

Reasoned document for revision of specification of 8 wheeler tower wagon (DETC)

Sub:Revision of specification No. TI/SPC/OHE/8WDEIC/0090(02/09 to manufacture the self propelled 8 wheeler inspection & maintenance car of diesel electric under slung type for operation on broad gauge (1676 mm).

Ref: Railway Board's letter no.84/RE/158/1/2 (FTS 2862) dated: 4.04.2011.

1. RDSO has issued the specification No. TI/SPC/OHE/8WDEIC/0090(02/09 to manufacture the self propelled 8 wheeler inspection & maintenance car of diesel electric under slung type for operation on broad gauge (1676 mm) on May'2010.
2. Railway Board; vide their letter under reference, wherein RB desired a need to evaluate the specification as per latest requirement for which a meeting of RDSO & few Zonal Railways was called at RB on 04.04.2011.
3. For considering various aspects and for evaluation of above specification "DRAFT" of it was uploaded on RDSO's official website for suggestion/comment of probable vendors and outside agencies as per detailed guide lines to *Change of equipment, item specification as per RDSO's QMS document No. QO-D-7.1-2 Ver.-3. Letter in this regard has been sent to Railway Board on 13.05.2011.*
4. Draft of the specification for revision was also forwarded to Carriage Dte and MP Dte for their comments/suggestions.
5. MP Dte and Carriage Dte of RDSO have commented on the specification and STR which have been incorporated in the specification and marked as "Red".
6. M/s. Titagarh Wagons Limited, Kolkata (TWL) commented on the "DRAFT" specification uploaded on website; same were forwarded to MP & Carriage Dte for their remarks. Valuable remarks received so far along with justification and views of RDSO are summarized below:

S.N.	Clause no.	Item	Description in Specification	Comments of TWL	RDSO's views
1.		Free Supplies		To consider supply of Electrics as Free Supply by IR.	It is a policy matter hence comments of Railway Board should be taken
2.				To consider supply of Wheelsets as Free Supply by IR.	-do-
3.		PVC		To consider inclusion of PVC, as per new formula, which has been made applicable for a current Railway Board tender for ACEMU coaches due on 10-06-2011, as below. $P1 = P0/100 (15+9.8 \times (l1/l0))+9.8 \times$	-do-

				<p> $(S1/S0) + 45 \times (L1/L0) + 0.4 \times (FA1/FA0) + 5 \times (A1/A0) + 15(E1/E0)$ </p> <p> Where, P1 = Escalated/de-escalated price. Po = Base Price. I1 = The index number of whole sale prices in respect of items "Iron & Semis" Base 2004-2005 compiled by Economic adviser to the Govt. of India (EA, GOI) for the calendar month, three months prior to the call for inspection. Io = Whole sale price index for "Iron & Semis" applicable for Base month. S1 = The index number of whole sale prices in respect of items "Steel Flat" Base 2004-2005 compiled by EA , GOI for the calendar month, three months prior to the call for inspection. So = Whole sale price index for "Steel Flat" applicable for Base month. L1 = All India consumer price index for industrial worker compiled by Labour Bureau, Ministry of Labour for calendar month three months prior to the call for inspection of coaches. Lo = All India consumer index </p>	
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				Industrial workers applicable for Base Month. FA1=Index number of wholesale price in respect of Ferro Alloy compiled by EA , GOI for calendar month, 3 month prior to call for inspection.	
4.	1.1	Scope	This specification covers the design, manufacture, supply, testing & commissioning of self-propelled 8-Wheeler Inspection & Maintenance car for operation on broad gauge (1676mm) electrified (25 kV a.c.) routes of Indian Railways. The 8-Wheeler Inspection & Maintenance car is a self-propelled 4-axle vehicle and is used for periodical inspection, patrolling and maintenance of traction overhead equipment (OHE). It shall also be used for attending to sites of break down, restoration and damaged OHE etc. It is also required to erect small lengths of catenary and contact wire by way of repairs of damaged OHE. The 8-Wheeler Inspection & Maintenance car uses the power generated by the Diesel Alternator set provided in the car for propulsion and not the power from live OHE.	To consider the scope of work without "Design" work, as much as possible, unless absolutely necessary. RDSO/Indian Railways (IR) should try and provide a proven design of all major and critical sub-system of the product to the maximum extent possible, leaving room for minor design requirements in the "Scope of work" and "Schedule of Requirements"	-do-
5.	3.20	Bogie	General Design: The car shall have two 2-axle bogies of well-proven design. It shall be of robust welded design suitable for taking the brake gear, final drive, suspension etc. The bogies shall be capable of withstanding the maximum static and dynamic stresses under the loaded	The existing DEMU bogie design of ICF make as per ICF drawing no. DMU/DPC5-0-0-502 with latest alteration should be considered.	Supplier has to give his own design as per details of revised para.

