

BASUDHA UDYOG PRIVATE LIMITED

EXECUTIVE SUMMARY

ON

REIA-EMP

OF

PROPOSED

EXPANSION OF EXISTING COKE OVEN PLANT

&

INSTALLATION OF A 12.0MW POWER PLANT USING WHRB

At

80, Thandalachery Village, Gummidipoondi Taluk, Thiruvallur District.

SEPTEMBER, 2008



1.0 THE PROJECT

There is considerable demand for coking coal in South India and hence **Basudha Udyog Private Limited (BUPL)** had established its existing facility and with increasing demand **BUPL** thought it appropriate to increase its capacity. **BUPL** has proposed expansion of existing coke oven plant from **72000 TPA** to **158760 TPA** by installing an additional battery and also establish a **12 MW power plant** using WHRB using the most eco friendly process of non recovery coke oven.

Product	Existing	Upon Expansion
Low Ash Metallurgical Hard Coke	72,000 TPA	1,58,760 TPA
Power Generation using WHRB	--	12 MW

2.0 LOCATION

The existing coke oven plant is located at 80, Thandalachery Village, Gummidipoondi Taluk, Thiruvallur District, Tamil Nadu. The site is predominantly an industrial area. The location is as shown in **Fig.1.0**, and expansion is proposed within this plant area of 24.64 Acres.

3.0 MANUFACTURING PROCESS

The main raw material used is low ash, low sulphur coking coal, which is imported. The crushed coking coal is charged into series of ovens from the top. Carbonization of coking coal for 36 hours at 1200°C results in converting coal to coke, and the coke is ready for pushing.

Non-recovery coke ovens have a distinct environmental advantage over conventional ovens in that they are operated under negative suction which reduces emission levels to very low levels.

In Non-recovery coke ovens, the gas evolved from the coal is completely combusted, a portion of the energy being released to sustain the coking process. The remainder is exhausted through a waste gas system from which heat is recovered by raising steam in boilers and to generate electric power of **12 MW**.

4.0 DESCRIPTION OF THE ENVIRONMENT

As part of Rapid Environmental Impact Assessment study, an area covering 10 km radius around the **BUPL** site was considered, and study undertaken during **May - July 2008** to establish baseline environmental status with respect to various attributes and the status is as follows.

4.1 AMBIENT AIR QUALITY

Ambient air quality monitoring was carried out continuously for 1 season, to assess the air quality status in the region. At all these sampling stations “**SPM**” as well as gaseous pollutants like “**SO₂**” and “**NO_x**” were monitored round the clock. The **CO** and **HC** were also monitored at various sampling locations. Apart from these, the dust fall rate (DFR) was also monitored during the study. The values of all the parameters were found to be well within permissible levels in the ambient air, and in general varied as described in **Table 1.1**.

Table 1.1 Summary of Air Quality Data

Location	Concentration $\mu\text{g}/\text{Nm}^3$			
	SO ₂	NO _x	SPM	RSPM
Project Site	9-16	6-19	46-134	17-39
Verkadu	7-13	8-14	53-146	18-42
Gummidipoondi	9-14	10-20	53-152	18-43
Sirupulapettai	8-15	7-20	60-164	20-36
Getnamallee	10-14	9-18	56-181	24-50
Kanlur	9-19	10-14	50-168	20-48
Annappanaickenkuppam	7-14	9-18	74-181	21-52
Mel Mudalambedu	8-19	10-17	61-168	22-47
Overall	7-19	6-20	46-181	17-52

- CO < 114.5 $\mu\text{g}/\text{Nm}^3$
- HC < 65 $\mu\text{g}/\text{Nm}^3$

4.2 WATER ENVIRONMENT

The assessment of water quality in the area of 10 Kms radius around **BUPL** plant site was undertaken during the study period.

Selected physico-chemical parameters have been used for describing the baseline status of water environment and assessing the possible impacts due to the proposed expansion.

Generation of baseline data for water quality covers sources of ground water. Water quality was monitored once during the month to assess the baseline status. Bacterial examination was carried out to identify faecal contamination of water sources.

In-Plant measure to reuse most of the waste water thus minimizing drawal of fresh water.

Total Dissolved Solids (TDS) from the samples analysed varied between 410 mg/l to 580 mg/l. The hardness of the corresponding samples varied between 54 mg/l to 310 mg/l. Heavy metals in all the samples were found to be below detectable limit except for few metals which were also below detectable limits.

Total coli form was present in traces showing slight faecal contamination. The test carried out for Pesticides and phenolic compounds proved the water in and surrounding the plant site to be nontoxic in nature.

4.3 NOISE ENVIRONMENT

Noise level assessment around **BUPL** plant site has been carried out with the objective of assessing the impact of total noise generated in the site on its workers and human settlements within and around plant site. The noise levels at all the plant boundary was found to be far within the permissible norms of MoEF with respect to day / night.

