

印度尼西亚达瑞铅锌矿 AH 矿段工程设备订货表

Equipment Ordering Datasheet for Dairi Lead-Zinc Mine AH Ore Block Project, Indonesia

	磨机控制系统 Mill control system	日期 Date	2020 年 11 月 Nov. 2020
工程名称 Project Name	印度尼西亚达瑞铅锌矿 AH 矿段工程 Dairi Lead-Zinc Mine AH Ore Block Project, Indonesia	工程代号 Project Code	
业 主 Client	中色（印尼）达瑞矿业有限公司 PT DAIRI PRIMA MINERAL	设备编号 Equipment No.	
		文件编号 Document No.	

1 设备名称

Equipment Name

序号 S.N.	设备编号 Equipment No.	设备名称 Equipment Name	台数 Qty.	安装地点 Location	主要用途 Main Use
1		半自磨机 PLC 控制系统及低压电控系统 PLC and low voltage control system of SAG mill	1	室外 outdoor	控制 1 台半自磨机 For control the SAG mill (1 set)
2		球磨机 PLC 控制系统及低压电控系统 PLC and low voltage control system of Ball mill	1	室外 outdoor	控制 1 台球磨机 For control the Ball mill (1 set)
3		铅再磨机 PLC 控制系统及低压电控系统 PLC and low voltage control system of Lead regrind mill	1	室内 Indoor	控制 2 台 SMD 磨机 For control the SMD mill (2 sets)
4		锌再磨机 PLC 控制系统及低压电控系统 PLC and low voltage control system of Zinc regrind mill	1	室内 Indoor	控制 2 台 SMD 磨机 For control the SMD mill (2 sets)

2 现场基础数据

Site Data

2.1 工程地点

Project Location

Dairi 铅锌矿位于印度尼西亚苏门答腊岛西北部，距离印尼第三大城市 Medan 约 120 公里。从印尼 Medan 市区开车至矿区，首先经 Bitumen 国道至 Sidikalang 镇，然后通过低等级的省级公路到达 Sopokomil 村庄，路面车流量较大，车程约为 5 个小时。

Located in the northwest of Sumatra, Indonesia, Dairi Lead - Zinc Mine is about 120km from Medan, the third biggest city of Indonesia. It takes about 5-hour drive to the Mine from Medan city first by Bitumen National Road to Sidikalang town and then by low-grade provincial roads to Sopokomil village. Vehicle flow on the road is very large.

2.2 矿区自然环境

Natural Conditions of the Mine Site

1) 矿区海拔标高：680m。

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Mine site elevation above sea level: 680m;

2) 年平均气温：24℃~28℃。最高气温 35℃，最低气温 15℃。

Annual average temperature: 24℃~28℃, highest temperature: 35℃, lowest temperature: 15℃;

3) 平均湿度：

年平均湿度：90%

月平均湿度最大：95%

月平均湿度最小：70%

Average humidity:

annual average humidity: 90%

max. monthly average humidity: 95%

min. monthly average humidity: 70%;

4) 年平均降雨量：3500mm~4000mm。

年平均潮湿天气：237 天。

Annual average precipitation: 3500mm~4000mm,

annual average humid days: 237 days;

5) 主导风向：东北风、西南风。

Prevailing wind direction: NE wind, SW wind;

6) 地震烈度：按照 475 年一遇（50 年发生的概率为 10%）为 0.37g，相当于中国《建筑抗震设计规范》中的抗震设防烈度 9 度。

Seismic intensity: 0.37g as per 475-year return period (10% probability of occurrence in 50 years), equivalent to the seismic intensity IX in the Code for Seismic Design of Buildings in China.

2.3 现场供电参数

Power Supply Parameters on Site

电机功率 > 650kW

11 kV, 3 相, 50 Hz

Motor power above 650kW

11kV, AC, 3-phase, 50Hz

电机功率 185-650kW

660 V, 3 相, 50 Hz

Motor power between 180kW and 650kW and below

660V, AC, 3-phase, 50Hz

电机功率 < 185kW

地表及井下水泵房：380V, AC 3 相, 50Hz

Motor power 185Kw and below

Surface and water pump room underground:

380V, AC, 3-phase, 50Hz

井下：1000V, AC 3 相, 50Hz

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	Underground: 1000V, AC 3-phase, 50Hz
地表维修电源和小功率设备电源	380/220 V, 50 Hz
Maintenance power supply and low-power equipment power supply on ground surface	380/220 V, 50 Hz
控制电源 Control Power	110VAC/24VDC

3 技术参数、技术要求

Technical Parameters and Requirements

3.1 设备概述:

Equipment Description

本次招标的磨机控制系统，用于印度尼西亚苏门答腊岛西北部 Dairi 铅锌矿项目，供货商应对设备的成套性、完整性、系统性负责。供货范围含设备的设计、制造、校验、试验、防腐涂装、包装、运输、现场安装指导、调试、培训、运行操作及维护、质量保证和售后服务及其它相关服务等。

The control systems of mills are used for Dairi Lead-Zinc Mine project, northwest of Sumatra, Indonesia. The Vendor shall be responsible for its completeness, integrity and systematization. The scope of supply includes design, manufacturing, verification, testing, anticorrosion coating, packaging, transportation, site installation guidance, commissioning, training, operation and maintenance, quality assurance & after-sales service and other relevant services.

3.2 供货范围:

scope of supply

本次控制系统供货范围是 6 台磨机（半自磨机 02-ML-001、球磨机 02-ML-002、铅再磨机 03-ML-003/03-ML-004、锌再磨机 04-ML-005/04-ML-006）的电控系统，包含设备的 PLC 控制系统（硬件及软件，系统的编程、组态、调试）、辅助设备的低压配电柜、设备所需要的各种现场操作箱、控制箱、接线箱、接线盒等，并提供现场安装指导、调试、培训服务。供货商应根据已购磨机的实际情况进行控制系统的配置并保证其完整性。

The supply scope of control system for 6 mills (02-ML-001 semi-automatic mill, 02-ML-002 ball mill, 03-ML-003/03-ML-004 lead regrinding mill, and 04-ML-005/04-ML-006 zinc regrinding mill) include the PLC control system equipment (hardware and software, system programming, configuration, and commissioning), low-voltage distribution cabinets of auxiliary equipment (MCC), various field operation boxes, control boxes, junction boxes and terminal boxes required by the equipment etc., and provide site installation guidance, commissioning, training service. The Vendor shall configure the control system

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according to the actual conditions of purchased mills and ensure its integrity.

各磨机的接口界区为：业主为各磨机分别提供一回路主电源（半自磨机和球磨机为 AC11kV，50Hz；铅再磨机和锌再磨机为 AC660V，50Hz）和一回路辅助电源（AC380V，50Hz）。半自磨和球磨机用高压配电柜，铅再磨机和锌再磨机用 660V 配电柜，配电柜及线缆等均由业主自行购买。供货商负责提供管线表（包含线缆起止点、具体规格型号及其他相关说明）。

The interface battery limit of each mill: DPM provides circuit of primary power supply (11 kV, 50 Hz for SAG mill and Ball mill; AC 660 V, 50 Hz for lead regrinding mills and zinc regrinding mills) and a circuit of auxiliary power supply (AC 380 V, 50 Hz) for each mill. SAG mill and Ball mill are equipped with high-voltage power distribution cabinets. Lead regrinding mills and zinc regrinding mills are equipped with 660 V power distribution cabinets. Power distribution cabinets and cables are purchased by DPM. And the Line List (including the starting and ending points of cables, specific specifications and other relevant instructions) is provided by the Vendor.

供货商应保证各磨机电控系统的完整性；设备交货期不应超过 8 个月。

The Vendor shall ensure the integrity of the electrical & control system of each mill; The equipment delivery date should not exceed 8 months.

3.3 技术参数及要求

Technical Parameters and Requirements

3.3.1 技术参数

Technical parameters

(1) 控制系统配置情况

Configuration of Control System

根据现场 6 台磨机的设备布置情况，其 PLC 控制系统采用 4 套独立的 PLC 控制柜。其中，半自磨机（02-ML-001）一套，球磨机（02-ML-002）一套，铅再磨机（03-ML-003/03-ML-004）一套，锌再磨机（04-ML-005/04-ML-006）一套。

半自磨机和球磨机控制柜分别放置在磨机平台上的遮阳防雨棚内。铅再磨机和锌再磨机控制系统放置在浮选车间内设备旁边。4 套 PLC 控制柜预留 Profibus-DP 通讯接口，与全厂 DCS 控制系统通讯。（全厂 DCS 控制系统另外由厂区控制系统集成商集成，不在磨机的控制系统供货范围内。）

According to the equipment arrangement of 6 mills on site, it is suggested 4 independent PLC cabinets are used in the PLC system, including one set for SAG mill (02-ML-001), one set for ball mills (02-ML-002), one set for lead regrinding mills (03-ML-003/03-ML-004) and one set for zinc regrinding

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mills (04-ML-005/04-ML-006).

