

RAIL COACH FACTORY, KAPURTHALA		
Specification No.	Description	Covering Page
Mech/M&P/3600/GM/04 Rev.- NIL	Design, Supply & Installation of Liquid Argon Storage Tank along with fittings and necessary certifications in addition to existing storage system	

Designation	Name	Signature	Date	Level
SSE/M&P	Rajat			Prepared
CPE	G.S. Negi			Agreed & Approved

Issue/ Rev	Changes	Date

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1.0 IMPORTANT INSTRUCTIONS TO TENDERERS FOR FILLING TECHNICAL BID

- 1.1 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.
- 1.2 Unless otherwise stated, latest alterations/ revisions of specifications/ standards/ drawings shall be applicable. In respect of safety standards and environmental standards relevant to the machine, the machine manufacturers shall ensure compliance with international (CE/ISO/DIN/JIS)/National standards (IS) (wherever applicable).
- 1.3 Tenderers should offer and quote for all the specified concomitant accessories, as these are considered essential for commissioning and utilization of the machine. Even if bidder does not recommend the purchase any of these accessories, the price must be quoted for comparison purposes and their recommendation/suggestion indicated in the offer. Tenderers should also quote for optional accessories, spares and consumable spares as asked in the specifications.
- 1.4 In case, any item is required in sets, please specify nos./pieces per set. This is essential for proper technical evaluation of the offer. Offers received without this may be considered as incomplete and liable to be rejected.
- 1.5 The bidder should quote only for the specified make of sub-assemblies and equipment wherever specified. Makes of sub-systems other than the specified ones will normally not be acceptable. In case, some other make is quoted, specific reasons for the same including its features/advantages over specified makes must be brought out in the offer.
- 1.6 In case there is a contradiction in any information provided (some parametric values given in the specification and those given in the brochure or some other document enclosed by the tenderer), unless specifically mentioned in the deviation cum confirmation statement the values as given in the specification shall be taken as confirmed by the tenderer and offer evaluated accordingly.
- 1.7 The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the Technical Specification. However, the decision of the Purchaser in this regard shall be final.
- 1.8 Purchaser reserves the right to verify the details submitted by the bidder by actual site visits.
- 1.9 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.
- 1.10 Tenderer not submitting the requisite information may note that his offer is liable to be ignored.
- 1.11 Layout and General Arrangement drawing of the plant shall be provided by the bidder.
- 1.12 Tenderer shall ensure to visit RCF premises before bidding and before submission of Layout and foundation drawings to understand precise requirement of the user and location.

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2.0 DESCRIPTION :

The specification covers Design, Supply & Installation of Liquid Argon Storage Tank of capacity 13 KL along with fittings and necessary certifications in addition to existing storage system. The supply shall include all concomitant accessories/equipment which the manufacturer consider essential to make the setup fully operational when installed at Rail Coach Factory Kapurthala Punjab.

3.0 SCOPE OF SUPPLY:

- 3.1 The scope of supply covers Design, Supply & Installation of Liquid Argon Storage Tank of capacity 13 KL along with fittings and necessary certifications in addition to existing storage system as per below specifications and major parameters given in Clause 4.0.
- 3.2 The supply shall include following items/ equipments:
 - 3.2.1 13 KL 23 bar Liquid Argon Tank Vessel
 - 3.2.2 Submission of Structural and foundation drawings for the Argon Tank. (*Civil Work pertaining to foundation of tank shall be done by RCF as per submitted drawings*)
 - 3.2.3 Submission of Drawings to CCOE/PESO, civil works validation by structural engineers, copies of all manuals drawings.
 - 3.2.4 PESO Compliances & Chartered Engineers Inspection including first years PESO fees. Vessel/Tank Hydro test certificate and Safety valves certificates to be provided by the supplier.
 - 3.2.5 Interconnection of the new Proposed Gas System with existing Vessels and Vaporizers which includes SS, Stainless Pipe, Ball Valves and other necessary fittings.
 - 3.2.6 Earth pit with GI & Lightening arrestor strip for cryogenic vessels & Merge into lightening arrestor on root top.
 - 3.2.7 Installation and Testing of items.
 - 3.2.8 Wire fencing upto 8 feet structure confirming to CCOE/PESO requirements.
- 3.3 The supply shall also include all other equipments and accessories which the manufacturer considers essential to make the equipment fully functional when installed and put into operation.
- 3.4 Other concomitant accessories/ equipment which the manufacturer considers essential to make the machine fully operational when installed and commissioned with requirement of utilities, etc if any, should be clearly indicated by tenderer in the offer.
- 3.5 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 tenderer specification.
 - iii. Cost of any other accessory treated as concomitant accessory.

