

RAIL COACH FACTORY, KAPURTHALA

SPECIFICATION OF DUST EXTRACTION SYSTEM FOR FRP

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:

To remove the dust generated during cutting and sanding operation of FRP Components. 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, a 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.**

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2.2 System should have enclosed chambers of size approx. 5 meters x 4 meters and suitable height (so as to accomodate the handling of material by fork lift trucks) with extraction grills from where dust can be extracted and collected in a dust collector with the help of suitable system of ducts, vaccum system etc.

2.3 Chamber shall be constructed by use of transparent sheets, for better illumination in chamber. Sufficient light provision is also to be incorporated in the system.

2.4 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.

2.5 Concomitant Accessories

2.5.1 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. The firm should have supplied at least one such system to any private/ government installation which is working satisfactorily and is of similar or more capacity w.r.t dust handling quantity, minimum vaccum, fan blowing capacity at -15 kPa. The documentary proof for the same is to be provided by the firm. Firm should also arrange to demonstrate the system to RCF representative, where it has supplied the system. The Bidder 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 from grinding & cutting at the source by using " high vaccum extraction from grills of the chambers where the FRP material is cut and grinded.

3.1.2 FRP dust from grinding & cutting is required to be captured in grinding / cutting area considering 2 operators at one time.

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- 3.1.3 The unit should have power saving features i.e. automatic switch off when all the sanders / cutter not in use.
- 3.1.4 The specified air quality standard should be maintained in the breathing zone of the operator as per the Notification no. B-29016/20/90/PCI-I dated 18.11.2009, of National Ambient Air Quality Standards for Industrial Area, Central Pollution Control Board, New Delhi. The breathing zone can be visualized as a hemisphere 200 mm radius in front of the operator's face.
- 3.1.5 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.
- 3.1.6 Dust extraction System should be capable to handle 50 Kg of FRP dust extraction per shift.
- 3.1.7 The extraction system should have powerful vacuum unit and can effectively extract the dust from the chamber . The **dust collected is to** be filtered before being exhaust to atmosphere.
- 3.1.8 An efficient silencers and acoustic enclosure to be used in the system. The enclosure should be easily removed for service.
- 3.1.9 System should be supplied alongwith a chamber for stocking of dust (before final disposal).
- 3.1.10 Additional accessories for clearing dust from floor shall also be supplied alongwith this system.
- 3.1.11 An alert system for choking of duct, filter, damaged filter bags shall also be incorporated in the system.
- 3.1.12 Safety instructions Do's and Don't do's, operation instructions shall indicated on the machine.

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 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.

5.0 Important Note:-

- 5.1 System should be able to maintain the atmospheric air condition with in the permissible limit as specified by Punjab Pollution Control Board & Punjab

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Factories Rules 1950 under the heading " permissible" levels of certain chemical substance in work environment.

5.2 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.

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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 approx 50 Kg dust per shift.

8.3 It should be 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 3 shift 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 SUBMISSION OF GA, FOUNDATION & RELATED DRAWINGS FOR APPROVAL

11.1 In case foundation is required, the supplier shall first submit 01 copy of foundation drawings with details of construction of foundations for approval within 04 weeks of the receipt of Acceptance of Tender to each consignee for approval.

11.2 The supplier shall also submit the Complete layout of machine elements like :

- i) Dust source (Chamber Size), ducting, dust collector, electrical panel, Servo Controlled Voltage Stabilizer etc. and other related diagrams (Mechanical, Hydraulic, Electrical & Electronics).
- ii) Machine weight, overall dimensions, electrical load with length of 3 phase 415 V AC electric power cable.

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for approval within 04 weeks of the receipt of Acceptance of Tender to each consignee for approval and to enable the consignee for making necessary arrangements for Installation & Commissioning of Machine on receipt.

- 11.3 After getting approval from consignee, the supplier shall supply directly to each consignee copies of approved GA foundation drawings and related diagrams within 45 days (for both Indigenous and foreign tenderers) from the date of approval of GA drawing for information only.

12.0 COMMISSIONING AND PROVING OUT:

- 12.1 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 ----- 2.5 x 1.5 Mtrs.(Maximum Size)
Edge Cutting Components ----- 3.0 x 2.5 Mtrs.(Maximum Size)

- 12.2 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.

13.0 TECHNICAL LITERATURE:

- 13.1 Three copies of the printed illustrative catalogue showing features of the Dust extraction System to be supplied with the system.
- 13.2 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.

