

**TECHNICAL SPECIFICATION OF ENGINE CONTROL SYSTEM WITH  
ASSOCIATED ACCESSORIES FOR METAL SHARK BOAT**

1. **Name of the Equipment.** Engine Control System with Associated Accessories for Metal Shark Boat.
2. **Purpose.** The Engine control system will replace the existing control system fitted on board of METAL SHARK11 of Bangladesh Coast Guard in East Zone.
3. **Quantity** : 01(One) complete set.
4. **Brand** : To be mentioned.
5. **Model** : To be mentioned.
6. **Country of Manufacture and Origin** : USA, UK, Canada, Japan, Australia, New Zealand, EU Countries, Norway.
7. **Year of Manufacturing** : 2018 or later.
8. **Local Agent** : To be Mentioned (If any) (Name and Address).
9. **Qualification/Eligibility of Bidder:** Original equipment manufacturer (OEM) of the engine/ Gear box/control system or their authorized agents /dealers can submit quotations through their authorized local agents in Bangladesh. In case of offer from authorized agents/dealers, following certificates from the OEM are to be submitted with the offer.
  - a. Authorization certificate.
  - b. Warranty certificate.
  - c. Guaranty certificate for supplying of spares.
10. **Scope of Supply.** The control system is to be supplied as per the specifications enumerated in the subsequent paragraphs. The control system and associated accessories should be complete with all standard accessories and attachments, ready in all respect for operation after installation on board. The scope of supply shall include the following:
  - a. Engine Control Module (ECM)
  - b. System Integration Module (SIM)
  - c. Diesel View Display
  - d. System Tachometer & System Speedometer
  - e. Smart Multiplex Module (SMM) and associated C-Cruise Switch Panel Assembly
  - f. System Link Instrumentation
11. In addition to these major system components, there are numerous interconnect and peripheral components that are required to ensure proper functioning of the system. These components include:
  - a. Interconnect Harnessing
  - b. Junction Boxes
  - c. Vessel Mounted Sensors

12. **Existing Engine.**

a. **Main Engine.**

Engine Maker : CUMMINS ENGINE COMPANY COLUMBUS  
Engine Model : QSB6.7-M  
Type & Operation : 4–Stroke, Direct Injection, Turbo charged  
Number of Cylinders : 4cycle, In Line, 06 Cylinder Diesel  
Engine Rating : Idle 550RPM, Econ3300 RPM, 480 BHP

b. **Gearbox.**

Manufacturer : Twin Disk  
Model : MG 5075 SC  
Gear Ratio : 1.34:1

13. **Control & Monitoring Panel:** At present, the existing control system (smart craft 2.5) works on two separate control and monitoring for both engines. The unit is fitted in the bridge room. The control and monitoring panel is also designed to incorporate safety features of the propulsion sets for their smooth functioning. Smart craft Digital displays and/or analog gauges provide data on engine speed, Oil Pressure, engine load and monitors fluid level, vessel range, depth, vessel speed, rudder position, temperatures and more. The Smart Craft 2.5 system integrates many boat operations and allows engine and environmental conditions to be monitored through digital displays. The control of engine throttle and shifting is an option available through the Smart Craft 2.5 system.

14. **Detail specification of Engine Control System :** The dimension of the new panel should be matched with existing panel which is mounted on the dashboard of the bridge room.

15. **System Integration Module (SIM):**

The SIM should perform the following essential functions:

- a. Converts J1939 engine data to CANKingdom messages required by the Smart Craft system.
- b. Converts CANKingdom messages to J1939 protocol to be passed to the Engine Control Module.
- c. Collects vessel data from sensors and formats to CANKingdom messages.
- d. Communicates bidirectional with the Diesel View display.
- e. Performs fault message analysis and reports status via the Diesel View Display.
- f. Performs sensor diagnostics and reports status via the Diesel View Display.
- g. Provides reference voltage to the various vessel sensors.

16. **Diesel View Display :**

The Diesel View Display should continuously monitor and report information transmitted via the high speed data link. Engine data to be reported includes the following parameters (please mention whatever possible):

- a. Engine Speed (RPM)
- b. Engine Oil Pressure
- c. Engine Coolant Temperature

- d. Battery Voltage
- e. Instantaneous Fuel Rate
- f. Intake Manifold Temperature
- g. Engine Load (%)
- h. Throttle (%)
- j. Engine Boost Pressure
- j. Ambient Air Pressure
- k. Engine Oil Temperature
- l. Total Engine Hours
- m. Total Fuel Consumed
- n. Gear Oil Temperature
- p. Gear Oil Pressure

17. **Safety Devices:** Following safety devices are to be provided in a suitable place:

- a. Low lube oil pressure alarm- audio and visual.
- b. High cooling water temperature alarm- audio and visual.
- c. Engine over speed alarm- audio and visual.
- d. Manual emergency shut off device.

18. **Power Input Requirements :**

- a. The CMD Smart Craft system shall provide all specified functionality with a nominal input voltage range from 11VDC to 16VDC.
- b. The low operating voltage : 7.0 VDC (Not less than)
- c. High operating voltage : 18.0 VDC (Not more than)
- d. Minimum operating temperature  $-10 \pm 2$  degree Celsius
- e. Maximum operating temperature  $+85 \pm 5$  degree Celsius

19. **Cables & JB.** The supplier should change all existing cable and JB related with engines and control panel for smooth running the engine with IEE standard. The supplier is to provide appropriate and required marine type Power cables and sufficient Control cables for Propulsion set as per IEE standard required for connecting the Propulsion set with respective control panels. The price is to be quoted per meter separately.

