GOVERNMENT OF INDIA: MINISTRY OF RAILWAYS RESEARCH DESIGN & STANDARD ORGANISATION MANAK NAGAR, LUCKNOW – 226011

EXPRESSION OF INTEREST

EOI No: RDSO-TO0LKO(PSI)/2/2024 Date: As signed

1.0 The Ministry of Railways, Research, Designs & Standards Organization (RDSO), Lucknow, India is interested in developing a Schedule of Technical Requirement (STR) for the item, detailed as below:

Name of work	Contact Person
Development of Schedule of Technical Requirements (STR) for approval of Vendors for Power Quality Restorer for 25kV and 2x25 kV Traction Power Supply System	Ramesh Kumar Pal, ADE/TI-3, Traction Installation Directorate, Annexe-II Building, Research Designs & Standards Organization (RDSO), Ministry of Railways, Manak Nagar, Lucknow – 226 011, Uttar Pradesh, India Ph. No. 9794860641 Email: psi.ti@rdso.railnet.gov.in

2.0 Purpose and Objective of the EOI

2.1 The primary objective of this Expression of Interest (EOI) is to gather technical feedback from interested private entities to aid in drafting the initial Schedule of Technical Requirements (STR) for the above specified item.

2.2 The received feedback from all interested parties responding to this EOI will be thoroughly considered during the due diligence process in finalizing the initial STR. Any technical clarifications needed as part of this process will be communicated with the participating parties.

2.3 Functional requirements for STR for the product having Standard No. IS/RDSO-TI/0002:2023 is attached as Annexure-A.

3.0 Submission Requirements for Interested Parties

3.1 Interested parties should provide their brief details as per the format in Annexure B within 30 days from the date of publishing of the EOI.

3.2 Clause-wise technical comments, along with justification, should be submitted under the "Remarks" column in Annexure C.

In case of any clarification/ difficulty, please contact the concerned ADE-3/TI of the Traction Installation Directorate, whose contact details are indicated above, on any working day.

Digitally Signed by Jitendra Kumar
Date: 07-10-2024 12:44:03
Reason: Approved

(Jitendra Kumar)
Director/TI-3

Annexure-A

Hkkjr ljdkj/GOVERNMENT OF INDIA

jy e=ky;/MINISTRY OF RAILWAYS

एसटीआर संख्या :**IS/RDSO-TI/000…:2024**

STR No.: IS/RDSO-TI/000…:2024

Functional requirements

भारतीय रेलवे के 25kV vkj 2x25kV ट्रैक्शन सिस्टम के लिए,
पावर क्वालिटी रिस्टोरर की आपूर्ति के लिए विक्रेताओं के
अनुमोदन के लिए तकनीकी आवश्यकताओं की अनुसूची
Schedule of Technical Requirements for approval of Vendors for supply of Power Quality Restorer for 25kV and 2x25kV Traction System in Indian Railways

Issued in: …/2024

		gLrk{kj@Signature
vuEkkfnr Approved by	i?kku dk;dkjh funs'kd ¼d"k.k lLFkkiu½ Principal Executive Director (TI)	
अनुशंसित Recommended by	dk;dkjh funs'kd ¼d"k.k lLFkkiu½ Executive Director (TI)	

tkjhdrkZ@Issued by,
d"k.k lLFkkiu funs'kky;
Traction Installation Directorate
vuqla/kku vfHkdYi vkj ekud lxBu
Reserch Designs & Standards Organistaion,
ekudunxj]ydukÅ–226 011
Manak Nagar, Lucknow-226011

Note: (i) This STR is the property of RDSO. No re-production shall be done without the permission of DG (TI) RDSO.
(ii) All clauses of this STR shall be enforced from ……

Prepared by	Checked	and issued by
SSE/Protection/TI	ADE-3/TI	Director-3/TI

1.0 SCOPE

This schedule covers the technical requirement to assess the manufacturing capability of vendor for manufacture and supply of Power Quality Restorer for use in 25 kV and 2x25kV AC traction system on Indian Railways as per RDSO standard No.IS/RDSO-TI/0002-2023 or latest.

2.0 GENERAL INFRASTRUCTURE AND MANUFACTURING FACILITIES

2.1 The "Make in India" Policy of Government of India shall be applicable.

2.2 The manufacturer should have adequate covered accommodation for the purpose of effective storage of inward raw material, and the finished product awaiting dispatch and prototype / routine inspection and testing.

