KORBA ST-I, II & III (3X200MW + 3X500MW + 1X500MW) FGD PACKAGE

TECHNICAL SPECIFICATIONS FOR WIND TUNNEL TEST OF RCC CHIMNEY

DOCUMENT NO. PE-TS-466-620-C001
(REVISION 00)

BHARAT HEAVY ELECTRICALS LIMITED
Project Engineering Management
Power Sector, Plot No. 25, Sector 16A, Noida (U.P.)-201301

SECTION 'C'

SPECIFIC TECHNICAL REQUIREMENTS

1. **General Requirement**

1.01. Bidder shall conduct wind tunnel study with a scaled down model of chimney in an established wind tunnel to study the along and across behaviour of the subject chimney under wind loading for the cases as mentioned in Table-1.

Table-1

Sl.No	Cases
1	STAND ALONE CHIMNEY, WITHOUT FLUE LINER
2	STAND ALONE CHIMNEY, WITH FLUE LINER
3	INTERFERENCE CASE WITH ADJACENT STRUCTURES, WITHOUT FLUE LINER
4	INTERFERENCE CASE WITH ADJACENT STRUCTURES, WITH FLUE LINER

2. In case the bidder recommends strakes based upon the results of the study, then above mentioned cases should be repeated with strakes as well. Subject project consists of one RCC chimney of 240m height and four RCC chimneys of 150m height. One test for 240m high chimney and one test for 150m high chimney is to be done. Judicious selection of one target chimney from four numbers 150m high chimneys, for wind tunnel study shall be decided by bidder as per plant layout and wind rose diagram.

2.01. For every case of wind tunnel study, following parameters shall be derived and furnished in a detailed report.

I. Natural frequency

II. Bending Moment (at minimum four elevations)

III. Shear Force (at minimum four elevations)

IV. Deflection (at peak)

2.02. Dimensional analysis of subject chimney vis a vis the model, shall be conducted to find the various dimensional parameters.

This dimensional analysis shall be furnished in the detailed study report.

3. **Wind Loading:**

   Wind loading will be in accordance with Indian Standard Code IS: 875 (Part 3) for a basic wind speed of 45 m/sec (Terrain Cat-2).
   Across-wind loads due to vortex shedding shall be considered in study as per velocity range defined in IS 4998-2015.

4. **Material of construction**

   The bidder shall prepare an aero-elastic model of the chimney with fibre reinforced plastic or any other suitable material reflecting dynamic properties of subject chimney, whose properties may be dimensionally correlated with the grade of concrete of the subject chimney.

5. Bidder shall simulate the subject terrain in the wind tunnel, as per that given in IS 875 Part (III). Aero elastic model of chimney along with rigid model of all major structures (for interference case only) which are within the distance of “20 times the diameter of the chimney at the 2/3 height of the chimney” all around shall be considered in the study.

6. The bidder shall simulate inside the wind tunnel actual prototype flow conditions for the study. The scale of the model shall be such that the boundary conditions (side wall and roof) in the wind tunnel shall not alter the targeted flow conditions. However, the scale of the model shall not be less than 1:250

7. **Report**

   After conducting the wind tunnel test, Bidder shall submit the detailed study report (in soft copy) for review of BHEL/Customer. Final detailed study report after incorporation of BHEL/Customer observations shall be submitted by the bidder (in soft copy and 3 hard copies).