PARADIP PORT TRUST

Odisha, India

Tel.: (06722) 222034 / 222335/9437318532

INVITATION FOR
EXPRESSION OF INTEREST &
BUDGETARY OFFER

FOR

"SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF DRY FOG DUST SUPPRESSION SYSTEM AT WAGON TIPPLER OF IOHP"

Submission on or before 22.9.2019

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"SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF DRY FOG DUST SUPPRESSION SYSTEM AT WAGON TIPPLER OF IOHP"

(This notice is issued only to elicit an Expression of Interest along with submission of Budgetary Offer from Parties interested in the Project and does not constitute any binding commitment from Paradip Port Trust to proceed with the Project or invite any or all the Parties in the subsequent bidding process.)

REQUEST FOR BUDGETARY OFFER

(A) GENERAL INFORMATIONS:

Sl. No.	Item	Details
1.	Name of the Work	"SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF DRY FOG DUST SUPPRESSION SYSTEM AT WAGON TIPPLER OF IOHP"
2.	Department/Organization	ELECTRICAL & MECHANICAL/PARADIP PORT TRUST
3.	Executive Design	Iron Ore Handling Plant
4.	Officer inviting the offer	Executive Engineer(M)
5.	Immediate Next Authority	Superintending Engineer
6.	Sanctioning Authority	Chairman, PPT
7.	Executing Authority	Executive Engineer

(B) OTHER INFORMATIONS:

Sl. No.	Item	Date	Time
1.	Publication Date	02.09.2019	1600 HRS.
2. a)	Document Download Start Date	02.09.2019	1600 HRS.
b)	Document Download End Date	22.09.2019	1715 HRS.
3. a)	Start date for seeking Clarification on-line	-	-
b)	Last Date for seeking Clarification On-Line	-	-
4.	Date of Uploading Response to Clarifications Sought	-	-
5.	Offer Submission End Date	22.09.2019	1715 HRS.
6.	Offer Validity Period	120	
7.	Currency of Offer	Indian Rupee	
8.	Language of Offer	English	

SCOPE OF WORK

Budgetary Offer for the Work: "SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF DRY FOG DUST SUPPRESSION SYSTEM AT WAGON TIPPLER OF IOHP"

Paradip Port Trust intends to install a Dry Fog Dust Suppression System for its Wagon Tippler hopper area. In this context the following data are annexed for reference.

(1) System Concept Envisaged
(2) Broad Specification for reference purpose
(3) BOQ for Supply of Goods and Execution

In wagon tippler, mainly N type box carrying iron ore fines, pellets, thermal coal are received for tippling purpose. It is requested to submit budgetary offer along with terms and conditions as per the system envisaged. It is also requested to suggest any addition/modification/deletion to the system envisaged, BOQ in order to make the system more robust, reliable and economic and accordingly furnish the offer in consideration with the changes suggested. Both the offers i.e. (1) as per our system concept & BOQ and (2) if changes suggested shall be inclusive of all taxes, duties and other incidentals except GST.

DESCRIPTION OF SYSTEM ENVISAGED

(A) **System Description** :

The system designation and the area to be covered is as under.

Sl. No.	System	Area Covered		Pump House Location
		Tippler-149	Tippler-150	
1.	Dry Fog Dust Suppression System	Hopper area and its Feeder Chute	Hopper area and its Feeder Chute	Within 50 mtrs. Radius from the Tippler area

(B) Coverage :

Sl. No.	Tippler-149		Tippler-150	
1.	Dimension of Hopper area (in mtrs.)	Dimension of Feeder Chute area (in mtrs.)	Dimension of Hopper area (in mtrs.)	Dimension of Feeder Chute area (in mtrs.)
	13.6 x 5.35	4.7 x 1.5	13.6 x 5.35	4.7 x 1.5

(C) System Concept envisaged and Design Consideration:

1. The intended Dry Fog System will be having required capacity Water Storage Tank and Control panel for operation inside the existing Pump House at Wagon tippler. The existing pump house dimension is as below.
   Size : (6.8 x 5.2 x 3.5) Mtrs.
2. The Storage Tank and the existing Pump House will be located within 50 mtrs. From the wagon tippler.
3. Water Requirement :

   There is water requirement of 72 cum per day for the intended system considering 20 hrs. operation per day. There is an existing bore well in the vicinity of the Pump

House. In general water from the bore well is slightly saline in nature. Accordingly the total system shall be designed to suit this type of water quality.

