

Technical Specification part 2 for construction of new steel ladles for the Project titled "Innovative high-silicon steel with adjustable low content of non-metallic impurities and inclusions with controlled morphology and appropriate level of AlN inhibitor for high-quality transformer sheets" (project no. : POIR.01.01.01-00-0238 / 17) to be performed on the Blast Furnace Plant and Steel Plant at AMP in Cracow.



**Technical Specification
for construction of steel ladles for the Project titled "Innovative high-silicon steel with adjustable low content of non-metallic impurities and inclusions with controlled morphology and appropriate level of AlN inhibitor for high-quality transformer sheets" (project no. : POIR.01.01.01-00-0238 / 17) to be performed on the Blast Furnace Plant and Steel Plant at AMP in Cracow.
Part no. 2 (Ladles) before signing the non-disclosure agreement**

This specification is attached as Annex 2. to the request for quotation no 2/0238/2018

**ArcelorMittal Poland S.A.
Unit in Cracow**

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INTRODUCTION

ArcelorMittal Poland S.A. (hereinafter also AMP) carries out its business in various divisions in Poland, with a main focus on steel production in Kraków and Dąbrowa Górnicza and in other important production plants responsible for manufacturing of various steel products in Poland.

For this purpose, under the project for "Construction of Vacuum Tank Degasser VTD", the AMP Company has prepared this Technical Specification for **manufacture and DDP delivery of 16 ladles acc. to INCOTERMS 2010, supervisions of assembling and commissioning, as built documentation for ArcelorMittal Poland S.A. Unit in Kraków.**

The subject of the order indicated in this specification applies to the project entitled "Innovative high-silicon steel with adjustable low content of non-metallic contaminants and non-metallic inclusions with controlled morphology and appropriate level of AlN inhibitor for high-quality transformer sheets" (project no. : SGD.01.01.01-00-0238 / 17, co-financed under Sub-measure 1.1.1 of the Intelligent Development Operational Program 2014-2020 co-financed by the European Regional Development Fund.

In connection with the Company's obligation to apply the competition principle, this technical specification is a detailed description of the subject of the order which allowing preparation of the Offers by Bidders.

This specification has been prepared with the most care to determine the full, unambiguous and comprehensive description of the subject of the Order so as to enable Bidders to determine all their obligations and risks and to account for the price and other elements of the offer.

For this purpose, AMP as part of the "Installation of Vacuum Tank Degasser - VTD" project prepared this Technical Specification for the production and delivery of new steel ladles to the Plant at Cracow.

All purchases, services and **delivery of DDP INCOTERMS 2010** subject to this tender must be included and cooperate with the existing infrastructure and equipment in the Company and must meet the same technological standards. Therefore, the need to maintain the same technological conditions and the need to preserve the unification of equipment resulting from the expansion of existing infrastructure determined the provisions in this specification. The provisions used are justified in the need to ensure smooth implementation of the project. The indicated provisions do not require the Bidders to apply

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the indicated solutions and only inform about the minimum parameters and standards. The use of certain types of solutions is not obligatory but merely exemplary. Indications regarding expected technical parameters and indications regarding specific types and producer names are of a general nature, referring only to exemplary indications of equivalent products and are not the only accepted solution. On this basis, the Buyer allows equivalent solutions.

The Bidder is required to familiarize with this Specification and make sure that the devices are technically feasible, and to accept full responsibility for the guaranteed operation of devices to be delivered in terms of their capacity, parameters as well as smooth and reliable functioning.

The detailed scope of works to be carried out under the Request for Quotation is presented hereunder.

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1. PURPOSE OF THE PROJECT

The purpose of the project is to produce and delivery of DDP INCOTERMS 2010 steel ladles for the new Vacuum Tank Degasser; further referred to as the VTD system.

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2. BUYER STANDARDS

During the execution of all phases of the works (construction project) on the premises of ArcelorMittal Poland S.A. company, the Supplier must observe and always apply the safety requirements contained in the Book of Safety, including all appendices, e.g. Standards for Prevention of Fatal Accidents:

- ST 000 Health and safety policy
- ST 001 Isolation
- ST 002 Confined spaces
- ST 003 Working at Height
- ST 004 Rail safety
- ST 005 Audits
- ST 006 Vehicles and driving
- ST 007 Lifting equipment and operations
- ST 008 Contractors
- ST 009 Alert
- ST 010 Safety metrics
- ST 011 Incident investigation
- ST 012 Working in gas hazard areas
- ST 014 HIRA (Hazard Identification and Risk Assessment)
- ST 015 Golden Rules
- ST 018 Cargo securing
- ST 201 H&S Design Specification
- ST 301 Cell phones

(the above mentioned standards will be passed after the Bidder signs the non-disclosure agreement).