2.3 The manufacturer should have an effective quality control system to monitor quality control of the

- Inward raw material
- Stage inspection at various assembly/manufacturing stages.
- Inspection of the final assembled product to conform adherence to the requirements of the specification.
- Testing of equipment to test the designed feature Power Quality Restorer

2.4 The manufacturer should have a proper drawing office with AutoCAD to support the designs/ development of product.

2.5 The company should have a clean and pollution free environment, taking adequate safety precautions during the production.

2.6 The company must have items like fire extinguishers, safety warning board, shock treatment charts and medical first aid kit in their premises.

2.7 The manufacturer should have adequate sanction of load from electricity authority to support the proper testing of product/system in integrated manner.

2.8 The company should have a dedicated group of qualified Engineers to provide essential services to the product after installation in field anywhere in India.

2.9 The relations with the workers should be harmonious and regular employee training programs should be scheduled by the management for regular up- gradation of the knowledge and skills of the employees.

3.0 MACHINERY AND PLANT

The following machinery and plant of suitable capacity should be available at the firm's premises for the manufacturing and testing of the Power Quality Restorer equipment:

i. Test room of adequate size for testing of panels and integration testing.
ii. Facility for Burn-in test for control cards with external monitoring and control over temperature.
iii. Test bench for testing of control card's functional test and bought out item such as Thyristor/IGBT.
iv. PCB preheating oven.
v. Power Analyzer.
vi. Harmonic Analyzer suitable for THD measurements.
vii. Current Injection sets.
viii. Variable power factor source.
ix. Variacs of suitable current rating and upto 1 kV.
x. Fabrication tools, Insulation cutting and preparation machine, lathe, drilling,

cutting machine, sheet bending, welding machine etc.

xi. Test jigs for testing of design features and functionality tests.

xii. Electronic equipment assembly tools such as nose-pliers, cutter, wire strippers.

xiii. Bench drilling machines, portable drilling machines, precision drilling machines, lug insertion machine and crimping tools.

xiv. Mechanical working tools such as screw driver, spanners set and mallet.

xv. Hydraulic trolley and Heavy-duty assembly trolleys.

xvi. Hand tools.

xvii. Variable AC/DC power supply.

xviii. Temperature controlled soldering.

xix. Load bank linear.

xx. Load bank Non- linear.

xxi. Integrated meter test jig.

xxii. IGBT / Thyristor module test jigsk.

xxiii. Air compressor.

xxiv. Overhead crane / Chain pulley block.

xxv. Spray painting bench.

xxvi. Diesel Generator set.

xxvii. Computers/ work stations for Drawing office.

4.0 QUALITY CONTROL REQUIREMENTS

4.1 The firm should have acquired ISO:9001-2015 series certification for the product forwhich approval is being sought.

4.2 The system of easy tractability of the product from the raw-material stage to the finished product stage should be available.

4.3 The manufacturer should have a system of monitoring the supplied product complaints. The complaints made by the customer should be identifiable to the various manufacturing stages of the product and linking the complaint for corrective and preventive action of the product.

4.4 Quality assurance plan for the product detailing following aspect should be available:-

- Organization chart.
- Flow process chart.
- Stage inspection details.
- Various parameters to maintain the control over the manufacturing.
- Policy of disposal of rejected material and its record for documentary evidence.

4.5 Quality manual of the firm indicating the extent of control over production and testing should be available.

4.6 A Degree/Diploma holder must be the head of the inspection / testing / final control section with 5 years experience in the relevant field.

4.7 System of documentation in respect of rejection at the customer and its warranty replacement should be available.

4.8 System should exist for documentation of the following.

- Incoming raw material with the reference of suppliers as well asinternal test.
- Details regarding stage inspection and test results.
- Details regarding the final testing and dispatch to the customer inproper packed condition.
- System for timely calibration of testing and measuring instruments.

4.9 Quality assurance plan (QAP) shall be approved by RDSO.

5.0 INSPECTION AND TESTING FACILITIES

The firm should have the following testing and measuring instruments / equipments. These instruments should be calibrated with standard master instruments accountable to national Physical Laboratory or a similar reputed national/international agency. Each instrument should have a valid calibration certificate: -

i. Voltage and current injection test bench fitted with output meters.
ii. Digital storage oscilloscope. Digital multi-meters, Megger, LCRBridge/LCR meter.
iii. DC/AC digital ammeter, voltmeter, wattmeter, phase angel measurement meter, timer, frequency meter, tongue tester & temperature sensors.
iv. High voltage testing equipment / HV tester.
v. Physical parameter measuring tools and vernier calipers, micrometer, screw gauges and metal scale.
vi. Tan delta and capacitance measuring instruments.
vii. Digital capacitance meter.
viii. DC/AC high voltage application test bench fitted with output meters with appropriate time measuring device.
ix. Rheostats of different ratings.
x. Electronic test bench for card testing.
xi. R-L load (0.5PF to 1 PF).
xii. HV CTs and PTs.
xiii. PCB testing setup.
xiv. Digital temperature controller.
xv. Temperature indicator / thermometer.Digital insulation tester.
xvi. Thyristor/IGBT firing card testing kit.

