

PRE-QUALIFYING CRITERIA FOR PROCUREMENT OF GROUNDING BRUSH

- 1) **SCOPE:** Supply of GROUNDING BRUSH for steam turbines to be mounted on bearing pedestal. These brushes are used for grounding stray currents generated in Steam Turbine rotors.

- 2) **CONDITION OF DELIVERY:**
The grounding brush shall be supplied in single kit comprising of grounding brush and other accessories as per the vendor (casing, arm, earthing cable with terminating shoe, flanges and fasteners.)

- 3) **TECHNICAL REQUIREMENTS:**
 - (a) The brush to be manufactured as per spec TC 51218 & Drg no. 33074500014 Rev 00.
 - (b) The brush assembly should be suitable for service at temperatures up to 200°C.
 - (c) The brush should be suitable for shaft speed of approximately 400 ft./sec.
 - (d) The grounding brush should have of metallic bristles which are removable and adjustable. Bristles used shall have the composition as given below:

CHEMICAL COMPOSITION OF BRISTLES MATERIAL :

Analysis of Chemical composition of bristles shall conform to the following in weight %:

Ag(Silver)	Copper (Cu)	Traces of Ni, Au, Al, Fe
70-85%	Cu = 30-14.5	0.4-0.6

Gold Plating: 99%Pure
Gold Coating: 0.5-2 micron plating over the silver wire
Silver Wire-Dimension 160-210micron diameter
Insulation Pads-Electrical Insulation
Casing-Steel 304 grade Stainless steel (Non-magnetic)
Bristle Holder: Electrolytic Copper grade

- (e) All metallic components like casing, arm, flanges and fasteners to be made up of 300 series austenitic stainless steel (non-magnetic) of the 18 chrome-8 nickel type.
- (f) Brush holder: Aluminium or Babbitt.
- (g) Unless otherwise specified, non-conducting components of Teflon based or pyrex Liners are to be of special high temperature, low friction, filled Teflon compound. Window should be Plexiglas or Pyrex for high temperature.
- (h) Electrical parts should be of copper or aluminium wires.
- (i) Annular holes prepared in brush holder should be angled for extra flexibility of operation to allow the brush assembly for installation in sloped position up to 45° as measured from horizontal axis. Reversal of the bristles should be possible depending on direction of rotation of shaft.
- (j) For Electrical connectivity each bundle of bristles should be tied together on inner side of electrolytic copper holder and sealed with copper strip over entire length of copper brush holder.

4) **DIMENSIONS AND TOLERANCES :**

Dimensions:

The grounding brush holder shall be true to drawings for all items including accessories. Suppliers shall send their drawings for approval incorporating necessary details, allowances

etc. The approved drawings shall be returned and shall be valid for the purpose of inspection as stated on the drawing /purchase order.

Tolerances:

All machined surfaces shall have a minimum machining allowances of 0.2mm

The supplier shall furnish following documents (in English) to BHEL.

- a) BHEL Order No.
- b) Item description & drawing no.
- c) Supplier's name
- d) Dimensional inspection report.

5) MARKING:

The following details shall be punched / embossed and the same shall be encircled by paint.

- a) Material code, Spec no & Rev
- b)Supplier's name

6) PACKING, PRESERVATION AND TRANSPORTATION :

The grounding brush kit shall be suitably packed in a condition to withstand exposure to all climatic conditions.

The grounding brush kit shall be properly protected from damage and corrosion during transport.

7) REJECTION AND REPLACEMENT :

The final decision regarding acceptance or rejection rests with BHEL, if the supplied grounding brush kit is not found as per this specification.