# TERMS OF REFERENCE (TOR)

## ENGINEERING CONSULTANCY SERVICES
## DETAIL ENGINEERING DESIGN (BED) & OWNER'S ENGINEER
## COAL UNLOADING SYSTEM MODIFICATION PROJECT

**for**

**IPP Kendari-3 Coal Fired Steam Power Plant 2x50 MW**

PT DSSP POWER KENDARI

**February 2026**

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The Company/third party(s) shall bear any and all its costs without limitation, associated with or incidental to the preparation and submission of its proposal, including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by DSSP or any other costs incurred in connection with or relating to its proposal. All such costs and expenses will remain with the Company, and DSSP shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by any Company/third party in preparation or submission of the proposal, regardless of the conduct or outcome of the DSSP TOR selection process.

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## I. GENERAL INFORMATION

PT DSSP Power Kendari (“DSSP”) is an Independent Power Producer that has a Power Purchase Agreement (PPA) with PT PLN (Persero) to build, own, and operate a coal-fired steam power plant with a net capacity of 2x50 MW (the “Plant”). The Plant is located at Desa Tanjung Tiram, Kecamatan Moramo Utara, Kabupaten Konawe Selatan, Sulawesi Tenggara.

The Plant consists of two units boiler and steam turbine generator, auxiliaries equipment, and balance of plant (BOP). In addition, the plant is equipped with a coal jetty for receiving coal and associated facilities, such as a coal conveyor for transporting coal from the jetty to the plant.

PT DSSP Power Kendari (hereinafter referred to as the “Owner”) plans to execute a Coal Unloading System Modification Project for an existing 2 x 50 MW coal-fired steam power plant. The Project is intended to improve efficiency and reliability in coal transfer operations, as the current condition relies on conventional truck-based coal transportation, which results in high operational costs, inefficiencies, increased traffic, and higher operational risks. The system is designed to handle coal delivery by 13,000 DWT barges, unloading at a marine (sea) location, and transferring coal to the existing coal handling facilities using a belt conveyor system with a nominal capacity of 350 TPH.

The Coal Unloading System Modification Project (the “Project”) shall be implemented to improve reliability, safety, and operational efficiency of fuel supply to the power plant. The Project scope includes modification and integration with existing facilities, covering:

- Existing jetty (assessment and modification as required)
- Coal unloading facilities suitable for 13,000 DWT barges
- Belt conveyor system (350 TPH) including transfer towers and galleries
- Interface with existing coal handling system and stockpile

In view of the above, the Owner intends to appoint an independent Engineering Consultant to perform the Detailed Engineering Design (DED) for the Coal Unloading System Modification Project. The scope of services shall include preparation of complete and construction-ready engineering documents, including but not limited to finalized layouts, detailed drawings, technical specifications, material take-offs (MTO), bill of quantities (BOQ), engineering calculations, and all documents required to support procurement, fabrication, construction, installation, testing, and commissioning**.**

The Engineering Consultant shall also provide engineering support and act as the Owner’s Engineer during the construction phase, including design clarification, review of shop drawings, technical assistance, and site support as required.

## II. OBJECTIVE OF THE SERVICES

To provide engineering consultancy services for the preparation of Detailed Engineering Design (DED) for the Coal Unloading System Modification Project at an existing 2 x 50 MW coal-fired steam power plant, which shall define the complete and finalized technical design, system configuration, layout, design criteria, and detailed engineering required as the basis for procurement, fabrication, construction, installation, testing, and commissioning**,** and to provide engineering consultancy and technical support during the construction phase as the Owner's Engineer, with the following key parameters:

- Coal unloading capacity: 350 TPH
- System type: Belt conveyor system
- Barge size: 13,000 DWT
- Project: Modification / retrofit of existing facilities

## III. GENERAL AND SPECIFIC REQUIREMENTS

The Consultant shall:

1. Have proven experience in coal handling and coal unloading system projects, preferably for coal-fired power plants.
2. Possess strong technical capability in jetty, marine structures, bulk material handling, and conveyor systems.
3. Demonstrate experience working with EPC contractors, OEMs, and vendors, including local and international manufacturers.
4. Provide qualified personnel with relevant experience. Curriculum Vitae (CV) and competency certificates shall be submitted.
5. Be familiar with applicable international and Indonesian standards (ISO, IEC, ASTM, DIN, SNI, PIANC, etc.).
6. Ensure English proficiency for key personnel; additional language capability is an advantage.
7. Declare no conflict of interest with EPC Contractors, vendors, or suppliers involved in the Project.