NOTE:

In case different requirements are quoted in subsequent norms or standards compliant with those specified above, more stringent (restrictive) norms or standards shall apply!

3. EXISTING CONDITIONS

Currently, there are three Oxygen Converters running in the Cracow Converter Steel Plant, with a secondary metallurgy unit for each of them. Each of the secondary metallurgy units is equipped with ceramic lances for argon blowing of the molten steel using the "from the top" method, ferroalloy tanks, four-strand wire feeding machine and tanks for ladle filler sand.

The average heat tonnage is 147 tonnes, capacity of steel-teeming ladles without freeboard is 150 tonnes.

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4. SCOPE OF BIDDER WORKS

4.1 Subject of the works

The aim of the works is to build new ladles, its **delivery of DDP INCOTERMS 2010**, unloading, loading and transport (including handling).

4.2 Scope of works:

4.2.1 **Manufacture and delivery to the plant of 16 new steel ladles** to the required melt weight of circa 150 tonnes of steel and a freeboard of at least 75 cm while maintaining the current size of trunnions for operating cranes for the heats delivered to the VTD system, and 155 tonnes of steel for the heats processed at the secondary metallurgy units. The nominal weight in both cases must not exceed 220 tonnes. The ladle closure system (slide gate) is to remain the same as in the ladles we use now. Thickness of refractory linings in the new ladles shall be as follows:

- Bottom of the ladle: 400-500mm
- Metal zone: 240mm
- Slag zone: 320mm

Designing the new ladles will be commissioned in a separate tender.

A detailed design of the new ladle should be provided within a period of maximum 10 weeks from the moment of contract signing.

The new ladles must be commissioned in close cooperation with the Buyer within a maximum period of 36 weeks from the contract signing date.

4.2.2 The Offer should include information on the grades of steel the Contractor plans to use to make the steel ladles.

4.2.3 Ensuring the author's supervision to the full extent of the contract, which includes consultations on the project site, additional drawings, sketches and explanations of (without hour limit). Supervision of the project.

4.2.4 Colour of ladles' paint coatings: RAL 9006. Corrosion protection must be suitable for highly corrosive environment (e.g. industrial or marine environment), at temperature values reaching up to 300°C, and - in case of other components - at

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ambient temperature (corrosive environment: C5-I and C5-M in accordance with PN-EN ISO 12944-2 standard) and in accordance with the requirements specified in the visual management (Appendix no. 4).

- 4.2.5 Arrangements and preparation of all necessary permits (including transport permits) in respective administration bodies;
- 4.2.6 Preparation in coordination with AMP of the work schedule, Quality Assurance Plan (PZJ), Health and Safety Plan (BIOZ), Work Organization Plan (POR);
- 4.2.7 The Bidder shall provide to the AMP Company, within a mutually agreed time limit, comprehensive as-built documentation in Polish and English, in electronic form (in AutoCad + .pdf and 3 sets in paper and electronic form);
- 4.2.8 The Contractor shall submit complete as-built documentation, error-and omission-free, suitable to be reviewed and copied. Should any drawing or document have to be returned because of improper quality, and should it cause any obstacle to its review and approval, the Tenderer shall be held liable for any delay pertaining to such reason.
- 4.2.9 The Bidder shall provide any other drawings, documents and analyses necessary to carry out the design review.
- 4.2.10 The Bidder shall be solely responsible for the accuracy of the information and dimensions specified in the documents and liable for any losses arising from quoting erroneous data.
- 4.2.11 The Bidder agrees to the inspections of each execution phase along with the approval of workshop documentation by entities indicated by the Buyer, including ladle designer.
- 4.2.12 Metric units should be used in the drawings and in technical documentation. The entire documentation shall be prepared in Polish and English.
- 4.2.13 The Bidder shall present, in the offer, the terms of service covering the scope he presented, including his reaction time and time required to remove a fault.
- 4.2.14 Disassembly and assembly works on the premises of AMP: 24 hours per day, 7 days per week.
- 4.2.15 The Bidder agrees to participate in coordination meetings at the times set-out by AMP.
- 4.2.16 The Bidder agrees to prepare reports and schedules in accordance with the requirements of AMP.
- 4.2.17 Preparation of complete documentation and the Quality Assurance Plan to be approved by the Buyer, including among others:
 - attestations and certificates of materials to be used for production of the ladles

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- welding, control and acceptance plan
- transport, including protection systems to secure the components against damaging
- paint coating system
- permissible deviations and tolerance of manufacturing

5. GUARANTEED PARAMETERS

- 1). New Steel Ladles should be covered by guarantee of workmanship for a period of 10 years.
- 2). Quality documentation based on the approved quality assurance plan.
- 3). Hot commissioning of each of 16 ladles - 1 campaign (**min. 70 heats**)
- 4). The Buyer shall perform the Factory Acceptance Test (FAT) in the plant/ workshop of the Contractor at a previously agreed point in time. All technical parameters set-forth in the technical documentation, Quality Plan and certificates shall be verified during the FAT.

