

Heavy Fuel Oil (Mazut) Odor Control

HAIFA FUEL PORT

SPECIFICATION FOR Activated Carbon System for Odor Control

4575.22-018

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TABLE OF CONTENTS

1. GENERAL
2. SCOPE OF SUPPLY
3. PROCESS AND OPERATING DATA
4. LOCATION
5. DUTY AND REQUERMENTS
6. MATERIALS OF CONSTRUCTION
7. DESIGN CODE
8. BID INFORMATION
9. NAMEPLATE
10. DEMONSTRATION
11. GUARANTEE

APPENDIXS

Appendix A Mass flow calculation's for mazut fuel oil vapor
Appendix B P&ID

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1. GENERAL

This specification covers the requirements for design, manufacturing and supply of activated carbon system for heavy fuel oil odor control, to be supplied, installed and activated to ENERGY INFRASTRUCTURE .LTD at Haifa Fuel Port Site.

The activated carbon system shall be mounted at the base of the pier , with estimated distance of 200 meters from the loading stations.

2. SCOPE OF SUPPLY

2.1 The design, manufacture, workshop testing and delivery to P.E.I at Haifa fuel port of one (1) complete Activated Carbon System according to the P&ID – Appendix B.

The system shall be supplied, and mounted on a skid, complete with all accessories.

2.2 The Activated Carbon System shall include the following main equipment's :

2.2.1 Two (2) activated carbon filters as specified in paragraph 3 & 4.

2.2.2 One (1) droplet separator, as specified in paragraph 4.

2.2.3 One (1) centrifugal blower as specified in paragraph 4.

2.2.4 One (1) flammable gas detector (optional).

2.2.5 One (1) VOCs detector (optional).

2.3 The vendor shall provide the interconnecting piping (between equipment), and safety guards for rotating parts.

2.4 Control panel (all the equipment's shall be monitored on control panel).

2.5 The packing shall be suitable for transport and delivery to site.



3. PROCESS AND OPERATING DATA

- 3.1 Fuel loading flow rate: 150-400 [m³/hr]
- 3.2 Daily volume of fuel: 2300-4800 [m³]
- 3.3 Mazut heavy fuel oil vapor mass flow: 0.054 [kg/hr], (Appendix A)

NOTES:

- (*) The calculation's in Appendix A as provided based on AP42- Air emissions Factors and Quantification.
- (*) Vendor can revalue, add /or suggest other calculations standards in order to determine the compatible equipment for the process according to the operating data above.

4. LOCATION

Prevailing weather conditions are:

- 4.1 Temperature: minimum 5°C - maximum 45°C
- 4.2 Average relative humidity: 68%
- 4.3 Environment: marine

5. DUTY AND REQUIREMENTS

- 5.1 The activated carbon filters shall be capable of adsorbing the heavy fuel oil odor.
 - 5.1.1 Hardness, density, pore and particle sizes , surface areas , extractables , ash and pH of the raw materials to be specified by the vendor.
 - 5.1.2 Preferable Raw material replacing rate is **Once** per year , other suggestions shall be examined by the designer and the client.
- 5.2 The droplet separators shall be compatible for vapor flow rate of 400 [m³/hr].
- 5.3 The centrifugal blowers shall be capable of moving heavy fuel odor at :



- 5.3.1 Flow rate : 400 [m³/hr]
- 5.3.2 Temperature : 10-45 [°C]
- 5.3.3 Static pressure: 20 [mbar] (Rated)
- 5.3.4 Power and model : by vendor.

5.4 The presence of heavy fuel oil odor complies with all regulations set forth by the Ministry of Environmental Protection.

(* NOTE: vapor pipeline diameter is 6" and 200 [m] length , vendor shall determine the exact static pressure for the process.

6. MATERIALS OF CONSTRUCTION

- 6.1 Activated carbon filters : S.S 316L
- 6.2 Droplet separators : S.S 316L
- 6.3 Centrifugal blowers: S.S 316L or Galvanized iron .
- 6.4 Interconnecting piping and fittings : S.S 316L

7. DESIGN CODE

- 7.1 Process –ANSI B 16.5 150# RF
- 7.2 Activated Carbon- by Manufacturers standards.
- 7.3 EPA-AP 42 - Air emissions Factors and Quantification.

8. BID INFORMATION

In order to evaluate the quotation on a common basis, vendor shall provide with his quotation the following documentation:

- 8.1 Complete and detailed description of the unit, including:
 - Equipment Data Sheet.
 - Measured data within the equipment.
 - Performance data (including Utilities requirement).



- Motor and model specification.
- Noise level (at 1 m distance from unit) – for the blowers.
- Skid dimensions.
- Materials of construction.
- Dynamic & Static Loads.
- Installation, operating and maintenance instruction.
- Adsorption capacity and pressure drop- for carbon filters.
- Itemized priced list of recommended spare parts for two years with detailed assembly drawings.

8.2 Vendors' limits of supply.

8.3 Delivery schedule.

8.4 Statement that the offered equipment complies with customer's specification or a list of any deviation from it.

9. NAMEPLATE

9.1 SS316L Nameplate on each equipment with the following information:

- Equipment tag number.
- Name of manufacturer
- Date of manufacturing
- Rated and Normal Capacities.
- Rated and Normal Pressure.



10. DEMONSTRATION

- 10.1 Vendor will submit with proposal a list of installations in which similar equipment is in use and upon request of Purchaser the Vendor will arrange an operating demonstration of the equipment.
- 10.2 All installation costs will be paid by the Vendor.
- 10.3 The equipment's construction materials shall withstand the harsh marine environmental conditions of ports, including corrosion, abrasion, chemical exposure, moisture, temperature fluctuations, and mechanical stress, ensuring long-term reliability and performance.
- 10.4 Vendor shall suggest an extra blower and droplet separator as an option.

11. GUARANTEE

- 11.1 The vendor shall guarantee that all materials and equipment furnished is of first grade and the vendor's work is performed in a skillful and workmanlike manner.
- 11.3 Should any defect due to faulty design, materials or bad workmanship become apparent during the guarantee period, the vendor shall repair or otherwise rectify the defects, free of charge to purchaser (including traveling expenses to the site). Changes shall be made at a time and in a manner agreeable to the client.
- 11.4 the vendor shall guarantee that the offered equipment is capable of performing the duty stated under above paragraph 3 & 4 and .
- 11.5 the vendor shall guarantee that the offered equipment is operator friendly and comfort incase of replacing activated carbon .
- 11.6 In case the equipment is not able to reach the process specification including utilities consumption the vendor will make the appropriate modifications in order to comply with the specification.
- 11.7 The cost of changes and modifications made to the equipment to fulfill the process guarantee will be borne by the vendor. A penalty clause, subject to negotiation, will apply if the guaranteed parameters cannot be met.



- 11.8 The changes and modification will be made in Fuel port site if possible, If it is not possible, vendor will dismantle the equipment and transfer it to the workshop for repair, In the mean time vendor will provide temporary equipment, After the repair the temporary equipment will be removed and the original repaired equipment will be installed.
- 11.9 The above activities are at full responsibility of vendor. Vendor will borne all the costs associated with those activities.



APPENDIX A

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4575.22-018

Page 9 of 10

15/02/2024

APPENDIX B

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