4. Selection of Sprinklers :

In wagon tippler, spray nozzles shall be arranged in three rows, at both side of hopper and the design shall cover the entire hopper and its corresponding feeder chute. Water spray in each group of nozzles shall be through solenoid valve and solenoid valves shall be linked with the wagon tippler rotation, i.e wagon tippler position switches and timer. There shall be two water pumps (one working and one reserve).

BROAD SPECIFICATION

The scope of work of Dry Fog Dust Suppression System includes :

(a) Dry Fog Dust Suppression System (DFDS) of wagon tippler hopper (i.eTP-149 & TP-150) & its corresponding feeder chutes.

(b) Separate pump set (1 working +1 standby) & water tank shall be provided for the Dry Fog Dust Suppression System of the wagon Tippler.

(A) **Applicable Codes and Standards**

The execution of the work covered under this specification shall conform to the latest Indian Standards specification where the same are available or the reputed standards acceptable to the Purchaser. In case such specifications are not available, the work shall be according to good engineering practice and norms acceptable to the Purchaser.

(B) **Design Criteria**

(1) Work zone dust concentration shall be less than 5 mg/m3 (at 5m to 7 m distance from source) above ambient level.

(2) Water line velocity shall be maintained less than 1.5 m/sec. Water pipe line shall be supported at regular interval. Make-up water, quick fill, drains and overflow connection shall be included at pump station tank. Duplex strainer shall be included at inlet to dust suppression system pumps. IS-1239 heavy class, ERW, G.I pipe line (for size up to 150 NB) shall be used in the water line. Water pipe line shall be preferably be laid over ground. In case of non-availability of same suitable supporting scheme shall be provided to suit site. Underground pipeline (wherever provided) shall have wrapping and coating as per IS – 10221 (preferably wrapping coating shall be coal tar based).

(3) IS-1239 heavy class, ERW, G.I pipe line shall be used in the compressed air line. Compressed air pipeline network over ground laying shall be preferred with a minimum slope of 10 mm in 1m (1: 100) along flow and moisture trap with drain provision at regular interval. Compressed air pipeline shall be preferably laid over ground or can be supported from building supporting structure. In case of non-availability of same suitable supporting scheme to be developed by the Bidder to suit site.

(4) In wagon tippler, spray nozzles shall be arranged in three rows at both side of hopper and the design shall cover the entire hopper and its corresponding feeder chutes. Water spray in each group of nozzles shall be through solenoid

valve and the solenoid valves shall be linked with the wagon tippler rotation, i.e wagon tippler position switches and timers. There shall be two water pumps (one working and one reserve) which have to be supplied/installed by the contractor.

(5) Compressed air station shall be provided for DFDS systems. One Standby compressor shall be provided apart from one working compressor.

(6) At each pump station air receiver capacity shall be considered @ 16% of the compressed air consumption in m3/min or 2 m3 capacities, whichever is higher.

(7) Adjacent to pump station of wagon tippler dust suppression system, UPVC water storage tank for 1-hour storage capacity shall be provided by the Bidder.

(8) The Bidder shall provide plat form, walkway, stair case adequate for the necessary approach to the equipment for operation & maintenance point of view.

(9) Duplex strainer with SS filter element shall be provided at inlet to dust suppression system pumps to remove all suspended particles exceeding 100 micron

(10) Monorail with chain pulley block shall be provided for handling of equipment of inside the Pump house.

(11) The Bidder shall provide the following minimum instruments

(a) High level and low level switch in water tank. Low level switch interlocked with pump operation.

(b) Spring loaded pressure release valve (adjustable) at pump discharge line for by passing water line to tank to avoid shut-off condition.

(c) Pressure gauge at all pumps discharge line.