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iv. Application duties and taxes, insurance, freight and installation and Commissioning charges.

3.6 Technical experts of the manufacturer during commissioning of machine will fully and adequately train the operators/ maintenance staff nominated by the consignee

4.0 LEADING PARAMETERS:

i.	Construction	Double Walled
ii.	Insulation	Vacuum + Perlite Insulation
iii.	Design Code	PED/CE/EN-13458-2
iv.	Max. Working Pressure	Upto 23 Bar
v.	Operating Temperature	-196° C
vi.	Inner Vessel Material	X5 Cr.Ni 18-10 for the Shell and Dish ends ASTM A182 F304 for the nozzles
vii.	Outer Vessel Material	Blast cleaned Carbon Steel with high quality anti-corrosion surface protection and a white polysiloxane finishing coat.
viii.	Pipe Work	Stainless Steel
ix.	Valve & Pressurizing Coil	Forged Stainless Steel/ Aluminium
x.	Gross Capacity (in liters)	13 KL
xi.	Net Capacity (in liters)	More than 90% of Gross capacity
xii.	Max. flow- upto 8 bar (in Sm³/hr)	1500 ± 10%
xiii.	Make of Vessel	Ferrox, VRV or Chart Linde only
xiv.	Daily evaporation rate (%)	0.22 ± 10%
xv.	Connectivity	
	The tank/ vessel shall be interconnected by suitable valves & piping with existing tanks such that it can be isolated for testing etc while liquid Argon is drawn from the other	
xvi.	Foundation Design	
	The vessel shall be designed to comply with CCOE, Nagpur norms	

(Wherever range given above, better range is acceptable)

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5.0 CONCOMITANT ACCESSORIES

- 5.1 The tenderer shall supply a list of concomitant accessories, which will be supplied along with the machine. The cost of each listed concomitant accessory should be quoted separately. Wherever for any reason the cost of any concomitant accessory is included in the basic price of the machine the same should be specifically mentioned.
- 5.2 Any other accessory, which in the opinion of the tenderer can contribute to higher performance, should be indicated and quoted separately.
- 5.3 A maintenance tool kit containing hand tools is required to cover all the fasteners of all sub-assemblies of the equipment.

6.0 SPARES & CONSUMABLES

- 6.1 The tenderer should furnish details of spares covered under warranty.
- 6.2 List of important spare parts and accessories with their part number and costing.
- 6.3 The tenderer should be furnishing the price list of spare parts required for two years normal maintenance of the equipment. Sources of supply of spares used other than that of manufacturer should be furnished by the tenderer.
- 6.4 List of recommended spares for normal maintenance after expiry of warranty period to till useful life of the equipment and these spares should be readily available in the market with your authorised stockists.
- 6.5 List of recommended consumables for two years shall be quoted separately.
- 6.6 Useful life estimated/expected for each equipment and its sub assembly should be indicated by the tenderers.

7.0 INSPECTION OF EQUIPMENT & TESTING AT MANUFACTURERS WORKS

- 7.1 Manufacturers must have suitable facilities at their works for carrying out various performance tests on the equipment. The tenderer should clearly confirm that all the facilities exists and shall be made available to the inspecting authority.
- 7.2 A sample inspection chart for inspecting the equipment should be supplied along with the bid.

