SUMMARY

This Summary presents a concise outline of the Pre-feasibility report for the proposed 11.0 MTPA Augmentation Project of the Tata Steel Plant, Jamshedpur.

Highlights of 11 MTPA Expansions

Objective: Capacity expansion from 9.7 MTPA to 11.0 MTPA Crude Steel production.

Product Configuration: Hot Metal – 12.5 MTPA
(Intermediate and final) Crude Steel - 11.0 MTPA

Saleable Steel:
Flat Products : 7.0 MTPA
Long Products: 1.743 MTPA
Semis: Slab : 0.376 MTPA
Billets: 1.687 MTPA

Site: Within the existing Steel plant boundary of area 717 Ha.

Introduction

1. The National Steel Policy 2012 has projected the crude steel production capacity to be 300 MT by 2025-26, to meet the domestic demand fully. Tata Steel Jamshedpur Plant, being one of the leading steel manufacturers of India, has decided to go with the expansion plan in order to meet country’s ever growing demand for steel.

2. The proposed augmentation of Tata Steel Works from 9.7 MTPA to 11.0 MTPA crude steel production would be undertaken by augmenting the production capacities of few plant units; namely, Sinter Plant, Pellet Plant, LD shops & the Mills, revamping of BF ‘D’ & ‘E’ and installation of a new LCP module and Continuation of Battery #3.
Project Description

3. The plant area of Tata Steel is located in Jamshedpur, east Singhbhum district of Jharkhand, ranging between 22°40'47" and 22°53'21" North latitude and 86°05'21" to 86°18'50" East longitude. The city is located in the basin areas of two principal surface streams, namely, the Subarnarekha River and its tributary, Kharkai River. Jamshedpur City is well connected with NH#33 passing through north-eastern direction of Tata Steel Plant.

4. The coke requirement for enhanced hot metal production would require increased coke supply, which would be fetched from HMC Division, Haldia as well as purchased coke. All the other batteries, COB#5-11 would be operating at their rated capacity.

5. Charge sinter requirement would be about 9.0 MTPA for 12.5 MTPA hot metal productions, where sinter is taken to be 46% of total blast furnace burden. The requirement of product sinter would be around 10.56 MTPA, for 15% undersize is considered. The present production level of existing sinter plants is 7.7 MTPA of charge sinter.

6. The augmented requirement of sinter would be met by debottlenecking the present capacity of sinter plant by necessary technological upgradation such as Extension of grate width, Increase in bed height, Improvement in sinter feeding, Modification of burners, Increase in fan capacity of sinter cooler etc.

7. The requirement of Charge pellet would be about 8.0 MTPA for 41% of Blast furnace burden. Considering 3% undersize through screening in the stock house, requirement of product pellet would be around 8.25 MTPA. The present production level of existing pellet plant is 6.0 MTPA of charge pellet.
8. The augmented requirement would be met by debottlenecking the present capacity of pellet plant by necessary modification like Enhancement of raw material conveyance capacity, Installation of additional mixer, Improvement of product conveyor capacity, reliability and availability, Increase in green ball bed level in induration furnace to achieve higher production, Modification/ upgradation of pellet screening system, etc.

9. The enhanced production of hot metal of 12.5 MTPA would be derived from ‘C’, ‘F’, ‘G’ ‘H’ and ‘I’ blast furnaces and revamping ‘D’ and ‘E’ blast furnaces. The present production capacity of hot metal is around 10.55 MTPA.

10. The enhanced level of hot metal requirement would be met by the stretching the present capacities of ‘H’ & ‘I” blast furnaces by improving operating parameters & burden ratio and operationalize ‘D’ & ‘E’ blast furnaces after necessary revamping for enhanced production. All other facilities like hot metal handling, slag handling and other auxiliaries like power, water and utilities would be checked and upgraded, as required, for enhanced hot metal production.

11. The crude steel production would increase to 11.0 MTPA from 9.7 MTPA following the higher production of hot metal. At 11.0 MTPA stage the crude steel production would be approximately 3.5 MTPA in LD #1, 4.5 MTPA in LD #2 and 3.0 MTPA in LD#3.

