

**TENDER SPECIFICATION OF PORTABLE AIR CONDITIONING PLANT (CAPACITY: 30 TON)**  
**(FOR CSD ORGANISATION)**

1. **Name of the Equipment.** Portable Air Conditioning Plant (Capacity: 30 ton).
2. **Purpose.** The air conditioning plant will be used for providing conditioned air to ships/craft while it is on dock in Dry dock/S BAN placing the plant on dock repair jetty/ pontoon of Bangladesh Navy.
3. **Operational Requirements.** The Portable Air Conditioning Plant is to provide conditioned air by simultaneous control of air temperature, humidity, purity, and pressure to meet the requirements of the conditioned space. It should be able to cool the internal accommodation, office space, equipment room and other working spaces of dock ship by supplying conditioned air in flexible and insulated aluminium foil air duct that passes through the hatches of ships/crafts. The air conditioning unit shall be self-contained air-cooled with an all-weather enclosure of ample capacity to meet the indoor requirements under adverse weather conditions and suitable automatic operation. The unit along with accessories is to be factory-assembled, tested and housed as a single unit so that it can be lifted, shifted, and positioned to place the same in any other place in Bangladesh.
4. **Quantity.** 3 (Three).
5. **Manufacturer, Principal Supplier & Local Supplier.** Names and full addresses are to be mentioned in the following table.

| Ser | Description        | Remarks         |
|-----|--------------------|-----------------|
| a.  | Brand/Manufacturer | To be mentioned |
| b.  | Principal Supplier | To be mentioned |
| c.  | Local Supplier     | To be mentioned |

6. **Year of Manufacture.** 2024 or later. The item should be brand new and original.
7. **Country of Origin.** USA, UK, EU Countries, Japan, Canada, Australia, South Korea, Turkey and New Zealand.
8. **Country of Origin.** Same as the Country of Origin.
9. **Certificate/Document of Authentication.** The local supplier must provide the following original certificate(s)/ document(s) with the offer/quotation of items as regard to the genuinity of the source and item(s) to establish a chain of links from the original source to supply:
  - a. One certificate/ document from the manufacturer in favour of the supplier (in the case of the manufacturer as the direct source).
  - b. Two certificates/ documents, one from the manufacturer to the authorised agent and the other from the authorised agent to the supplier (in case the authorised agent is the immediate source).



c. Three certificates/ documents, first one by the manufacturer to the authorised agent, second one by the authorised agent to the sub-agent and third one by the sub-agent to the supplier (in case of the sub-agent as immediate source). If the supplier is unable to obtain the first certificate (by the manufacturer to an authorised agent), then relevant documents to prove the agency-ship of its claimed agent of the recognised manufacturer need to be produced.

10. **Basis of Design/ Design Criteria.**

a. **Outdoor Design/ Combined Conditions.** Based on climatological data of Bangladesh, the ambient conditions are as follows:

| Ser | Description             | Remarks          |
|-----|-------------------------|------------------|
| (1) | Outside Air Temperature | 5°C to 45°C      |
| (2) | Relative Humidity (RH)  | Up to 95%        |
| (3) | Water temperature       | Salty and muddy. |

b. **Indoor Design Conditions.** Indoor design conditions for air-conditioned spaces of ship/craft shall be:

| Ser | Description            | Remarks |
|-----|------------------------|---------|
| (1) | Dry Bulb Temperature   | 24°C    |
| (2) | Relative Humidity (RH) | 50%     |

11. **Duty Cycle/ Nature of Duty.** 24-hour operation per day.

12. **Electrical Power Supply.** All machinery/ equipment of the Portable Air Conditioning Plants should be able to run the shore supply of 400 V, 50 Hz, 3 Phase (AC supply). The supplier shall specify the total power requirements at full load operation of the air conditioning plant. The system should include all protection devices/ controls to withstand fluctuation/ variation in the power supply. The input power supply tolerance of compressors and associated motors of the plant should be within  $\pm 10\%$  of the rated electric supply.

13. **Standard.** The Portable Air Conditioning Plants are to be designed and constructed according to international standards. The standard to which the quoted Portable Air Conditioning Plant complies is to be specified in detail (ISO/ASHRAE or any other equivalent global standard).

14. **Scope of Supply.** The scope of supply is to include the following:

a. 03 x Portable Air Conditioning Plants, with all items necessary for immediate operation without the requirement of any other items (attachments, accessories, consumables, etc) (as per paragraphs 15 to 16).

b. Standard Tools (as per paragraph 17).

c. Optional items (as per paragraph 18).