The cabinets of SAG mill and Ball mill are respectively placed in the sun-shading and rain-proof shed on the mill platform. The cabinets of lead regrinding mills and zinc regrinding mills are placed beside the equipment in the flotation workshop. There are the Profibus-DP communication interfaces reserved for 4 PLC cabinets to communicate with the DCS control system of the whole plant. (The DCS control system of the whole plant is integrated by the plant control system integrator, which is not within the supply scope of the mill control system.)

(2) 低压配电柜的配置

Configuration of Low-Voltage Distribution Cabinet

各磨机的 PLC 控制系统电源及辅助低压设备（如冷却风机、慢驱装置、润滑油站、空间加热器、水电阻柜等装置）的配电及控制由供货商负责。每套控制系统使用独立的低压配电柜，可采用固定式低压配电柜。磨机和半自磨机的配电柜放置在磨机平台上的专用遮阳防雨棚内。配电柜至设备之间的线缆由业主自行购买，供货商提供管线表（包含线缆起止点、具体规格型号及其他相关说明）。

The Vendor is responsible for the power distribution and control of the PLC control system power supply and auxiliary low-voltage equipment (such as cooling fan, slow drive device, lubricating oil station, space heater, water resistance cabinet) of each mill. Each control system should has an independent low-voltage distribution cabinet, and fixed low-voltage power distribution cabinets can be used. Low-voltage distribution cabinets of SAG mill and Ball mill are placed in the dedicated sun-shading and rain-proof shed on the mill platform. The cables from the distribution cabinets to the equipment will be purchased by DPM, and the Line List (including the starting and ending points of cables, specific specifications and other relevant instructions) is provided by the Vendor.

(3) 控制系统功能说明

Control System Function Description

a. PLC 控制柜（含 PLC 和触摸屏） PLC cabinet (including PLC and touch screen)

该控制柜为磨机控制系统的核心，配置可编控制器和彩色液晶触摸屏。

系统中 PLC（提供通讯接口 Profibus-DP）可与集控系统（DCS）进行通讯，并可提供相应的无源触点及电机定子绕组温度、磨机主轴承温度信号（4-20mA）给 DCS 系统。PLC 的 I/O 点数富裕 10%。

建议的功能如下：

——润滑站的控制、保护和连锁；

——采集和处理下列信号：

- a) 温度信号：电机定子绕组温度、转子轴承温度、磨机主轴承温度、小齿轮轴承温度、润滑站油温。
- b) 油压信号：主轴承、小齿轮轴承的油压。
- c) 油流信号：主轴承、小齿轮轴承的油流。

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触摸屏上可显示如下多个监控画面:

- 主机系统
- 润滑系统
- 各个测量点的实际测量值，如各个轴承温度、润滑站供油压力、油流等
- 各个测量点的趋势图，如温度、压力、油流等
- 故障报警信息
- 故障跳闸信息

要求在触摸屏上可修改参数，如各个轴承温度报警值及停机值、润滑站供油压力、油流等低报警值及停机值。对系统集中监控，实现球磨机的启动、停止、连锁、保护等多种功能，也可由中控室（DCS）或机旁控制箱控制。控制柜上配有少量按钮和信号灯,作为日常自动操作和备用。

This PLC cabinet equipped with a programmable controller and a color LCD touch screen is the core of the mill control system.

The PLC (with the Profibus-DP communication interfaces) in the system can communicate with the centralized control system (DCS). It can also provide the signals of corresponding passive contacts, motor stator winding temperature and mill main bearing temperature (4 - 20 mA) to the DCS system. 10% surplus of PLC I/O points is reserved.

The recommended functions are listed below:

- Control, protection and interlocking of the lubricating station;
- Collect and process the following signals:
 - a). Temperature signals: motor stator winding temperature, rotor bearing temperature, main bearing temperature of the mills, pinion bearing temperature and oil temperature at the lubricating station.
 - b). Oil pressure signals: oil pressure in the main bearing and pinion bearing.
 - c). Oil flow signals: oil flow in the main bearing and pinion bearing.