Annexure-B

FORMAT FOR LETTER OF RESPONSE

Respondents Ref No: **Date:**

Director/TI-3,
Traction Installation Directorate, Annex-II
Research Designs & Standards Organization
Ministry of Railways, Manak Nagar,
Lucknow,
INDIA 226011

Dear Sir,

Subject: Response to EOI for Participation……..

1.0 Name and full address:
2.0 Status of Manufacturer/Authorised distributor/Indian sole selling agent (strike which is not applicable).
3.0 Turnover of last 3 years (year wise)
4.0 List of items dealt
5.0 List of clients
6.0 Number of employees
7.0 Undertaking in the proforma attached (Annexure-1).

Authorized Signatory:

Signature:
Name:
Designation:
Company Name:
Address:
Mobile No.:

Annexure-1

(To be taken on non-judicial stamp paper of appropriate value as applicable in the respective state and dully notarized & witnessed)

UNDERTAKING

I, son of …… aged about …..... Years resident of …… do hereby solemnly affirm as under:-

1.0 That the deponent is the Authorized signatory of (Name of the Sole Proprietorship Concern/ Partnership Firm/ Registered Company/ Joint Venture).

2.0 That the deponent declares on behalf of (Name of the Sole Proprietorship Concern/Partnership Firm/ Registered Company/Joint Venture) that:

a. In regard to matters relating to the security and integrity of the country, no charge sheet has been filed by an agency of the Government /conviction by a Court of Law for an offence committed by the ----------(name of the entity)or by any sister concern of the ----------(name of the entity) would result in disqualification.

b. In regard to matters other than the security and integrity of the country, ----------(name of the entity) has not been convicted by a Court of Law or indicted / passed any adverse order by a regulatory authority against it or it's any sister concern which relates to a grave offence, or would constitute disqualification. Grave offence is defined to be of such a nature that it outrages the moral sense of the community.

DEPONENT

VERIFICATION

I declare that the contents of para 1.0 and 2.0 above are true as per my knowledge and nothing has been hidden.

DEPONENT

Annexure –C

Pointwise Comments/ Remarks on Draft Function Requirements of STR (Annexure-A) for vendor development of PQR

Clause No.	Original Clause	Comments/ suggestions	Justification of proposed changes	Remarks
1.0	SCOPE This schedule covers the technical requirement to assess the manufacturing capability of vendor for manufacture and supply of Power Quality Restorer for use in 25 kV and 2x25kV AC traction system on Indian Railways as per RDSO standard No.IS/RDSO-TI/0003:2023 or latest			
2.0	GENERAL INFRASTRUCTURE AND MANUFACTURING FACILITIES			
2.1	The "Make in India" Policy of Government of India shall be applicable.			
2.2	The manufacturer should have adequate covered accommodation for the purpose of effective storage of inward raw material, and the finished product awaiting dispatch and prototype / routine inspection and testing.			
2.3	The manufacturer should have an effective quality control system to monitor quality control of the ➢ Inward raw material ➢ Stage inspection at various assembly/manufacturing stages ➢ Inspection of the final assembled product to conform adherence to therequirements of the specification ➢ Testing of equipment to test the designed feature Power Quality Restorer			
2.4	The manufacturer should have a proper drawing office with AutoCAD to support the designs/ development of product.			

