	विशाखपट्टणम पोर्ट प्राधिकरण यांत्रिक एवं विद्युत अभियंता विभाग प्रशासनिक भवन, पोर्ट क्षेत्र विशाखपट्टणम – 530035 (आ.प्र.)	VISAKHAPTNAM PORT AUTHORITY MECHANICAL & ELECTRICAL ENGINEERING DEPARTMENT Administrative Office Building, Port Area Visakhapatnam – 530035 (A.P)	SAGARMALA PORT-LED PROSPERITY

NO: IM&EE/MOF/FPL/ELEC/CMS for EQ1**/**
DT: 01 -09-2025

Sir,

Sub:- Expression of Interest for "Design, Engineering, Supply, Installation, Testing & Commissioning of **Cable Management System** for the Shore to Ship Power Supply facility at EQ1 terminal of Visakhapatnam Port Authority-reg

VISAKHAPATNAM PORT AUTHORITY invites Expression of Interest (EOI) from System Integrators for the "Design, Engineering, Supply, Installation, Testing & Commissioning of **Cable Management System** for the Shore to Ship Power Supply facility at EQ1 terminal of Visakhapatnam Port Authority", Visakhapatnam. Interested Parties / Vendors may furnish their EOI with all the necessary documents as mentioned in the terms and conditions, scope of work, etc including cost in a sealed cover along with the covering letter duly signed by an authorized signatory which shall be received up to 3 PM dt.12/09/2025 and shall be opened on the same day at the above address, in presence of interested Bidders. VPA reserves the right to accept or reject any or all the tenders or part thereof without assigning any reason.

The sealed budgetary offer shall be reached to the office of Chief Mechanical Engineer, Visakhapatnam Port Authority, and Visakhapatnam 530035. In this connection the clarification if required the same may be forwarded to email ID cme.vmv.vpt@gov.in (DCME) & cme.tkk.vpt@gov.in (SE Elec)

Yours Faithfully,

DY CHIEF MECHANICAL ENGINEER

DESIGN, ENGINEERING, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF CABLE MANAGEMENT SYSTEM SUITABLE TO EXISTING ELECTRICAL FACILITIES OF SHORE POWER SYSTEM OF EQ1 TERMINAL

The cable management system comprises all equipment designed to control, monitor and handle the LV flexible power and control cables and their connection devices, allowing transmission of power and electrical signals and compensating for vessel's movement caused by tidal range and/or cargo operation. It serves as an interface on the ship with the shore power system
Grounding may be achieved by means of methods such as neutral earthing, low or high resistance earthing, etc. The protection of circuits is designed around the method of system grounding selected.

Cable Management System

1. A cable management system (cable reels, crane, etc) enabling the connection of cables between the shore connection switchboard and the ship receiving switchboard and suitable for the different places where the vessel intends to connect is to be provided.
2. Cable management system, cables are to be equipped with warning notices to highlight the presence of voltage level, moving parts, obstacles, risks of fall, etc.
3. The cable management system is to be arranged to provide adequate movement compensation (due to ship movement, tidal changes, etc.) and to maintain an optimum length of cable which avoids slack cable or exceeding of tension limits.
4. The cable management system is to ensure that the cable tension does not exceed the permitted design value.
5. The cable management system is to be equipped with a device (e.g. limit switches), independent of its control system, to monitor maximum cable tension and deployed cable length.
6. The detection of tension in the cable is to activate an alarm at the first stage and an emergency shutdown at the second stage.
7. The cable management system, cables are to be physically protected against heavy seas and mechanical damage.
8. Power connections with external electrical power supply arrangements may be made with either suitable connections or by using socket-outlets and plugs in accordance with applicable standards of LV Plug and Sockets
9. Power, control and monitoring cables are to be at least of a flame-retardant type in accordance with the requirements given in IEC 60332-1-2. The outer sheath is to be oil-resistant and resistant to sea, air, seawater, solar radiation (UV) and not hygroscopic.
10. Power, control and monitoring may be based on a single cable or cables in bunch.
11. Arrangements are to be provided to stow the cable management system and associated cable when not in operation.
12. The breakaway capability of the vessel is to be demonstrated. The time necessary to disconnect the shore connection system is to be recorded.
13. Consequences of mooring breaks on the shore connection are to be considered. It is not to lead to critical damage to the installation.

