

Government of India
Ministry of Railways



STR No.TI/STR/038

(Revision-0)

Schedule of Technical Requirements,
for
Vendor Approval for Manufacture & Supply
of
CURRENT CARRYING FLEXIBLE DROPPER ("A" DROPPER)
FOR 25 kV, 50 Hz ELECTRIC TRACTION SYSTEM.

[Specification No. TI/SPC/OHE/CCFD/0160 with Latest Amendments]

ISSUED BY

Traction Installation Directorate
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1.0 SCOPE:

This Schedule of Technical Requirements (STR) is to assess manufacturing capability of the Vendor for new Registration /Approval to manufacture and supply of current carrying flexible dropper("A" Dropper) to Railways for use in the 25 kV, 50 Hz, AC electric traction.

This STR shall be read in conjunction with RDSO Specification No. TI/SPC/OHE/CCFD/0160(02/2020) with latest amendment.

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

2.0 GENERAL INFRASTRUCTURE, MANUFACTURING AND TESTING FACILITIES

The manufacturer should have adequate covered accommodation and free space for the storage and transportation of the raw material and finished – current carrying flexible dropper awaiting dispatch. Manufacturer should have the system to ensure that the final product conforms to the RDSO specification No. TI/SPC/OHE/CCFD/0160(02/2020) with latest amendment.

2.1 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.

2.2 MANUFACTURING FACILITIES : Following Machinery and Plant of suitable capacity should be essentially available with the prospective manufacturer.

2.2.1 PRODUCTION STAGE

- a) Machine for drawing required size of rod from CCCM Rod.
- b) One complete wire drawing set for wire size up to 0.5 mm.
- c) Electric butt welding machine or facility or soldering the wire.
- d) Facility for spooling the wire.
- e) One stranding machine, suitable to manufacture current carrying dropper with minimum stress so that wire do not break during stranding, equipped with other facilities up to winding of conductor on the drum.
- f) Platform weighing machine upto 3 T Min.
- g) Powered hacksaw.
- h) Powered grinder.
- i) Other tools and tackles required for the purpose.
- j) One powered drilling machine.

2.2.2 DESIRABLE FACILITY:-

Facility for alloying magnesium with 'A' grade copper cathode and manufacturing of continuous cast copper magnesium rod to suitable diameter shall be available with the firm. In case the above facility is not available, and CCCM rod could be procured from the third party source, the manufacturer shall furnish the details of purchase(Invoice) directly from manufacturer along with bill of lading/Airway Bill and bill of entry (in case of import).

Procurement of CCCM rod from indigenous manufacturer is preferable.

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Procurement of CCCM rod from any distributor/trader/channel partner of manufacturer is not permitted to ensure quality of material.

2.3 INSPECTION AND TESTING FACILITIES :

The firm should essentially have the following testing and measuring instruments/equipment. These instruments, wherever applicable, should be calibrated from NABL/NACCB or a similar reputed international/national agency. Each instrument should have a valid calibration certificate.

S.N.	Equipment/measuring instruments	Range/Accuracy/Remarks
1.	Spectrometer for determining the copper and other trace elements of continuous cast copper magnesium rod.	Suitable for determining all the trace elements specified in RDSO's Spec. No. TI/SPC/OHE/CCFD/0160(02/2020) with latest amendment
2.	Digital/Analytical balances	Suitable capacity/scale.
3.	Kelvin's Double Bridge for measurement of resistance.	Suitable range/accuracy.
4.	Tensile Testing Machine	500kgf-capacity.
5.	Precision Digital Electronic weighing balance.	-
6.	Micrometers and calipers & thermometers.	Suitable range & accuracy.
7.	Facility for measurement of lay & lay length of stranded Conductor.	-
8.	Electrolytic Analyser for determination of chemical composition of Copper.	Suitable for the purpose.
9.	Well-equipped chemical lab for determination of Cu content and Mg content.	-
10.	Muffle Furnace	-

3.0 QUALITYCONTROLREQUIREMENTS

- 3.1 The firm should have ISO-9000 certification for the product broadly for which approval is being sought.
- 3.2 The quality manual of the firm should clearly indicate the control over manufacturing and testing of the said product at various stages of production and testing.
- 3.3 System of easy traceability of the product from the stage of raw material to finished product should exist.
- 3.4 The firm should have quality assurance plan (QAP) indicating the checks to be carried out at Raw Material stage, in process stage and testing and inspection stage.
- 3.5 Details about type test, quantum of checks and record of all the parameters checked should be kept systematically in respective record books.
- 3.6 The approval of QAP mentioned in para 3.4 above is to be obtained by the firm from RDSO.
- 3.7 It should be ensured that system of documentation in respect of rejection at the customer end and warranty replacement exists.
- 3.8 It should be ensured that in case of failures reporting from purchaser a system of reporting recording, visit to the site, and collection of failed samples, proper analysis and

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corrective action taken in order to arrest failures.

- 3.9 It should be ensured that properly calibrated instruments are used and calibration is done within time through authorized agencies.
- 3.10 It should be ensured that suitable tag for identification having details mentioned below shall be provided on each coil.
- i) Purchaser's order number.
 - ii) Size of Flexible Dropper Wire.
 - iii) Gross and net weight.
 - iv) Coil Number/ Drum number
 - v) Name of Manufacturer
 - vi) Consignee and other particulars as required by the purchaser.
- 3.11 It should be ensured that employees engaged in the manufacture/ testing of the said product are technically competent enough and are headed by qualified engineer.
- 3.12 It should be ensured that manufacturer maintain adequate firefighting equipment for employees' safety and takes measures for keeping pollution under control.
- 3.13 At least a diploma holder must be the head of the inspection/testing/quality control section with 5 years' experience in the relevant field.
- 3.14 System should exist for documentation of the following.
- In coming raw material with the reference of suppliers as well as internal test results.
 - 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.

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