12. The production capacities of the rolling mills would be stretched with considerations like increase of net rolling hours and adjustment of product-mix to obtain higher average strip width & thickness in hot strip mill & higher average diameter of the finished product in long mills.
13. The annual requirement of SMS grade lime at 11.0 MTPA production stage of crude steel is 9.13 MTPA for BOF at the Steel Melt Shop. For the increased crude steel production, the shortfall of lime is 578 TPD taking the rated production of the existing 9 Nos. of lime kilns into account. An additional vertical shaft kiln of 600 TPD is proposed to be installed to meet the additional requirement at 11.0 MTPA crude steel production stage.

14. For the increased production of hot metal, the total raw material requirement would be around 35.98 MTPA at 12.5 MTPA hot metal production stage, compared to 28.7 MTPA raw material required at 10.55 MTPA. It is envisaged that the existing raw materials supply sources of Tata Steel would largely continue to act as raw materials linkages for meeting the estimated requirements for the 11.0 MTPA expansion stage.

15. All major transfer points of new material handling systems would be provided with dry fog, dust suppression and/or industrial vacuum cleaning system facility. In case of extension of existing material handling system, the existing norm or method of dust suppression would be incorporated/ followed. The lime handling facilities only shall have dust extraction system. No water sprinkling facility would be provided in new iron ore fines stockpiles. However, coal piles shall be provided with water sprinkling arrangement.

16. The estimated additional plant annual energy consumption for enhancement of production capacity would be around 690 Million kWh. Additional electrical power requirement would be met from additional in-plant generation from extra by-product gases as well as external sources such as Ramchandrapur-Baripada 400 kV line of Power Grid.
Summary (cont’d)

- Corporation of India Limited (PGCIL) through Bulk Power Receiving Substation (BPRS), Tata Power Company Limited (TPCL), Jojobera Power Plant and DVC substation at Golmuri.

17. Total make-up water for the proposed expansion has been estimated as 700 cu m per hour. The additional make-up water required for the proposed expansion would be made available from the plant water system. No additional make-up water would be required to draw water from Subarnarekha River. Installation of a central Effluent Treatment Plant (CETP) and review of capacity of clarified make-up water system network would be done to meet the additional water requirement.

18. The by-product gases generated (i.e. Blast Furnace Gas, Coke Oven Gas and LD Converter Gas) would be utilised as fuel for various heating applications (BF stove heating, coke oven underfiring, sinter furnace, pellet plant, mill reheating furnaces, calcining plant etc) of the steel plant. Balance available gases would be utilised in power plant for steam and power generation.

19. Buffer Vessels for Oxygen, Nitrogen and Argon would be required to cater to the additional consumptions of periodic nature for these gases in the expansion. In order to meet the peak flow requirement, buffer vessels along with pressure reducing stations (PRS) are envisaged, installed on the downstream of the above buffer vessels so as to provide the required pressure and flow rates. The requirement of additional plant air and dry air would be met either by procuring additional compressors and dryers in existing compressed air station or by installation of new compressed air station based on availability of space.

20. To meet the additional air conditioning requirements in the expansion stage, possibility of expansion of existing chilled
Summary (cont’d)

water plant would be examined. Package type air conditioners would be provided where expansion of the chilled water plant is not possible.

Site Analysis

21. The physiography of Jamshedpur establishes that this is a part of Chhota Nagpur plateau. The plant area is located in a gently undulating plain with elevations in the range of 130 to 160 m above mean sea level (msl). The Dalma hill range in the north has got a peak elevation of 926 m above msl. The steel plant and the city are located in the catchment area between Kharkai and Subarnarekha Rivers.

22. The existing landuse shows that nearly 92 per cent of the plant area has built-up area; water bodies due to cooling ponds occupy nearly 4 per cent and balance 4 per cent remain distributed among greeneries and waste dump area. The adjoining area of 10 Km aerial coverage (i.e buffer zone) has diverse classification, namely, agricultural, degraded forest, industrial land, rural residential land and urban built-up area and the semi-urban area.

23. Singhbhum district is covered by crystalline and metamorphic rocks, which on weathering have given rise to red soils. The soils in the plant and its adjoining area can be broadly divided into three groups; (i) reddish yellow light grey catenary soils; (ii) yellow-reddish deep soils and (iii) mixed red-yellow black soils rich in iron content.