			conditions and load up to 40% in excess of the maximum gross load and to meet the performance requirement specified in para-2.0. The weight of the bogies shall be as low as possible, consistent with strength and robustness. The design shall provide primary and secondary suspension; coil spring in secondary suspension shall be used. The design shall ensure that the Sperling Ride Index value does not exceed 4.0 at a maximum speed of 110 km/h plus 10%.		
6.	3.20.3	Suspension System	The suspension system shall be of two-stage type with suitable spring and damping arrangement. Springs for primary and secondary suspension shall be designed to cater for actual service conditions. Calculations for determining the spring characteristics and the damping value in various modes shall be submitted to RDSO for approval. The manufacture and supply of the helical springs shall be as per RDSO specification No. C-8303.	To consider the existing DEMU Bogie with air spring secondary suspension in lieu of new proven design.	No change is required.
7.	1.8	Guarantee	Any component of the car failing or proving unsatisfactory in service within 36 months from the date of commissioning in India due to defective design, material or workmanship shall be repaired/ replaced by the contractor free of cost. Further, should any design or material modification be made in any part of the equipment supplied or as a result of any defect/lacuna/ fault/short-coming in the original design features or material the period of 36 months for that assembly/sub-assembly would commence	To consider 'Warranty' instead of 'Guarantee' and to consider the Warranty period for "18 months from the date of commissioning or 24 months from the date of receipt at Consignee's stores, whichever is earlier"	Not acceptable.

			from the date modified part is commissioned in service. Spares required if any during the warranty period shall be supplied & commissioned free of cost by the contractor. The tenderer shall specify the maintenance schedule required to be carried out by railway during and after the expiry of warranty period.		
8.	3.1.4	Underframe Material	As indicated in para 3.1.3 above, the underframe material shall be of corrosion resistant structural steel to IRS: M 41. Trough floor of 1.7 mm thick of steel to IRS: M 41 shall be provided in covered area.	To consider use of 1.6mm or 2mm thick IRSM-41 in lieu of 1.7 mm thick plate	Use of 2.0 mm thick IRS M-41 is acceptable in lieu of 1.7 mm.
9.	3.4.1	Door Footsteps	The door footstep assembly shall be of mild steel and shall have compreg board to RDSO spec. No. C-9407 (latest Revision). The edges shall be protected with metallic treads. Any other suitable arrangement can also be considered	To consider use of 6mm thick MS Chequer plates in lieu of Compreg board.	6.0 mm thick MS Chequer plates in lieu of Compreg board is acceptable.
10.	3.17.2	Piping	Copper tubes with double ferrules joints shall be provided in auxiliary brake circuit.	To consider stainless steel tubes with double ferrule system in lieu of copper tubes.	Double ferrule and Cu pipe reduces the leakage and also corrosion free as compared to steel pipes. Therefore; not accepted.
11.	4.3.3	Alternator for battery Charger & DG set	A skid mounted portable diesel generator similar to Honda make (petrol start kerosene run) of 3 kVA (minimum), 240V, 50 Hz along with transformer shall be provided to meet 150 Amps light weight IGBT welding machine load and other auxiliary load of search lights (2x250 watts), emergency light and for other such purposes.	To consider "Petrol start petrol run" DG set	Petrol start kerosene run or petrol start petrol run is accepted.
12.	5.3.2.6	Diesel Engine and Transmission system	Suitable hand priming pump shall be provided to avoid air lock in the fuel system.	To be deleted	Not agreed. Existing hand priming pump shall remain.