## IV. SCOPE OF ENGAGEMENT

The Consultant shall provide engineering consultancy services for the preparation of Detailed Engineering Design (DED) and engineering support during construction for the Coal Unloading System Modification Project, including but not limited to the following:

### 1. Data Collection and Design Basis

a. Review existing plant data, drawings, and available documents.
b. Conduct site visit(s) to verify existing conditions and interfaces.
c. Identify detailed design constraints related to retrofit works and operating plant conditions.
d. Define applicable design codes, standards, and detailed design assumptions.

### 2. Detailed Engineering Design (DED)

#### 2.1 General Arrangement and System Layout

a. Final coal unloading system configuration from jetty to existing coal handling system.
b. Detailed conveyor routing, transfer tower locations, and elevation profile.
c. Final definition of all interface points with existing facilities.
d. Preparation of construction-ready drawings (GA, sections, details).

#### 2.2 Civil and Structural (Detailed Design)

a. Detailed assessment of existing jetty and required structural modifications.
b. Detailed civil and structural design for Conveyor supports, trestles, and transfer towers,
   Foundations, piles, and concrete structures
c. Complete structural calculations and design reports.
d. Issued-for-construction (IFC) drawings for all civil and structural works.

#### 2.3 Mechanical (Detailed Engineering Design)

a. Detailed Detailed design of the complete coal handling and unloading system, including ship/barge unloader, conveyors, transfer points, chutes, hoppers, feeders, dust control equipment, and firefighting system for coal handling facilities.

b. Conveyor Engineering (Detailed Level):

- Final belt width, speed, capacity, and service factor calculation.
- Final conveyor length, horizontal and vertical profile.
- Detailed drive power calculation including starting, braking, and emergency conditions.
- Motor, gearbox, coupling, and brake sizing.
- Detailed take-up system design (gravity / winch / hydraulic).
- Complete belt tension and stress analysis under all operating scenarios.
- Idler spacing, belt sag, and transition length calculation.
- Pulley sizing and shaft strength calculation.

c. Transfer Point and Material Handling Design:

- Detailed chute design (flow analysis, wear liner, blockage prevention).
- Hopper sizing and discharge geometry.
- Skirt board and sealing system design.
- Dust suppression and enclosure design at transfer points.

d. Mechanical Drawings and Layout:

- Detailed General Arrangement (GA) drawings.
- Equipment layout and erection drawings.
- Conveyor profile and stringing drawings.
- Access platforms, ladders, walkways, and handrails.
- Maintenance access and lifting (monorail, crane, hoist) provisions.

e. Equipment Engineering:

- Preparation of equipment datasheets.
- Technical specifications for all mechanical equipment.
- Vendor data requirements and technical bid comparison criteria.
- Review of vendor drawings and documents.

f. Mechanical Calculations and Reports:

- Design calculation reports for all major equipment.
- Compliance with relevant international standards (CEMA, DIN, ISO, AS, BS).

**2.4 Electrical, Instrumentation, and Control (Detailed Engineering Design)**

**2.4.1 Electrical**

a. Detailed electrical system design including power supply, distribution, and motor control system.

b. Load List and Power System:

- Detailed electrical load list.
- Power demand and load flow calculation.
- Short circuit calculation.
- Motor starting and voltage drop analysis.

c. Electrical Drawings:

- Detailed Single Line Diagram (SLD).
- Motor Control Center (MCC) layout.
- Power and control cable routing drawings.
- Earthing and lightning protection system design.
- Lighting system design (area classification, lux calculation).

d. Equipment Specification:

- Technical specifications for transformers, MCC, VFD, switchgear, and panels.
- Cable sizing and selection.
- Protection relay setting philosophy.

### 2.4.2 Instrumentation

a. Detailed instrumentation design for coal unloading and conveying system.

b. Instrument Engineering:

- Instrument index and instrument data sheets.
- Measurement range and accuracy definition.
- Selection of field instruments (belt scale, speed sensor, pull cord, misalignment switch, level transmitter, dust monitor, fire detector).

c. Instrument Drawings:

- Instrument loop diagrams.
- Hook-up drawings.
- Instrument location plans.
- Cable and junction box schedules.

