

RAIL COACH FACTORY, KAPURTHALA

SPECIFICATION FOR DUST EXTRACTION SYSTEM

Specification No.Mech/M&P/2700/GM/03

IMPORTANT NOTE:

- (i) Bidders are required to give clause wise comments on the technical specifications, confirming compliance/non-compliance with details of deviations if any along with their effect on the performance. Back references to be avoided, offers are likely to be ignored in case of non-compliance of these instructions for furnishing the information.
- (ii) The bidders should quote for sub-systems of makes as specified in these specifications. Other makes of sub-systems will not normally be acceptable. In case, for reasons to be indicated by the bidder, it becomes necessary for him to quote for makes other than those specified, the alternative makes may be accepted only, on merit.
- (iii) Tenderers must offer and quote the price of all the concomitant accessories specified, as considered essential for commissioning and utilization of the machine. Offers received deficient of price of any of the concomitant accessories specified, are liable to be considered as incomplete.
- (IV) Tenderer or his authorised agent should visit at RCF, Kapurthala with prior appointment with CPE/RCF and acquaint themselves with the site condition, where Cutting and Sanding operation of FRP are being carried out. The firm should give conformation to this aspect in the offer.

1.0 PURPOSE:

During Cutting and Sanding operation of FRP components a lot of dust is generated. In order to improve the existing working environment and reducing the health hazard Tool Mounted Dust Extraction System in FRP shop is required.

2.0 DESCRIPTION AND SCOPE OF SUPPLY:

- 2.1 The scope of supply covers supply, design and construction necessary for installation and commissioning of Dust Extraction System in FRP shop as detailed in the specifications and other concomitant accessories/equipments, which the manufacturer considers essential to make the machine fully operational when installed and connected to power source and other utilities. Requirement of utilities etc. if any, should be clearly indicated by the tenderers in the offer. Main Technical parameters of the system will be as per Schedule (I).
Variations in the Parameters can be considered if the bidder is

ready to guarantee the performance of his equipment & accept the payment after complete prove out of the equipment to the satisfaction of the consignee.

2.2 System should have 3 extraction points, the extraction system should handle minimum two extraction point at the same time. The dust extraction from the particular tool (with a automatic valve) should take place when the particular tool is on, otherwise there should be no extraction.

2.3 The total value of the offer will be calculated on :

I - The cost of the basic machine

II- Cost of the concomitant accessories according to tender specification.

III - Cost of any other accessory treated as concomitant accessory.

IV- Applicable duties and taxes, insurance, freight installation commissioning, and training etc.

2.4 Concomitant Accessories

2.4.1 The machine shall be accompanied by the concomitant accessories, the bidder should supply a list of such accessories. He should also mention the cost of each listed concomitant accessory.

3.0 PROVEN DESIGN & SYSTEM CAPABILITY :

The system offered must be of proven design incorporating latest features. The bidder shall provide sufficient evidence that he is a reputed/ proven manufacturer and has experience in manufacturing & supply of similar system. He is required to enclose along-with the offer, his performance of last five years mentioning purchaser's name & address for this purpose. In case a sole distributor is submitting the bid on behalf of the proven manufacturer, an authorization signed by the proven manufacturer should be submitted.

3.1 General system capability of the system should be as follows:

- 3.1.1. To extract FRP dust at the source by using " high vaccum and on tools extraction" technique.
- 3.1.2. As the suction device becomes an integrted part of sander /cutter hence extraction should follow the operator's movements.
- 3.1.3. FRP dust is required to be captured in grinding / cutting area considering operators at one time.
- 3.1.4. The System should be designed for handling automatic start/ stop of Dust extraction from the tool. All the suction extraction prower to be connected to Dust System through an automatic valve.

- 3.1.5. The unit should have power saving features i.e. automatic switch off when all the sanders / cutter not in use.
- 3.1.6. The specified air quality standard should be maintained in the breathing zone of the operator. The breathing zone can be visualized as a hemisphere 200 mm radius in front of the operator's face.
- 3.1.7. Automatic filter cleaning system with reverse air flow should be provided in the system. Filter operation should be in two stage course and fine. Sock / Tube filter with PTFE coating should be provided.
- 3.1.8. Dust extraction System should be capable to handle 50 Kg of FRP dust per shift.
- 3.1.9. The extraction system should have powerful vacuum unit and can serve up all the three extraction points simultaneously. The eaterance dust to be filtered before being exhaust to atmosphere.
- 3.1.10. Power control can be obtained by fitting automatic vacuum valve to the extraction points. The valve provide suction power when operator starts the operation and it stops automatically after the operation stoped.
- 3.1.11. An efficient silencers and acoustic enclosure to be used in the system. The enclosure should be easily removed for service.

4.0 Ducting System:-

- 4.1 Suitable duct work is required for trasportation of dust from the extraction place to the central fan and filter unit. The Tenderer will furnish the detail of overhead dust extraction system.
- 4.2 The Ducting should not make any hindrance to the movement of Operator and Material.
- 4.3 All the steel parts as Pipe Bends, Junctions, T-Piece, Pipe Coupler etc. should be galvanized / coated to protect against Dusting/Corrosion.