4.4 SOIL ENVIRONMENT

The soil is sandy in depths with traces of silt and clay. The soil is weakly acidic with no traces of the alkalinity. The fertility value of the soil is very low with low organic matter and NPK content. The soil had adequate quantities of the micronutrients Bo, Mn, Cu and Zn. The soil was non-saline with low concentrations of NaCl and Na₂CO₃. This soil would require good quality irrigation water to develop green belt.

4.5 BIOLOGICAL ENVIRONMENT

A detailed study was conducted by means of field survey and also obtaining secondary data, covering a radius of 10 km around the proposed **BUPL** site. The analysis of the results of vegetation in the entire 10 km radius of the **BUPL** plant site indicated that there was an abundance of plant community in the entire area and its distribution was heterogeneous. The distribution of terrestrial fauna was found to be uniform. The data collected revealed absence of rare and endangered species at and surrounding the **BUPL** plant site.

4.6 SOCIO-ECONOMIC ENVIRONMENT

The total population of Gummidipoondi taluk as per Census 2001 is 1, 43,402 out of which 71919 (50.15%) are males and 71423 (49.80%) are females. Among the total population, 38408 (26.78%) belonged to the Scheduled Castes (SC) and 3434 (2.39%) belonged to the Schedule Tribes (ST). Literates were counted as 77345 (53.93%).

Most of the villages around the proposed project site area have good facilities for primary education, primary medical facilities like community health centre, potable drinking water. Good post and telegraph services and power supply are available in all villages. All villages are

connected by Kuccha and Pucca roads. Bus is the main mode of public transport, other than rail transport.

5.0 ENVIRONMENT IMPACT AND MANAGEMENT PLAN

5.1 AIR ENVIRONMENT

Non-recovery coke oven is most eco friendly process of making metallurgical coke and has following distinct advantages resulting in minimizing impact on air environment.

- Non Recovery Coke Ovens along with WHRB for electric power generation is eco-friendly and pollution free.
- Non Recovery Coke Oven operates under negative pressure while conventional ovens operate under positive pressure.
- Over 80% of the heat is utilized directly (through direct thermal radiation from gases over coal bed) for coking the coal mass. Balance 20% of exhaust gases pass through cavity in wall and go below sole level refractory to heat coal indirectly. i.e., through thermal conduction.
- Exhaust gases can be effectively utilized for power generation also.
- Complete combustion of volatiles achieved due to recycling of secondary flues and limited primary air inlet.
- Due to the selective admission of primary air into the oven cavity (crown) and the admission of secondary air into the sole flues provided a 'low temperature' environment for combustion. This minimizes the potential of "Thermal NO_x" generation and restricts NO_x formation.
- During carbonization, the coal mass liberates CO which is allowed to mixed with a controlled flow of air within the oven and get them burnt for maintaining the adequate value of temperature around 1200°C inside the oven.
- CO is also allowed to burn in the secondary duct at wall of the oven called as wall flues for maintaining a temperature of 1000°C.
- The air ducts provided in the walls of waste heat tunnels will be punched at the chimney base for final burning of rest of CO.
- The design of sole flue is in the form serpentine type and allows for admission of secondary air for combustion along the length and breadth of sole flue will also eliminate any hot spot occurrences.

- Coke oven plant shows large reduction in green house gases as per Kyoto Protocol

Coal handling & preparation plant

1. Coal unloading area is provided with water spray system.
2. The coal hopper/crusher house is provided with dust extraction and ventilation system.
3. The belt conveyor system envisage Belt conveyor on open gallery type system with continuous hooding device along the length of belt conveyor.