14.0 ANNUAL MAINTENANCE CONTRACT (Optional and Not included in the scope of supply)

- 14.1 Tenderers are required to quote for a comprehensive Annual Maintenance Contract for the machine supplied against this specification for a period of three years on yearly basis giving the rates for each year i.e.first year, second year..so on., which will be inclusive of all spares, material and labour costs. The duties and taxes as applicable should be indicated separately. All consumables spares and materials shall form a part of the scope of comprehensive AMC except as follows:-
(a) Electricity / fuel, Lubricating oils or coolant.
(b) Major machine elements/ structural members which are under guarantee of three years.
- 14.2 AMC is a not a part of scope of supply. In case of optional requirement and not included in commercial evaluation criteria, in such cases, the option to award AMC shall remain with the consignee after completion of warranty period. The detailed terms and conditions of AMC are given in the Annexure-A

15.0 WARRANTY:

As per IRS terms and conditions of the contract.

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SCHEDULE-I

Parameter	Unit	Value
Power	kw	12 to15 appr.
Capacity Free Blowing	m ³ /h	800 to 900 appr.
Capacity at-15 kpa	m ³ /h	500 appr.
Minimum vacuum	kP	-25
Filter surface	m ²	3 to 4
Filter Life	hr	7000 appr.
Noise level	dB(A)	70 appr.
Weight	Kg	300 to 400 appr.

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- 1 The duration of AMC shall be 3 years from the date of expiry of warranty. Rates for AMC shall be quoted by the tenderer on yearly basis, which will remain applicable during the duration of AMC and not subject to any variation except any statutory changes in taxes and duties as compared to quoted rates.
- 2 The tenderer must provide AMC services at the consignee location without any precondition. The AMC should include complete responsibility for the bought out sub assemblies and components.
- 3 The details of preventive maintenance services including cleaning of machine to be provided under AMC shall be provided by the tenderer.
- 4 Preventive maintenance shall preferably be conducted on weekends/working days through mutual agreement with the consignee. Each preventive maintenance schedule normally shall not exceed one day. The total shutdown time for preventive maintenance should be kept as low as possible but not more than 60 hours/month (averaged over the quarter) including time for cleaning, weekly, fortnightly, monthly, quarterly schedules etc. The preventive maintenance regime offered must be aimed at achieving minimum 90% uptime of the plant excluding the plant down time for preventive maintenance schedules.
- 5 The tenderer shall ensure that in case a failure is reported by a consignee, qualified service engineers visit the site within 3 days from the date of complaint on calendar days' basis. This period of 3 days after the failure report shall be treated as grace period, which will not count towards plant down time for upto one failure per quarter and a maximum of 4 failures per annum. Incase, the number of failures exceeds one during any quarter or four during any year of AMC, grace period of only 2 days will be permissible for such additional failures. Complaints shall be lodged by consignee by fax, e-mail or per bearer at address given by the tenderer. The responsibility to keep the failure reporting address details current will rest with the tenderer.
- 6 Incase preventive maintenance is carried out alongwith breakdown maintenance schedule; preventive maintenance time will be deducted from breakdown time of the plant.
- 7 **Penalty Clause:** Penalty shall be levied on the tenderer for maintaining plant up time below the limit of 90% calculated on working days basis, after discounting for grace period and preventive maintenance period. Penalty shall be calculated as %age of quarterly payment and will be deducted from the respective quarterly payments. Penalty calculation will be done over quarterly payment period.

S.No.	Availability Slab	Applicable Penalty
1	90% to 80%	0.5% for every 1% (or part there of) reduction in availability of plant below 90%.
2	Below 80%	1% for every 1% (or part there of) reduction in availability of plant below 80%.

- 8 A Bank Guarantee equal to ¼ of annual value (highest of the annual values if the rates offered for various years are different) of AMC subject to a minimum value of 1.25 % of the quoted cost of machine including concomitant accessory (in

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case the annual AMC rate quoted is less than 0.5% of the cost of machine), will be submitted by the tenderer to the consignee 90 days before the expiry of warranty. The AMC will have the validity of 5 years 6 months. The tenderer can submit multiple BG for lesser duration to cover the period of 5 year 6 months ensuring the uninterrupted validity of the AMC BG for 5 year 6 months. The confirmation for the submission of this BG will be submitted to RCF/KXH for the release of WBG. The AMC BG will be returned on completion of AMC period. In case, the tenderer fails to provide AMC services successfully; the AMC BG will be forfeited. This will be in addition to penalty as per clause 7 above. The provision would not be applicable where the advance payment is made.

- 9 Plant up time of less than 60% for two consecutive quarters will constitute complete failure of tenderer to provide the AMC services successfully and will result in forfeiture of AMC BG. This will be in addition to penalty clause 7 above for the period of actual performance.
- 10 Consignee may terminate the AMC in the event of failure of tenderer to provide AMC services of the AMC agreement in addition to encashing of AMC BG as per clause 8.
- 11 If the AMC is not part of the scope of supply, the cost of AMC will not be added for evaluation.

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