

EXECUTIVE SUMMARY

For
**CAPACITY EXPANSION FROM 31,320 TO 1,30,320 TPA FERRO ALLOYS
PRODUCTION BY INSTALLATION OF ADDITIONAL 3X9 MVA & 1X24 MVA
SUBMERGED ARC FURNACE ALONG WITH 1,50,000 TPA BRIQUETTING
PLANT AND 18,000 TPA SINTER PLANT**

At

**Sy.No. 12 to 16, 18, 20, 33, 49 of Pedabantupalli
village, Gurla mandal, Vizianagaram district, Andhra Pradesh.**

*Study Period: Summer Season
(1st March to 31st May 2018)*

Applicant

**Mr. Amit Agarwalla
M/s Sri Jayalakshmi Ferro Alloys (P) Ltd.
Pedabantupalli village, Gurla mandal,
Vizianagaram district, Andhra Pradesh-530001
Ph. No.:08952-2222040
Email: office.jlf@anjaneyferro.com**



Environment Consultant

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EXECUTIVE SUMMARY

Project name and location

Project Name: M/s. SRI JAYALAKSHMI FERRO ALLOYS PVT. LTD.

Capacity expansion of Ferro alloys (Ferro Manganese/Silico Manganese/Ferro silicon/Ferro chrome) from 31,320 to 1,30,320 TPA through Submerged Arc Furnace (3x9 MVA + 1x24 MVA) along with 1,50,000 TPA Briquetting plant and 18,000 TPA sinter plant at Sy.No. 12 to 16, 18, 20, 33, 49 of Pedabantupalli village, Gurla mandal, Vizianagaram district, Andhra Pradesh.

i. Person to be employed:

The employment generation from proposed project will be 1000 direct employments and 500 indirect employments. Total employment generated from the project will be 1500.

The manpower estimated have been based on production, technologies proposed, type of requirement for various units, level of mechanism and automation, layout of the plant etc. Provision has been made to accommodate off and leave reserve requirement.

There is lot of places in-which employment generates indirectly viz: Transportation, Travel, Packaging, Information Technology, Telecom, Automobile, Courier Sector etc.

ii. Address for Correspondence (Name, Designation and complete address)

Mr. Amit Agarwalla

M/s Sri Jayalakshmi Ferro Alloys (P) Ltd,

Pedabantupalli village, Gurla mandal, Vizianagaram district, Andhra Pradesh-530001

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iii. Products and capacities. If expansion proposal then existing products with capacities and reference to early EC.

Summary of the Project (Existing & Proposed) is given below:

S.No.	Unit	Capacity	Production (TPA)	Final Product
Existing Units				
1	Submerged Arc Furnace	2x9 MVA	31,320	Ferro Manganese /Silico Manganese/Ferro silicon/Ferro Chrome
Proposed Units				
1	Submerged Arc Furnace	3x9 MVA	54,000	Ferro Manganese /Silico Manganese/Ferro silicon/Ferro Chrome
		1x24 MVA	45,000	
Total Production (Ex. + Prop.)		5x9 MVA 1x24 MVA	1,30,320	
2	Briquetting Unit		1,50,000	Briquettes
3	Sinter Plant		18,000	Sinter

M/s Sri Jayalakshmi Ferro Alloys Pvt. Ltd. has obtained Environmental Clearance vide File No. J-11011/331/2008-IA.II(I) dated 29/04/2009 along with CTE (order no. 166/PCB/CFE/RO- VZM/HO/2009/771 dated 26/10/2009 and latest CTO (Order No. APPCB/VSP/VZN/18930/ CFO/HO/ 2017 dated

12/05/2017) for 31,320 TPA Ferro Alloys production by 2x9 MVA submerged arc furnace.

iv. Requirement of land, raw material, water, power, fuel with source of supply (Quantitative)

Requirement of Land

The proposed expansion shall require an additional land of 3.64 hectares apart from the existing land of 13.9 hectares. The total land of 17.54 hectares is already acquired by the project proponent. No additional land is required for the project.