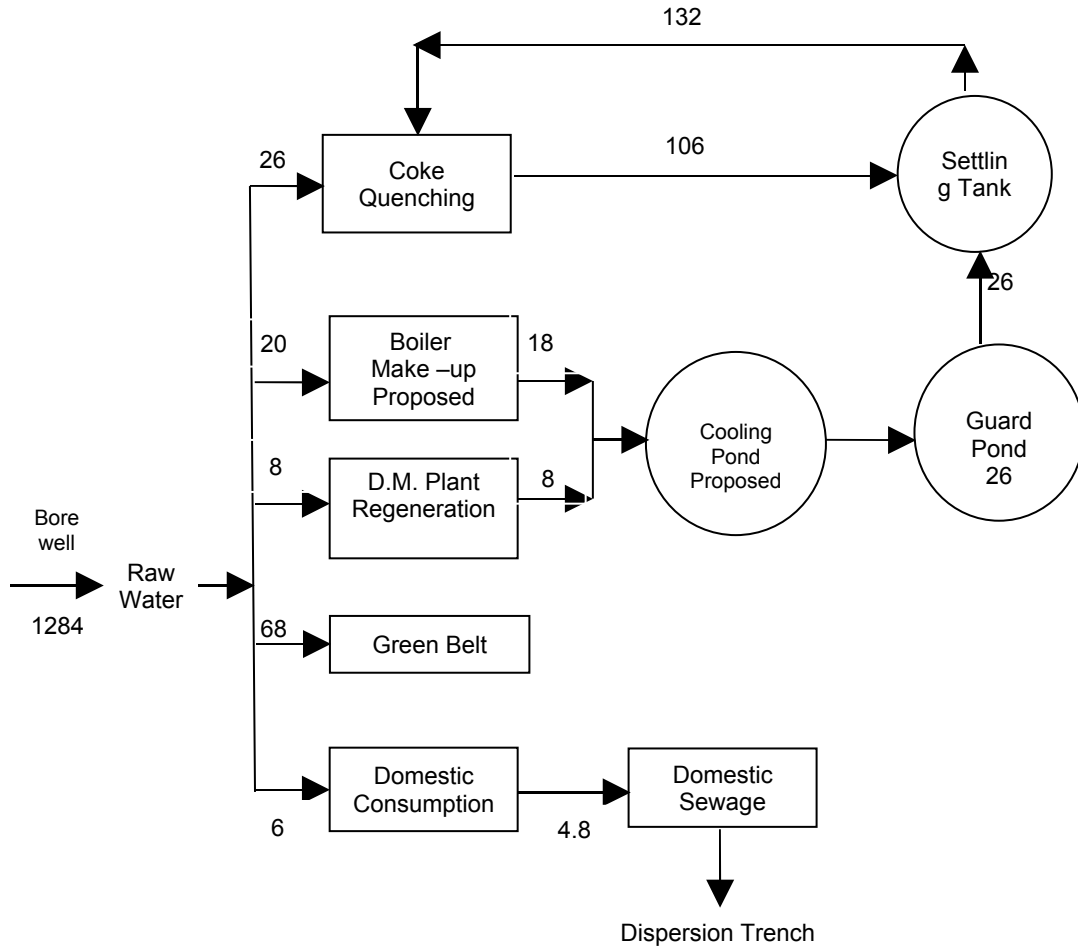
The ambient air quality monitoring and prediction of **GLC** for different averaging times depict that 24 hrs/avg, **SPM** remain within the permissible limits of **CPCB**. The proposed expansion will not contribute significantly to the existing levels of **SPM**.

5.2 WATER ENVIRONMENT

The only source of waste water from the process is water from quenching. This water is collected in a series of settling tanks and re-used. The plant works on the concept of zero discharge. The water used for coke quenching is recycled and reused. The Boiler blow down along with D.M. Plant regeneration waste is used as make-up for coke quenching thus minimizing fresh drawal of water. Hence, the impact on water environment will be insignificant.

Water Balance Diagram

All values are in m³/day



5.3 NOISE ENVIRONMENT

Acoustic enclosures have been provided wherever required to control the noise level below 85dB (A). Wherever, it is not possible technically to meet the required noise levels, personal protection equipment have been provided to the workers. The wide green belt around the plant will attenuate the noise levels out side the plant boundary.

5.4 LAND ENVIRONMENT

One of the activities with large potential effects on soil and groundwater is the disposal of waste on land and in landfill sites. When waste material is disposed off on land, rainwater and surface run-off may percolate through the material and carry contaminants into soil and groundwater. Change in soil surface and soil properties may have impacts on soil micro-organisms, natural and cultivated plants and animals, the visual landscape and amenity and on buildings and other constructions.

The **solid waste generated** will be Coke Breeze of around **400 T/month, which is** sold out to local cement plant / brick manufacturers.

6.0 GREEN BELT DEVELOPMENT

Of the total **24.64 Acres** of the land area about **3.7 Acres** of land is already developed as greenbelt, upon augmentation **BUPL** proposes to improve the greenbelt area by developing additionally **2.3 Acres**.

7.0 ENVIRONMENTAL MONITORING PROGRAM

Area of Monitoring	Number and location of sampling stations	Frequency of sampling	Parameters to be analysed
Ambient Air Quality	2 stations	Twice a week; each for 24 hour period at suitable intervals OR As per SPCB consent	SPM, RSPM, SO ₂ , NO _x and CO
Stack Emission	Stack emission measurement at duct	Once every 15- days	SPM, SO ₂ and NO _x
Surface Water Quality	1 nearest surface water bodies	Once every 3-months	Physical, chemical and biological parameters
Ground Water Quality	3 stations adjacent to the ambient air quality stations.	Once every 3-months	Physical, chemical and bacteriological parameters. Heavy metals and toxic constituents.
Soils	At the plant site and from close to the air quality monitoring stations.	Once every 3- months	Physical, chemical, cat ion exchange value, permeability, heavy metals
Noise	4 stations.	Once every month	Ambient sound levels (L _{eq} values).