

<b>REASONED DOCUMENT PREPARED AFTER RECEIPT OF COMMENTS FROM M/S APOLLO INDUSTRIAL CORPORATION &amp; M/S DOLPHIN MANUFACTURING LTD. ON FINAL SPECIFICATION OF HIGH EFFECTIVNESS LARGE AFTER COOLER</b>					
<b>SN</b>	<b>CORRESPONDING PART OF THE SPECIFICATION OF HIGH EFFECTIVNESS LAC BY ED DTE.</b>	<b>SUGGESTIONS RECEIVED FROM M/S APOLLO</b>	<b>SUGGESTIONS RECEIVED FROM M/S DOLPHIN MANUFACTURING LTD.</b>	<b>COMMENTS OF ED DTE.</b>	<b>REVISED CLAUSE IN SPECIFICATION</b>
1.	<p>Item 2.1 of TS: scope of project)</p> <p>It is planned to design, develop and procure a prototype high effectiveness, large after cooler, suitable for DLW built 16 cylinder 3100/3300/3600 HP ACo DLW engines of Indian Railways.</p>			<p>In literature, it has been proved that plate and fin type after cooler will be more suitable in comparison to shell and tube type to get high effectiveness. (Remarks-Heat Exchanger Design Hand Book written by T.KUPPAN publisher Taylor &amp; Francis)</p>	<p>It is planned to design, develop and procure two nos. prototype high effectiveness, plate and fin type large after cooler, suitable for DLW built 16 cylinder 3100/3300/3600 HP ACo DLW engines of Indian Railways.</p>
2.	<p>Item 3. c of TS :Acceptance criteria</p> <p>The after cooler material must be compatible to work with IR approved coolant HP Power KOOL RR with</p>	<p>The after cooler material must be compatible to work with IR approved coolant HP POWER KOOL RR with after cooler life expected of minimum eight years,</p>	NIL	<p>In MP specification for Cooling water Corrosion Inhibitor for ACo Diesel Locomotives no. MP-2.99.00.03 (Rev-00), item no 6.3 it stated that</p>	<p>Revision is not required for this clause but now It will come under General Criteria 4.3.</p>

	<p>expected after cooler life of minimum twelve years. The material used for after cooler must be corrosion resistant for coolant PH value from 7 to 11.</p>	<p>however our guarantee against any manufacturing defect of the cooler will be for 24 months from date of dispatch or 30 months from date of fitment whichever is earlier, the material used for the after cooler must be corrosion resistant for coolant Ph value from 7 to 8.5(please refer attached details of HP POWER KOOL RR which says Ph of 3% solution will be 7.5, so there is no need for suitability of the cooler for Ph value of 7.5 to 11,As on date almost all sheds have switched over to use of HP POWER KOOL since this is the only coolant additive approved by RDSO.</p>		<p>“Ph value of engine water shall not exceed 10 under any circumstance or there is a risk of failure of non ferrous components”. Therefore this clause was kept. The reference of 12 years as expected life is taken from ED report no TR/ED/2000/122 dated Oct 2000.</p>	
3.	<p>Item 3. e of TS: Acceptance criteria</p> <p>Weight of the offered after cooler should be comparable to the weight of the existing shell and tube</p>	<p>Weight of cooler will be 90 kg ±7kg (83 to 97 kg)</p>	<p>Weight of the core assembly required has not been provided by IR</p>	<p>May be accepted. Note : The weight of existing after cooler is approx. 350 kg</p>	<p>Weight of the offered after cooler should be comparable or less than to the weight of the existing shell and tube type after cooler.</p>

	type after cooler.				But now It will come under General Criteria 4.2
4.	Item 11 of TS: Environment conditions, the after cooler shall be designed to tolerate continuous operation at air side conditions of 4 bar (gauge) and 220°C.	The after cooler shall be designed to tolerate continuous operation at air-side conditions of 4 bars (gauge) & 190° C.		Not agreed because it is likely to go up in case of miller timing turbocharger therefore 220 deg C was kept.	Revision is not required.
5.	NIL	Comparative accelerated performance test for life of cooler-Comparative accelerated performance test for life of cooler. RDSO to test 3 Larger After Coolers as per attached Annexure-A. If Apollo has to do this test, RDSO to give one Larger After cooler as per existing drawing with Copper tubes & Aluminium fins on returnable basis for testing and prediction of life of the cooler.		RDSO has not stipulated anywhere for comparative accelerated performance test.	Additional Suggestion is not required.
6.	Item5.1 of TS :Performance of engine fitted with High effectiveness large after cooler shall be validated on		The performance Test for Heat Dissipation conformance and the thermal Effectiveness to	Agreed	Revision is not required

