

ENCLOSURE NO 2 TO THE REQUEST FOR QUOTATION REGARDING THE ESTIMATION OF THE ORDER VALUE

## TECHNICAL SPECIFICATION

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.

The subject of the order indicated in this specification applies to the project entitled "Development of the innovative Zn-Al-Mg based coating for the production of hot deep galvanized sheets" (project no. : **POIR.01.02.00-00-0176/16-00**) Measure 1.2. "Sectoral R&D programmes" 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 for **Purchase, delivery (DDP according Incoterms 2010) and startup of zinc layer thickness measurement system for Hot Dip Galvanizing Line at ArcelorMittal Poland S.A. Świętochłowice.**

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.**

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 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.

AMP expects a technical solution to meet the requirements of the installation. Contractors are expected to submit a basic offer considering the requirements of this Technical Specification.

The package must be complete in all respects and valuation shall include all the components/equipment required to achieve proper construction, operation and maintenance of the installation.

### **Requirements for measurement system**

1. Measurement of alloy Zn-Al (GI)
2. Measurement of alloy Zn-Al-Mg (Al max. 5,2%, Mg max. 3,2%)
3. Measurement range for top head 15 – 300 g/m<sup>2</sup> of zinc layer
4. Measurement range for bottom head 15 – 300 g/m<sup>2</sup> of zinc layer
5. Measurement for strip speed between 15-180 m/min
6. Measurement for strip width between 700 – 1520 mm
7. Measurement for strip thickness between 0,4 - 2 mm
8. Measurement heads based on X-ray tubes

### **Functionality of measurement system**

1. Measurement type:
  - a. single spot (in the middle)
  - b. three spots
  - c. cross profile (traversing between edges)
2. HMI:
  - a. actual measured value of zinc layer (2 sides)
  - b. measured values for strip length
  - c. cross profile of measured values
  - d. status of device
  - e. calibration of device
  - f. alarms
  - g. control of device
3. Reports for each coil:
  - a. Identification number of exit coil
  - b. start/stop time of measurement
  - c. zinc layer thickness setpoint (g/m<sup>2</sup>)
  - d. average zinc layer thickness (g/m<sup>2</sup>)
  - e. max. zinc layer thickness (g/m<sup>2</sup>)
  - f. min. zinc layer thickness (g/m<sup>2</sup>)
  - g. proces capability Cp oraz Cpk
  - h. zinc layer distribution on strip length
4. HMI languages:
  - a. Polish
  - b. English

5. Signal exchange between measurement system and existing PLC must be realized by at least 1 of the methods:
  - a. inputs/outputs digital/analog
  - b. profibus
  - c. profinet
6. Signal exchange must include:
  - a. actual zinc thickness side A (g/m<sup>2</sup>)
  - b. actual zinc thickness side B (g/m<sup>2</sup>)
  - c. actual deviation of zinc thickness side A (g/m<sup>2</sup>)
  - d. actual deviation of zinc thickness side B (g/m<sup>2</sup>)
  - e. position of measurement heads from pass line (+/- mm)
  - f. status of device (measurement, parking position, alarm)
7. Light indicator of opening and closing shutter

### **Scope of delivery**

1. Measurement heads based on X-ray tubes – 2 pcs
2. Frame with traversing system 1 pc.
3. Main control cabinet – 1 pc.
4. Local control cabinets – 1 pc.
5. Local control desk with emergency stop – 1 pc.
6. Computer station:
  - a. Computer (min. processor Intel with 4 cores, 8GB+ RAM, 50GB+ HDD) - 1 pc.
  - b. Monitor LCD 26" – 1 pc.
  - c. Operating system Windows 10 – 1 pc.
  - d. Operator software for operating with measurement system 1 pc.
7. Technical documentation in Polish and English – hard copy 1 pc., digital 1 pc.

### **Scope of work**

1. Start-up and commissioning of measurement system
2. Integration of measurement system with existing control system and visualization

### **General requirements**

1. Identification of the necessary utilities and connections – identification of take-over points.
2. Identification of the location of the local control panel.
3. Selection of materials based on thermal conditions existing in the area where the equipment operates.
4. Submission of the engineering for Investor's approval.
5. Development and delivery of complete technical documentation in Polish – hard and soft copy

### **GUARANTEED PARAMETERS**

1. Measurement of alloy Zn-Al (GI)



2. Measurement of alloy Zn-Al-Mg (Al max. 5,2%, Mg max. 3,2%)
3. Measurement range for top head 15 – 300 g/m<sup>2</sup> of zinc layer
4. Measurement range for bottom head 15 – 300 g/m<sup>2</sup> of zinc layer
5. Mean Time Between Failure MTBF of measurement system 1000 h
6. Minimum warranty period 24 months.