(d) Pressure gauge at air-receivers, safety valve and drain provision

(e) At consumer application points following instruments shall be provided: - Independent pressure gauge & control valve (Ball valves) shall be provided for pressure regulation. This unit shall be housed in a steel cabinet of IP-65 construction.

- For flow activation, solenoid operated valves shall be provided in water and airline.

- Pressure switch in compressed air line to prevent spray operation at low pressure.

- The equipment for "DFDS" system is grouped into two main categories.

(1) **Main Equipment**: The main equipment shall include spray bar assemblies fitted with dual-fluid air driven acoustic oscillator atomizing nozzles, pressure regulating units, and flow activation stations for ON-OFF control of the system and instrumentation for auto operation.

(2) **Auxiliary Equipment**: The auxiliary equipment shall include water storage and pumping unit with duplex water filter and associate electrical works,

air and water piping, enclosures, necessary hoods and skirt boards on feeder belt conveyors / equipment to suit spray nozzle operation. Starter cum control panel shall be provided at pumping station and local control panel shall be provided at different application points if necessary.

(F) **Brief Specifications of various components of the system are given below**

(1) **Spray bar assemblies**:The spray bar assemblies shall be manufactured from stainless steel tubing drilled and tapped for connection of nozzle adapters. A specially designed and selected dual fluid atomizing nozzle shall be fitted into each of the adapters. These nozzles are fitted with acoustic oscillators for atomizing the water into droplets of Micronics size by passing them through a field of high frequency sound waves. The nozzles shall be of stainless steel while the adaptors shall be of brass. Each spray bar shall be provided with mounting brackets and flexible hoses for connection to the air & water pipeline.

(2) **Pressure regulating units (PRU)**:The performance of "Dry Fog" type dust control system is critically related to the size of water droplets. The nature and particle size of dust generated in the material handling system changes with change in size and characteristic of the material. In practice, the sizes of the dust particles have a very wide spectrum (1-800 microns). A careful control of air and water flow & pressure is therefore necessary to obtain optimum dust suppression results. For this purpose, pressure regulating units shall be provided in the system. The pressure regulating unit shall consist of diaphragm type pressure regulator with pressure gauge and ball valve for isolation of air and water line. The operator can adjust both the air and water pressures independently to change the fog characteristics to obtain optimum dust suppression results vis-a-vis the site requirements. The pressure regulators shall be installed in a metallic enclosure with inspection door with rubber sealing arrangement. Flexible hose shall be provided for connection of PRU to the air & water pipeline. The number of pressure regulating units shall depend upon the position / elevation of spray bars. Generally independent pressure regulating units shall be provided when the elevation of spray bars exceeds 3 m.

(3) **Flow activation stations (FAS)** :The flow activation station shall consist of solenoid valves in air & water line, pressure switch in the airline, selector switch, and indication lamps. Isolation ball valves shall be provided in the air & water line. All the equipment shall be installed in a metallic enclosure with inspection door with rubber sealing arrangement. Flexible hoses shall be provided with each FAS for connection to air and water pipeline. The "ON - OFF" control of the fogging system shall be through the flow activation stations with facility for both manual and auto mode. A three position selector switch shall be provided to select the mode of operation. The switch when energized shall open the electric solenoid valves, which shall permit compressed air and water to enter into the pressure regulating units and spray bars. In addition, a pressure switch shall be installed in the airline to ensure that air and water solenoid valves are energized only when sufficient air pressure is available in the line. This shall ensure that the system cannot operate without sufficient air pressure to the nozzles and reduces the chance of un-atomized water to pour into

the dust source. Flow activation shall have indication for: - - System ON - System OFF due to lower air pressure

(4) **Auto operation**: The flow activation stations shall have provision for both manual and automatic operation. For manual operation, the system shall become operational with selector switch in manual mode and in auto mode, the fogging operation starts on receiving a signal from the tippler operator. Pressure regulating units shall be provided at each location to regulate the pressure of compressed air and water. The dust suppression system shall be divided into independent circuits taking into account the flow diagram, operational requirements, distances between dust suppression locations etc. Flow activation stations with instruments for auto operation are to be provided for each circuit for ON/OFF control of the dust suppression system.