24. The regional climate of Jamshedpur region is humid tropical. The day time temperature during March-April exceeds 44°C with humidity 43%. The humidity level rises to a level of 76% in the months of July-August. The average temperature during
the winter season is around 21°C with humidity levels around 60%. The annual average rainfall is around 1380 mm.

25. Jamshedpur urban area is well developed in respect of road network, underground sewerage facility, water supply, electrification and telecommunication. The water supply and power supply facilities in Jamshedpur city proper are good. Even rural areas get the advantages of the well-planned infrastructure facilities as developed by Tata Steel, and other industrial establishments.

26. Some of the important industries are Tata Motors, Lafarge Cement producing cement, Adityapur Industrial area, Jojobera thermal power plant etc. Apart from these, there are a significant number of other industries within a 25 km radius of the plant area like Jamshedpur Dairy, Bharat Engg. & Body Building Co (P) Ltd, Usha Alloy & Steel Ltd and other sponge iron units.

27. Jamshedpur is a region endowed with a rich cultural heritage and is a home for multi-lingual tribes like the Santhals, Mundas, Ho, Kharias and Phorias. The Tribal Culture Centre (TCC) and Tribal Culture Society of Tata Steel looks after the interests of the tribal people for education, health and development of entrepreneurship.

28. The principal medical facilities include The Tata Main Hospital of Tata Steel, Jehangir Gandhi Memorial Hospital, Kantilal Hospital State Government run general hospital, T.B. hospital, Tata Eye Care Hospital, private Nursing homes, Diagnostic laboratories, Polyclinics among others. The area has as many as 183 schools and 13 colleges Higher education centres like Colleges, Technical Institutes, NIT, Medical College are also available in Jamshedpur town.
Environmental Pollution Mitigation Measures

29. The plant is already equipped with all necessary APC control measures required for the production of 9.7 MTPA crude steel. However, in view of augmentation of the plant facilities, there would be additional pollution load, for which adequate mitigation measures would be adopted.

30. Few units, like Sinter Plant, Pellet plant, Steel Melting shop, etc, whose capacities would be stretched to attain the enhanced production, the existing Air pollution Control (APC) system would also be augmented, retrofitted and upgraded as per requirement. In Lime calcining plant, new APC equipment would be installed for the new module.

31. The issue which are envisaged for this expansion program, (1) Maintaining the PM emission levels from all stacks within prescribed limit of 50 mg/N cu m (2) control of fugitive dust emission. To keep the dust emission levels within the stipulated limit, adequate measures would be taken to reduce point source emission. In order to control the fugitive dust emission, key fugitive dust emission sources have been identified and management measures would be implemented.

32. Total make-up water requirement for proposed expansion project would be 700 cu m/hr, which would be made available from internal circulation and reuse system of different catch pits located at outfall/nallah.

34. The effluent from Coke oven batteries would be treated separately in Biological Oxidation and Dephenolisation (BOD) unit, as done for other coke oven batteries. The existing water treatment systems may be augmented as per requirement.
Summary (cont’d)

35. There would be an additional generation of solid by-products like BF slag, BOF slag, mill scales, caster scrap, refractory debris, flue dusts etc, estimated to be around 0.7 - 0.9 MTPA, comprising mainly of BF & BOF slags, dusts, etc., A new slag granulation facility would be installed for BF ‘E’ for granulation of additional BF slag. The extra amount of flue dusts and scraps would be recycled to the either Sinter plant or BOF.

Rehabilitation & Resettlement

36. The issue of rehabilitation & Resettlement (R&R) would not be applicable to the purview of this proposed project as this expansion would take place within the boundary of the existing Tata Steel Works at Jamshedpur. However, being one of the pioneers of Indian Industry and a responsible corporate house, Tata Steel has endeavoured to improve the quality of life of the people of Jamshedpur and its adjoining areas over all these years.

37. The CSR activities of Tata Steel which is regarded as a global benchmark has taken up a mammoth social outreach program covering the city of Jamshedpur and more than 600 villages. The principal initiative areas are income generation, health & medical care, education, sports, etc. Some of the activity areas in which Tata Steel has largely involved the common masses in its growth story are civic services, income generation, community health development, training and education etc.