EXPLANATION OF THE TENDER DOCUMENTATION N. 4

Name of the Contracting Authority	**AL INVEST Břidličná, a.s.**
Registered office	Bruntálská 167, 793 51 Břidličná
Registration number	27376184
Tax number	CZ27376184
File no.	B 3040 administered by the Regional Court in Ostrava
Profile of the Contracting Authority	https://profily.proebiz.com/profile/27376184
Internet address of the Contracting Authority	https://alinvest.cz/
Data box ID	xcbcpxk

Contact person of the Procurement Procedure	Jan Machara
Phone	+420 724 164 102
Email	jan.machara@alinvest.cz

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
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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 (additional)
No.	Reference to the Tender Documentation if any		Wording of the original request	Explanation No. 1 of the Contracting Authority of 12 June 2024	Wording of the additional request	
	Document title + page	Relevant text of the document				
1	Annex_3_TD_Technical _sp ecifications ; 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.	Will the expected temperature in the foundry be higher than 50° C?	Currently we do not know, but it is possible that temperature near casting technology (5 meters) and near hot aluminium (5 meters) will be above 50°C
2	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. We expect the supplier of the treatment and casting side to work with the furnace supplier aimicably. 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. We also expect the furnace supplier and the casting machine supplier use a common metal level sensor supplier and model. We also expect the furnace supplier to provide a secondary metal level signal, separate of the control system to hi light 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 outside the automation or control program.	Working together is of course ok. The coordination should be done by Customer	Accepted
3	Annex_3_TD_Technical _sp ecifications ; page 9	Communication with the parent system	Not encompassing included: please define details.	See definiton 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 preperation or downstream portion of the caster suppliers scope to communicate with the Alinvest MES.	That can be done. But the goals and tasks must be clearly defined for both sides and the effort involved must be calculable.	All technological data must be collected and must be visible for the Customers MES. The Participant (hereinafter referred to also as the „Contractor"), as the specialist in this field should know the scope of neccesary work (based on similar project)

4	Annex_3_TD_Technical_sp ecifications ; page 10	Design, purchase of materials, manufacturing, assembling, inspection, painting, packaging, transportation, erection and commissioning supervision, performance tests, performance guarantee , training, and manuals.	XXX does not give ANY "gurantee" 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 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, fit for purpose and to the acceptance standards presented.	A warranty is mandatory. A guarantee is good will of the supplier. Change wording from guarantee to legal warranty period.	Accepted
5	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 ist used" for the lining, and microporous panels (calcium silicate basis) for insulation. High Alumina is mainly used in steel industry.	Please take exception to this in your offer. Note though that the highest quality troughing materials used in the industry are High Alumina and Low Silica. Fused Silica is a significant step down in quality from what we have asked for. 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.	Launder inserts made of high aluminia and low silica should be feasible. However, we would like to point out that we have no experience with these and if they are used, only at the express request of AL Invest as well as the possible longer procurement time for replacement pieces. A these are manufactured in the USA.	Accepted
6	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.	Electrical heated lids will be provided. To preheat the cold launders after a longer production stop, we recommend a flushing process with liquid metal. Requires approx. 500 kg of metal.	Accepted
7	Annex_3_TD_Technical_specifications ; page 15	We Is prefered integration of smaller CX launders , with hot air blowing as a pre-heat system when needed .	What is a CX launder?	We prefer smaller Cross Section (CX) metal flow troughs. 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. Smaller Cross Sectioned (CX) thoughts 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.	Whether a metal temperature can be below 720° C during casting also depends on how well the above-mentioned channel material insulates. From our side we would like to state that we certainly supply one of the best insulated gutters on the market. See also attached pictures (PDF).	Accepted

8	Annex_3_TD_Technical_sp ecifications ; page 15	We Is prefered 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	Electric lid heating is not as fragile compared to “hot air blower”.	Accepted
9	Annex_3_TD_Technical_sp ecifications ; 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.	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. Final number of modules, sections will be fixed within engineering phase 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 your case, when the silica fit is exposed.	The launder inserts that may need to be replaced are a maximum of one meter long and can be replaced individually. (See pdf above.)	Accepted
10	Annex_3_TD_Technical_sp ecifications ; 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 XXX: < 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 per minute. Our focus, is on the steady state condition. When designing the trough, at steady state of 7.0-9.8 meters per minute, the flow remains in the laminar flow region.	Our system works very stably with the 5m/m flow velocity. Depending on the fill level in the launder, the speed can also be higher. Our aim is always to adjust the speed so that the resulting oxide skin is not torn open in order to prevent the skin from being pulled into the filter.	Accepted
11	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).	Sorry but we cannot delete this clause. Max level: 40 mm from top of refractory lining is acceptable 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.	This is also our aim to remain approx. 40 mm below the top edge of the launders to prevent the liquid metal from overflowing. This is additionally secured by overfill electrodes.	Accepted