6. REQUIREMENTS FOR OFFERS

6.1 REQUIREMENTS FOR TECHNICAL OFFER

- 1) Scope of work included in the offer (stating the amount),
- 2) Bill of materials/works with indication of quantities.
- 3) The exclusions should be detailed in the responsibility matrix table.
- 4) Responsibility matrix (i.e. division of labour clearly defining the Contractor's and the Buyer's extent - see the example below):

Table 1. Matrix of responsibility (example)

Item	Description	Responsibility		Remarks
		Bidder:	ArcelorMittal Poland S.A.	
1.	Deliveries to AMP	X		
2.	Unloading	X		
	Disassembly works			
3.	Assembly works	X		Required utilities, etc.
4.	Preparing the system for testing	X	X	
...	etc.			

- 5) Assembly drawings along with cross-sections/descriptions, etc. or initial drawings of spatial layout (workshop, as-built documentation).
- 6). Granting appropriate licenses for the applied solutions - in accordance with legal requirements;

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- 7) Guidelines for conducting periodic inspections and preventive measures of the maintenance services.
- 8) Delivering the user manual.
- 9) The Bidder will clearly specify any deviations in its Offer from the technical conditions presented here, if it is unable to strictly meet these requirements.
- 10) During works, the 24-hour supervision of OHS inspectors is required. At each shift, the inspector conducts the OHS audit and communicates its results to the AMP Project Manager.
- 11) A list of persons responsible for OHS supervision, along with their experience described, must be attached to the technical offer.
- 12) The Contractor will be responsible for equipping the construction site with:
 - fire-fighting equipment, as agreed with Fire Protection and Gas Rescue AMP service, dielectric equipment.
- 13) Detailed work schedule (at least on a weekly basis) showing the milestones.
- 14) Ensuring that the guaranteed parameters are maintained.
- 15) List of references (names of customers, locations, values of supplies/services, year).
- 16) List of spare parts for two years of normal operation and for start-up period. Detailed list of spare parts supplied by the Contractor shall be approved by the Buyer at the project implementation stage (e.g. trunnion plates, sleeves, complete catches for the Ladles).
- 17) Declaration that the expertise and experience held and Site visit are sufficient to complete the entire scope.
- 18) Declaration that the scope of supplies and services will be completed in compliance with the provisions of the law in force.
- 19) Statement of labour intensity to perform task by individual industries (if necessary).
- 20) Offer validity period.
- 21) The Bidder will clearly specify any deviations in its Offer from the technical conditions presented here, if it is unable to strictly meet these requirements.
- 22) Other information, which do not bear any cost-related data, but may affect the quality of Offer provided by the Contractor.
- 23) List of all subcontractors submitted for approval by AMP.
- 24) Access roads, storage yards, sidewalks (pavements, lighting, fencing, drainage with connections to sewerage systems, etc.) should be secured before transport and unloading, for the purpose of storage and prefabrication; own sanitary facilities

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- should be ensured for the duration of the works. Bidder is responsible for any damage and repairs of the infrastructure during the project
- 25) Work organization project and Quality Assurance Plan for the entire task.
 - 26) CE certificate for the system.
 - 27) Approvals and certifications of materials and equipment.
 - 28) Warranty for corrosion protection for at least 5 years.
 - 29) Corrosion protection must be suitable for highly corrosive environment (e.g. industrial or marine environment), at temperature values reaching up to 300°C for components in contact with hot exhaust gases, and - for other components - at ambient temperature (corrosive environment: C5-I and C5-M acc. to PN-EN ISO 12944-2 standard).
 - 30) Allocation of task costs for the created fixed assets.
AMP will inform the Bidder about the number and type of fixed assets of the task in order to have the costs correctly allocated. The Bidder must assign the costs based on this division (i.e. labour, spare parts and transport). This task must be performed before completion of the Construction project.
 - 31) Breakdown of costs of the project.
 - 32) Schedules, reports and statements.
 - 33) All necessary structures, machines and devices as well as materials necessary for the project must be manufactured and delivered at own cost.
 - 34) It is required to draw up the partial and final acceptance reports.
 - 35) Deliver the commissioning, operating, service, maintenance and repair manuals for machinery and equipment and conduct training for employees of all industries.
 - 36) It is required to install fencing and ensure supervision over the project site, together with social and office, storage and assembly facilities, taking into consideration the costs associated with delivery of necessary utilities (temporary connections to be ensured by the Contractor based on his arrangements with the Plant). This requirement shall also apply to the start-up and commissioning of the system.
 - 37) The Contractor is responsible for disposal and removal of waste produced during the works.
 - 38) The Buyer is responsible for provision of containers for municipal waste and for removal of this waste.
 - 39) Any delivery services associated with the project, namely unloading, storage, loading and transport between operations are included in the scope of the Contractor works. AMP may provide the Contractor, at his cost, with a place for storage of deliveries on condition that the required size of the storage space has been determined in advance.

