

Reasoned documents of Draft STR no. RDSO/PE/STR/AC/0008-2003(Rev-5) for all type of RMPUs.

S.N	Name of the firm	Description	RDSO Comments
1	M/s Ess Ess Kay Engineering, Kapurthala	<p>In regards to our submission of comments on RDSO's draft STR No. RDSO/PE/STR/AC/0008-2003 (Rev.5), it would be pertinent to comments first on the provisions of STR Rev. 03:</p> <ul style="list-style-type: none"> i. It is worth mentioning that provisions incorporated in the RDSO's STR No. RDSO/PE/ STR/AC /0008-2003 Rev. 03 were a leap forward steps in the direction to ensure better "Quality & Reliability" of product. Provisions, inter-alia, included: "Setting up of fully automatic psychometric laboratory, in-house manufacturing of Heat Exchangers, Coil selection software etc". Such provisions were a welcome step. ii. Accordingly, the existing manufacturers/ suppliers of RMPUs had invested hugely on creation of these facilities, as envisaged in Rev. 03 of STR, on top most priority as advised by & insisted upon by RDSO at that time. Further, requisite expert manpower was also employed to man & operate such test facilities/machines and software's. As such, existing manufacturers made huge investment to create requisite test facilitates/infrastructure. iii. It may be pertinent to mention here that we have created our manufacturing facilities exclusively for Indian Railways. Our business is also of exclusive nature to Indian Railways. As such, our business is solely dependent on Railways. While incurring such a huge investment, as envisaged in STR Rev.03, to supply the best quality of HVAC systems for Indian Railways (Rolling Stock Application), it was obviously expected in hinds of mind that our dedication/dependency for Indian Railways will further go a long way to expand our technical capability and grow our business as well. iv. It may also be worth mentioning that we have obtained IRIS Certification for HVAC system to improve upon quality & reliability. 	<p>There has not been any change in infrastructural requirement of STR and further, Firm qualifying to STR requirements will have to design, develop and tested RMPU as per RDSO specification only and hence there will be no compromise with RDSO specification.</p> <p>Keeping in view the production of air conditioned vehicle in the country and the requirement of air conditioner for same. The qualifying requirement for supply of AC units for automobiles has been introduced.</p>

However, in Rev. 04 and **Rev. 05** of subject STR the stringent requirements are being vitiated/relaxed by adding new word like "**Automobile**" in the Introduction & in Para H(b) to broaden the Qualifying Criteria. In Para No. H (1.b) of subject draft STR (**Rev. 05**), it is mentioned that "manufacturer should have supplied 100 units of not less than 1.5 TR capacity of RMPU/HVAC refrigeration/CAB AC to Railway/Metro /**Automobile** system for rolling stock/Automobile application".

Following points ought to be considered before reckoning the experience of HVAC System of Automobile sector:

1. The working and operational conditions of Indian Railways are altogether different then the working and operational conditions of Automobile sector.
2. The train runs in the rake form i.e. around 20 coaches in rake formation. As such, any problem in HVAC System of a coach would affect the entire train working/operation. While in Automobile case, the problem in HVAC would affect the working/operation of one-unit Automobile (Buses/Commercial vehicle). Bus/Commercial vehicle can be halted at any location and attended to **but** it is not the case with Train operation.
3. Working and operational conditions of a train in respect of "Shock & Vibrations" encountered, especially at the time of braking, are entirely different. Rail- wheel interaction is altogether different then the Road-tyre interaction.
4. The mounting arrangement and structurally also the Rail Coach is different then the Bus/Commercial vehicle.
5. The Design of RMPU/HVAC Systems of Coaches and that of an automobile are different. RMPU/HVAC refrigeration's of 1.5 TR capacity and Automobile applications are designed with single compressor and single refrigeration circuit only. Whereas, the RMPU/HVAC systems of Trains are

		<p>designed/manufactured with Dual Compressor and dual refrigeration circuits that too are now based on Inverter Based Compressor and Reverse Cycle features, which is totally different concept from 1.5 TR capacity/Automobile application.</p> <p>6. Safety and Passengers comfort's aspects/requirements in both the case are un-comparable.</p> <p>7. Thus, experience for Automobile could not be considered equivalent for Rolling Stock application. This will adversely affect the Quality/reliability of product. Also, it will undo the endeavor of provisions of STR Rev. 03.</p> <p>In view of above, it is humbly requested that the revision of subject STR is not called for as it would have adverse effect/implication on the Quality/reliability of Product. We should continue with the current RDSO's STR No. RDSO/PE/STR/AC/0008-2003 (Rev.04) only.</p> <p>In fact, we would rather, suggest RDSO to revert back to RDSO's STR No. RDSO/PE/STR/AC/0008-2003 (Rev.03).</p>	
2	<p>M/s RS ARD Private Limited (RSARD)</p>	<p>M/s RS ARD Private Limited (RSARD) is an "Indian Startup" being a manufacturer of various precision components and assemblies for Indian Railways, Aerospace and Defense segments.</p> <p>Currently, the Manufacturing plant is ready and the installation of Machinery and equipment etc. is going on full swing. The operations are slated to start from end of May 2022.</p> <p>We i.e. M/s RS ARD Private Limited are very much interested in Design. Development and Manufacturing of All Type of Roof Mounted AC Package Unit (RMPU).</p> <p>We have carefully studied the Technical specifications laid down by Research Development and Standards Organization (RDSO) and we confirm that we can manufacture the All Type of Roof Mounted AC Package Unit (RMPU) as per the same in India under Make in India.</p> <p>But while going through the under revision RDSO Schedule of Technical Requirements (STR) No. RDSO/PE/STR/AC/008-2003 (Rev.5) April 2022, we</p>	<p>On date all approved vendors of RMPU are Indian and hence STR is promoting Make in India Policy of Government of India.</p> <p>The design and reliability of RMPU units for trains are critical for comfort, reliability and safety of travelling passenger for which the requisite</p>