Raw Material Requirement

Quantity of raw materials required and their source is indicated in the Table below:

Raw Material Requirement after the Proposed Expansion

Raw Materials	Production of 1,30,320 TPA of either of the product			
	Ferro Manganese	Ferro Chrome	Ferro Silicon	Silico Manganese
<i>Mn ore</i>	3,39,000	-	-	2,31,000
<i>Coke</i>	1,04,250	1,18,000	26,000	65,160
<i>Dolomite</i>	26,000	-	-	-
<i>Chrome ore Briquettes</i>	-	1,50,000	-	-
<i>Chrome Ore Lumps</i>	-	33,000	-	-
<i>Friable</i>	-	57,000	-	-
<i>Magnesite</i>	-	52,000	-	-
<i>Quartz</i>	-	1,05,000	2,34,600	-
<i>Charcoal</i>	-	-	1,70,000	-
<i>Mill scale</i>	-	-	6,500	-
<i>Coal</i>	-	-	-	78,000
<i>High MNO slag</i>	-	-	-	63,000
<i>Sinter</i>	-	-	-	18,000
Total	4,69,250	5,15,000	4,37,100	4,55,160

Water requirement

The manufacturing process of Ferro Alloys does not require water at any stage. The water requirement in the Project will be for cooling purpose, domestic consumption and green belt development. The existing unit requires 45 KLD of water and proposed unit requires 120 KLD of water. Total initial water requirement for the project will be 165 KLD. The proponents have obtained the permission for withdrawing 168 KLD of ground water from ground water department, Vizianagaram. The details of water requirement for different purposes are presented in table below.

Water Requirement

Item	Existing	Proposed	Total
<i>Cooling Purpose</i>	35	105	140
<i>Domestic purpose</i>	10	15	25
Total	45	120	165

There is no generation of process wastewater in the proposed project. Cooling water is continuously re-circulated in the cooling water circuits, heat exchangers and discharged to the sump or holding tank cooling towers where evaporation losses drift losses and spillages are encountered. Domestic waste water

will be sent to the septic tank followed by soak pit. Zero Discharge norms will be followed.

Power Requirement

The existing power requirement is 15 MVA and additional 42MVA will be required for proposed expansion. The power will be sourced from the Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL). In order to meet the emergency power requirement, the industry proposes to install 1x250 KVA DG set apart from the already available 1x125 KVA DG set.

Manufacturing Process

The products are smelted by a continuous process with the electrodes submerged deep into the charge. The smelting processes include the following stages.

1. Removal of volatiles and moisture from the charge and heating of the charge by the heat of burning.
2. Gases which leave the furnace and after-burn at the top.
3. Reduction of iron and ores with simultaneous formation of metal carbides.
4. Melting of the elements reduced with the formation of molten metal.
5. Formation and melting of slag.
6. Reduction of Manganese / Chrome and Silicon from the slag.

Hygroscopic moisture of the charge materials is removed in 10-15 minutes upon charging, while the volatile matters are run-off in the temperature range of between 200-1000°C. The iron contained in the manganese ore is reduced to a high extent in the process. Ferric oxides are reduced with carbon monoxide and hydrogen at low temperatures. Ferrous oxide is first reduced with carbon monoxide and hydrogen at 500-600°C temperature and after that with solid carbon in the deeper zones of the bath.

