

Executive Summary
to
Environmental Impact Assessment
& Environmental Management Plan for the proposed 0.2
MTPA integrated Steel plant 70 MW Captive Power plant
at Pappankuppam Village, Gumidipoondi Taluk,
Thiruvallur district, Tamil Nadu

Sponsor
KAMATCHI SPONGE & POWER CORPORATION LTD
CHENNAI



M/s. RICHARDSON & CRUDDAS (1972) LTD.
(A Government of India Undertaking)
A Subsidiary of Bharat Yantra Nigam Ltd.
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1.0 INTRODUCTION

1.1 Preamble

Kamachi Sponge & Power Corporation Limited (KSPCL) proposes to establish an integrated steel complex at Papankuppam village, Gumidipoondi Taluk, Thiruvallure district, Tamilnadu State. The proposed units and their capacities are given below.

S.No.	Division	Capacity
1	Induction Furnace	4 X 15 Ton
2	Ladle Refining Furnace	35 Ton
3	AOD Station	35 Ton
4	Oxygen Plant	50 Ton
5	Continuous Casting Machine	-
6	Rolling mill	2,00,000 TPA
7	Captive Power Plant	2 X 35 MW

1.1.1 Scope of the REIA study

KSPCL has retained Richardson & Cruddas (1972) Limited as environmental consultants for carrying out a Rapid Environmental Impact Assessment study for the proposed Integrated steel plant. A detailed presentation was made before the **Expert Appraisal Committee of the Ministry of Environment & Forests (MoEF) on 23rd September, 2008**. MoEF have provided the TOR vide their letter no. **F. No. J-11011/419/2008-IA-II dtd. 15.10.2008** for the preparation of EIA / EMP report on the following aspects and incorporated in the report.

- Present land use based on satellite imagery should be incorporated for 10 KM study area.
- Site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall is necessary.
- Location of National Park/Wild life sanctuary/Reserve Forest within 10 Km radius of the project should be included.
- List of raw material required and source should be included.
- Design details of Submerged Arc Furnace and manufacturing process details should be included.

- Ambient air quality at 8 locations within the study area of 10 km., aerial coverage from project site should be included. Location of one AAQMS should be in downwind direction.
- Ambient air quality modelling for power plant should be included.
- Cumulative impact of the other unit.
- An action plan to control and monitor secondary fugitive emissions as per CPCB guidelines should be included.
- Determination of atmospheric inversion level at the project site and assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features.
- Permission for the drawl of 1700 m³/day ground water from the Central Ground Water Authority/ Central Ground Water Board. Water balance cycle data including quantity of effluent generated, recycled and reused and discharged should be incorporated.
- Ground water monitoring minimum at 8 locations and also near solid waste dump zone should be carried out. Geological features and Geo-hydrological status of the study area and ecological status (Terrestrial and Aquatic) should be included.
- Possibilities of sea water intrusion due to excessive ground water drawl should also be studied and incorporated.
- Solid waste generation, storage, utilization and disposal should be included particularly related to the slag.
- End use of solid waste and its composition should be covered. Toxic metal content in the waste material and its composition should also be incorporated particularly of slag.
- Disposal plan for Fly ash.
- Risk assessment and damage control should be included.
- Occupational health of the workers should be incorporated.
- An action plan to develop green belt in 33 % area should be included.
- Scheme for rainwater harvesting should be incorporated.
- Socio economic development activities should be in place.
- Total capital cost and recurring cost/annum for environmental pollution control measures should also be included.

- A tabular chart for the issues raised and addressed during public hearing/public consultation should be provided.
- Any litigation / court case pending against the proposal should also be included.
- Compliance to the recommendations mentioned in the CREP guidelines should be included.

The REIA report has been prepared strictly as per the approved Terms of Reference issued by MoEF.

1.2 Resources Availability

1.2.1 Raw materials:

Sl. No.	Raw Materials	Source
1	Sponge Iron	Captive
2	Coal	Domestic Market / Imported
3	Scrap	Domestic Market / Imported
4	Dolochar	Captive / Domestic Market
5	Coal washery rejects	Orissa / Chhattisgarh
6	Manganese	Local Market
7	Quartzite	Local Market
8	Ferro Alloy	Local Market
9	Oxygen	Captive
10	LPG	Domestic

1.2.2 Land

A total land of 88.5 acre at BR Kandigai & SR Kandigai post, Papankuppam village is already acquired for the development of the proposed project.