	<p>the test bed of ALCO engine at Engine Development Directorate, Research Designs &amp; Standards Organization (RDSO), Lucknow, India .Heat Dissipation Conformance Test and thermal effectiveness shall be carried out of one prototype sample of after cooler on ED Dte test bed. Performance shall meet the stipulated requirements.</p>		<p>be carried out of one prototype sample after cooler in RDSO test Bed.</p>		
7.	<p>Item 3.d of TS: Complete interchange-ability with the existing after cooler. It means easy fitment in existing after cooler housing without any modification in locomotive piping.</p>		<p>The Large After cooler designed and offered will be without Top and Bottom Covers, without cast Housing. It is only a core assembly with headers as per drawing SKE-0960 made available to us and to be fitted in the existing locomotive cooler housing arrangement. If required RDSO will be provide assistance for our Engineers to inspect and take measurements of the fitment arrangements.</p>	<p>Not Agreed, You will have to provide Top and Bottom cover without housing.</p>	<p>Revision is not required. But now It will come 3.b of TS</p>

8.	<p>Item 1-ii (b) of SCC Vibration-The firm shall have facility of rig for vibration testing of the after cooler assembly. The prototype after cooler shall be subjected to vibration test as stipulated in the IEC 61373 category 1 Class A Body mounted. The after cooler should not fail during the testing.</p> <p>It may be noted that in the locomotive bears 3g longitudinal, 1.5 g laterals and 2g vertical acceleration shocks encountering during the operation</p>		<p>Vibration Testing of the After Cooler as a complete unit as stipulated in IEC 61373 category 1 Class A body mounted to be arranged by Indian Railways.</p>	<p>Not Agreed. Vibration Tests to be arranged by the firm.</p>	<p>Revision is not required</p>
9.	<p>Item 6 of SCC, RDSO shall share necessary documents and drawings with the successful tenderer after signing of NDA</p>		<p>Indian Railways will share/provide all data arrived at in the above tests with the Vendor.</p> <p>This information will enable Vendor to investigate and address any issues with design and other requirements for modification if necessary.</p>	<p>It will be provided after signing of NDA.</p>	<p>Revision is not required</p>
10.	<p>Item no.1-i of SCC, The bidder shall be willing to train at least five IR personnel for</p>		<p>Since the product is manufactured as per the IR dimension there</p>	<p>Training is necessary for maintenance and</p>	<p>Item no.1-i of SCC, The bidder shall be willing to train at least five IR</p>

	two weeks in the new technology at the time of prove-out on engine test bed		will be no need for training but other than for cases of repair and re-test for leak. Dolphin will extend and train IR personnel as and when required.	commissioning of Large After Cooler. However the duration may be revised to five days	personnel for five days in the new technology at the time of prove-out on engine test bed
11.	Item no. 1.-ii (a) of SCC, Core Leakage test- The manufacturer shall have in-house facility for this test. The after cooler shall be tested with air pressure of 7.2 bar applied for at least 30 minutes and there shall be no leakage of air during static testing.		We will provide necessary facility to test the after cooler with air pressure of 7.2 bar applied for a 30 minutes to test no leakage.	Agreed	Revision is not required
12.	Item no. 1.-ii (b) of SCC Vibration-The firm shall have facility of rig for vibration testing of the after cooler assembly. The prototype after cooler shall be subjected to vibration test as stipulated in the IEC 61373 category 1 Class A Body mounted. The after cooler should not fail during the testing. It may be noted that in the locomotive bears 3g longitudinal, 1.5 g laterals and 2g vertical acceleration		The after cooler to be tested for vibration as stipulated in IEC 61373 and Heat Dissipation conformance test and thermal effectiveness to be carried out of the prototype sample cooler by RDSO/Indian Railways.		Revision is not required