6.2 REQUIREMENTS FOR COMMERCIAL OFFER

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- 1) The Offer price shall comprise costs of adaptation of employees and equipment to comply with Occupational Health and Safety standards applicable in the AMP Company.
- 2). The Offer price should be stated for the whole works as accurately as possible. All components should be listed as divided into groups and described in detail according to appendix no 1 of the Request of Quotation.

The price portion should be thoroughly prepared on the basis of instructions provided to the Tenderer in a request for quotation.

Pos.	ITEMS	Weight	Quantity	Price	Currency
1	Delivery of Steel Ladles - 16 pcs				
2	Spare parts - for the Ladles for a period of two years				
3	Supervision of commissioning				
4	As-built documentation				
	Total				

7 DATE OF WORKS' COMPLETION, MILESTONES

- 1) Execution of the entire scope of works in compliance with this Technical Specification shall take place in accordance with the following general time frames (guidelines):

Table 2. General schedule

Item	Task/description	Maximum duration
1.	Signing the Order / Contract	D
2.	Submission of the Quality Assurance Plan	D + 8 weeks
3.	Submission of the draft OSH and work execution plan (description of all activities, equipment used and the list of subcontractors)	D + 8 weeks
4.	Delivery of ladle technical documentation by the Buyer	D + 10 weeks
5.	Preparation of the basic design with detailed report of strength concerning the ladles and auxiliaries, agreed upon and approved by AMP	D + 14 weeks
6.	Factory Acceptance Test (FAT) according to approved quality plan	D + 20 weeks
7.	Manufacture of 16 ladles	D + 32 weeks
8.	Delivery of 16 ladles to the Plant in Cracow and handing them over for installation of accessories by other entities	D + 36 weeks
9.	Cold start of the first 6 ladles	D + 44 weeks
10.	Hot start (first heat) of 6 ladles	D + 52 weeks
11.	Commissioning the remaining ladles	D + 60 weeks
12.	End of performance tests of the ladles	D + 68 weeks
13.	Signing the Preliminary Acceptance Certificate (PAC)	D + 83 weeks

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- 2) 24/7 assembly works on the AMP site shall be considered.
- 3) Detailed work schedule shall be submitted to the Buyer for approval in the frame of performance of the Bidder 's scope of work, with consideration of the stages of erection site organization and securing, execution of all activities related with admission of the Bidder by the Buyer's Safety at Work Department to work at the Buyer's site, completion of purchases, prefabrication, assemblies, tests and commissioning. This schedule must also comprise description (list) of tasks forming critical path of the Project and its milestones.
- 4) The Bidder is required to deliver, together with the offer, the project schedule in the form of a histogram indicating the individual activities and their corresponding dates in relation to the table of crucial milestones for the individual fields.
- 5) The Bidder is required to provide a detailed description of the Project implementation method.
- 6) The Bidder must ensure that the stoppages at the individual areas of the facility are as short as possible.
- 7) Introduction of the new steel ladles together with auxiliaries should take place at least 6 months before the scheduled commissioning of the VTD system.
- 8) Any deviations from the project milestones or from the total duration of the project set forth by the Buyer must be identified and highlighted by the Bidder in his offer.

APPENDIXES

12.1 APPENDIX NO. 1 – Environmental data (will be passed after the Bidder signs the non-disclosure agreement).

12.2 APPENDIX No. 2 – Area for social facilities for the Bidder (will be passed after the Bidder signs the non-disclosure agreement).

**12.3 APPENDIX No. 3 - List of general available reference documentation
(will be passed after the Bidder signs the non-disclosure agreement).**

12.4 APPENDIX No. 4 - Visual management (will be passed after the Bidder signs the non-disclosure agreement).