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Document Title: Schedule of Technical Requirement for Secondary cells- Low Maintenance (LMLA) & Valve Regulated (VRLA)			



Government of India - Ministry of Railways
RESEARCH DESIGNS & STANDARDS ORGANISATION
Manak Nagar, Lucknow-226011

SCHEDULE OF TECHNICAL REQUIREMENT (STR)
FOR VENDOR APPROVAL FOR MANUFACTURE AND
SUPPLY OF

SECONDARY CELLS-LOW MAINTENANCE & VALVE REGULATED

FOR S&T INSTALLATIONS

STR No. SIQ 0113

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Author	Name: Shri A. K. Singh Designation: Director/Signal-VIII RDSO, Lucknow
Approved by	Name: Shri Sandeep Mathur Designation: Executive Director (Co-ord)/Signal RDSO, Lucknow

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Document Control Sheet

Name	Organization	Function	Level
Shri Manoj Kumar SSE/D/Signal	RDSO	Member	Prepare
Shri Dharam Chand ADE/Signal- VIII	RDSO	Member	Check
Shri A. K. Singh Director/Signal- VIII	RDSO	Member	Issue

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SCHEDULE OF TECHNICAL REQUIREMENT FOR SECONDARY CELLS-LOW MAINTENANCE & VALVE REGULATED FOR S&T INSTALLATIONS

Scope:

The Schedule of Technical Requirement No. SIQ 0113 covers the norms for Machinery & Plants required for production, testing equipment for quality assurance and infrastructure for manufacturing of Secondary cells - Low maintenance (LMLA) and Valve Regulated (VRLA) for Railway Signaling & Telecom applications. Vendor shall also comply other relevant laws of the country and quality norms issued by RDSO time to time.

Secondary cells - Low Maintenance & Valve Regulated

List of specifications for various types of Secondary cells-

S.No.	Description	Specification No.
1	Secondary cell – Low Maintenance Lead Acid	IRS:S 88/2004
2	Secondary cell – Valve Regulated Lead Acid	IRS:S93/96A

I) Essential machinery and plants required for production-

S. No.	Description	Remarks
1	Hot air oven	--
2	Polarity testing machine	--
3	Heat sealing machine	Item already covered at S. No. 40(i), hence deleted.
4	Air pressure testing machine	Item already covered at S. No.40(ii), hence deleted.
5	Grid casting machine	--
6	Water bath	--
7	Battery component casting mould	--
8	Automatic Paste mixing machine	Item covered at S. No. 18, hence deleted.
9	Plate cutting and lug cleaning machine	--
10	Group assembly equipment	--

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S. No.	Description	Remarks
11	Oxy-acetylene torch	--
12	Distilled water plant	Item already covered at S. No. 37, hence deleted.
13	Container and cover manufacturing plant	Shifted and amended at S. No. 39.
14	Plate/Jar formation plant	--
15	Jigs for plate assembly	--
16	Separator test unit	--
17	Lead oxide manufacturing mill	--
18	Automatic paste mixing plant	--
19	Automatic plate pasting machine	--
20	Humidity and temp. controlled curing chambers	--
21	Inter-cell welding machine *	Item already covered at S. No. 40(iv), hence deleted.
22	Short circuit testing machine *	--
23	Shear testing machine *	Item already covered at S. No. 40(v)), hence deleted.
24	Spine trimming machine *	--
25	Grid cutting machine*	--
26	Vibrator*	--
27	Pitch treatment plant*	--
28	Separator manufacturing plant *	--
29	Bitumen compound sealing plant *	--
30	Pressure die casting machine *	--
31	Automatic acid filling machine **	--
32	Acid chilling plant **	--
33	Heat-sealing plant with controlled temperature, pressure and time duration **	Item already covered at S. No. 40(i), hence deleted.
34	Stack box manufacturing facility **	--
35	Chemical laboratory to test various chemical ingredients.	Test facilities incorporated in line with S. No. 12 of STR of PS & EMU Dte.
36	Gas burners set for assembly of positive and negative plates	Test facilities incorporated in line with S. No. 13 of STR of PS & EMU Dte.

