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).

ArcelorMittal Poland S.A.

Unit in Cracow

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INTRODUCTION

ArcelorMittal Poland S.A. (further also referred to as AMP) runs the business in various divisions in Poland with a focus on steel production in Cracow and Dąbrowa Górnicza and in other important production plants responsible for manufacturing of various types of 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 **manufacturing and ex-works delivery of the new steel ladles.**

The subject of the order indicated in this specification applies to the project entitled "Innovative high-silicone steel grade with adjusted small content of impurities and non-metallic inclusions and with controlled morphology and proper amount of AlN inhibitor, intended to be used for high quality transformer sheets" (project no .: POIR.01.01.01-00-0238 / 17,) Measure 1.1. "R&D projects carried out by enterprises", Sub-measure 1.1.1 "Industrial research and development works carried out by enterprises" 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 the subject of the contract that allows potential Contractors to estimate the value of the contract.

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

The valuation prepared on the basis of this specification will not constitute as an offer within the meaning of the Commercial Code.

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 subject to this inquiry for the estimation of the contract value 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

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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 Contractors to apply 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 Contractor 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.

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1. PURPOSE OF THE PROJECT

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

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

Buyer standards are available on www.arcelormittal.com/poland at "**CONTRACTOR ZONE**". Login and access password is defined by H&S Team supervising the subsidiaries in AMP.

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

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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.

4. SCOPE OF CONTRACTOR WORKS

4.1 Subject of the works

The aim of the works is to build new ladles, its deliveries, 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 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 Valuation 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 ambient temperature (corrosive environment: C5-I and C5-M in accordance with

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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 Contractor 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 Contractor shall provide any other drawings, documents and analyses necessary to carry out the design review.

4.2.10 The Contractor 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 Contractor 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 Contractor 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 Tenderer agrees to participate in coordination meetings at the times set-out by AMP.

4.2.16 The Contractor 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
- welding, control and acceptance plan

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- 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. 50 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 PRELIMINARY EVALUATION

1) The Bid price shall comprise costs of adaptation of employees and equipment to comply with Occupational Health and Safety standards applicable in the AMP Company.

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 1. 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.	Manufacture of 16 ladles	D + 32 weeks
7.	**Delivery of 16 ladles to the Plant in Cracow and handing them over for installation of accessories by other entities**	**D + 36 weeks**
8.	Cold start of the first 6 ladles	D + 44 weeks
9.	Hot start (first heat) of 6 ladles	D + 52 weeks
10.	Commissioning the remaining ladles	D + 60 weeks
11.	End of performance tests of the ladles	D + 68 weeks
12.	Signing the Preliminary Acceptance Certificate (PAC)	D + 84 weeks

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