

Dear Sir,

Sub: 1. Stack Emission & Ambient Air Quality Monitoring
2. Testing of BWSSB Water, Borewell Water, ETP Water, Effluent, Sludge & Domestic Sewage

We invite your competitive offer for carrying out sampling and analysis of the above subject work in our premises. The scope and schedule of work detailing the stacks is enclosed for your reference. The sampling, analysis and reporting procedures should confirm as per the rules and regulations laid under Air (Prevention & Control of Pollution) Act, 1981 and Water (Prevention & Control of Pollution) Act, 1974 and The Environment (Protection) Act, 1986. It shall also confirm the stipulations laid down by M/s Karnataka State Pollution Control Board.

The proposed contract is for a period of 24 months starting from **August 2016** and likely to be extended by one more year based on the satisfactory performance. If you feel it is necessary, you can visit our factory premises on any working day, to familiarise yourself with the work involved or for any clarifications on the subject.

Quotation in two part, consisting of **Part A - Techno Commercial bid** and **Part B - Price bid (Annexure 1 and 2)** shall be **put in separate sealed covers** and both the covers to be put in **one sealed cover** super scribing the enquiry number and due date and shall be dropped into **WEX Tender Box of EPD** kept at reception hall on or before **24th May 2016 (Tuesday) by 2-00 PM** and tender will be opened on the same day at **2-30 PM**.

In case, if there is any difference between quoted rate and amount of the bidder, only rate quoted will be considered for evaluation. Bidders are requested to write there quoted amount in words clearly and legible to avoid any confusions.

Thanking you.

Yours Sincerely,

(RAMACHANDRAIAH G P)
Engineer - Safety, HSE, PDY & IE

PART-A
SCHEDULE & SCOPE OF WORK

Sub : Stack Emission and Ambient Air Quality Monitoring

I. DETAILS OF STACKS AND POLLUTANT TO BE MONITORED

STACK NO.	STACK ATTACHED TO	POLLUTANT TO BE MONITORED
01	Rectangular Kiln – 1	SO ₂
02	Rectangular Kiln – 3	SO ₂
03	Boiler 5 TPH	SO ₂
04	Boiler 3 TPH (oil fired)	SO ₂
05	Bickley Kiln – 1 - Ceralin	SO ₂
06	NGK Shuttle Kiln	SO ₂
07	Wistra Shuttle Kiln	SO ₂
08	Glazing Booth – 01	SPM
09	Glazing Booth – 02	SPM
10	Tunnel Kiln	SO ₂
11	500 KVA DG Set – 1	SO ₂
12	500 KVA DG Set – 2	SO ₂
13	500 KVA DG Set – 3	SO ₂
14	Pyromaster Kiln - Ceralin	SO ₂
15	1000 KVA DG Set	SO ₂
16	Bickley Kiln – 2 - Ceralin	SO ₂
17	Spray Drier - Ceralin	SPM
18	Thermic Fluid Heater-1	SO ₂
19	Thermic Fluid Heater-2	SO ₂
20	Rectangular Kiln – 2	SO ₂
21	Rectangular Kiln - 4	SO ₂

Note :

1. Number of stacks given above are only indicative, at any given time. Some of the stacks may not be in operation and monitoring should be carried out for such stacks which are in operation during sampling period.

2. Number of stacks may increase or decrease during the period of contract and the rate for any increase or decrease in stacks will be paid at the same rate fixed for the existing stacks

II . AMBIENT AIR QUALITY MONITORING

Ambient air in the premises and its surroundings are to be monitored at identified place as per rules with 24 Hrs. sampling. The location of the monitoring place is to be fixed in consultation with the Executive in charge.

The parameters for monitoring are as follows:

SL. No.	POLLUTANT	TWA	METHOD OF MEASUREMENT
1.	Sulphur Dioxide (SO ₂)	24 Hours	Improved West & Gaeke Method Ultraviolet Fluorescence
2.	Nitrogen Dioxide (NO ₂)	24 Hours	Jacob Hochheister modified (Na-Arsentire) method Gas Phase Chemiluminescence
3.	Respirable Particulate Matter (Size less than 10 µm) (RPM)	24 Hours	Gravimetric, TOEM, Beta Attenuation
4.	Respirable Particulate Matter (Size less than 2.5 µm) (RPM)	24 Hours	Gravimetric, TOEM, Beta Attenuation
5.	Lead (Pb)	24 Hours	AAS/ICP method for sampling on EPM2000 or equivalent filter paper -ED-XRF using Teflon Filter
6.	Carbon Monoxide (CO)	8 Hours	Non dispersive infrared spectroscopy
7.	Ozone	1Hour	-Photometric -Chemiluminescence, -- -Chemical Method
8.	Ammonia µg/ m ³	24 Hours	Chemiluminescence, Indophenol blue method
9.	Benzene µg/ m ³	Annual	Gas chromatography based continuous analyser, Adsorption & Desorption followed by GC Analysis
10.	Benzo Pyrene (BaP) -particulate phase only, ng/m ³	Annual	Solvent extraction followed by GC/HPLC Extraction
11.	Arsenic	Annual	AAS/ICP method for sampling on EPM2000 or equivalent filter paper
12.	Nickel	Annual	AAS/ICP method for sampling on EPM2000 or equivalent filter paper

