

VISAKHAPATNAM PORT TRUST
MECHANICAL & ELECTRICAL ENGINEERING DEPARTMENT

TENDER NOTICE . No. 50 /2016-17/IM&EE/MOF/FOF/ET/F.05 / dt.04.04.2016

Sealed tenders are invited for the work: - Retrofitting of Main Engine speed controls (electro)-pneumatic) using PLC (programmable logic controllers) in dredger GHD Durga-Reg.

The Estimate cost (Put to Tender) Rs.4, 70,670/-

Date of hoisting of Tender Documents: from 05.04.2016 at 16.30 hrs. to 12.04.2016 at 14.00 hrs.

Last date & time open of Tenders: 18.04.2016 at 14.00 Hrs.

Bid Validity: 30 Days.

1. The firm has to pay E.M.D Rs.9413/- (Rupees nine thousand four hundred and thirteen only) in the form of Bankers' Cheque / pay order / Demand Draft of Nationalized / Scheduled Banks drawn in favour of F.A & C.A.O., VPT.
2. The firm has to pay cost of Tender Documents Rs. 400/- in the form of B C / P O / D.D of any Nationalized / Scheduled Banks drawn in favour of F.A & C.A.O, VPT.

Sealed Cover Quotations are to be addressed to:
Superintending Engineer (E/T)

Mech & Electrical Engg.Dept
ADMINISTRATIVE OFFICE BUILDING
ROOM NO 204
Visakhapatnam Port Trust,
VISAKHAPATNAM-530035.

Enc; - Work Schedule.

DY.CHIEF MECHANICAL ENGINEER



VISAKHAPATNAM PORT TRUST
MECHANICAL ENGINEERING DEPARTMENT
VISAKHAPATNAM – 530 035 (A.P.)

(Fax No.91-0891-2564787 / 2565023 E-mail: cme.vmv.vpt@gov.in)

No. ICME/MOF/FOF/ET/f.05

Dt. .04.2016.

**Retrofitting of main engine speed controls (electro pneumatic) using PLC controls in dredger
GHD sagar durga-reg**

WORK SCHEDULE

S.No	NAME OF THE WORK	Qty	UNIT RATE	AMOUNT
1	Retrofitting of both main engine (port & stbd) speed controls, clutch controls, interlocks using PCL controls in dredger GHD SagarDurga (scope & specification as per annexure-A Make:Siemen,ABB Allen Bradley	02sets		
2	Programming, configuration, testing charges	L/S		
3	Supply & installation of E-P converter as per the specification at Annexure-B	01No		

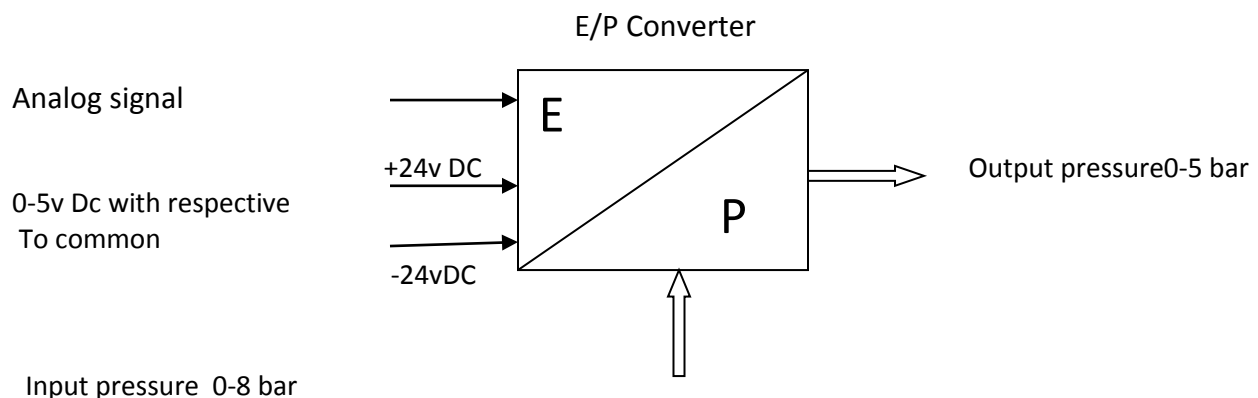
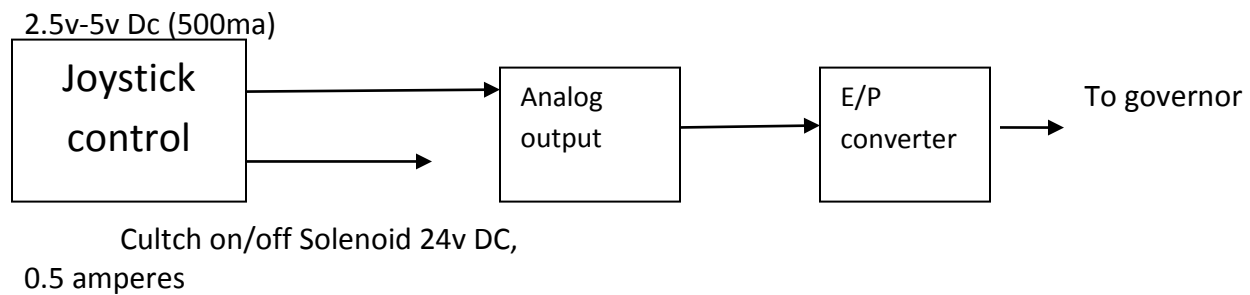
TERMS & CONDITIONS:

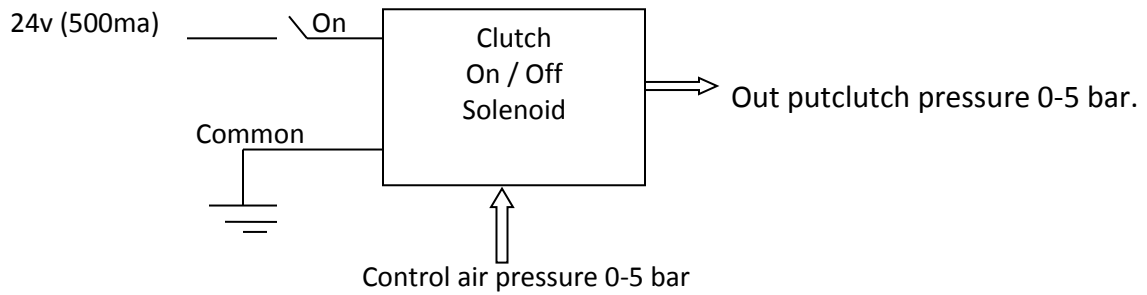
1. Validity of offer should be 02 months.
2. All applicable taxes to clearly mentioned.
2. Completion period is 03 weeks from the date of issue order/site clearance
3. Applicable taxes (APVAT, J.T) will be recovered as per rules in force
4. Warranty/Guaranty period is 03 years from the date of completion.
5. Scope of work – At Annexure “A”
6. Bidder having experience in similar work “industrial / Marine automobile using PLCS, automation – (Documentary evidence during last 03 years of works executed to be enclosed)

SUPERINTENDING ENGINEER E/T

System Design & Specifications:

- a) Clutch on/ off – To enable clutch on/off, variable D.C output voltage is generated from a 3-notch Joystick Controller. The DC Variable voltage (analog o/p) will be generated on 3 steps (0-2.5v-5v). Zero analog voltage corresponds to neutral.
- b) 2.5v analog voltage corresponds to clutch-forward control. From 2.5V to 5V analog voltage corresponds to throttle. Similarly in the reverse i.e. clutch –reverse direction duly passing through Neutral conditions.
- c) Throttle controls → Analog signal varying between 2.5V – 5V will drive both engines (PORT & STBD) for speed varying between 600 RPM to 1200 RPM. Throttle control will follow always clutch on controls. Throttle control (Analog output Signal 2.5V – 5V DC) will be driving E/P converter (Electro pneumatic converter which will accept Analog input).





Interlocks:

1. To ensure without clutch on, throttle signal should not deliver.
2. To ensure always systems in neutral position before commencing operations.

Outputs (PORT & STBD): ----- 02Sets

1. Neutral indication (on/off)
2. Station change over (Engine, Bridge) indications.
3. Clutch-Forward (Engine, Bridge)
4. Clutch-Reverse (Engine, Bridge)
5. Controls- on/off.

Note-1 For all signal controls, 8 pair signals cable 0.5 sqmm is essential 2x40 mts. (approx)

Note-2 Clutch on/off solenoids are operating at 24V DC @500ma. E/P converter accepts Analog Input 0-5 volts DC @ 500ma

Note-3 Joystick Controller (3-notes) Neutral – Clutch -Throttle

Asst Engineer (e/t)

CPU SPECIFICATIONS

- Supply Voltage : 24VDC
- Mains/voltage failure stored energy time : 5ms
- Work Memory :128KB INTEGRATED
- Size of retentive memory for retentive data : 64KB
- Memory card : Required
- Program Backup without battery : should be with memory card.
- CPU Processing Time : 0.07microsec for bit operations
0.15micro sec for word operations
0.2micro sec for fixed point arithmetic.
0.72 micro sec for floating point arithmetic.

- Counters : 256
- Timers :256
- I/O Address Area :2048 byte
- On-board I/Os : **16 DI and 16 DOs**
- - **Digital Inputs** : 12DIs should be usable for technological functions
Rated Voltage : 24V DC
Input Current for signal “1” : 8mA
Input Delay : should be parameterizable
 - **Digital Outputs** : 4DOs should be configurable for High Speed.
Short Circuit Protection: Should be Present.
OutputType : Transistor
Output Current for Signal “1”: 500mA.
 - **Encoder** : 2Wire Sensor

- Counters : 3Nos
- Counter Frequency : 30KHz
- Frequency Measurement : 3Nos
- Frequency : 30KHz
- PID Controller : To be Present
- No. of Pulse Outputs : 3Nos. PWM up to 2.5KHz.
- Communication Ports : 02 Ports
- Communication Protocols :Modbus/Profibus/MPI