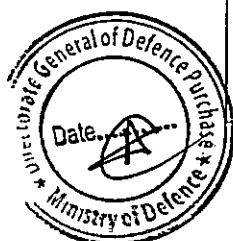
Spare parts and special tools (as per paragraphs 19 and 20).



- e. Documents (instruction manual, workshop level repair manual, parts catalogue, factory test certificate, etc; as applicable) (as per paragraphs 21 to 23).
- g. Installation, Test, Trial and Acceptance, and Training (as per paragraphs 25 to 27).
- f. Pre-Shipment Inspection (PSI) and Factory Acceptance Test (FAT) (as per paragraph 28).
- h. Warranty and Guarantee (as per paragraphs 29 and 30).

15. **Technical Specification.**

| Ser | Description                                       |                             |
|-----|---|-----------------------------|
| a.  | <b>General</b>                                    |                             |
|     | (1) Type  | To be mentioned             |
|     | (2) Model   | To be mentioned             |
|     | (3) Brand   | To be mentioned             |
|     | (4) Length  | To be mentioned             |
|     | (5) Breadth                                       | To be mentioned             |
|     | (6) Height  | To be mentioned             |
|     | (7) Total weight                                  | To be mentioned             |
|     | (8) Capacity                                      | <b>Not less than 30 ton</b> |
|     | (9) Supply cable                                  | <b>Not less than 20 m</b>   |
|     | (10) The plant should be transferred by trolley   |                             |
|     | (11) Plant to be compact                          |                             |
| b.  | <b>Compressor</b>                                 |                             |
|     | (1) Type  | To be mentioned             |
|     | (2) Model   | To be mentioned             |
|     | (3) Brand   | To be mentioned             |
|     | (4) Number of compressors per unit (at least two) | To be mentioned             |
|     | (5) Refrigerant                                   | To be mentioned             |
|     | (6) No of stage                                   | To be mentioned             |
|     | (7) Type of capacity control                      | To be mentioned             |
|     | (8) Capacity control range                        | <b>15°C</b>                 |
|     | (9) Type/ method of lubrication                   | To be mentioned             |
|     | (10) Grade of lubrication oil                     | To be mentioned             |
|     | (11) The overall dimension of the machine         | To be mentioned             |
|     | (12) Weight (kg) without total plant duct         | To be mentioned             |
| c.  | <b>Evaporator</b>                                 |                             |
|     | (1) Type  | To be mentioned             |
|     | (2) Tube metal                                    | Copper                      |
|     | (3) No. of tube                                   | To be mentioned             |
|     | (4) Capacity                                      | To be mentioned             |



| Ser | Description  |                        |  |
|-----|--|------------------------|--|
|     | (5)  | Dimension              | To be mentioned  |
|     | (6)  | Tube shape             | A – shape coil (for downflow)  |
|     | (7)  | Air distribution       | Uniform  |
|     | (8)  | Metal of fins          | Aluminium  |
|     | (9)  | Gauge metal            | Aluminium  |
| d.  | <b>Condenser</b>   |                        |  |
|     | (1)  | Metal of condenser     | To be mentioned  |
|     | (2)  | No. of condenser       | To be mentioned  |
|     | (3)  | Size of condenser      | To be mentioned  |
|     | (4)  | Metal of tube          | Copper   |
|     | (5)  | Cooling system         | Air-cooled   |
|     | (6)  | Cooling media          | Fans   |
|     | (7)  | Air Pressure           | <b>400 psi</b>   |
|     | (8)  | Pump down capacity     | To be mentioned  |
|     | (9)  | Fans blade             | Aluminium  |
|     | (10)   | Fan type               | Propeller type   |
| e.  | <b>TRV</b>   |                        |  |
|     | (1)  | No. Of TRV per unit    | To be mentioned  |
|     | (2)  | Range of TRV Per unit  | To be mentioned  |
| f.  | <b>Control and Interlocking System</b>   |                        |  |
|     | (1)  | Type of control        | Microprocessor control   |
|     | (2)  | Function               | Auto check function  |
|     | (3)  | Memory                 | Preset memory  |
|     | (4)  | Storage memory         | Memory should not be erased on power failure                                 |
|     | (5)  | Start/stop             | Restart automatically  |
|     | (6)  | Leaking system         | The Safety thermostat and other controls shall be interlocked with the motor |
|     | (7)  | Safety of data         | Parameter and data shall be protected in memory by battery.                  |
|     | The control system shall allow programming of the following conditions:  |                        |  |
|     | (a)  | Temperature set point  |  |
|     | (b)  | Humidity Setpoint      |  |
|     | (c)  | High-Temperature Alarm |  |
|     | (d)  | Low Temperature Alarm  |  |
|     | (e)  | High Humidity Alarm    |  |
|     | (f)  | Low Humidity Alarm     |  |
|     | The microprocessor shall activate an audible, visual, and general alarm in the event of any of the following conditions: |                        |  |
|     | (a)  | High Temperature       |  |
|     | (b)  | Low Temperature        |  |
|     | (c)  | High Humidity          |  |
|     | (d)  | Low Humidity           |  |
|     | (e)  | Loss of Air            |  |
|     | (f)  | High Pressure          |  |
|     | (g)  | Low Pressure           |  |