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S. No.	Description	Remarks
37	Distilled water manufacturing plant	Test facilities incorporated in line with S.No.14 of STR of PS & EMU Dte.
38	Compressor with dryer.	Test facilities incorporated in line with S. No. 15 of STR of PS & EMU Dte.
39	For PPCP container firm shall have:	Test facilities incorporated in line with S. No. 18 of STR of PS & EMU Dte.
i	Automatic injection moulding machine for manufacturing of battery container and lid.	
ii	Moulds for manufacturing of battery container and lid.	
40	The following machines shall be fitted across the conveyer-	Test facilities incorporated in line with S. No. 18 of STR of PS & EMU Dte.
i	Heat sealing machine with controlled temperature, pressure & Hour meter.	-do-
ii	Automatic air pressure machine to check the sealing & for auto segregation of defective /failed cell.	-do-
iii	Automatic hole punching machine for inter-cell welding	-do-
iv	Automatic inter cell connector welding machine for mono block batteries.	-do-
v	Automatic shear testing machine to check the welding strength & for auto segregation of defective/ failed cell.	-do-
41	Fork lift/Electric hoist	Test facilities incorporated in line with S. No.19 of STR of PS & EMU Dte.
42	One DG sets of rating 70KVA (min) and another of rating 35KVA (min).	Test facilities incorporated in line with S. No. 22 of STR of PS & EMU Dte.

* Applicable for LMLA cells only, ** Applicable for VRLA cells only

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II) Essential testing equipment required for Quality Assurance-

S. No.	Description	Remarks
1	Test bench consisting of Digital Ammeter & Voltmeter (4½ digit) for carrying out various electrical tests as stipulated in specification.	--
2	Electronic Balance for chemical and components weight (capacity of 1000gm with Least Count: 0.1mg)	Modified in line with S. No. 22 of STR of PS & EMU Dte.
3	App. Density apparatus	App. Deleted.
4	Standard sieves	--
5	Analytic balance	Already covered at S. No. 2, hence deleted.
6	Conductivity meter	--
7	Manometer	--
8	Life tester	Already covered at S. No. 26, hence deleted.
9	Breaking strength tester	--
10	Micrometer (Range: 0-25mm) (Least Count: 0 .001mm)	Range specified.
11	Gauge	--
12	Try square, scale	--
13	Digital Vernier Caliper (Range: 0-500 mm) (Least Count: 0.01mm)	Range specified.
14	Pitch gauge	--
15	Battery charger / discharger	Already covered at S.No. 25, hence deleted.
16	Data Recorder	Already covered at S.No. 25 & 26, hence deleted.
17	Multimeter Digital (DC-1000V, AC-750V, DC-10A, R-2M Ohm)	Modified as per S. No. 8 of STR of PS & EMU Dte.
18	Digital Thermometer	--
19	H.V. tester	--
20	Hour meter	--
21	Separator Testing machine	--
22	Safety valve testing arrangement **	--
23	Automatic air pressure testing arrangement equipment	--
24	Automatic Atomic absorption spectrometer **	Modified.
25	Computerized constant current battery charging/ discharging equipment with monitoring and recording of time duration, voltage, current & temperature for electrical performance test.	Test facilities incorporated in line with S.No.1 of STR of PS & EMU Dte.

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S. No.	Description	Remarks
26	Fully computerized life cycle tester (minimum 6 channels) with monitoring & logging of test data.	Test facilities incorporated in line with S. No. 2 of STR of PS & EMU Dte.
27	Test equipment required for fire retardant testing.	Test facilities incorporated in line with S.No.16 of STR of PS & EMU Dte.
28	Constant voltage charger (0-15 V) DC for water loss test with current, voltage and temperature data logging facility.	Test facilities incorporated in line with S. No.9 of STR of PS & EMU Dte.
29	Sulphuric acid testing arrangement as per IS 266-93 latest.	Test facilities incorporated in line with S. No.19 of STR of PS & EMU Dte.
30	Weighing balance (digital) up to 150kg with least count of 10gm for battery.	Test facilities incorporated in line with at S. No. 21 of STR of PS & EMU Dte.
31	Temperature controlled A.C. test room with UPS for testing equipment.	Test facilities incorporated in line with S. No. 3 of STR of PS & EMU Dte.

** Applicable for VRLA cells only

Note:

- ~~I. Out sourced firms shall have ISO approval and its QAP shall be duly verified by DI/QA /S&T.~~
- ~~II. All the essential testing equipment must be calibrated once in a year by Government / Reputed agency. In house calibration wherever feasible, may Be done with specific permission of DI/QA/S&T.~~

1. Plant, machinery and testing equipments given above are only indicative. All necessary plant and machinery of adequate capacity and testing equipments as necessary to manufacture the product as per RDSO specification and drawings and to ensure quality shall be provided.
2. This STR shall be applicable to all new vendors applying for registration.

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