2.5	The company should have a clean and pollution free environment, taking adequate safety precautions during the production			
2.6	The company must have items like fire extinguishers, safety warning board, shock treatment charts and medical first aid kit in their premises.			
2.7	The manufacturer should have adequate sanction of load from electricity authority to support the proper testing of product/system in integrated manner.			
2.8	The company should have a dedicated group of qualified Engineers to provide essential services to the product after installation in field anywhere in India.			
2.9	The relations with the workers should be harmonious and regular employee training programs should be scheduled by the management for regular up- gradation of the knowledge and skills of the employees.			
3.0	MACHINERY AND PLANT The following machinery and plant of suitable capacity should be available at the firm's premises for the manufacturing and testing of the Power Quality Restorer equipment.			
3.0 (i)	Test room of adequate size for testing of panels and integration testing			
3.0 (ii)	Facility for Burn-in test for control cards with external monitoring and control over temperature			
3.0 (iii)	Test bench for testing of control card's functional test and bought out item such as Thyristor /IGBT			
3.0 (iv)	PCB preheating oven			
3.0 (v)	Power Analyzer			
3.0 (vi)	Harmonic Analyzer suitable for THD measurements			
3.0 (vii)	Current Injection sets			
3.0 (viii)	Variable power factor source			
3.0 (ix)	Variacs of suitable current rating and upto 1 kV			
3.0 (x)	Fabrication tools, Insulation cutting and preparation machine, lathe, drilling, cutting machine, sheet bending, welding machine etc.			

3.0 (xi)	Test jigs for testing of design features and functionality tests			
3.0 (xii)	Electronic equipment assembly tools such as nose-pliers, cutter, wire strippers.			
3.0 (xiii)	Bench drilling machines, portable drilling machines, precision drilling machines, lug insertion machine and crimping tools			
3.0 (xiv)	Mechanical working tools such as screw driver, spanners set and mallet			
3.0 (xv)	Hydraulic trolley and Heavy-duty assembly trolleys			
3.0 (xvi)	Hand tools			
3.0 (xvii)	Variable AC/DC power supply			
3.0 (xviii)	Temperature controlled soldering			
3.0 (xix)	Load bank linear			
3.0 (xx)	Load bank Non- linear			
3.0 (xxi)	Integrated meter test jig			
3.0 (xxii)	IGBT / Thyristor module test jigs k			
3.0(xxiii)	Air compressor			
3.0(xxiv)	Overhead crane / Chain pulley block			
3.0(xxv)	Spray painting bench			
3.0(xxvi)	Diesel Generator set			
3.0(xxvii)	Computers/ work stations for Drawing office			
4.0	QUALITY CONTROL REQUIREMENTS			
4.1	The firm should have acquired ISO:9001-2015series certification for the product for which approval is being sought.			
4.2	The system of easy tractability of the product from the raw-material stage to the finished product stage should be available			
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	➢ Organization chart. ➢ Flow process chart. ➢ Stage inspection details. ➢ Various parameters to maintain the control over the manufacturing. ➢ Policy of disposal of rejected material and its record for documentary evidence			
4.5	Quality manual of the firm indicating the extent of control over production and testing should be available			
4.6	A Degree/Diploma holder must be the head of the inspection / testing / final control section with 5 years experience in the relevant field			
4.7	System of documentation in respect of rejection at the customer and its warranty replacement should be available.			
4.8	System should exist for documentation of the following. ➢ Incoming raw material with the reference of suppliers as well asinternal test. ➢ Details regarding stage inspection and test results. ➢ Details regarding the final testing and dispatch to the customer in proper packed condition. ➢ System for timely calibration of testing and measuring instruments			
4.9	Quality assurance plan (QAP) shall be approved by RDSO			
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5.0 (i)	Voltage and current injection test bench fitted with output meters			
5.0 (ii)	Digital storage oscilloscope. Digital multi-meters, Megger, LCR Bridge/LCR meter			
5.0 (iii)	DC/AC digital ammeter, voltmeter, wattmeter, phase angel measurement meter, timer, frequency meter, tongue tester & temperature sensors			

5.0 (iv)	High voltage testing equipment / HV tester			
5.0 (v)	Physical parameter measuring tools and vernier calipers, micrometer, screw gauges and metal scale			
5.0 (vi)	Tan delta and capacitance measuring instruments			
5.0 (vii)	Digital capacitance meter			
5.0 (viii)	DC/AC high voltage application test bench fitted with output meters with appropriate time measuring device.			
5.0 (ix)	Rheostats of different ratings			
5.0 (x)	Electronic test bench for card testing			
5.0 (xi)	R-L load (0.5PF to 1 PF)			
5.0 (xii)	HV CTs and PTs			
5.0 (xiii)	PCB testing setup			
5.0 (xiv)	Digital temperature controller			
5.0 xvi)	Temperature indicator / thermometer. Digital insulation tester			
5.0 (xvi)	Thyristor/IGBT firing card testing kit			
-	**Any other M&P and T&P, if required for manufacture of PQR may be mentioned with full justification.**			