IIM Metallurgy Materials Engineering

NEWSLETTER
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(DELHI CHAPTER)

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INTRODUCTION

This News Letter is containing brief on 13th Executive Committee Meeting for the year 2010-11 held on 30.4.2011.

The News Letter contains the following Write-ups:

1. New Steel Making Technologies & Processes-An Aid to Value Addition & Cost Competitiveness by Shri S C Suri, Vice Chairman, IIM DC & Chairman Technical Publication Committee
2. Malaysia – Truly Asia by Shri L. Pugazhenthy, Past President, IIM
3. Noise Pollution – How much we ignore it by Shri P R Chandna, Member IIM-DC
4. Features of National Mineral Policy (NMP) 2008
5. The News Letter also contains National and International news relating to ferrous & non-ferrous sector

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Chapter News

Member of Building Committee Mr. R K Gupta briefed the EC members on the progress of the lecture hall. EC also examined the accounts for the year 2010-11 and also reviewed the draft of the Annual Report of IIM-DC for the year 2010-11. It was also agreed that the MOU between IM-DC and ITEE shall be discussed by the New EC after AGM. The next AGM is scheduled for 4th June 2011.

New Steel Making Technologies and Processes – An aid to Value Addition & Cost Competitiveness

S C Suri
Life Fellow IIM, Vice Chairman, IIM-DC &
Chairman, Technical & Publication Committee

1.0 Introduction

Iron is produced by melting iron ore and removing impurities. Steel is simply a purer form of iron with lower carbon content. This simple steel, however, requires a lot of equipment and technology to take the final shape. Talking of steel technology, it has grown at a fast pace in a short span of time, just like the advancements in other fields. Whether it be charcoal to coke, Blast Furnace to Electric Arc Furnace or Ingot to continuous cast steel, all has happened in a couple of decades.

Steel industry operations comprise of multiple, batch-type production activities, resulting in numerous interruptions of their process flows and equally numerous instances of stocking in-process inventories. Imposed by the limits of available technology. This batch-type approach has placed limits on levels of attainable operating efficiency and has involved heavy capital and environmental-cost burdens, it has contributed to yield and energy losses. It has created conditions susceptible to the development of production bottlenecks and it has restricted coordination between and among the major operating stages.

2.0 Limitations of Batch-type Steel making Operations

Given the limits and difficulties imposed by traditional, batch-type production, many of the major advances in steel technology have been directed at rationalizing process flows to permit an increasing degree of continuous operation. This technological emphasis is exemplified in continuous casting, continuous hot and cold rolling, and continuous annealing, all of which have replaced less-efficient, batch-type operations. The ideal steel plant ultimately would permit a continuous flow of production from start to finish. Mill of the 21st century would incorporate technologies, which will have the capacity to bring this ideal much closer to reality.

Advantages of Integrated Steel Operations

Integrated steel plants have certain inherent advantages, that are attributable to an integrated steel making process. Integrated steel plants using Blast Furnaces, work with virgin material and are in a position to avoid the problem of contamination of tramp elements in scrap, thus having an edge in the quality of product. They are also able to cater to a wider range of products because of larger scale of output and investment.

Over the years integrated steel plants have modernized and expanded to meet the market requirements and to benefit from the rapid advances in steel-making technology. The emphasis every time has been to build on the existing strengths and to maximize utilization of resources available within and outside.

3.0 Basic Objectives of Steel Plant Modernization

Modernization and expansion have the following objectives:

(i) The enhanced production should be achieved by realization of full potential of existing assets
(ii) Upgradation of key facilities
(iii) De-bottlenecking
(iv) Productivity improvement by technological upgradation and linked facilities for value addition

(v) Capacity enhancement

Post-expansion, the plants should be in a position to face the market challenges and customer requirements. Before we go to on to the new technologies and processes being adopted, it will be in fitness of things to have an overview of benefits envisaged from the new technologies. This will give a proper perspective to the new technology framework.