5. Important Note:-

A. System should be able to maintain the atmospheric air condition with in the permissible limit as specified by Punjab Pollution Control Board & Punjab Factories Rules 1950 under the heading " permissible" levels of certiaim chemical substance in work environment.

B. The system should consist of:-

1. Discharge/Exhaust
2. Control Panel
3. Acoustic Enclosure
4. Frame for fork lift handling
5. Control Unit
6. Dust Collector
7. Compressed Air Inlet

- 8. Collection Bin
- 9. Ducting System.

6.0 ELECTRICAL/ELECTRONICS

- 6.1** The whole dust extraction system shall be designed to operate with 415V +/- 10%, 50Hz +/- 3%, three phase three wire /four wire system with neutral solidly earthed at the source.
- 6.2** The electrical supply shall be made by RCF at one point to operate the equipment in FRP Shop. Provision of all electrical/ electronic equipment from the down stream of the isolating switch shall be in the scope of the bidder.
- 6.3** The total cabling work from the isolative switch to the system shall be carried out by the bidder. The wiring shall conform to IS 732 (latest). all the internal wiring cables i.e. for the equipment supplied, both for power and control wiring shall be included by the bidder under his scope of work. this includes the electrical panels/ distribution boards for the sub-distribution of the power to various equipments.
- 6.4** Total power requirement shall be indicated by the bidder.
- 6.5** The bidder shall indicate the total connected load of the system.
- 6.6** The bidder shall indicate the electrical energy consumption (in kWh) of the total system when full system is in operation per hour.
- 6.7** In case the total connected load exceeds 200 KVA capacity, a separate air circuit breaker shall be provided with suitable protections like over current, under voltage, under frequency protections for isolating the system as a whole.
- 6.8** The system shall incorporate electrical safety as per relevant IE rules (Latest). It should be certified by authorized Electrical Inspector.
- 6.9** The unit should be complete with starter and control unit mounted on a profile frame. Long life filters should be used and having efficient filter cleaning method. The Direct driven fan with life time lubricated bearings and automatic starter/stop should be used.

7.0 OPTIONAL ACCESSORIES:

- 7.1** In case bidder desires to suggest any accessories to achieve higher performance and/ or better quality levels, the same shall be clearly explained and quoted separately as Optional accessories. The purchaser has the discretion to order or not to order.

8.0 SPECIAL FEATURES:

- 8.1** Special features incorporated in the Dust Extrication System, if any, shall be indicated separately by the Bidder clearly indicating advantages of the features.

- 8.2** The machine should be capable to handle appr. 50 Kg dust per shift.
- 8.3** It should efficient to make the atmosphere clear from FRP dust.
- 8.4** The volume occupied by the machine, pipe & it's accessories should not hinder the man, machine material near the cutting / Sanding Tables.
- 8.5** Total area of the dust extraction system should be specified. & also suggest the height of the system is required to be installed in shop.

9.0 GENERAL CONDITIONS

- 9.1** The machine should be capable of operating in severe workshop conditions of dust temperature between 0°C to 50°C and humidity up to 98%. The system should be capable of working under these conditions continuously for 3shift working

10.0 SPARES

- 10.1** The tenderer should furnish details of spares covered under warranty.
- 10.2** The tenderer should also furnish the price list of spare parts required for two years normal maintenance of the equipment.

11.0 COMMISSIONING AND PROVING OUT:

- 11.1** The successful bidder shall have to commission the Dust Extraction System within one month from the date of receipt at RCF, Kapurthala. Tenderer shall prove out the Dust Extraction System for the following components:-

Sanding Components ----- 3.0x2.5 Mtrs.(Maximum Size)
Edge Cutting Components ----- 2.5x1.5 Mtrs.(Maximum Size)

- 11.2** The successful bidder will get a general arrangement drawing approved from consignee before supply of the equipment. The GA drawing should indicate the general arrangement of sub-assemblies and functioning of the system.

12.0 TECHNICAL LITERATURE:

- 12.1** Three copies of the printed illustrative catalogue showing features of the Dust extraction System to be supplied with the system.
- 12.2** The successful bidder will have to furnish for 4 copies (3 hard & 1 Soft) of the spare parts catalogue giving the part List number of each component with exploded views and assembly drawings, maintenance manual, trouble-shooting guide, operational manual of the Dust extraction System and all electrical circuit diagrams.

13.0 AMC

The bidder shall quote for comprehensive AMC for five years from the date of

expiry of the warranty. An all inclusive single figure for the annual payment shall be quoted.

14.0 WARRANTY:

As per IRS terms and conditions of the contract.

SCHEDULE-I

Power	kw	12 to15 appr.
Capacity Free Blowing	m3/h	800 to 900 appr.
Capacity at-15 kpa	m3/h	500 appr.
Minimum vacuum	kP	-25
Filter surface	m2	3 to 4
Filter Life	hr	7000 appr.
Noise level	dB(A)	70 appr.
Weight	Kg	300 to 400 appr.