1.2.3 Water requirement

The total water requirement will be about 1.7 MLD. The water requirement can be met from local bore well after getting proper clearance from concerned authorities.

1.2.4 Power

Power requirement in various units of Industries :

Description	Total power (kW)
Induction furnace	24
Ladle refining (arc furnace)	7
Billet casting	3
Rolling mill	4
Oxygen plant	1
Pollution control equipment	2
SMS auxiliaries	3
Rolling mill auxiliaries	2
Total	46 MW

1.2.5 Man power

S.No	Category	Total
1.	Administrative	73
2.	Technical & Supervisory	184
3.	Others	100
	Total	327

2.0 PROJECT DESCRIPTION

Scrap and Sponge Iron received from Scrap Yard is melted in Induction Furnace. After complete melting of Scrap and Sponge Iron as per calculation H.C. Fe Cr is added in Induction Furnace. This liquid metal is then poured into transfer ladle and after weightment is poured into AOD Converter. In AOD Converter Carbon is brought down to desired level by injecting Oxygen and Argon / Nitrogen in various proportion to achieve desire carbon content of the liquid metal. After achieving the carbon level the melt is subjected to de-oxidation and reversal of chromium and manganese from the slag. The slag after de-oxidation is removed and the process is called Slag-off. After addition of balancing elements the liquid metal is tapped into Ladles with bottom pouring and is transferred to Continuous Casting Machine after refining. The liquid steel is then cast into required Billet sizes through Close Casting technique by which liquid stream does not come into contact of atmospheric air. The billets from CCM will be rolled in a rolling mill to long products (TMT bars) of required size to meet customer specification.

The Power Plant will have two nos. of 150 tph, 95 kg/cm²(a) / 515°C Fluidized Bed Combustion boiler and similarly two turbine bleed cum condensing turbine with air cooled condenser. The proposed fuel for the boiler will be Imported Coal (50%), dolochar (37%) & washery rejects (13%). However, the boiler will be designed for firing 100% imported coal also. While firing 100% coal, the plant gross heat rate is around 3150 kcal/kWh and approximate coal consumption will be 39.4 tph. However, the plant will be using 50% coal (5600 Kcal/Kg), 37% dolochar (2800 Kcal/Kg) and 13% washery rejects (2200Kcal/Kg) with an average GCV of 4000 Kcal/Kg.

3.0 BASELINE ENVIRONMENT

Monitoring was carried out during December`07- February`08 (Winter)

- **Meteorology** : The predominant wind direction was from NE. The maximum wind velocity observed 21.2 KMPH. Wind velocity readings were ranging from <1.0 to 21.2 Kmph. Temperature values were ranging from 18.5 °C to 34.5°C. The mean relative humidity values were in the range of 35 % to 92%. Sky was clear during the study period. The mean atmospheric pressure was found to be 752 - 758 mm of Hg
- **Ambient air quality:** Ambient air quality in both core zone and buffer zone (10 km radius from core zone) showed the SPM, RSPM, SO₂ and NO_x are well within the NAAQ standards specified for rural and residential area.
- **Noise levels** monitored in core zone and buffer zones were found to be well within limits.
- **Water samples** collected within study area showed compliance of all parameters with the prescribed standards.
- **Soil samples** analysis showed moderate fertility.
- **Socio-economic status** of the study area is found to be moderate.

- The floral diversity as well as abundance showed wide variation depending upon physiography and land use. No endangered plant species have been identified. As such, conservation plan is not needed.

4.0 IDENTIFICATION OF IMPACTS

- Environmental Impacts due to the project during construction phases, regular operation and decommissioning have been identified.
- No major negative impact on water resources.