Touch screen

The following monitoring pictures can be displayed on the touch screen:

- Host system
- Lubricating system
- Actual measured values at each measuring point, such as temperature of each bearing, oil supply pressure at the lubricating station and oil flow.
- Trend diagram at each measuring point, such as temperature, pressure and oil flow.
- Fault alarm information.
- Fault trip information.

It is required that the parameters can be modified on the touch screen, such as the temperature alarm value and shutdown value of each bearing, the low alarm value and shutdown value of the lubricating station oil supply pressure, oil flow, etc. The centralized monitoring system can realize multiple functions

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such as starting, stopping, interlocking and protection of the ball mills, and can also be controlled by the central control room (DCS) or the control box beside the machine. The control cabinet is equipped with a small number of buttons and signal indicators for daily automatic operation and standby.

b. 低压配电柜 Low-voltage power distribution cabinet

该控制柜包括如润滑站高低压油泵电机等的控制主回路，并为其他控制柜和控制箱提供电源。

This cabinet includes the main control circuit such as the high and low pressure oil pump motor of the lubrication station, and provides power for other control cabinets and control boxes.

c. 磨机就地操作箱 Mill local operation box

该控制箱主要是来实现磨机和主电机的就地起停操作。在控制箱的面板上设置工作方式转换开关，可实现“就地控制”和“集中控制”的转换。“集中控制”是在集中控制室的操作台上进行，此控制箱上设置“紧急停车按钮”。还带有以下部件：

- 电机和磨机的备妥指示灯
- 电机和磨机的运行指示灯
- 电机和磨机的操作方式选择开关

磨机就地操作箱与磨机控制室之间的所有现场接线由业主自行采购提供。所有控制逻辑将作为 PLC 控制柜的一部分。

This control box is mainly used to realize the local start-stop operation of the mills and main motors. The operation mode conversion switch is set on the panel of the control box to realize the conversion between "local control" and "centralized control". "Centralized control" is performed on the console of the centralized control room. The "emergency stop button" is set on this control box, and also come with the following parts:

- Ready indicators for motors and mills;
- Operation indicators for motors and mills;
- Operation mode selection switch for motors and mills.

All field wiring between the local operation box of the mill and the mill control room shall be purchased and provided by DPM. All control logic will be part of the PLC cabinets.

d. 润滑站机旁控制箱 Control box of the lubrication station

润滑系统主要由控制室中的控制器控制，也可利用机旁控制箱就地控制。由就地/远程选择开关进行切换。正常工作情况下，就地/远程选择开关处于远程模式。带有以下部件：

- 各泵的启、停按钮
- 各泵的运行指示灯
- 双泵工作的选择开关
- 浸入式加热器指示灯
- 油箱液位低指示灯

机旁控制箱与磨机控制柜之间的所有现场接线由业主自行购买提供。所有控制逻辑将作为 PLC 控制柜的

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一部分。

The lubricating system is mainly controlled by the controller in the control room, and is also controlled locally by the control box beside the machine. It is switched by the local/remote selection switch. During normal operation, the local/remote selection switch is in remote mode with the following parts:

- Start/stop buttons of each pump;
- Operation indicators of each pump;
- Selection switch for double pump operation;
- Immersion heater indicator;
- Fuel tank low fuel level indicator lamp.

All field wiring between the control box beside the machine and the mill control cabinet shall be purchased and provided by DPM. All control logic will be part of the PLC cabinet.

e. 慢驱控制箱 Low-speed drive control box

该控制箱控制磨机慢速驱动电机的启动、停止，正向、反向运行，以及对慢速驱动电机 实施过流、过载、短路、缺相等保护；并与磨机主电机高压开关柜及磨机 PLC 控制柜保持联锁。慢速驱动装置在磨机检修或更换衬板时使用。慢速驱动与主电机及离合器有联锁控制条件，只有当主电机停止时，才允许慢速驱动电机工作。

This control box controls the start, stop, forward and reverse operation of the low-speed drive motors of the mills, protects the low-speed drive motor against over-current, overload, short circuit and open phase; and is interlocked with the high-voltage switch cabinets of the main motors of the mills and the PLC cabinets of the mills. The low-speed drive device is used when the mill is overhauled or the lining plate is replaced. The slow-speed drive has interlocking control conditions with the main motor and the clutch. The slow-speed drive motor is allowed to operate only when the main motor stops.