8.0 INSTALLATION COMMISSIONING AND PROVING TESTS

- 8.1 The contractor or his agent would be required to carry out a joint check at the consignee's end, along with the consignee, before unpacking is done, to avoid subsequent complaints regarding short shipment/transit damages. It is necessary that this joint inspection be done immediately on receipt of the machine by consignee to avoid commissioning delays due to shortages/transit damages.
- 8.2 Installation of the machine would be done under the supervision / direction of firm engineers. The contractor shall arrange commissioning of machine after installation is done. Adequate number of teams of technical experts will be made available so that the commissioning delays are eliminated. Such personnel will be required to be present as soon as the machine has been received.
- 8.3 The contractor or his agent shall install and commission the entire setup within 90 days from the date of receipt of material.

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- 8.4 The machine performance shall be demonstrated to the full satisfaction of consignee at the consignee's works and complying with parameters as per Clause 4.0.
- 8.5 Civil Work/ Foundation Work shall fall under the scope of RCF.
- 8.6 If an assembly/sub-assembly requires to be taken back to the manufacturer's premises for repairs/replacement either before commissioning or during warranty, the manufacturer or his agent would be required to submit a Bank Guarantee. In case the entire machine has to be taken back, a Bank Guarantee would have to be submitted. The Bank Guarantee should be of adequate value so as to cover the cost of the assembly/sub-assembly/paid up cost of the machine.

9.0 TECHNICAL LITERATURE

- 9.1 One copy of the printed illustrative catalogue showing technical features of the machine and its elements must be enclosed with each copy of the bid.
- 9.2 The successful tenderer will have to furnish, for each machine 4 copies of spare parts catalogue giving the part list number of each component with exploded views and assembly drawings of major assemblies, maintenance manual, trouble shooting guide, operational manual of the machine and all electrical circuit diagrams to the consignee directly within 3 months of the placement of order. The bidders should provide a list of literature, they will supply along with the machine. The technical literature shall be provided for complete machine including imported and indigenously purchased components/sub-assemblies.

10.0 WARRANTY

- 10.1 As per IRS conditions or as quoted by the tenderer whichever is later.
- 10.2 Warranty period for part or machine shall be extended after completion of warranty period by the duration under which the part or machine remains under breakdown during warranty.

11.0 SCHEDULE OF ANNUAL MAINTENANCE CONTRACT (AMC) FOR PERIOD OF 5 YEARS AFTER COMPLETION OF WARRANTY PERIOD

- 11.1 Tenderer shall provide proposal for 5 year Annual Preventive Maintenance schedule to be executed after completion of warranty period in the format as per annexure-B.
- 11.2 The firm shall maintain the machine in good working condition during the contract period and shall correct the fault or failures, repair or replace the worn or defective parts/equipment during the normal working hours of shop where the equipment has been installed. Unserviceable parts/equipment need to be replaced at no extra cost with brand new parts/equivalent or superior specification.
- 11.3 The firm shall respond by deputing service personal to oral / telephonic/ or other modes of intimation for repair and maintenance of the said machines within 2 hours.
- 11.4 The firm shall ensure that the machine is in proper working condition, to the full capacity, after repair and maintenance.
- 11.5 To have a timely supply of spares during AMC, the contractor shall furnish a total list of spares which should contain list of spares that shall be arranged by the firm, both chargeable, duly mentioning the charge against each item, and spares which shall be non-chargeable, and list of spares to be held by RCF.

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- 11.6 The contractor shall clearly list-out the list of consumables required for day-to-day operation of the machine. It shall be the scope of RCF to arrange the consumables once the completion certificate is issued for the retrofitted machine.
- 11.7 The tenderer/contractor shall provide suitable standby when repairs exceeds 2 hours. When any equipment is taken for repair to the tenderer/contractor's premises suitable standby equipment should be provided.
- 11.8 Besides attending the breakdown calls, the firm shall attend to the corrective and preventive maintenance of the machines once in a month.
- 11.9 The AMC is valid for five years from the date of completion of the warranty period. No freight is admissible.
- 11.10 During the AMC period, whatever equipment is defective shall be handed over to RCF. During completion of the AMC period the machines should be handed over in full working condition to its full capacity.
- 11.11 The firm should maintain a register duly indicating the nature of defects and repair attended and got signed by RCF authority. Preventive maintenance schedule should be made. The schedule should be made in such a way that more than one machine should not be attended on the same day. A copy of the schedule should be given to RCF at the beginning of the AMC and the schedule should be strictly followed and on carrying out the preventive maintenance the same should be entered in the register and got signed by RCF authority.
- 11.12 AMC charges shall be paid quarterly as one quarter of the total AMC charges applicable for that year on submission of bills duly certified by the engineers in charge with regard to the satisfactory execution of AMC during the period for which the bill is claimed. Duties & taxes as applicable at the time of payment shall be deducted at source.