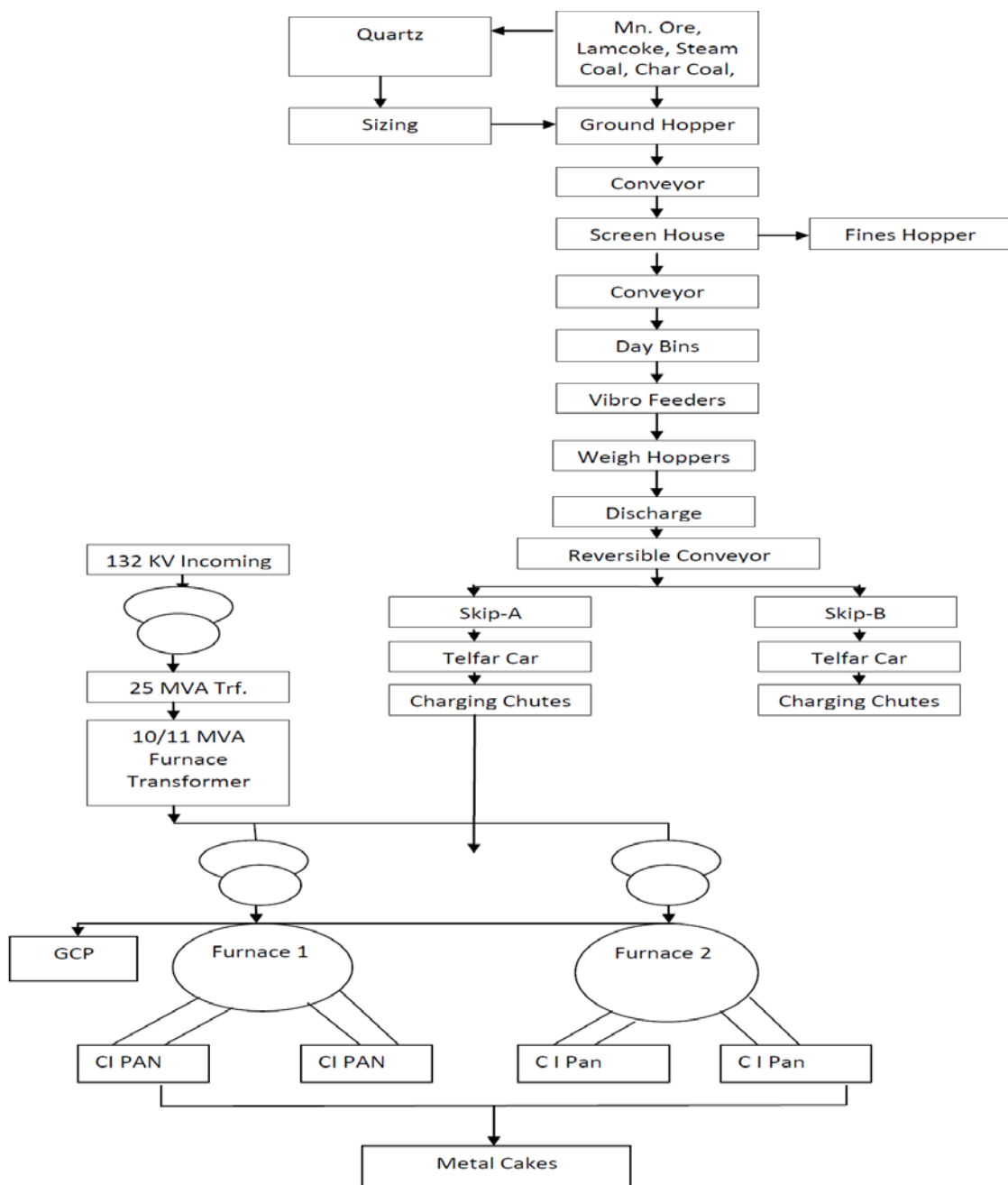
The reduction of manganese from pyrolusite occurs stepwise: $MnO_2 \rightarrow Mn_3O_4 \rightarrow MnO \rightarrow Mn_3C$ with a reducing atmosphere in the furnace, the dissociation of manganese oxides can take place at low temperatures. Carbon monoxide and hydrogen can also reduce Mn_3O_4 to MnO at low temperatures. The process of smelting silico manganese essentially consists in Manganese and Silicon being simultaneously reduced from manganese silicates, slag, ore and quartz. The process relies on a higher temperature; the temperature at tapping is 1500°C. Apart from the high temperature, for successful reduction of silicon the process requires high concentration of silica in the slag. The metal and slag are tapped from the furnace every two hours. The metal and slag are tapped through two tap holes into a ladle or onto casting pans. The slag over flows and collected into another ladle or in casting pans.

Mixed charge is delivered to the furnace from furnace bays along four movable chutes. Three chutes serve to deliver the charge to spaces between the electrodes and the fourth, into the space between the central electrode and furnace wall. Charging is done periodically to allow the previous charge settled at the top, to move down. With normal run of the furnace, yellow flames shoot up evenly all over the surface of the furnace top. The following measures are essential to maintain the top in normal conditions:

The charge should always have the specified composition.

- The charge should be given evenly to each phase electrode.
- Consumption of electric energy should strictly correspond to the number of unit charges without letting the top overheat.
- Charge cones should be pierced periodically.

Disturbances in the furnace run may be caused by various factors. Most often they are linked with an inappropriate consumption of the slag and with a deficiency or excess of the reducer in the charge. Each type of disturbance has quite typical external features: deep or shallow position of the electrodes, an increase or decrease in the content of carbon or silicon, overheating or chilling of the top, evolution of white smoke at the electrodes, ejects of coke breeze, intense slagging at the electrodes etc. The electrodes are slipped every shift or sometimes twice a day. The metal and slag are tapped simultaneously three times a shift. The ladle for tapping is mounted on a carriage under the tap hole, the slag flows over the ladle nose into a slag pot installed on a parallel railway. During tapping, the top hole is often poked with an iron bar so as to let out the metal and slag completely from the furnace. The tap hole is packed with thick clay as soon as metal appears at the ladle nose (i.e. when the ladle is filled with metal).