(5) **Centrifugal Pump**: 02 (two) no. centrifugal pumps of required capacity are required for smooth operation of the Dry Fog Dust Suppression System. Both the pumps shall be operated in regular interval one after another. Pump casing shall be vertically split type. Pump shall be coupled to motor with flexible coupling. Material of construction Casing - C.I Impeller - Bronze Bearing Bracket - C.I Shaft protection sleeve - Bronze Wearing ring - Bronze Shaft - EN-8 Common base frame for pump & motor - M.S Common base plate for pump & motor shall be in one piece & made of welded steel construction. Adequate space shall be provided between pump drain connection and base plate for installation of minimum 15 mm drain piping. Pumps shall be supplied with suitable drain pans or drain rim type base plates with tapped drain connections. Critical speed of the shaft shall be at least 30 percent above the operating speed.

(6) **Water Piping and Fittings**: Water piping shall be up to 150 mm NB size shall be GI, ERW, heavy class and conforming to IS-1239 Part- 1 . The pipes above 150 NB shall be of GI type. Pipe ends shall be bevelled. Pipe fittings shall be as per IS 1239, Part -2 for pipes of size up to 150 NB. Fabricated fittings manufactured from the pipes may be provided for pipes of sizes 200 NB & above. Plate type pipe flanges (as per IS 6392) shall be provided. Pipes shall be of welded joints. Welding (manual metal arc welding) shall be as per relevant IS code and only certified welders shall be employed. All piping systems shall be hydro tested at 1.5 times the design pressure. Auto air venting valves shall be provided at highest point of the pipe lines & drain valves shall be provided at lowest points of the pipelines in different segments. Pipe supports comprising pipe shoes, saddles, base plate, clamps & structural members like channels, angles etc. shall be provided

(7) **Valves:**All valves shall be offered to suit the water quality and shall be designed, manufactured and tested as per latest revision of relevant standard of BIS or any other equivalent standard.

(8) **Air Receiver**:Vertical self-supporting in cylindrical design with dished end at both ends having minimum capacity of 2 m3 volume. The air receiver shall be designed for a working pressure of 8 kg/cm2 . Design, manufacture, inspection and testing of air receiver shall be in accordance with IS:7938 and IS : 2825.

The air receiver shall be supplied with following accessories: -

(a) Circular skirt welded to the bottom portion of the shell.

(b)Circular base plate welded to the skirt with holes for foundation bolts. Foundation bolts/ studs, nuts, washers.

(c)Nozzles for inlet and outlet with weld neck flanges.

(d)Manhole nozzle at an accessible height with weld neck flange and cover having devit arrangement.

(e)Safety valve of sufficient blowing capacity mounted at a suitable height connected through a flanged joint to nozzle welded on the receiver shell. Safety valve shall be provided with test lever and gagging arrangement.

(f) Vent valve at the highest point of the dished end for releasing the air during hydro test.

(g) Water drain nozzle at the lowest point with drain isolation valve, trap station and by pass valve.

(h)Companion flanges with bolts, nuts and gaskets for inlet and outlet nozzles and other valves.

(i) Stubs for pressure indicator for local measurement of pressure.

(9) **Pressure Gauge Manufacturing Standard**:All pressure gauges shall have minimum 150 mm diameter dial size, calibrated in metric engineering units and accuracy of +/- 1% of full span or better for bourdon type and +/- 1.5% of full span or better for capsule type gauges. All pressure gauges shall be provided with external zero adjustment facility, over range protection, blow out disc and 3-way isolation valve. All pressure gauges shall be designed to withstand at least 1.20 times the maximum scale/rated pressures.

(10) **Pump House:** The existing Pump House is within 50 mtrs. radius from the wagon tippler area where the dry fog dust suppression system will be installed. The dry fog dust suppression system will be operated from the control room in Pump House. The bore well is nearer to the water storage tank. The dimension of the pump house shown in drawing is for reference purpose only. Required no. of pumps, MCC, PLC panel will be installed in the pump house. Necessary gate valves, globe valves, pressure release valves, NRV, pressure gauges, etc will be provided for each pumping unit. Strainer will be provided at suction line in the pump inlet.