4.0 Benefits of New Technology

Incorporation of new technologies will result in several benefits. They are briefly listed below:

4.1 Cost Competitiveness

The new technologies aim at increase in production of Crude Steel through state-of-the-art technology meeting the productivity levels of international standards. With the implementation of the modernization projects, cost of production is expected to be lower on account of economies of scale. Reduction in fixed cost will thus be achieved through volume growth, reduction in manpower cost and financial changes. Reduction in variable cost will be achieved through technological interventions like 100% Basic Oxygen Furnace, 100% continuous casting, coke rate reduction through Coal Dust Injection, Oxygen enrichment and auxiliary fuel injection, process control computerization / automation and new units with state of the art and cost-efficient technology. Further, operational efficiency will increase in view of the up-gradation envisaged in the intermediary plants. Because of the lower cost of production as compared to most of its competitors a modernized plant not likely to face any difficulty in marketing its products. Reduction in cost of production will also result in increase of net sales realization.

Reduction in procurement cost should be envisaged by e-commerce, total cost of ownership and centralized procurement for select items.

4.2 Quality Improvement

100 per cent concast route will substantially reduce quality problems like fins, bulges, scabs, lamination, non-homogenous chemical composition, non-metallic inclusions and cracked edges. Continuous casting technology has been universally adopted due to its beneficial impact on yield, product quality, energy saving and reduction in operating cost. The share of continuous cast steel in the total crude steel has increased to more than 90% in developed countries.

The degassing of modern steel will enable the process to produce special quality steel with low levels of oxygen, hydrogen & nitrogen. Adoption of De-sulphurisation for lower sulphur, will ensure improved quality of finished products.

In addition to above, technology and input quality control will result in improvement across the value chain and improve the inter-plant product/process standardization, optimization and rationalization.

4.3 Energy Savings

The introduction of efficient & cost effective technologies would reduce the energy consumption per unit production. Phasing out of low yield and energy intensive units lower coke rate at the Blast Furnace; introduction of Coal Dust Injection in BF; conversion of pusher type reheating furnaces to walking beam type, conversion of high pressure of BF gas into power through top pressure recovery turbine; computerized heating control system in various application softwares, sinter exhauster revolutions per minute control by variable frequency drives, production of processed steam and power from recovery of energy from hot coke shall substantially reduce energy consumption from the existing level.

4.4 Value Addition

Presently Indian integrated steel plants market around 40% of its products as value added products and the remaining is of commercial quality. By the time, modernization and expansion are complete, the production of value-added products can be substantially enhanced. This will on one hand, give better realization, and on the other hand, give access to newer market segments.

4.5 ***Better Customer Service***

There is demand for several new products viz. Creep Resistant plates for use in the construction of shell plates of BFs, Boiler quality thicker gauge plates for use in high capacity boilers, High tensile plates with improved corrosion resistance for manufacture of railway coaches, Z quality DMR 249 A plates for defence sector, Micro-alloyed wheel & axle for railways, quenched & tempered plates for Gun carriage, API X 65 and X 70 ERW pipes & High strength formable quality steel & thin gauge high strength HR coils for chassis manufacturing & pre-fabricators, auto, cylinders application.

4.6 ***Exploring New Markets***

There is a growing requirement for wider (>3200 mm) and heavier plates to cater to the specific requirements of Oil and Gas pipelines, shipbuilding industry, Offshore Oil Platform & Oil Rigs and super thermal projects. Many new mills are coming in India with wider width ranging from 4500MM to cater to these growing demands. Capacities for wider plates should be built to meet the market requirement.

India is emerging as one of world's fastest growing significant economies with anticipated GDP growth rate of eight percent plus every year. It is expected that there will be significant growth in the sectors like capital goods, automobiles, pipes and tubes, consumer durables, containers, storage vessels, ship building, pressure vessels, construction projects. This augurs well for the flat steel products. These would be a critical input for the above sectors. After setting up hot metal desulphurization, secondary refining facilities and state-of-the-art CRM complex, it would be possible to produce higher value added branded products.

4.7 ***Increase in Exports***

Integrated steel plants are importing major quantity of coking coal, it has to consider suitable hedging mechanisms to minimize the risk of foreign exchange fluctuations. The proposed export of value added products would provide the natural hedging. Brown-field expansion by existing steel makers, the backward integration of re-rollers and the forward integration of smaller DRI or pig iron producers into steel making, coupled with the emergence of 2-3 green-field projects, will push up the steel output in the medium-term. A mismatch between domestic steel output and consumption demand may develop, which would force the Indian steel manufacturers to increasingly look for export opportunities. India is placed in a vantage position for exporting to the countries in the Asian continent, which is economically the fastest growing region in the world.