f. 密封加脂润滑控制箱 Sealed and greased lubrication control box

该控制箱为磨机密封加脂润滑的控制、保护与联锁。喷射润滑为间歇工作制，根据现场工况进行可设定工作时间和间歇时间。并与磨机 PLC 柜保持联锁。

当磨机开始工作时，密封加脂润滑自动启动并按设定程序工作。磨机停止工作时，密封加脂自动停止工作。

This control box is mainly used for the control, protection and interlocking of sealed and greased lubrication of the mills. Spray lubrication adopts an intermittent operation system, which is performed according to the field operation conditions, and the operation time and intermittent time can be set. The control box is interlocked with the PLC cabinets of the mills.

When the mill starts running, the sealed and greased lubrication starts running automatically and operates according to the set program. When the mill stops running, the sealed and greased lubrication automatically stops running.

g. 喷射润滑控制箱 Spray lubrication control box

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该控制箱为磨机大小齿轮喷射润滑的控制、保护与联锁。喷射润滑为间歇工作制，根据现场工况进行可设定工作时间和间歇时间。并与磨机 PLC 柜保持联锁。当磨机开始工作时，喷射润滑自动启动并按设定程序工作。磨机停止工作时，喷射润滑自动停止工作。

This control box is mainly used for the control, protection and interlocking of the spray lubrication of the main gears and pinions of the mills. Spray lubrication adopts an intermittent operation system, which is performed according to the field operation conditions, and the operation time and intermittent time can be set. The control box is interlocked with the PLC cabinets of the mills. When a mill starts running, the spray lubrication starts running automatically and operates according to the set program. When the mill stops running, the spray lubrication automatically stops running.

供货商可根据已购磨机设备的实际情况进行增减配置并保证磨机控制系统功能的完整性。各个柜体的防护等级应满足设备布置和现场气候条件。

The above control system can be configured according to the actual situation of purchased mill equipment and ensure the integrity of the mill control system function by the Vendor. The protection level of each cabinet should meet the equipment layout and climate conditions at the site.

3.3.2 控制系统软硬件品牌要求

Brand requirements for control system's hardware and software

可编程控制器、HMI 应使用西门子、AB 等同等品牌的产品；主要电气元器件应使用西门子、AB、ABB、SCHNEIDER 等同等品牌的产品。

The programmable controller, HMI should use Siemens, AB and other equivalent brand products; the main electrical components should use Siemens, AB, ABB, SCHNEIDER and other equivalent brand products.

3.3.3 技术标准：

Technical standards:

产品设计、制造、检验相关标准外除满足 IEC 标准外，还应满足安装所在国相关标准。

The design, manufacturing and inspection of products shall conform to IEC standards and also relevant standards in the country of installation.

供货商应提供的图纸如下：

- A、外形尺寸图；
- B、电控系统原理图和布置图；
- C、其他需要说明的图纸。

The Vendor shall provide the following drawings:

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- A. Outline drawing of cabinet;
- B. Schematic drawing and layout plan of electric control system;
- C. Other drawings to be noted

4 技术文件、技术资料的交付

Submission of Technical Documents and Materials

4.1 基本要求

Basic Requirements

- 1) 外形尺寸图、基础图及荷载要求；电、仪等接口条件图；
 - 2) 设备出厂质量合格证书，实验报告、参数报告及使用说明；主要部件的检验数据报告；
 - 3) 设备安装、调试、操作运行及维修手册。
- 1) Overall dimension drawing of cabinet; electric and instrumentation interface condition drawing;
 - 2) Quality certificate, test report, data report and operating instruction of equipment; test data report of main components;
 - 3) Equipment installation, commissioning, operation and maintenance manuals

4.2 交货资料要求

Requirements of Deliverables

供货商应在设备交货时提供下列资料，包括但不限于：

The Vendor shall provide the following documents at the time of equipment delivery, including but not limited to:

- 1) 提供设备操作和维护保养手册、使用说明书及备件手册，包含下列可应用的内容：
 - (1) 设备技术说明：使用、安装、检修、安全运行等说明书。
 - (2) 所有电气、仪器仪表和控制系统的系统原理图及控制编程，用以说明系统所有的组件；
 - (3) 电气线路图和端子图；
 - (4) 设备拆卸、清洁、维修、更换部件和重新装配程序及技术要求，包括建议的允许公差。
- 1) Equipment operation and maintenance manual, operation instructions and spare part manual, including the following applicable items:
- (1) Technical specification of equipment: operation, installation, repair and safe operation instructions;
 - (2) System schematic drawing and programming of all electrical, instrument and meter and control system indicating all components of the system;
 - (3) Electric wiring diagram and terminal drawing;

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(4) Equipment disassembling, cleaning, maintaining, parts replacing and reassembling procedures and technical requirements, including recommended allowable tolerances.

2) 注明设备所必须的外部接口条件，设备自身的布线说明，电气接线图及其它生产材料的要求。

2) Indicating necessary external interface conditions of equipment, wiring instruction of equipment, electrical connection drawings and requirements of other production materials;

3) 主要电气产品及外购件的规格、型号、厂家、产品技术文件、工艺及操作说明书和其他的技术参数资料。

3) Specification, model, manufacturer of main electrical products and outsourced parts, technical document of products, process and operation instructions and other technical data;

4) 提供整机及重要零部件在该工况下的设计使用寿命。

4) Providing the design service life of the complete equipment and important components and parts at the operating condition;

5) 设备常见故障的种类、原因分析及处理方法。

5) Type of frequent equipment faults, cause study and treatment method

6) 提供正版控制系统的编程和组态软件授权及项目文件。

6) Providing the license of programming and configuration software of copyrighted control system and project documents;

7) 保证供货设备运行十年所需的详细备件清单。

7) Detailed list of necessary spare parts for ensuring 10-year operation of equipment;

8) 如果文件和图纸需要进行修改，修改部分应及时另行发送给买方。

8) Updated documents and drawings shall be sent to the buyer separately in time if any revisions.

9) 所有技术资料计量单位使用国际标准计量单位制 SI;

9) The unit of measurement in all technical documents follows the international standard system of units of measurement – SI;

10) 图纸一律采用计算机制图，图纸比例严格按照 1: 1 比例绘图，供货商在要求的时间内提供图纸、文件，图纸、文件必须盖有制造商的专用章。并另提供可修改的电子版图纸、文件，图纸为*.dwg，文件为*.doc, *.xlsx。

10) All drawings shall be drafted in computers strictly at a scale of 1:1. The Vendor shall submit drawings and documents within the given time. Drawings and documents shall be affixed with the manufacturer's stamp, and furthermore, revisable electronic copies of drawings in the format of *.dwg and documents in the format of *.doc or *.xlsx shall be provided.

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11) 图纸标准为中国国家标准或 ISO 标准，采用幅面：A0、A1、A2、A3、A4，优先用 A1，打印文件规格：A4。

11) Drawings shall follow Chinese national standards or ISO standards in paper sizes of A0, A1, A2, A3 or A4, among which, size A1 is preferred. The size of printed documents is A4.

5 现场技术培训

Onsite Technical Training

1) 供货商负责到现场培训业主的技术人员和操作维护人员，培训内容包括所提供设备技术性能、结构及工作原理、安装调试、操作及设备维护等全部内容。

1) The Vendor is responsible for on-site training to the technical personnel and operation and maintenance personnel of DPM. The training includes all contents regarding the technical performance, structure and working principle, installation and commissioning, operation and equipment maintenance of the equipment provided.

2) 供货商应派有经验的技术人员到施工现场指导，负责处理设备的质量问题和选配件核实工作，并对全套设备的质量全面负责至运行，业主有权派出自己的技术人员参加此项工作。

2) The Vendor shall send the experienced technical personnel to the construction site for supervision, to handle the quality problems of equipment and the verification work of optional parts, and to take full charge of the quality of the packaged equipment until operation. DPM has the right to send its own technical personnel to participate in this work.

6 安装、调试、检验及验收

Installation, Commissioning, Test and Acceptance

1) 合同签订后，双方根据招标文件、投标文件、有关国际标准，国家标准和制造厂标准制定验收大纲。

1) After the contract signing, the two parties shall formulate an acceptance outline according to the tendering documents, bidding documents, relevant international standards, national standards and manufacturer's standards.