Flow chart of Ferro Alloys production

M/s Sri Jayalakshmi Ferro Alloys Pvt. Ltd. at Pedabantupalli village, Gurla mandal, Vizianagaram district, Andhra Pradesh
Expansion Proposal- Capacity Expansion of Sri Jayalakshmi Ferro Alloys (P) Limited from 31,320 to 1,30,320 TPA Ferro alloys production by installation of additional 3x9 MVA+ 1X24 MVA Submerged Arc Furnace (SAF) with 1,50,000 TPA Briquetting plant and 18,000 TPA Sinter plant.

Solid Wastes generation from the existing and proposed project activities and their utilization are as mentioned in Table below:

Nature of Solid Waste	Quantity (TPA)	Management
Ferro Manganese Slag	12530	Fe-Mn slag will be reused in Si-Mn production
Silico Manganese Slag	9400	Si-Mn slag will be utilized in road/land development.
Bag Filter Dust	4000	Bag filter dust from SAF will be used in Sinter plant or Briquette plant

Air Pollution Mitigation Measures:

One Pulsejet Bag Filter will be provided to each of the Submerged Arc Furnaces. Pucca roads within premises, water sprinkling in dusty areas and greenbelt/plantation to arrest fugitive dust.

Water Pollution mitigation measures

No use of water in the manufacturing process. However, water will be used for environmental purposes such as water sprinkling, plantation etc. No industrial wastewater generation is envisaged. Generation of wastewater is only from the domestic uses of workers. Softening Plant backwash water & Cooling Tower blow down will be used for slag cooling and dust suppression. The storm water drains will be segregated and channelized to water harvesting area. Also, about 7.5 KLD of domestic wastewater will be generated and it will be routed through septic tank and soak pit. Rain water drainage out falls will discharge the water to the rainwater harvesting pond.

In case of hazardous operation, safety systems incorporate:

Workers will be informed, kept aware and trained about occupational health hazards, due to such activities. Workers health related problem if any, will be properly addressed.

Capital cost of the project, estimated time of completion:

The estimate of capital cost is based on Cost & Prices and Taxes & Duties. The total capital requirement for the proposed project has been estimated at **Rs 18,213.97 lakhs**. The cost estimates for major plant & equipment are based on indicative prices received from reputed suppliers. The cost of Civil & Structural steel works are based on estimated quantities and the prevailing composite rate of civil & structural work.

Descriptions of Environmental sensitivity in 10 km radius form the site. Selection of the project – Nature of land – Agricultural (single/double crop), barren, Govt/private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest, eco-sensitive zones, accessibility.

S.No.	Features	Details
1	Village, District and State	Sy.No. 12 to 16, 18, 20, 33, 34 & 49, Peddabantupalli village, Gurla mandal, Vizianagaram district, Andhra Pradesh
2	Survey of India Topo sheet covering the plant and surroundings	E44L7, E44L8, E44L11 & E44L12
3	Latitude	Latitude: 18 ^o 19'08.65"N
4	Longitude	Longitude: 83 ^o 29'47.03"E
5	Land use of the project site	Within existing industrial premises
6	Total Area	17.54 ha.

M/s Sri Jayalakshmi Ferro Alloys Pvt. Ltd. at Pedabantupalli village, Gurla mandal, Vizianagaram district, Andhra Pradesh
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S.No.	Features	Details	
7	Nearest Highway/State High Way	NH-43, 17.3 km in West	
8	Nearest Railway Station	Garividi Railway station, 7.4 km in SE.	
9	Nearest Airport	Visakhapatnam Airport, 73 km in SW.	
10	Nearest water bodies	Gadigedda reservoir, 3.4 km in south Nellimarla, 27 km in South	
11	State, National boundaries	Nil within 10 km radius	
12	Densely populated or built-up area	Garividi – 7.1 Km, SE	
13	National Park/Wild life Sanctuary	Nil within 10 km radius	
14	Existing Units and capacities as per the existing Environmental Clearance	Ferro alloys production – 31,320 TPA	
15	Proposed capacity after Expansion	Ferro Alloys production – 1,30,320 TPA Briquetting Plant – 1,50,000 TPA Sinter plant – 18,000 TPA	
16	Cost of the Project	Rs.18,213.97 lakhs	
17	Manpower Requirement	1000	
18	Requirement of Water (in KLD) and Source	165 KLD	Source: The proponents have obtained the permission for withdrawing 168 KLD of ground water from ground water department, Vizianagaram.
19	Requirement of Power and Source	57 MVA	Source: The power will be sourced from the Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL).