### 2.4.3 Control and Automation

a. Control system architecture and philosophy (PLC / DCS / SCADA).

b. Control Engineering:

- Control narrative and sequence of operation.
- Interlock and protection logic.
- Cause & Effect (C&E) diagrams.
- Alarm and trip philosophy.

c. System Integration:

- Integration with existing plant control system.
- Network architecture and communication protocols.
- HMI/SCADA screen philosophy.

## 2.5 Cost Estimate

The Consultant shall prepare a **Detailed Cost Estimate** based on the approved Detailed Engineering Design, including:

a. Detailed cost breakdown for all systems and work packages:

- Civil and structural works (including foundations, piles, concrete, steel structures, and buildings)
- Mechanical equipment supply, fabrication, and installation
- Electrical, instrumentation, and control systems
- Firefighting and safety systems

b. Detailed Bill of Quantities (BOQ) with itemized quantities based on IFC drawings and MTO.

c. Material Take-Off (MTO) for all disciplines.

## 2.6 Simulation and Analysis of Heavy Equipment and Truck during Coal Transfer

a. Equipment type and capacity (loaders, excavators, dump trucks, etc.).
b. Cycle time and productivity analysis.
c. Equipment quantity requirement.
d. Operational scenarios and bottleneck analysis.

## 2.7 Draft Improvement Outline

| | | | | | | |
|---|---|---|---|---|---|---|
| **Detailed Engineering Design** | | | | | | |
| **1** | **Jetty Area** | | | | | |
| A | Modification truck pad | 1 | set | | Existing | |
| B | Retrofit reclaim feeder | 1 | set | | Existing | |
| C | Replace reclaim feeder to belt feeder | 1 | set | | New | |
| **2** | **Stock Pile Area** | | | | | |
| D | Conveyor 2 | 1 | set | Length 20 metre : belt width 800mm | New | 20m |
| | Conveyor 3 | 1 | set | Length 220 metre : belt width 800mm Including conveyor tripper system | New | 220m |
| E | Conveyor 4 | 1 | set | Length 180 metre : belt width 650mm : Including feeder system : using plough system | New | 180m |
| F | Demolition wall of coal shed for acees | 1 | Au | | New | |
| **Basic Design** | | | | | | |
| 1 | Ship Unloader | 1 | set | | New | |

**A. Modification truck pad**

The modification of the truck pad is necessitated by the inadequate effective length of the existing truck pad, resulting in trucks being positioned at an inclined angle during dumping activities.

**B. Retrofit reclaim feeder**

The reclaim feeder retrofit is necessitated by the low operational reliability of the existing reclaim feeder, as key components including pins, flight bars, and chains are prone to frequent failures.

**C. Replace reclaim feeder to belt feeder**

The replacement of the existing reclaim feeder with a belt feeder is proposed based on the recurring failures of the current reclaim feeder, as a potential solution to achieve higher system reliability and more stable operation.

**D. Conveyor 2 & Conveyor 3**

Conveyor 2 and Conveyor 3 are additional conveyors to be installed as part of the coal unloading system from the jetty to the stockpile. The installation of these conveyors is intended to improve coal transfer capacity, ensure continuous and efficient material handling, reduce dependency on truck-based transportation, and enhance overall operational reliability and safety.

**E. Conveyor 4 Including feeder**

Conveyor 4 is proposed to be used for the transfer of coal from the stockpile to the enclosed coal shed facility. This system is intended to ensure a controlled and continuous coal transfer process and enhance operational efficiency and reliability.

**F. Demolition Wall of Coal Shed for Acccess**

**G. Ship Unloader**

The ship unloader is included under this project only for basic design development. Detailed engineering and construction are planned for a future phase, subject to business and operational considerations.

## APPENDIX

Following the Non-Disclosure Agreement (NDA), the documents below are submitted to the Bidders as a “REFERENCE ONLY” to prepare the proposals outlined in this ToR.

1. Layout Jetty
2. Truck Pad Drawing
3. Reclaim Feeder Drawing
4. Layout Stock Pile
5. Improvement concept