2) 供货商派出有多年工作经验的技术人员到招标人现场负责设备的卸车、安装指导、调试和考核工作，考核结果必须符合验收大纲的要求。现场安装指导、调试、培训的服务时间不低于 60 个工作日。

2) The Vendor shall send the experienced technical personnel to DPM's site, to take charge of unloading, installation guidance, commissioning and test of equipment. The results of test must meet the requirements of the acceptance outline. **The site service time for on-site installation guidance,**

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commissioning and training shall not be less than 60 working days.

3) 在设备安装、调试期间，供货商应对 DPM 的所有相关技术人员、操作人员以及维修人员进行操作、保养、机械电气维修等方面的技术培训。

3) During the installation and commissioning of the equipment, the Vendor shall make technical training in terms of the operation, maintenance, mechanical and electrical repair, to all relevant technical personnel, operators and maintenance personnel of DPM.

4) 设备到货时供货商随设备提供出厂检验报告、产品合格证、成套供货清单及装箱单。设备采用的外购、外协件应提供原产地证明及检验合格证书。

4) When the equipment arrives, the Vendor shall provide the ex-factory test report, product certificate, package supply list and packing list along with the equipment. The outsourced parts used in the equipment shall be provided with the certificate of origin and the certificate of inspection.

5) 安装、调试完成后，双方应对合同设备进行试运转。经检验达到技术性能考核指标及验收大纲的要求时视为考核完成。

5) After completion of the installation and commissioning, both parties shall perform the test run of the contracted equipment. The test will be deemed to be completed when the technical performance test indices and the acceptance outline requirements are achieved as verified by the tests.

7 售后服务要求

After Sales Service Requirements

1) 能够即时供应备件，并且可在印尼提供综合的培训服务。

1) The spare parts shall be supplied immediately and the comprehensive training services in Indonesia shall be available.

2) 设备故障的反应时间应在 24 小时内，同时提供 24 小时的热线服务。

2) The response time for the faults of equipment should be within 24 hours, and a 24-hour hotline service shall be available.

3) 售后服务事宜在供货商文件中加以说明。

3) The after-sales service terms shall be specified in the Vendor 's documents.

8 设备质保期

Equipment warranty

1) 设备质保期为最终验收后的 12 个月内，质保期间，供货商方将对所提供的设备进行保修。

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1) The warranty period of the equipment is 12 months after the final acceptance. During the warranty period, the Vendor shall guarantee the supplied equipment.

2) 保修期内，如果发生由于设备本身的原因造成故障或损坏，供货商应免费修理或更换，更换或修理后的设备质保期顺延；产品寿命周期内，系统及应用软件如发布新版本，应免费为用户更换或升级。

2) During the warranty period, if there is any malfunction or damage caused by the equipment itself, the Vendor shall repair or replace the equipment free of charge, and the warranty period of the equipment after replacement or repair shall be postponed; during the life period of the product, if new version of the system or application software is released, the Vendor shall replace or update for the user free of charge.

9 其它

Others

1) 对标准配置和选构配件、附件、易损件、一年备品备件、安装调试、培训、运保等的分项要求单独报价。对供货商投标时提供的配置中未达到标书要求的，按该项目有效投标价最高价加价。

1) Separate quotation shall be made for breakdown items such as standard configuration and optional accessories, attachments, wearing parts, one-year spare parts, installation and commissioning, training, freight and insurance. If the configuration provided by the Vendor in the bidding documents does not meet the requirements specified in the tendering documents, the bidding document shall be regarded as a quotation of the highest rate in grading.

2) 投标时须标明重要部件的材质、寿命及生产年份。

2) The material, life and production year of important parts shall be indicated in bidding documents.

3) 未列项目及其它补充项目由供货商补充完善。

3) The unlisted items and other supplementary items shall be made up and improved by the Vendor.

4) 采用最新国家标准、环保性能、生产安全有关要求以及国际标准等。各标准之间存在差异时，按较高标准执行。

4) When adopting the latest national standards, environmental performance, production safety related requirements and international standards, if there is any discrepancy between the standards, the higher standards shall apply.

附件 1: 磨机和电气室布置图;

Annex 1: Layout drawing of the Mills and Electrical Room;

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附件 2: 磨机技术数据;
Annex 2: Technical date of Mills;
附件 3: PID 图纸
Annex 3: Piping & Instrument Diagram.

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