III. FREQUENCY OF ANALYSIS AND REPORTING

A) For Stacks

The frequency of monitoring for stacks is **once a month**. Sampling should be carried out when the associated equipment is in operation and reports should be submitted on or before 5th of every month for preceding month sampling. The report should be submitted in duplicate and should have complete details of the sampling and analysis, viz.,

- a. Stack No.
- b. Stack Attached to
- c. Date and Time of Monitoring / period of monitoring
- d. Stack dimensions
- e. Ambient conditions
- f. Emission parameters like temperature, flue gas velocity, discharge quantity
- g. Concentration of pollutant monitored
- h. Instrument used for sampling and analysis
- i. Calculation sheet

B) For Ambient Air Quality

The frequency of monitoring for ambient air quality shall be **twice a week** and shall not exceed **104 samples in a year**. The report of analysis shall be submitted on or before 5th of every month for the preceding months' sampling. The report should be submitted in duplicate and should have complete details of the sampling as per page No. 2 of above.

IV. INSTRUMENTS FOR SAMPLING ANALYSIS, CALIBRATION STATUS

The instruments used for sampling and analysis should be maintained in sound operating condition and shall have valid calibration status at all times. You should submit the calibration certificates for all the instruments calibrated by "NABL" Accredited laboratory before starting the monitoring work. During the course of the contract, the instruments shall be maintained in valid calibration status and any change / repair / modification / addition / deletion of instruments should necessarily be validated with re-calibration and the copies of the certificate shall be produced.

V. NABL ACCREDITATION

You are required to submit valid "NABL" Accreditation Certificate of your laboratory **along with technical bid** and it shall be renewed time to time during the contract period.

VI. SAFETY & STATUTORY REQUIREMENTS

As the subject work involves workmen working at heights, necessary safety measures should be taken, like, use of safety shoe, safety belts, heat resistant hand gloves, safety helmets, etc., to ensure safe working. Persons with requisite experience and good physical health only shall be deployed for the sampling.

The personnel deputed for sampling should be covered under ESI, PF and other statutory requirements and they should be paid the prescribed minimum wages. The respective documents / challans for statutory payments made should be submitted periodically.

VII. EARNEST MONEY DEPOSIT (EMD)

An EMD of Rs. 40,000/- (Rupees Forty Thousand only) to be submitted either through DD or Pay Order favouring **BHEL-EPD, Bangalore – 560 012 along with technical bid.**

VII. OTHER REQUIREMENTS

You shall abide by the general terms and conditions of the contract work applicable at BHEL – EPD from time to time. Further, BHEL – EPD reserves the right to terminate the contract in the intervening period without assigning any reason whatsoever.

Also, BHEL – EPD reserves right to entrust the subject work parallelly to any other laboratory / laboratories during the tenure of the contract at its discretion. Your quote shall include all applicable taxes. You are required to produce the valid calibration certificate of all relevant equipments before issue of work order.

(RAMACHANDRAIAH G P)
ENGINEER – SAFETY, HSE, PDY & IE

Schedule for test

Sub:Testing potable water (physical, chemical and biological), Effluent, sewage, and sludge samples as per prescribed parameters.

