications ; page 70	<ul style="list-style-type: none"> <li>All drawings and documents must be submitted in the Czech and English language.</li> </ul>	Only documents needed for CE declaration. Rest in English language.	Accepted
294	Annex_3_TD_Technical_specifications ; page 70	<ul style="list-style-type: none"> <li>During engineering, the Contractor must have at least one member of the team who is able to speak and write in English or Czech</li> </ul>	Customer needs team member able to write and speak fluently English.	Accepted – one team member or translator
295	Annex_3_TD_Technical_specifications ; page 73	The equipment shall be designed with a noise level having an upper exposure action value equal to 85 dB and a lower exposure action value equal to 80 dB.	Misleading statement in reference to specifications above.	Accepted
296	Annex_3_TD_Technical_specifications ; page 74	5.2 Requirements for mechanical safety Mechanical safety covers the protection of users against risks related to moving parts, mechanical forces, falling objects or any other mechanical risks.	Specification is not necessary. The supplier has to execute a risk assessment according to IEC 12100 by law. This standard covers all the mentioned points in detail.	Accepted
297	Annex_3_TD_Technical_specifications ; page 75	5.3 Requirements for electrical safety	See above statement	Accepted
298				
299	Annex_3_TD_Technical_specifications ; page 76	<ul style="list-style-type: none"> <li>Failure condition addressed via remote connection: response time within 4 hours of the announcement.</li> <li>Failure condition addressed personally by a technician: response time within 24 hours of the announcement.</li> </ul>	Currently [REDACTED] and our sub suppliers do not have the capacities to offer such a service.	The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided. Kindly make a suggestion by counter question (= new request for explanation of the Tender Documentation in accordance with Art. 14 of the Tender Documentation).
300	Annex_3_TD_Technical_specifications ; page 76	The draft service level agreement should also incorporate a price quotation for regular service and urgent service, with price validity of 5 years.	This is not matching our price philosophy.	The Participant's comment is not obvious to the Contracting Authority and therefore no relevant explanation can be provided. Kindly make a suggestion by counter question (= new request for explanation of the Tender Documentation in accordance with

				Art. 14 of the Tender Documentation).
301	Annex_3_TD_Technical_specifications ; page 77	<ul style="list-style-type: none"> <li>The Contractor shall deliver standard procedures for installation, start-up, commissioning, (incl. detailed plans, required times &amp; resources, tolerances, alignment, start-up sequencing, check of performance indicators).</li> </ul>	Not necessary, because covered by experienced ■ supervisors. Information and training for startup and usage of the equipment is handed over to the customer.	Kindly deliver standard procedures for installation, start-up, commissioning
302	Annex_3_TD_Technical_specifications ; page 77	<ul style="list-style-type: none"> <li>The Contractor shall be willing to participate with at least one representative in a risk analysis event if asked to. They shall also provide a limited amount of reliability reviews with Customer's representatives during equipment design, installation, commissioning and start-up.</li> </ul>	To be discussed involvement of the customer in the different phases, how to handle it between the parties.	Accepted
303	Annex_3_TD_Technical_specifications ; page 79	The training will take place in a minimum of four blocks, at the Customer's site, in English. The blocks are necessary due to various working shifts of the operators and expert staff.	Not more than four blocks/shifts	Accepted – four blocks
304	Annex_3_TD_Technical_specifications ; page 79	On site training (duration: 5 (five) days) as per during cold and hot commissioning.	Independent of the blocks/shifts; meaning morning and afternoon training sessions will be held 5 days.	Accepted
305	Annex_3_TD_Technical_specifications ; page 79	This training applies to expert staff, such as electricians, mechanics, tool makers, PLC programmers, process engineers, metallurgists and management.	No training for metallurgists and management.	Accepted
306	Annex_3_TD_Technical_specifications ; page 80	<ul style="list-style-type: none"> <li>Primer and finish coats of a suitable aluminum explosion prevention coating shall be applied to all equipment near the casting pit exposed to molten metal, per manufactures instructions.</li> </ul>	Only to equipment supplied by the supplier; no coatings to other equipment; not painting of pits and foundations = scope of customer.	Accepted
307	Annex_3_TD_Technical_specifications ; page 81	<ul style="list-style-type: none"> <li>A Material Safety Data Sheet shall be in the immediate vicinity of all chemical and paints when located on Customers site.</li> </ul>	Supplier will hand over all SDS of deliveries like chemicals, oils and substances; Customer can place information where needed according internal practice.	Accepted

**The Contracting Authority hereby changes the deadline for submission of Tenders. The deadline for submission of Tenders is now set at 26 June 2024 until 10:00 a.m.**

In Břidličná on 12 June 2024