12	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.	Depending on the diameter to be cast, a certain fill level is necessary. This is related to our casting system.	Accepted
13	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. An abrupt joint, will introduce turbulence and inclusions. I think that you would always want your customers to produce a superior product and would want to adopt these features in your design.	Can we agree that the 300 mm radius refers to the centre of the launder?	Accepted
14	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	We use Multiguard 955 cp (Carboline) for metal exposed portion.The colour is black. This has proven to be the better colour for detecting possible flaking of the coating.	Accepted
15	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.	Please see our comments above to the launder system.	Accepted
16	Annex_3_TD_Technical_specifications ; page 17	Melt differential temperature measured at furnace TOP and at casting equipment shall not exeed 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. XXX will not warrant a specific temperature target drop for unknown conditions.	Design has to fit for this temperature drop.	Please see our comments above to the launder system.	Accepted
17	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.	Accepted. Force can be adjusted manually.	Accepted

18	Annex_3_TD_Technical_sp ecifications ; 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 % Cl2 or optionally no chlorine.	Only one rotor will be provided: max 5 % chlorine	Please plan on less than 0.5% chlorine, targeting 0.25%.	Is there a special room for the gas mixing stations for all degassers used in the foundry? We are thinking in particular of the dangers arising from the use of chlorine.	There will be separated mixing station for each line. Yours scope of supply should be aslo mixing station for HDC line
19	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; XXX prefers no Cl; however target limits of Na, K, Li depend on customer requirements; Influenced mainly by primary stock (scrap).	Agreed – AIB is responible for storage.		
20	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.		

21	Annex_3_TD_Technical_specifications ; page 25	- 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 ring. The oil must have a provision to terminate oil flow to an inoperable mold position.	Delete clause: specification not meaningful.	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 upset the flow pressure to the adjacent molds.	Our mould lubrication works with a pump (and a stand-by pump) and a distributor system. See attached pdf. File.	Accepted
22	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 seccured.	Not accepted – electrical and hydraulic lines shall not be located below metal level in the proximity of the launder	Cables are laid in conduits as far as possible and makes sense. No hydraulic in the areas of liquid metal.	Accepted
23	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	A bypass roller table is provided for this case.	Accepted

Request by the Participant for explanation of the Tender Documentation						**Explanation of the Contracting Authority (additional)**
No.	**Reference to the Tender Documentation if any**		**Wording of the original request**	**Explanation No. 3 of the Contracting Authority of 1 July 2024**	**Wording of the additional request**	
	Document title + page	**Relevant text of the document**				
24	Annex_3_1_TS_Guaranteed_parameters_ of_ billets ; page 3	• No cracks and pores are allowed under 50 X magnification. If cracks or pores are funded under 50 X magnification, the sample is NOK.	Contradiction to standard ISO 10049:2019; suggestion to delete clause and remain with standard.	No cracks and pores are allowed under 50 X magnification. If cracks or pores are funded under 50 X magnification, the sample is NOK. It should be understood like a target value. It will not be part of performance testing, so this is not guarantee parameter. On the other hand the Contractor has to ensure installation of best available technology for key equipment like degassing unit, filter and casting technology to ensure reaching required targets.	Can be accepted, although it is contradicting the standard, because there the conditions are missing for 50x evaluation. Severity level 0 means no pores in ISO 10049:2019 with defined sample conditions. Deleting the 50x definition eliminates the undefined state.	50x definition is important for our customer, but you are now exluded from the guarantees

25	Annex_3_1_TS_Guaranteed_parameters_ of_ billets ; page 3	• In case of higher count of inclusions, only one cluster larger than 50 µm, or one agglomeration larger than 20 µm is acceptable within an area of 1 mm2. Limits for rough segregations, inclusions, oxides, salts, grain refiner particles are given in Table 5).	Contradictions in text and table -> Suggestion for alternative text: The microstructure must be free from measurable cavities, oxide and foreign particles larger than 150 µm.	Spinels, non-metallic inclusions or feather crystals are not allowed. Only one TiB/TiC cluster larger than 50 µm, or one TiB/TiC agglomeration larger than 20 µm is acceptable within an area of 1 mm2 The Contractor has to ensure installation of best available technology for key equipment like degassing unit, filter and casting technology to ensure reaching required targets.	Oxides, Inclusions, grain refiner ok. For salt in melt no warrantee when applied in degasser.	Accepted

In Břidličná on 08 July 2024