	shocks encountering during the operation				
13.	Item no. 1.-ii (c) of SCC , This test for prototype shall be carried to establish that the after cooler must not fail by erosion at water velocity less than 2.14 meter per second.		Erosion test to be conducted by IR	It is not possible	Item no. 1.-ii (c) of SCC The erosion test will come in General Criteria 4.4 of TS.
14.	Item 1 (iii) of SCC Inspection of the defined scope supply shall be carried out by the authorised representatives of Engine Development Directorate at OEM's manufacturing facility without any additional cost before dispatch of material. The test programme shall be drawn up by the firm in consultation with RDSO. Type tests of all equipment shall be carried out by the manufacturer at his own responsibility and cost in the presence of the representative of IR		The Design scope supply can be carried out at Dolphin Manufacturing Ltd Ajman/UAE by the Directorate. All machines and equipment's presently available at Dolphin Manufacturing Ltd are specifically for the technology/material specified and being offered. All test equipment's/instruments are certified and calibrated.	Agreed	Revision is not required
15.	Item 2 of SCC, Warranty- The supplier shall provide a warranty for the satisfactory		We shall provide warranty for the satisfactory	Not agreed	Revision is not required

	performance for a period of 24 months for all the components of the High Effectiveness Large After Cooler from the date of commissioning on locomotive. Any damage or unsatisfactory performance due to design or manufacturing inadequacies noticed during the above period shall be rectified or component/equipment replaced by the supplier free of cost. The replaced component/equipment shall also be covered under warranty for the balance period of warranty of the original after cooler.		performance for a period of 12 months for the High Effectiveness Large After Cooler from the date of Commissioning		
16.	Item 3 of SCC, Payment terms		We agree to the terms indicated in the commercial conditions. However on acceptance of the product the terms will have to be reconsidered as 98% against inspection note and balance against proof of bill of lading.	Reconsideration is not required.	Revision is not required
17.	Item 4 of SCC		We agree to your terms		No revision is required



	<p>All data that is generated as a result of design, development and testing of High Effectiveness Large After Cooler systems, sub-systems and components shall become the sole property of Indian Railways. The information pertaining to High Effectiveness Large After Cooler supplied by the successful tenderer shall not be disclosed by IR without prior approval of the tenderer. Information pertaining to components supplied by IR shall not be disclosed to the Third Parties by the successful tenderer without preliminary authorization in a written permission of the Railway Board, Ministry of Railways, Government of India.</p>		<p>as indicated in the Special commercial conditions specification No. TS/ED/2012/68. However Dolphin Manufacturing Ltd (LLC) reserves the right to provide, develop suitable after coolers/ heat exchangers, Radiators, cooling system in cupro braze and other available technology and material of construction for other railways, private users, manufactures worldwide as per requirements.</p>		
18.	<p>Item 5 of SCC  (i)Successful tenderer shall give an undertaking for non-infringement of intellectual property rights for all specification, drawings issued by RDSO.  (ii)Indian Railways shall not</p>		<p>We will provide an undertaking for non-infringement of intellectual property rights for specifications and drawings issued by RDSO/Indian Railways. Dolphin manufacturing</p>		<p>Item 5 of SCC   All the specifications issued by RDSO shall include a requirement</p>

	<p>be responsible for any infringement of patent rights arising due to similarity in design, manufacturing process, use of similar components in design &amp; development and any other factor not mentioned herewith. In case of disputes on account of infringement of patent rights, entire responsibility and liability to settle any such dispute/matters shall lie with the successful tenderer.</p>		<p>will also not responsible for any infringement of patent rights arising due to similarity in design, use of similar components in design and development and any other factor not mentioned herewith. In case of disputes on account of infringement of patents rights, which are not spelt by the Indian railways presently and in the future for the development and supply of High Effectivimess Large After Cooler for DLW built 16 cylinder 3100/3300/3600 HP ALCo DLW Engines for Indian Railways the entire responsibility and liability to settle such dispute/matters shall lie with Indian Railways. We will sign a Non-Disclosure agreement on acceptance of tender for supply</p>		<p>of undertaking to be signed by vendors/successful tenderes on "INFRINGEMENT of PATENT RIGHTS". The under taking shall be as under:</p> <p>i. Indian Railways shall not be responsible for infringement of patent rights arising due to similarity in design, manufacturing process, use of similar components in the design &amp; development of this item and any other factor not mentioned herein which may cause such a dispute. The entire responsibility to settle any such disputes/matters lies with the</p>
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					<p>manufacturer/supplier.</p> <p>i. Details/ design/documents given by them are not infringing any IPR and they are responsible in absolute and full measure instead of railways for any such violations. Data, specifications and other IP as generated out of interaction with railways shall not be unilaterally used without the consent of RDSO and right of Railways/ RDSO on such IP is acceptable to them.</p>
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