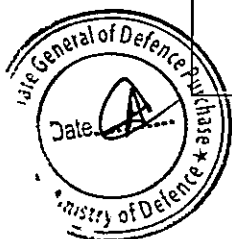


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| Ser | Description   |  |
|-----|---|--|
| g.  | <b>Motor</b>  |  |
|     | (1) Type  | Marine-type, squirrel cage induction motor   |
|     | (2) Model   | To be mentioned  |
|     | (3) Brand   | To be mentioned  |
|     | (4) Rated output (kW)                                       | To be mentioned  |
|     | (5) Working voltage range (V)                               | To be mentioned  |
|     | (6) Class of insulation                                     | F  |
|     | (7) Rated speed (rpm)                                       | To be mentioned  |
|     | (8) Rated frequency   | To be mentioned  |
|     | (9) No of phases  | To be mentioned  |
|     | (10) Full load current (amps)                               | To be mentioned  |
|     | (11) Starting current (amps)                                | To be mentioned  |
|     | (12) Efficiency at 100%, 75%, 50%, 25% of rated full load   | To be mentioned  |
|     | (13) Power factor at 100%, 75%, 50%, 25% of rated full load | To be mentioned  |
| h.  | <b>Motor Starter</b>  |  |
|     | (1) Manufacturer  | To be mentioned  |
|     | (2) Type  | To be mentioned  |
|     | (3) Rating  | To be mentioned  |
|     | (4) Protections   | Overload, under voltage and single-phase protection (for 3-phase motor starter) are to be provided |
| j.  | <b>Safety Devices</b>                                       |  |
|     | (1) HP air cut-out range                                    | To be mentioned  |
|     | (2) LP air cut-out range                                    | To be mentioned  |
|     | (3) Oil pressure cut-out range                              | To be mentioned  |
|     | (4) High temperature cut-out range                          | To be mentioned  |
|     | (5) If any other safety features                            | To be mentioned  |
|     | (6) Pressure relay valve                                    | To be mentioned  |
| k.  | <b>Filtration</b>   |  |
|     | (1) Quantity washable synthetic filter                      | To be mentioned  |
|     | (2) Quantity 5-micron filter                                | To be mentioned  |
|     | (3) Capacity of filter                                      | To be mentioned  |
| l.  | <b>Ventilation System</b>                                   |  |
|     | (1) Fans type   | Static and dynamic balance   |
|     | (2) Fans impeller   | Propeller type   |
|     | (3) Fans motor  | Flame proof and enclose type   |
|     | (4) Motor rated   | Continuous duty and rugged in construction   |