Baseline environmental data– air quality, surface and ground water quality, soil Characteristic, flora and fauna, socio-economic condition of the nearby population

Baseline Environmental Study

To predict the impact of the proposed activities on the surrounding environment, the current baseline environmental status was studied by collecting the data and carrying out monitoring for the period of 1st March to 31st May 2018. The baseline data for ambient air quality, surface and ground water quality, noise and soil quality was collected and analyzed for various parameters are as per norms.

Parameters	No. of Sites	Description	Permissible Level
Air Quality	8	<ul style="list-style-type: none"> PM2.5 35.2 µg/m³ and 62.3 µg/m³ PM10 48.2 µg/m³ to 91.4 µg/m³ SO2 9.4 µg/m³ to 22.3 µg/m³ NO2 17.3 µg/m³ to 43.8 µg/m³ CO 0.55 µg/m³ to 0.96 µg/m³ 	100 µg/ m ³ 60 µg/ m ³ 80 µg/ m ³ 80 µg/ m ³ 2 mg/m ³
Ground Water Quality	8	<ul style="list-style-type: none"> pH (at 25^oC) 7.34 to 7.93 Total Hardness 184.5 to 320.5 mg/L TDS 380 to 575 mg/L 	6.5-8.5 200-600 mg/l 500-2000 mg/l
Surface Water Quality	2	<ul style="list-style-type: none"> pH (at 25^oC) 7.41 to 8.41 Total Hardness 224.5 to 368.4 (mg/L) TDS 470 to 650 mg/L 	----

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Soil Quality	8	<ul style="list-style-type: none"> • pH 6.97 to 8.20 • EC 0.297 to 0.452 mS/cm • Potassium K 295 to 331 (Kg/hect) • Available nitrogen N 243 to 272 (Kg/hect) • Organic matter 0.47 to 0.58% 	----
Noise Level	8	<ul style="list-style-type: none"> • Day Time (6:00 a.m. to 10:00 p.m.) 43.1 Leq dB(A) to 68.1 Leq dB(A) • Night Time (10:00 p.m. to 6:00 a.m.) 31.3 Leq dB and 59.1 Leq dB 	75 Leq dB (A) 70 Leq dB (A)

Hazardous waste:

There is no hazardous waste from the plant except for used oil generated during course of production is sold to the registered recyclers in the market.

Likely impact of the project on air, water, land, flora-fauna and nearby population:

An Environmental Management Plan has been formulated to mitigate adverse impacts on environment and is based on the present environmental conditions (baseline) and the impact on environmental due to the proposed expansion.

The Environmental Management Plan describes the plan for proper and adequate implementation of treatment and control facilities to control air and water pollution and for maintaining the environment. It also includes the development of green belts in and around the plant, proper safety of the workers, noise control, fire protection systems and measures.

To ensure the effective implementation of the proposed mitigation measures, the monitoring plan has been developed.

Emergency preparedness plan in case of natural or in plant emergencies:

On-site and Off-site Emergency Preparedness Plan has been developed to control emergency situations. The emergency control room and Assembly area shall be set up at a safe location and marked on the site plan and will be manned round the clock. The control room will be activated in case of an emergency to direct and co-ordinate the operations to handle the emergency. It will be furnished with external and internal telephone connections etc; list of essential telephone numbers; list of key personnel and their address; fire fighting system and site plan. Depending upon site requirements, additional control room will be considered.

Issues raised during public hearing (if applicable) and response given:

Public hearing issues will be incorporated after the public hearing conducted by SPCB.

ESC Budget:

Rs. 455.3 Lakhs (2.5 % of the total cost) has been earmarked for the Enterprise Social Commitment (ESC) to meet expenditures for the commitments made to the stakeholders during the Public Hearing. As per the social environment and the related aspects the ESC will be aimed at infrastructure building for Education, Communication, Medical (health & family welfare), Drinking water and Training for self employment.

Occupational Health Measures:

Occupational diseases and health impairments occur every day throughout the world, due to lack or inadequacy of prevention and control measures at the workplace.

The project proponent strongly believes in the safety and health of the workers. The company will conduct regular medical checkup of the worker and on the safer side there will always be a rotation of the job for the worker who are exposed to dust and high noise. Safety being the first policy of the company.

M/s Sri Jayalakshmi Ferro Alloys Pvt Ltd. shall establish procedures and systems for reporting and recording of Occupational accidents and diseases and dangerous occurrences and incidents. All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses shall be investigated with the assistance of a person knowledgeable/competent in occupational safety.

A budget of Rs. 80 Lakhs per year has been earmarked for OH & S.