5.0 PREDICTION OF IMPACTS

- *Air Environment* : Post - Project Scenario ($\mu\text{g}/\text{m}^3$)

Code	Location name	Baseline scenario (max)			Predicted values			Post Project scenario		
		SPM	SO2	NOX	SPM	SO2	NOX	SPM	SO2	NOX
A1	<i>Existing Plant</i>	224	15	22	11.2	17.4	8.4	235.2	32.4	30.4
A2	Chitoornatham	163	12	17	8.3	10.2	6.2	181.3	22.0	23.2
A3	Project site	185	12	17	10.2	28.8	8.1	195.2	40.9	25.1
A4	Amirthamangalam *	175	12	17	5.2	6.4	6.1	181.4	18.4	23.1
A5	Sirupulapettai **	184	13	19	4.1	3.4	3.2	188.1	16.4	22.2
A6	SIPCOT Industrial Estate	225	11	18	3.2	1.8	0.8	226.8	12.8	18.8
A7	Narasingapuram	169	13	17	0.4	-	-	169.4	13	17
A8	Natham	136	9	14	0.5	-	-	136.5	9	14
A9	Gumidipoondi Town	176	12	18	0.8	-	-	176.8	12	18

* Downwind direction

** Cumulative effect

- *Water Environment*: No significant impact is expected on water quality.
- *Noise Environment*: No significant impact on noise environment. The predicted noise levels will be within the limits as prescribed by CPCB both in construction and operational phases of the industry.
- *Land Environment* : No significant impact on land environment

- *Biological Environment : No significant impact*
- *Socio-Economic Environment: The project will have positive impact in terms of employment, infrastructure facilities and enhancement of per capita income in the near by region.*

6.0 ENVIRONMENTAL MANAGEMENT PLAN

6.1 Air pollution control

Fugitive dust emission will be extracted by extractors with dry fogging and will be treated in bag house and discharged through tall stacks for atmospheric dispersion. Combustion products are treated by ESP / venturi scrubbers and discharged through tall stacks by induced draft fans. Material and product yard fugitive emissions are controlled by dust suppression with sprinkling water. A general enforcement in air pollution control process is observed which include

- ❖ Stable and consistent operation of all steel production units
- ❖ Correct proportion of feed materials
- ❖ Hooding and dust extraction, wherever required and possible

6.2 Water pollution control:

These measures include conservation of water by Rainwater harvesting and waste water treatment, recycling and reuse.

1. Conservation of water

- Rain water harvesting
- Design of units for less amount of water and recycle of water to the maximum by cascading use of water
- Use of boiler blow downs and cooling water blow downs for slag quenching, green belt development

2. Waste water treatment, recycling and reuse

- Gas cleaning plant waste water, billet cast and mill effluents, thermal power plant, sanitary waste water, cooling tower blow downs are separately treated with standard process and the treated effluent are utilized for slag quenching, ash handling. Excess treated effluents are stored into a guard pond for further secondary use in the plant.

6.3 Noise pollution control

- Design of equipment for less noise generation
- Dynamic balancing and vibration damping by suitable mounting mechanism and proper grouting
- Separate housing of high noise product machinery
- Use of ear plugs in very high noise prone areas
- Green belt development around each unit
- Road side tree plantation

6.4 Solid Waste Management

It is proposed to dispose of / reuse solid wastes as per plan given below

Unit	Solid waste	Suggested Disposal
Steel melting shop	SMS slag - 30000 t/yr	Cooled for ease of handling, used for land filling.
Continuous casting machines	Scales & Sludge	Mill Scale - Induction Furnace Sludge - Land filling
Rolling Mill	Scrap, scale, oil & grease and broken refractories	Scrap & Scale : Induction Furnace Oil & Grease : Sold to vendors Broken refractories: road material/ land fill
Power plant	Fly ash - 160000 t/yr	Collected at ESP; wetted to make it easy to handle. Captive brick production plant
Lead Acid Batteries	50-60 Nos/ Annum	Manufacturers / Authorized vendors

6.5 Energy conservation measures

- Adoption of CDM mechanisms
- Adoption of “power saving is power produced” principle

6.6 Green belt development

- At plant boundary

- At road sides
- Around various steel producing units
- Around office and other buildings
- Stretch of open land

The local plant species will be selected based on soil quality.