| Ser | Description  |  |
|-----|--|--|
| m.  | <b>Charging Connector/ Adaptor</b>   |  |
|     | (1)  | No. of charging point  |
|     | (2)  | Charging hose with gauge   |
|     | (3)  | Charging capacity  |
| n.  | <b>Dehumidification.</b> The Portable Air Conditioning Plants should be equipped with a dehumidifying function. The dehumidification function shall operate only when required, without reduction in the airflow rate, and ensure uniform air distribution & avoid sudden variation in supply air & room air temperature.  |  |
| p.  | <b>Vibration and Noise Control.</b> The design, construction, and workmanship shall be such to achieve a vibration level at the minimum and the noise level should not be more than 35 to 40 Decibels when the plant is operating at maximum capacity.   |  |
| q.  | <b>Refrigerant Piping.</b> The condensing unit and evaporator unit shall be interconnected by type 'L' seamless copper refrigerant liquid and hot gas lines using flared or brazed fittings. Necessary accessories shall be incorporated in the circuit. The liquid & hot gas lines shall be enamel painted and properly laid/ supported.  |  |
| r.  | <b>Charging Connector/ Adaptor.</b> To be mentioned.   |  |
| s.  | <b>Painting.</b> The units should be finished with two coats of enamel paint of good and approved quality.   |  |
| t.  | <b>Flexible and Insulated Air Duct.</b> The conditioned air will be distributed to the ship by the insulated air ducting. The evaporating unit shall be connected to air ducting using flexible connections of canvas type with zip if necessary. The evaporator outlet should have 4 connection points/pipes for connecting various air ducts. Flexible and Insulated Aluminium Foil Air Ducts with associated accessories and fitting arrangements are to be provided as per the following specifications: |  |
|     | (1)  | Product name<br>Flexible dual-layer Aluminium foil air duct with insulation                          |
|     | (2)  | Kind<br>Double-Sided   |
|     | (3)  | Material   |
|     | (a)  | Wall<br>Glass fibre bonded with Aluminium foil   |
|     | (b)  | Helix<br>Steel wire  |
|     | (4)  | Usage<br>Transfer of cold air from AC plants to ship   |
|     | (5)  | Colour<br>Silver/ Gold   |
|     | (6)  | Shape<br>Round   |
|     | (7)  | Size (diameter)<br>To be commensuration with the diameter of the connecting pipe from the evaporator |
|     | (8)  | Length of Air Ducts<br>(a) 01 x 100 m<br>(b) 01 x 50 m<br>(c) 01 x 30 m<br>(d) 01 x 20 m             |
|     | (9)  | Feature<br>(a) Highly flexible and compressible<br>(b) Flame resistant                               |



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| Ser | Description   |  |
|-----|---|--|
|     |   | (c) Heat resistant<br>(d) Corrosion resistant<br>(e) Small bending radius<br>(f) Easy to install |
| u.  | <b>Lifting Facilities.</b> A portable Air Conditioning Plant should have lifting facilities with necessary eyebolts and slings on the top of the plant. |  |

16. **Standard Accessories.** Standard accessories must include all items and accessories essential to operating the Portable Air Conditioning Plants, whether mentioned in the specification or not. The price of standard accessories is to be included in the FOB value. However, an itemised price list of standard accessories is to be provided with the offer for reference value only.

17. **Standard Tools.** 03 (three) sets of standard tools for maintenance of the Portable Air Conditioning Plant are to be provided. The price of standard tools is to be included in the FOB value. However, an itemised price list of standard tools is to be provided with the offer for reference value only.

18. **Optional Items.** The quotation should include a list of optional items (if any) required to operate Portable Air Conditioning Plants. When evaluating the comparative prices of the suppliers, only the prices of selected items by BN will be added to the total price.

19. **Spare Parts.** A recommended list of spare parts required for 05 years of satisfactory operation must be provided, indicating the itemised price. Only the prices of selected items by BN will be added to the total price while evaluating the comparative prices of the suppliers.

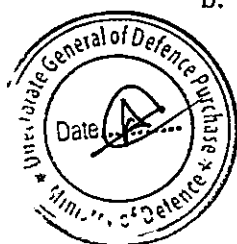
20. **Special Tools.** A recommended list of special tools required for carrying out maintenance of Portable Air Conditioning Plants is to be submitted with the quotation indicating itemised price. That price will be added to the total price while evaluating the comparative price of the suppliers.

21. **Documents.** 2 (two) sets of the following documents in English are to be supplied with each Portable Air Conditioning Plant (free of cost):

- a. The instruction manual includes technical specifications, installation, operation, and maintenance.
- b. Spare parts catalogue and its components.
- c. Factory test certificate/performance certificate.

22. **Certificates.** The manufacturer must give a certificate, which will form a part of the contract, stating that all the mechanical, electrical, and electronic components of the Portable Air Conditioning Plant and its control system are currently in production. The following certificates should be provided with the crane as per international standards:

- a. Factory Test Certificates of all main equipment of the Portable Air Conditioning Plant.
- b. Certification from internationally recognised standards