20. **Installation & STW.**

- a. Technical documents (Installation drawings, Installation, instruction, specifications etc.) required for installation of the control systems are to be supplied by the manufacturer well in advance.
- b. Installation and commissioning / setting to work of the items is to be done by the supplier. The installation work is to be done in a safe place directed by BCG.
- c. A qualified manufacturer's /supplier representative is to be engaged to install and set the work. All cost of this purpose is to be borne by the supplier.

21. **Test Trial& Acceptance.**

- a. Test, trials and commissioning of control system will be carried out in accordance with the instructions manual of OEM certification authority provided by the supplier. The supplier is to provide necessary test equipment for measurement/recording of transient variations, recovery time etc.

b. After satisfactory test trials (HAT and SAT) an acceptance certificate will be provided by the purchaser.

22. **Labeling.** Circuit breakers, control switches, instruments, indicating light and terminal block set are to be clearly labeled to identify in English their purpose and function.

23. **Standard Accessories.** Standard Accessories must include every item and accessories, which are essential to install and operate the Control System, whether those are mentioned in the specification or not. A list of such items/accessories is to be provided with the quotation indicating item wise price.

24. **Spare Parts.** Origin Equipment Manufacturer (OEM) recommended and mandatory spares for 01 years trouble free operation are to be quoted showing item wise price.

25. **Brochure/Booklet.** Two sets of brochure/booklet having detail of offered control system must be provided with the quotation for evaluation and assessment .

26. **Manuals.**

a. 02(two) sets of drawings (English) and instructions necessary for installation of the Control System with all equipments are to be supplied within eight weeks of signing the contract.

b. 02 (two) sets of following books/manuals in English are to be supplied with the Control System:

c. 02 (two) sets of maintenance manual and work shop level repair manual in English of the System.

d. 02 (two) sets of electrical wiring diagrams and faults in English finding flow charts.

27. **Warranty.**

a. Warranty for repair/replacement at supplier's cost for the supplied Control System and other accessories, for a period of minimum 12 months after final acceptance by CGHQ on completion of installation and necessary test/trial on board, is to be provided .The warranty shall cover all parts and service costs/charges throughout the warranty period.

b. If for defect of any unit or sub unit of the supplied items, the Control System or any supplied items remain non-operational for a certain period with in warranty, the warranty will be extended by the same period.

c. For warranty repair/replacement, the supplier will collect the defective item (portable) from Installed boat from Chittagong (as applicable) and re-supply the same to collecting place after warranty repair or for replacement within 45(Forty five) days from the date of defect at no cost to the purchaser.

28. **Guarantee.**

- a. The supplier will guarantee to supply the spares (from manufacturer) for at least 5 years with reasonable price. Yearly increase of price of spares should not be more than 5% the price list for spares to be supplied with the quotation.

29. **Training.** Training on operation and maintenance of the supplied Control system is to be imparted by the supplier's (principal's) experts/engineers to 10 BCG personnel for two working days. Costs of air fare, accommodation and food for all such experts/engineers are to be borne by the supplier (Principal).

30. **Shipment & Delivery.**

- a. The supplied items are to be delivered within 120 days after signing the contract to the following Consignee:

The Director General  
Bangladesh Coast Guard Headquarters  
Agargaon Administrative Area  
Sher-e-Bangla Nagar  
Dhaka-1207

- b. Initial inspection will be carried out by CI&QC at CGHQ. After inspection the item should be carried to the installation site by the supplier at their cost.
- c. In case of CFR, the supplier will carry the items from Chittagong seaport/airport as applicable) to Installation site at the cost and risk of supplier after initial inspection.
- d. All items are to be delivered in suitable commercial packing.
- e. All packages are to have packing notes showing their contents in detail and all packages shall be marked with the name and address of the consignee and gross weight.

31. **Port of Shipment.** Any port of country of origin (Relevant document need to be submitted during supply of this goods).

32. **Validity.** The offer should remain valid up to 120 days from the date of tender opening.

33. **Terms of Payment.** After satisfactory test, trial and acceptance by the coast guard, full payment will be made in local currency.

34. **Other Information.** The bidder should provide any other information deemed necessary for evaluation of the tender as part of the information.

35. **Boat Visit.** The bidder may visit the Boat to assess the actual requirement of cable, present state of existing panel, installation materials and works involved with installation before submission of tender to avoid any difficulties/confusion after placing order.

36. **Compliance Statement.** A compliance statement fulfilling the entire requirement mentioned above to be meticulously prepared by supplier and submitted for

proper evaluation of offer. Any deviation from the specification is also to be mentioned in the offer. Mentioning of "Yes/ No/ Complied" will not be enough. An incomplete compliance statement may attribute to cancellation of the offer.

37. **Condition for Acceptance of Quotation.** Quotation may not be considered if detailed information/ specifications, original maker's books and catalogue about the same model of the offered item, accessories, scope of supply etc are not provided.