PROJECT NAME:
Design, Engineering, Supply, Installation, Testing & Commissioning of an **Indigenous Cable Management System (CMS)** for Shore Power Supply at EQ1 Terminal, Visakhapatnam Port Authority.

Purpose:
Provide shore-side electrical power (440 V, 60 Hz, ~850 kW peak load) to berthed vessels, allowing them to shut down onboard generators (cold ironing).

Key Features:

- Fixed tower-mounted **Jib Crane type CMS** to handle and connect flexible power cables between shore and ship.
- **Wind resistance:** Operational up to 20 m/s; withstand 56 m/s in standby.
- **Marine-grade construction:** C5 paint, stainless steel moving parts, IP65 shore power panels.
- **Remote control operation** (radio with emergency stop).
- **4 flexible cables** managed separately/together, using existing cables/plugs.
- **Safety systems:** Cable tension monitoring, over-pull alarms, emergency shutdown.
- **Integration:** Shore Power Panels with breakers, metering, automation interface.

Scope:
Includes **foundation construction/modification**, shore power panel installation, structural CMS fabrication, electrical integration, FAT & SAT testing.

2. Technical & Scope Summary

System Design Basis

- **Standards:** IEC 80005-3 (Low Voltage Shore Connection), IEC 60309-5 (plugs & sockets).
- **Vessel load profile:**
  - Peak: ~850 kW; Sustained: ~700 kW
  - Voltage: 440 V, Frequency: 60 Hz, PF: 0.85
- **Cable loop length:** ~40 m (finalized after detailed design).
- **Structural loading:** Design for 10 T payload, seismic zone 3, wind 56 m/s.

Major Components

1. **Column:** ~15 m high, carbon steel, C5 coating, supports rotating arm.
2. **Rotating Arm:** ~6 m, 0–180° rotation, motorized gearbox, rollers to guide cable.
3. **Cable Dispenser:** Belt-driven, motorized, pay-out/reel-in speed ~10 m/min, frequency-controlled.
4. **Cable Position Sensing Devices:** Limit switches for alarms & ESD triggers.
5. **Shore Power Panel:** IP65, marine grade, breakers for each cable, busbars, energy meter, remote I/O.(exists at EQ1 terminal of VPA)
6. **Flexible Cables:** Marine reeling type, IEC compliant, existing stock reused.
7. **Control Panel:** For arm & cable movements, with radio remote and local controls.
8. **Wind Protection Cages:** For high wind conditions.

Scope of Work

- **Design & Engineering:**
  - Structural analysis (STAAD), foundation design, reaction forces. (data available at VPA)
  - Electrical schematics, cable schedules, panel layouts.
- **Supply:**
  - CMS structure & components, Shore Power Panels, controls.
- **Installation:**
  - Foundation construction/modification (civil or steel).
  - Electrical integration from eHouse ACB panel to Shore Power Panel.
- **Testing:**
  - FAT (visual, functional, controls, ESD, overload tests).
  - SAT (on-site performance verification with ship connection).
- **Documentation:**
  - Drawings, O&M manuals, inspection & test reports.

Performance & Environmental Requirements

- Ambient: 0 °C to +45 °C.
- Marine corrosion protection as per ISO 12944-5.
- Safe operation across vessel draft/tide range.
- Cable bending radius above manufacturer's limit at all times.

SUPDT ENGINEER 15/11

Sub:- DESIGN, ENGINEERING, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF CABLE MANAGEMENT SYSTEM SUITABLE TO EXISTING ELECTRICAL FACILITIES OF SHORE POWER SYSTEM OF EQ1 TERMINAL

BOQ

Sl No	Description	Qty	UOM	Unit rate	Remarks
1	Design, Engineering, Supply, Installation, Testing & Commissioning of Cable Management System for the Shore to Ship Power Facility at EQ1 terminal of Visakhapatnam Port Authority. It includes supply of Fixed tower-mounted **Jib Crane type CMS suitable for Low Voltage 1000A AC 50/ 60Hz with control panel**, flexible copper cables Composite Cable of Size 3cx185sqmm + 3cx35sqmm + 4cx2.5sqmm), cable dispenser and associated sensing devices, foundation, erection, integration from e House LT panel board to Shore panel, plug and socket connection of LT flexible trailing cable, installation of jib crane, structural CMS fabrication, FAT & SAT testing and commissioning of same	2	Lot		

19/25

Supdt Engineer (Elec)