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23. **Quality Assurance Certificate.** Quality Assurance Certificate in respect of the associated equipment regarding its manufacturing and performance is to be provided at the time of delivery of the items.
24. **Record of Sales.** Record of sales of the quoted model of Portable Air Conditioning Plants with names of the customers in the preceding three years is to be included with the quotation.
25. **Installation.** The buyer will install the Portable Air Conditioning Plants. However, the supplier/ manufacturer will provide the necessary drawings and instructions. All necessary installation materials are to be supplied with the complete sets.
26. **Test, Trial, and Acceptance.** The buyer will carry out tests and trials of the item at Chattogram in the presence of the supplier's representative. After a satisfactory test and trial, an acceptance certificate will be signed jointly by the supplier's representative and the buyer's representative.
27. **Training.** The supplier's/manufacturer's installation engineer will provide operation and maintenance training in Bangladesh to the operators for 5 (five) days after the air condition plant is tested, trialed, and commissioned. The bidder will quote the cost of training separately in their financial offer. The supplier will bear the cost of the trainers' air ticket, internal transportation, accommodation, food, medical support, etc.
28. **Pre-Shipment Inspection (PSI) and Factory Acceptance Test (FAT).**
- a. Pre-shipment Inspection (PSI) and Factory Acceptance Test (FAT) will be carried out by 2 (two) BN officers for 3 (three) days, excluding the journey period, at the buyer's expense. The supplier should inform the buyer about the date schedule, and procedure of PSI and FAT at least 8 (eight) weeks prior to the commencement of the said PSI and FAT. After inspection, a joint inspection report will be prepared and signed by both the seller and buyer's representatives.
- b. On return from the country of supplier, the BN officers will submit a report to DNE. DNE, through DTS, will, in turn, forward the final decision along with the PSI and FAT report within 2 (two) weeks, based on which DGDP will render clearance for the shipment of stores to the supplier concerned: The supplier will not ship any item of the contract without clearance from the DGDP.
- c. All types of movement/ transportation (air, sea, road, rail) of the BN officer within the manufacturer/ supplier's country, reception and arrangement for entry into the country/ concerned area for the PSI and FAT are to be borne by the supplier.
29. **Warranty.** The principal/manufacturer will give a warranty for trouble-free operation for at least one year from the date of acceptance by the buyer. During the warranty period, if the Portable Air Conditioning Plant remains non-operational due to any action pending by the supplier, the warranty will be extended for the same period. The warranty covers all parts and labour (including the cost of the service engineer) throughout the warranty period.
30. **Guarantee.** The manufacturer will guarantee the supply of the spare parts for at least five years at a reasonable price. The annual increase in the price of spares should not be more than 5% of the price list provided with the quotation.





31. **Shipment.**

- a. The supplier will arrange the shipment of all items by sea to Chittagong Port, Bangladesh.
- b. All items are to be delivered in sea-worthy packing to ensure safe transportation by sea.
- c. All packages must have detailed packing notes showing their contents, and they must be marked with the consignee's name, address, and gross weight.
- d. The supplier will arrange transportation of all supplied items from Chittagong port to the NSD Chattogram.
- e. **Port of Shipment.** Any port of the manufacturing country. In case of shipment through any port of the manufacturer's authorised dealer, the relevant manufacturer's certificate is to be provided as proof of the genuineness of the offered item.

32. **Delivery.**

- a. The items are to be delivered within **9 (Nine) months** from the date of signing the contract to the following consignee:

The Commanding Officer, NSD Chattogram, New Mooring, Chattogram,  
Bangladesh

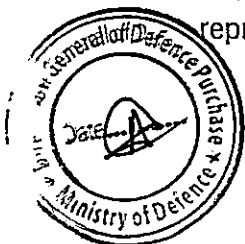
- b. **Place of Delivery.** NSD Chattogram.
- c. The supplier will carry the items from Chittagong Port to NSD Chattogram at the cost and risk of the supplier.

33. **Validity of Offer.** The offer should remain valid till 180 days from the date of tender opening.

34. **Currency.** Foreign Currency.

35. **Terms of Payment.** L/C for the full purchase amount will be opened in favour of the principal supplier under the following payment terms:

- a. 80% of the total CFR value will be paid on delivery of the items described under the scope of supply and on production of necessary shipping documents.
- b. The remaining 20% of the CFR value will be paid upon producing an 'Acceptance Certificate' after satisfactory test and trial jointly carried out by the buyer's and supplier's representatives.



36. **Condition for Acceptance of Quotation.** The quotation has to have supporting documents (booklets, leaflets, catalogues, brochures, etc.) with details about Portable Air Conditioning Plant. If detailed information regarding specifications, maker's books and catalogue for the quoted model of the Portable Air Conditioning Plant, spare parts, accessories, scope of supply, etc, are not provided; the quotation will not be accepted.

37. **Compliance Statement.** A compliance statement fulfilling all the requirements of the tender is to be submitted with the offer for evaluation of the quotations. Merely stating 'Yes' or 'No' will not suffice, rather detailed descriptions/information as required are to be provided. An incomplete compliance statement may contribute to the cancellation of the offer. If any clause of this specification is not commensurate with the offered Portable Air Conditioning Plant, the deviation must be spelt out clearly.