(11)**Operation of Pumps:** 02 no. of centrifugal pumps are required for smooth operation of the DSS system. Both the pumps shall be operated in regular interval one after another.

(12)**Electrical System :** The source of power supply 415 V/AC, 3Ph&N, 50 Hz will be provided by PPT. LT MCC will be equipped with microprocessor based incomer, Motor control center with earth fault protection, over current protection, unbalanced load protection,

control transformer, spare feeder etc. All JBs to be installed at site are outdoor type and should be double type with IP65 grade protection.

(13) **Basic Data:** Following basic data may be considered for design of the system.

Following Basic data may be considered for design of the DFDS System.

i) Site ambient air temperature

Maximum ambient air temperature : 55 degree, C

Minimum ambient air temperature : 10 degree, C

ii) Atmosphere : Humid & heavily dusty with dust from iron ore fines, coals, slag etc.

iii) Standard Voltage Level : L.T. Power Supply: 415 Volt+/- 10%, 3 Phase, 50 Hz +/-3%, 4 wires, solidly earthed.

Any other voltage level required if any for instruments, control system, Panel/Cabinets Lighting shall be generated by the Contractor.

(14)Any civil work excluding construction of Pump house required for installation of DFDC system at Wagon Tippler including construction of pedestals for installation of pumps inside the Pump House, construction of pedestals for installation of required capacity of water tank is under the scope of the firm. Laying if pipe lines of required size from the bore well to the pump station is under the scope of the firm.

(15) **Operational Logic:** The fogging operation shall start on receiving a signal from the tippler operation round the clock in sequence. The operational mode of the dry fog dust suppression system shall have 02 modes (i) Manual (ii) Auto. Basing on the above system concept & requirement the system shall be installed and commissioned.

(16) **Painting** : Preparing the pipeline and other related structural and equipment surfaces for painting with wire brushing, power buffing, chipping etc and cleaning with soap water/thinner for removal of oil/grease etc, and painting the same with two coat of coaltar Epoxy paint (100 micron each) over a coat of inorganic zinc silicate primer (100 micron) or approved quality, complete as necessary shall be executed by the contractor.

(17) All the materials to be used in this project are to be supplied and installed by the contractor only.

(18) **THIRD PARTY:**

The Contractor shall avail the services of a third party, acceptable to Paradip Port Trust, if required as per the contract, and bear the cost of the Third Party inspection. The responsibility of the third party shall, inter alia, be to ensure and certify that the work is being executed as per the relevant standards as given in the approved QAP. Paradip Port Trust reserves the right to replace the Third party during the execution of the Contract if the third party inspection is not

satisfactory. Additional cost, if any, for such change shall have to be borne by the Contractor. In case of any technical dispute between the purchaser and the contractor in connection with design, construction, erection, testing etc, the matter shall be referred to the third party for a reasoned decision which shall be reviewed by Paradip Port Trust.

OTHER COMMERCIAL CONDITIONS:

1) Payment Terms:

The payment will be made as follows:

i) 70% against "Supply of Goods" will be paid on supply and delivery of materials at Paradip Port in good condition and verification & acceptance thereof by the Engineer In-charge (EIC). However, the Contractor must ensure that the materials are delivered to site in parallel with the progress of site activities and approved BAR chart.

ii) Balance 30% against "Supply of Goods" and 100% of execution (Fabrication, installation, testing & commissioning including civil works) will be paid after successful commissioning and acceptance of the system. .

2) Security Deposit:

A sum of 10% of accepted value of the tender shall be deposited by the successful bidder (Contractor) as Security Deposit (SD). This will be deposited initially 1% value of the contract as initial security deposit (ISD) in shape of a Bank Guarantee or Demand Draft (DD) / Banker‟s Cheque drawn in favour of FA&CAO, Paradip Port Trust (DD/ Banker's cheque shall be payable at Paradip) within 15 days of issue of Letter of Intent (LOI). After deducting the EMD and ISD from the stipulated security deposit, the balance amount will be recovered in instalment through deduction at the rate of 10% of the value of each running account bill subject to attaining the required amount by the last running bill. In case of exemption of EMD, the successful bidder has to deposit initially 3% of the contract value as ISD instead of 1% of contract value.