- **Potential Separation :**
 - Potential separation digital inputs:
Potential separation digital inputs: Yes
between the channels: No

between the channels and backplane bus Yes

- Potential separation digital outputs:
 - Potential separation digital outputs: Yes
 - between the channels: Yes
 - between the channels: in groups of 8
 - between the channels and backplane bus: Yes

- Permissible Potential difference between different circuits :75 V DC/60 V AC
- Isolation : 600 V DC
- Ambient Temperature: 60Deg.C
- Programming Language : LAD, STL, FBD, SCL, CFC, Graph and HiGraph
- User Program Protection : Should be Present.
- Remote I/Os Handling : Should be Present

E-P Converter Specification (existing)

E-P Converter(R26-200-RNLG)

PNEUSTAT

Make: NORGREN

MODEL:01NO1176

SIGNAL INPUT: 0-10 V at 30 ma

Supply voltage : 24 V DC

MAX I/L: 10 BAR

Out put: 0-8 Bar

MADE IN U.K

Technical Details of 3-way proportional pressure control valve (equivalent)

Operation	Air piloted spool valve with integrated electronic pressure control
Medium	Compressed dry air, oil free filtered 5 micro
Out put pressure	0-8 bar (0- 120 Psi)
Supply pressure	Minimum 2 bar above maximum out put required
Air supply sensitivity	Better than 0.75% span out put change per bar supply pressure change
Port Size	G 1/4
Flow	Standard units up to 1400 NI/min
Temperature	0 to +50 degree centigrade
Degree Protection	IP-65 in normal operation
Linearity and Hysterisis	Less than 1 %
Electrical Details	5 wire- +24 V supply, Signal, Common,Feed back, Chasis
Input Signal	0-10 v
Power Input	DC 24 V DC + or - 25% (power consumption <1 watt)
Out pressure Feed Back signal	0-10 V DC full range
Connections	M12x1

SCOPE OF WORK

- REMOVING OF EXISTING OLD PROCESSOR CONTROL PANELS OF STARBOARD AND PORT SIDE.
- REMOVING OF OLD CONTROL AND SIGNAL CABLES FROM WHEEL HOUSE AND ELECTRICAL HOUSE.
- REPLACING TERMINAL BLOCKS WITH NEW TERMINAL BLOCKS OF SUITABLE RATING IN ALL JUNCTION BOXES FROM WHEEL HOUSE TO ELECTRICAL HOUSE.
- FIXING OF NEW PLC PANEL FOR STARBOARD AND PORT SIDE ENGINE CONTROL.
- LAYING OF NEW CONTROL AND SIGNAL CABLES TO WHEEL HOUSE AND ELECTRICAL HOUSE.
- NECESSARY CABLE TRAYS AND ACCESSORIES FOR CABLE LAYING.
- CABLE GLANDS AND ACCESSORIES FOR CABLES FIXING.
- TERMINATION OF CONTROL AND SIGNAL CABLES IN WHEEL HOUSE, ELECTRICAL HOUSE AND PNEUMATIC CONTROL PANELS.
- ALL THE ITEMS SHOULD BE AS PER MARINE STANDARDS.
- 25% SPARES SHOULD BE PROVIDED.
- REPLACING OF OLD E/P CONVERTOR WITH NEW CONVERTOR. ALL NECESSARY PIPING ACCESSORIES SHOULD BE PROVIDED.
- SUPPLIER WILL COMPLETELY RESPONSIBLE FOR THE JOB AND SHALL DEPLOY QUALIFIED SKILLED MANPOWER WITH REQUIRED TOOLS AND TACKLES.
- THE WORK DESCRIBED IS INDICATIVE. ALL THE WORK THAT REQUIRES FOR SUCCESSFUL COMPLETION OF SUPPLY, ERECTION, COMMISSIONING OF THE SYSTEM AND NOT MENTIONED ABOVE SHALL BE CARRIED OUT BY THE BIDDER WITHOUT EXTRA COST. ANY MATERIAL OR ITEMS OTHER THAN MENTIONED IN THE TENDER SHOULD BE SUPPLIED BY THE BIDDER WITHOUT EXTRA COST TO MAKE SYSTEM FULL FUNCTIONAL.
- THE BIDDER IS RESPONSIBLE FOR SUPERVISION OF WORK/PEOPLE.
- THE BIDDER HAS TO ENSURE SAFE WORKING PRACTICES AND USE OF NECESSARY SAFETY APPLIANCES.
- THE ENTIRE WORK HAS TO BE CARRIED OUT BY THE SUPPLIER AS AND WHEN THE DREDGER IS AVAILABLE FOR SHUTDOWN.
- ON PLACING THE ORDER, THE BIDDER SHALL SUBMIT THE GA DRAWING, BOM AND WORK SCHEDULE FOR APPROVAL. AFTER APPROVAL ONLY, THE BIDDER SHOULD PROCURE THE MATERIAL.
- THREE SETS OF HARD COPIES AS BUILDINGS DRAWINGS AND ONE SET SHALL BE SUBMITTED IN PDF FORMAT IN SOFT COPY.