Sl. No.	Discription	Unit	Quantity	Schedule
1	<p>Testing treated and untreated trade effluent for the following parameters including collecting sample from factory premises. Test to be carried out as per KSPCB norms as given below:</p> <p>(i) Colour and odour</p> <p>(ii) Suspended solids mg/l max (200)</p> <p>(iii) pH Value (5.5 to 9)</p> <p>(iv) Oil & Grease, mg/l Max (10)</p> <p>(v) Ammonical Nitrogen (as N) mg/l, Max (50)</p> <p>(vi) Bio - Chemical Oxygen Demand, (3 days at 27°C) mg/l, Max (100)</p> <p>(vii) Lead (as Pb), mg/l, Max (1)</p> <p>(viii) Hexavalent Chromium (as Cr⁺⁶) mg/l, Max (2)</p> <p>(ix) Copper (as Cu) mg/l, Max (3)</p> <p>(x) Total Chromium (as Cr), mg/l, Max (2)</p> <p>(xi) Zinc (as Zn) mg/l, Max (15)</p> <p>(xii) Nickel (as Ni) mg/l, Max (3)</p> <p>(xiii) Fluoride (as F) mg/l, Max (15)</p> <p>(xiv) Manganese (as Mn), mg/l, Max (2)</p> <p>(xv) Iron (as Fe) mg/l, Max (3)</p>	Sample	24	Monthly
2	<p>Testing Sewage discharge for following parameters including collecting sample from factory premises . Tests to be carried out as per KSPCB norms as follows: 1. Suspended solids, 2. Oil & grease, 3. Ammonical Nitrogen, 4. BOD in 3 days at 27°C, 5. Ph value, 6. Iron, 7. Copper, 8. Manganese, 9. Fluoride, 10. Phenolic compounds, 11. Mercury,12. Cadmium,13. Arsanic,14. Cyanide, 14. Lead,15. Zinc, 16. Hexavalent Chromium,17. Total chromium, 18. Selenium, 19. Magnesium, 20. Nickal, 21. Vanadium, 22. Bio- assay test.</p> <p>(i) Colour and odour</p> <p>(ii) Suspended solids mg/l max (200)</p> <p>(iii) pH Value (5.5 to 9)</p> <p>(iv) Oil & Grease, mg/l Max (10)</p> <p>(v) Ammonical Nitrogen (as N) mg/l, Max (50)</p> <p>(vi) Bio - Chemical Oxygen Demand, (3 days at 27°C) mg/l, Max (100)</p> <p>(vii) Lead (as Pb), mg/l, Max (1)</p> <p>(viii) Hexavalent Chromium (as Cr⁺⁶) mg/l, Max (2)</p> <p>(ix) Copper (as Cu) mg/l, Max (3)</p> <p>(x) Total Chromium (as Cr), mg/l, Max (2)</p> <p>(xi) Zinc (as Zn) mg/l, Max (15)</p> <p>(xii) Nickel (as Ni) mg/l, Max (3)</p> <p>(xiii) Fluoride (as F) mg/l, Max (15)</p> <p>(xiv) Manganese (as Mn), mg/l, Max (2)</p> <p>(xv) Iron (as Fe) mg/l, Max (3)</p>	Sample	2	Every Six Month (April & October)
3	Testing SLUDGE for the following Heavy metals including collecting sample from factory premises .1. CHROMIUM, 2. LEAD, 3. ZINC, 4. CYANIDE, 6. CADMIUM, 7. ARSANIC,8. MERCURY,9. HEXAVALENT CHROMIUM.	Sample	1	Once in a Year (May month)
4	Testing BWSSB water for potability as per IS 10500 (test based on IS3025 APHA-1622) for the following parameters including collecting sample from factory premises . 1. COLOUR, 2. ODOUR, 3. TASTE, 4.TURBIDITY, 5.Ph value,6. Total Hardness as CaCO ₃ , 7. Iron, 8. Chloride, 9. Residual free chlorine, 10. Total dissolved solids, 11. Calcium, 12. Copper, 13. Manganese, 14. Sulphate, 15. Nitrate, 16. Fluoride, 17. Phenolic compounds, 18. Mercury,19. Cadmium. 20. Arsanic,21. Cyanide,22. Lead,23. Zinc,24. Chromium,25. Alkalinity,26. Aluminium,27. Boron, 28 Magnesium.	Sample	12	Monthly
5	Testing BOREWELL water for potability as per parameters laid by IS 10500 (test based on IS3025 - APHA - 1622) for the following items including collecting sample from factory premises. 1. COLOUR, 2. ODOUR, 3. TASTE, 4. TURBIDITY, 5. Ph value, 6. Total hardness as CaCO ₃ , 7. Iron, 8. Chloride, 9. Residual free chlorine, 10. Total dissolved solids, 11. Calcium, 12. Copper, 13. Manganese, 14. Sulphate, 15. Nitrate, 16. Fluoride, 17. Phenolic compounds, 18. Mercury,19. Cadmium. 20. Arsanic, 21. Cyanide, 22. Lead, 23. Zinc, 24. Chromium, 25. Alkalinity, 26. Aluminium, 27. Boron, 28. Magnesium.	Sample	12	Monthly
6	Testing BOREWELL/BWSSB water for potability as per IS 3025-APHA for Biological parameters for following items and including collecting sample from factory premises. 1.MPN Coliform Bacteria per 100ml,2.FECAL Coliform Bacteria per 100ml,3.F Coli Coliform Bacteria per 100ml, BOD.	Sample	4	Every Six Month (April & October)