The Contractor may submit Bank Guarantee for the balance amount after deducting the EMD and ISD from the stipulated security deposit in which case there will be no deduction from the running bills towards security deposit.

EMD of the successful bidder may be refunded to the bidder after receiving an equivalent amount of Bank Guarantee only after issue of work order and signing of agreement.

The Contractor may also submit Bank Guarantee for a sum of 10% of accepted value of tender as Security Deposit (SD) within 15 days of issue of Letter of Intent (LOI) in which case (i) deposit of 1% ISD will not be required; (ii) there will be no deduction from the running bills towards security deposit; and (iii) EMD of the successful bidder will be refunded to the bidder after issue of work order and signing of agreement.

The security deposits shall be returned to the Contractor within 45 days of successful execution and acceptance of the work. The BG shall be valid till 45 days after the scheduled date of completion of the work.

3) Execution Period:

The execution period of the work shall be 120 days from the date of issue of Letter of Intent.

4) Warranty:

The warranty period for "SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF DRY FOG DUST SUPPRESSION SYSTEM AT WAGON TIPPLER OF IOHP" will be one year from the date of acceptance of the system.

- The Contractor shall warrant the Board that the goods and services under this contract will comply strictly with the contract, shall be first class in every particular case and, shall be free from defects. The Contractor shall further warrant the Board that all materials, equipment and the supplies furnished by him/her will be new and fit for their intended purposes.

- The Board shall promptly notify the Contractor in writing of any claim arising under this Warranty. Upon receipt of such notice, the Contractor shall promptly repair or replace the defective goods and/or services at no cost to the Board.

- If the Contractor, having been notified, fails to remedy the defects in accordance with the contract, the Board may proceed to take such remedial action as may be necessary, at the Contractor's risk and cost.

5) Liquidated Damage (LD):

a) Unless otherwise specified, in case of delay in completing the work, liquidated damage shall be charged to the Contractor at the rate 0.25% of the contract price for a delay of one week or part thereof subject to a maximum of 5% of the contract price if the original execution period is 90 days or more. Where the original execution period is less than 90 days, liquidated damage shall be charged to the Contractor at the rate of 0.1% of the contract price for a delay of one day or part thereof subject to a maximum of 5% of the contract value. Where the Liquidated Damage amount exceeds the maximum limit, Paradip Port Trust reserves the right to:-

i) Terminate the contract and / or ii) Forfeit the Initial Security Deposit (ISD).

b) In case of "substantial completion" of a section of work and subsequent taking over by the purchaser within the scheduled date of completion, the liquidated damage shall be levied on the cost of balance portion of the works which are completed after the scheduled date. "Substantial Completion" of a section shall mean that the section has been completed, passed the tests, if any, to meet its intended purpose and can be used by the purchaser for that purpose.

Note: Budgetary offers shall be submitted to the following address (through email or by Registered Post):

Executive Engineer (Mech.),
Iron Ore Handling Plant,
Paradip Port Trust.
PO:- Paradip,
Dist:- Jagatsighpur
Odisha – 754142
Contact No. 9437318532

Email Id: rakesh.mohapatra74@yahoo.com

Bill OF QUANTITY

Name of the Work : Supply, Installation, Commissioning, Testing of Dry Fog Dust System (DFDS) at Wagon Tippler of IOHP.

Sl. No.	Item Description	Rate (in Rs.)	Amount (in Rs.)
1.	Supply, Installation, Commissioning, Testing of Dry Fog Dust Suppression System (DFDS) at wagon tippler of IOHP including civil works as per scope of work.		
Total			

N.B.: The rate quoted above is inclusive of all taxes, duties & incidental charges excluding GST.

Signature of the Bidder