12.0 PAYMENT TERMS

80 % on receipt of machine and balance 20% after successful commissioning of machine and submission of Bank guarantee equivalent to 10% of P.O value valid up to the warranty period of the machine.

13.0 MAKE

- 13.1 The supplier shall clearly mention whether the system quoted is Indian make or imported. If Indian make, the tender should be accompanied by duly sanctioned factory license & relevant documents & also produce records of installation & satisfactory after sales service performance of their equipment from at least one govt. Institution of similar or large size for duration at least 3 Years duration.
- 13.2 If imported item, the OEM firm should be registered for operations in India for a minimum period of last 3 years. In case this is not so, the dealer should be authorized regional supplier & service provide for the late 3 years. He should also produce installation & satisfactory after sales service record of duration at least last 3 years from at least one govt. Institution for a system of similar or larger size. Further the tender should be accompanied by authorization certificate from OEM.
- 13.3 The supplier shall furnish the complete details of Model No. Make & Manufacturer's details/ address, Country and authorization details of Dealership.

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14.0 DEVIATIONS:

The tenderer should clearly certify that the machine offered fully meets the specification various design features incorporated in the machine to fulfil different technical performance requirements should be fully explained in the offer. However, minor deviations from this specification, which do not affect or in any way interfere with the stipulated performance standards, or would result in improved safety/reliability or would reduce recurring maintenance/operating cost of the machine, can be considered for acceptance.

15.0 DOCUMENTS TO BE UPLOADED FOR TECHNICAL EVALUATION

Following documents must be submitted by the tenderer along with the offer:

1. Clause wise comments on technical specification
2. Documentary evidence of previous supplies to other Railways
3. Authorisation certificate of OEM in case of Authorised dealer
4. Spares and Consumables List as per Annexure-A
5. Detailed list of spares covered under warranty.
6. Compliance of Schedule of Delivery as per Clause 17.0.
7. Details of deviations from specification if any as per Annexure-B.

Tenderer not submitting the above information may note that his offer is liable to be ignored.

16.0 OTHER TERMS & CONDITIONS

- 16.1 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.
- 16.2 The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the Technical Specification. Delivery period shall be within 90 days of placement of purchase order.

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17.0 SCHEDULE OF DELIVERY:

S N	Activity	Activity Code	Time Schedule (to be accepted by firm)
1	Issuance of PO	D1	NA
2	Submission of GA drawing to Consignee	D2	D1+30 days
3	Approval of GA Drawing By Consignee	D3	D2+30 days
4	Confirmation of availability of clear site by consignee.	D4	By D3 i.e. at the approval of GA drawing
5	Completion of Foundation by RCF	D5	D4+45 days or latest by D6
6	Supply of Plant	D6	D3+90 days
7	Power Connection for the machine and other on site requirement to be provided by railways.	D7	D6+7 days
8	Installation of Plant, Commissioning and Prove Out	D8	D6+90 days
9	Warranty	D9	D12+24 months

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ANNEXURE-A

Tenderer shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period as below:

S.N.	ITEM	PART NO.	SERVICE LIFE	PRICE

ANNEXURE –B

Tenderer shall provide proposal for 5 year Annual Preventive Maintenance schedule to be executed after completion of warranty period in the format as below:

S.N.	YEAR	AMC CHARGES
1.	IST YEAR	
2.	IIND YEAR	
3.	IIIRD YEAR	
4.	IVTH YEAR	
5.	VTH YEAR	

ANNEXURE –C

DEVIATION STATEMENT (IF ANY)

S.N.	Specification Clause No.	Deviation (If Any)
1.		
2.		
3.		
4.		
5.		