	<p>fell that the “STR” do not support MAKE IN INDIA as START UP. There are some clauses which were introduced in March 2020 (did not exist before in the STR), does not encourage the India Companies/ Start Ups under Make In India to manufacture RMPU and only MNCs can enter into the business.</p> <p>Our observations on the same, along with our comments/response are given below.</p> <p>We Would like to draw your kind attention towards our Interest in Manufacturing of All Type of Roof Mounted AC Package Unit (RMPU) as per the guidelines and specifications laid down by Research Designs and Standards Organization (RDSO) under MAKE IN INDIA as START UP.</p> <p>Clause: Introduction: The manufacturers who have capability to design and manufacture RMPU of similar capacity for rolling stock application and already supplied at least 500 RMPU of similar or higher capacity to international Railways/Metro/Automobile system in India or abroad for Railway rolling stock/Automobile application, in any two of last five years and at least 30% of above quantity should be working satisfactory for one year, need not follow RDSO’s STR stipulation of in-house manufacture of various sub components/assemblies required for RMPU manufacturing. However, such firm shall have requisite test facilities, service network and qualified personnel. Firm should submit the necessary infrastructure details and quality system procedure of sub vendors to whom these items are proposed to be out sourced. RDSO may audit such facilities”.</p> <p><u>Clause H</u> a) The experience of the firm in designing, manufacturing & supply of air-conditioning/refrigeration system. It should not be less than 3 years. b) In last 3 years, the manufacture should have supplied 100 units of not less than 1.5 TR capacity of RMPU/HVAC/ refrigeration/cab AC to Railways/metro. /automobile system for rolling stock application. Firm should produce documentary evidence for the supplied quantity indicating PO No. Qty. Value, date of delivery and name of the firm to who supplied etc. We are Okay with the other stringent clause, which stipulates.</p>	<p>infrastructure and qualifying criteria has been incorporated in the STR.</p> <p>So the qualifying and infrastructures requirements for prospective suppliers is considered essential.</p>
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3	<p>Amit Engineers, Baddi</p>	<p>On RDSO instructions, current suppliers had invested huge funds on Plant and Machinery based on the Rev. 03 of subject STR which includes setup of fully automatic psychometric laboratory, In- house manufacturing of Heat Exchangers and coil selection software etc. to manufacture stringent quality product, Further, current suppliers had given employment to personnel with expertise and experience to operate such machineries and software's.</p> <p>Entire investments were made with the concern to supply best quality of HVAC systems for Rolling Stock Application. Precisely, it was presumed that dedication/dependency for Indian Railway will guide to expand our technical capability and grow our business as well.</p> <p>Now, in Rev. 04 and Rev. 05 of subject STR the rigid requirements are being relaxed and new word like "Automobile" are being added to broaden the qualifying criteria or develop more sources, but from divergent fields and uneven experience with little past records, which is unfair and will lead to hamper the quality/reliability/serviceability of RMPU's</p> <p>In general, from origin to destination, Trains cover the distance from 200 Km to</p>	<p>There has not been any change in infrastructural requirement of STR and further, Firm qualifying to STR requirements will have to design, develop and tested RMPU as per RDSO specification only and hence there will be no compromise with RDSO specification.</p> <p>Keeping in view the production of air conditioned vehicle in the country and the requirement of air conditioner for same.</p>

	<p>4000 Km under various ambient temperature, whereas, the Automobile (Buses/Commercial vehicle) cover distance from 200 Km to 500 Km only, which has no match with trains journey conditions. Further, the shocks and vibrations for Railways Vehicles are more multifaceted (i.e. 3G type) than shock and vibration of Automobiles based on their distances and journey conditions as well. Thus, experience for Automobile could not be considered equivalent for Rolling Stock application.</p> <p>The structures for trains are made up of Stainless Steel duly Fabricated with special machineries thereafter, welded and brazing done by certified welders/brazers and final structure/product is tested under lab various conditions and water ingress as well.</p> <p>However, in Buses there are no Stainless Steel structures and in other vehicles Air Conditioning Modules are mounted separately as per available space, so both concepts are pole apart.</p> <p>In Clause No. H (1.b) of subject STR (Rev.05) it is mentioned that manufacturer should have supplied 100 units of not less than 1.5 TR capacity of RMPU/HAVC refrigeration/CAB AC to Railway/Metro/Automobile system for rolling stock/Automobile application.</p> <p>It is pertinent to mention that RMPU/HAVC refrigeration's of 1.5 TR capacity and Automobile applications are designed with single compressor and signal refrigeration circuit only. Whereas, the RMPU/HAVC systems of Trains are designed/manufactured with Dual Compressors and dual refrigeration circuits that too based on Inverter Based Compressor and Reverse Cycle features, which is totally different concept from 1.5 TR capacity/Automobile application.</p> <p>In view of above general comments, kindly consider that HAVC is matter of safety and comfort of passengers, whereby any supplier of HAVC should be adequately experienced and meets the standards settled for such critical components in rail application. The protocols may further be linked with better quality certifications like IRIS/TS-22163 etc. for existing and prospective suppliers for HAVC systems to Indian Railways.</p>	<p>The qualifying requirement for supply of AC units for automobiles has been introduced.</p>
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