13.	5.3.2.12	Diesel Engine and Transmission System	The exhaust pipe shall not leave carbon soot on important assemblies like traction motors, axle drive etc. The pipe shall be taken to the roof with adequate insulation to with stand 7000 deg.C . The silencer shall be provided on the dished roof top.	To review the inclusion of 7000 deg. C	It is 700 Deg.C
14.			The exhaust emission shall be below the limit laid down in UIC/ORE no. B13/RP22/E Clause-4 of the entire engine range of operation from idle to full power and shall be measured as per UIC/ORE/B13/RP21E. The exhaust capacity shall not exceed 20 as measured by Hartridge smoke Meter , under all conditions including acceleration of the engine. A suitable catalytic converter shall be connected in exhaust pipe to limit the emission.	To consider "Exhaust Capacity in Bosch" scale	Exhaust capacity shall be measured Hartridge smoke Meter or in equivalent scale.
15.	5.4.9.1 (3)	Compressor	The compressor shall be tested as RDSO's specification No. 70-BM-41	To replace the existing specification with correct one.	This clause has to remove.
16.	5.7.5.4	External Cables	The provisions shall be made for driving the auxiliary alternator from engine through V-Belts and pulley on the extended shaft of the Alternator, pulley of C-section to IS: 3142 shall have a PCD of 300 mm. The pulley shall be push-fit with suitable securing arrangement.	To consider PCD (Pit Centre Diameter) of 224 mm.	Not accepted. Lower PCD shall result in higher rpm of aux. alternator thereby affecting its Electrical out put.
17.	5.7.7.6	Traction Motor	Traction motor contactors, reversers, protective relays and other control gears shall be as specified in Annexure-7. They shall be housed in box and dust proof enclosures to be mounted in the underframe.	To consider option of mounting of the specified items on-board in case there is insufficient space under slung.	Traction motor contactors, reversers, protective relays and other control gears shall be as specified in Annexure-7. They shall be housed in box and dust proof enclosures to be mounted in the under frame, however alternate location may also be considered subject to clearance of the offered

					layout by RDSO.
18.	5.8.1	Contactactor Box (S)	All the power contactors of a power pack shall be housed and inter-connected through bus bar in a separate cubicle called "CONTACTOR BOX", which shall be under slung and designed for IP-55 (hose proof) protection. For each Car, two such boxes shall be supplied (one per power pack).	To consider option of mounting of the specified items on-board.	All the power contactors of a power pack shall be housed and inter-connected through bus bar in a separate cubicle called "CONTACTOR BOX", which shall be under slung , however alternate location may also be considered subject to clearance of the offered layout by RDSO and designed for IP-55 (hose proof) protection. For each Car, two such boxes shall be supplied (one per power pack).
19.	5.8.5	Traction Gear Control	DC contactors required to operate frequently in the system shall be designed for an electrical endurance capability of 1 million operations at the rated voltage and current	To be deleted	TWL views are not acceptable. DC contactor should be operated for 01 million operations during endurance test
20.	5.10.1.1	Safety Devices Alternators	Alternators. Earth Fault Relay - for earth fault in the traction unit	To be deleted	TWL views are not acceptable. For protecting the source; the provision of Earth Fault Relay should be there.
21.	5.12.2	Control Panel	Adequate Control Equipment including gauges, instruments and cab safety devices shall be provided for safe and satisfactory operation of the DEIC. The controls shall be so arranged in the driver's cab that it will be within easy reach of the driver from all drivers" position. All gauges shall be of proven, reliable design and of LED lit type. Gradations of all gauges shall be in metric unit. Following gauges shall be provided in the cab: - i).Diesel Engine lube oil pressure gauge. ii).Cooling water temperature gauge (Electronic)	Items iii) & iv) to be deleted	M/s. CIL does not provide the gauges mentioned at S.N. (iii) & (iv). These clauses are removed.

			<p>iii).Fuel oil pressure gauge. iv).Boost pressure gauge. v).Traction Motor load ammeter. vi).Air brake gauges. vii). Battery charge and discharge ammeter. viii).Water level indicator (Electronic) ix). Speed Meter.</p>		
22.	7.10.1	Riding Quality tests	<p>The riding quality tests shall be conducted at a speed which is 10% higher than the maximum specified operating speed, i.e. 145km/h on a section of mainline track over which there are no temporary speed restrictions and which is considered by the railway as being in a generally run down condition for main line standards but without speed restrictions. The tests shall be conducted from a reasonably low speed, which is considered safe by the Indian Railways, upwards insteps of 10-15 km/h to establish the performance at the specified speeds.</p>	To replace 145 km/h to 121 km/h (operating speed + 10%)	121 Km/hr is acceptable.
23.	7.10.2		<p>The following shall be the track standards of the test section Permitted irregularities</p> <ul style="list-style-type: none"> · Gauge +/- 6mm · Unevenness on 3.6m base - up to 15mm · Twist on 3.6m base - up to 3.5mm/m · Alignment on 7.2m base - up to 7mm 	To consider Unevenness on 3.6 mm base up to 6 mm in lieu of 15 mm.	The Criteria approved by “Standing Criteria Committee” for selection of Test Stretches for Oscillation Trials on BG routes of IR shall be considered.
24.	1.5.4	Annexure 6	<p>Withdrawable bridge racks consisting of diodes, fuses and associated components shall be provided on rails for withdrawing during maintenance</p>	To consider bridge racks consisting of diodes, fuses and associated components without rails.	Not acceptable as existing arrangement is easy for maintenance.