Year- wise plantation plan

Year	Number of plant species to be planted	Shrubs	Landscaping
2009-2010	6000	-	-
20010-2011	8000	1000	Grasses & Avenue plants
20011-2012	8000	1000	Grasses & Avenue plants
Total	22000	2000	-

6.7 Action plan as per Corporate Responsibility for Environmental Protection (CREP)

S.No.	CREP Guideline	Action Plan
1.	Fugitive emissions - To reduce (including installation of secondary de-dusting facilities).	The primary fume extraction system and secondary dedusting facilities will be installed.
2	Utilization of Steel Melting Shop (SMS) Slag as per the following schedule:	SMS slag will be initially dumped suitably and then will be used for road making
3	To reduce specific water consumption to 5 m ³ /t for long products and 8 m ³ /t for flat products	The water conservation as per the directives of CREP, when the plant gets stabilised and below 8 m ³ /t for flat products.
4	To operate the proposed pollution control equipment efficiently and to keep proper record of run hours, failure time and efficiency with immediate effect. Compliance report in this regard is submitted to CPCB / SPCB every three months.	Agreed
5	To implement rainwater harvesting	KSPCL have planed for Rain Water Harvesting
6	Reduction of Green House Gases by: Reduction in power consumption	Reduction of power consumption will be done by regular energy auditing.
7	To Improve overall house keeping.	Agreed

6.8 Cost implication for pollution control Measures

The capital cost of environmental control measures is Rs.6.90 Crores. Its break-up is given below :

Operation & Maintenance Expenditures	Capital Investments Value in Rs. Crores
1. Air Pollution Control System	4.00
2. water Pollution Control System	1.00
3. Solid waste management System	0.50
4. Green belt Development	0.20
5. Environmental Monitoring Equipments	0.20
6. Occupational Health & Safety	0.50
7. Others	0.50
Total	6.90
Annual Recurring costs for pollution control (Crore)	
Operation cost of Pollution control Equipment	: Rs. 0.40
Environmental monitoring	: Rs. 0.06
Maintenance of Green Belt and Landscaping	: Rs. 0.05
Total	Rs. 0.51

7.0 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMM

A monitoring strategy is required to ensure that all environmental resources which may be subject to contamination are kept under review and hence monitoring of the individual elements of the environment is necessary. KSPCL will install a Automatic weather monitoring stations to measure Wind speed and direction, Rainfall and temperature and humidity on hourly basis. On-line continuous monitoring system will be installed in stacks to monitor particulate matter. KSPCL will monitor the ambient air quality regularly are in five locations in and around the plant (downwind direction and where Max. GLC of SPM, SO₂ & NO_x) to ascertain the effect of process emissions on the ambient air quality. Surface and ground water will be sampled regularly once in a season from various locations in and around proposed plant to ascertain the trend of variation in the water quality, if any. Treated process wastewater quantity will also be monitored for pH, TSS, COD and Oil& Grease regularly. Ambient and work zone noise levels will be measured on quarterly basis. Occupational health surveillance of the workers will be done on regular basis especially for those to be engaged in handling hazardous substances and high noise generating equipment. Trees survival rate will be

monitored in the plantation areas and will be maintained at about 80% by replacement of dead trees. The KSPCL will have structured interactions with the plant surrounding village's people to disseminate the measures taken by the KSPCL and also to elicit suggestions for overall improvement of the surrounding villages. A separate Environment Management cell equipped with full-fledged laboratory facilities will be set up to carry out environmental management and monitoring functions.

8.0 DISASTER MANAGEMENT PLAN

- Identification of hazards
- Risk assessment of hazards
- Risk management applications
 - I . Preventive measures
 - II. On site emergency preparedness plan
- Off site emergency preparedness plan
- Industrial safety and fire fighting
- Rescue and repair services
- Shop level disaster control cell
- Central disaster control room
- Information flow

9.0 CONCLUSION

M/s. Kamachi Sponge & Power Corporation Limited (KSPCL) will successfully implement a well-designed environmental management plan in all the stages viz.

- ❖ EMP at construction stage
- ❖ EMP at operational stage to meet all the consent norms and Environmental Clearance issued by MoEF.

With commitment and dedication, KSPCL will commission the new steel plant and captive power plant with modern equipment. KSPCL also will undertake various community welfare measures like Encouraging entrepreneurship among locals, vocational training, construction of bus shelters, health camps and eye camps, Improvement of road network in the nearby villages and encouraging female education. KSPCL will implement all environmental measures proposed in this project report for various units at a capital cost of Rs. 6.90 crores and recurring cost of Rs. 0.51 crores.