4.8 ***Environment Management***

For adoption of environmental-friendly technologies, all necessary measures need to be incorporated to ensure that the statutory norms with regards to emissions and effluents are adhered to. Specific schemes need to be included to minimize emissions in the work zone and from the stacks. All effluent discharged should be suitably treated before being discharged into the system. Schemes like cast house de-dusting in Blast Furnaces, secondary emission control in steel melting shops, cast house slag granulation in blast furnaces, fume extraction system for the ladle furnaces, dust extraction system for bulk material handling, storage system in steel melting shops should be aimed at better environment management.

5.0 **Conclusion**

Technology up-gradation, inter-alia, will result from facilities for introduction of pellets in BF, auxiliary fuel usage in blast furnaces and cast house slag granulation, 100% BOF route, 100% continuous casting with secondary metallurgy facilities, and modern finishing facilities, in line with market requirements. New technologies and processes have several advantages as these have the potential to meet the changing requirements of the Indian steel industry.

Noise Pollution — "How much we ignore it"

P R Chandna
Member, IIM Delhi Chapter

Noise pollution – it's strange to think how much it affects every one of us whether rich or poor; young or old; men or women; drivers or pedestrian or even the automobile manufacturers; there is hardly any escape from such ubiquitous noise pollution and behold how much we IGNORE IT.

Noise pollution is making NOIDA/Delhi/Mumbai and any other Metros audibly intolerable places to live in. I am very sure that our brethrens dwellers from various other urban and semi-urban cities worldwide would also have the similar experiences and predicament to narrate. Noise pollution in our country is emerging as a major threat not only to individual health but also to social harmony and well-being and is likely to have both economic and social consequences.

A decade ago, on 14th February 2000, the Union ministry for environment and forests (MoEF) enacted the Noise Pollution (Regulation and Control) Rules, but was hardly ever holistically implemented.

The Act recognizes that there is "increasing ambient noise levels in public places from various sources, inter alia, industrial activity, construction activity, generator sets, loudspeakers, public address systems, music systems, vehicular horns and other mechanical devices" and further states that these have **"deleterious effects on human health and the psychological well-being of the people".**

Consequently, the government also considered it "necessary to regulate and control noise producing and generating sources with the objective of maintaining the ambient air quality standards in respect of noise".

As per this Act: the ambient air quality standards in respect of noise for different areas/zones shall be as specified below:

Ambient Air Quality Standards in respect of Noise

Area Code	Category of Areas/ Zone	Limits in dB(A) Leq *	
		Day Time	Night Time
(A)	Industrial Area	75	70
(B)	Commercial Area	65	55
(C)	Residential Area	55	45
(D)	Silence Zone	50	40

Notes:

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is defined as an area comprising not less than 100 metres around hospitals, educational institutions and courts. The silence zones are zones which are declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

   * dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A - "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq : It is an energy mean of the noise level, over a specified period.

The Act empowers State Governments to take measures for abatement of noise including noise emanating from vehicular movements and ensure that the existing noise levels do not exceed the ambient air quality standards specified under these rules. The authority has been made responsible for the enforcement of noise pollution control measures and the due compliance of the ambient air quality standards in respect of noise. The law also empowers the local police station officer to take action whenever complaints are received!!!

Ever since the liberalization of 1991, the economic activities in India have grown at pace, which has also accelerated the growth of automobile, and maintains at double digit figures. The number of vehicle on the roads have increased exponentially and contributing to intolerable noise pollution. The levels the noise pollution which it has already reached doesn't need any substantiations; the two video clippings of traffic on a road having a hospital and two schools – which comes under "*Silence Zone*"; uploaded at the web site **'You tube'** at the following URLs, speaks volumes:

- http://www.youtube.com/watch?v=9edUCUM1DuQ
- http://www.youtube.com/watch?v=INI1i-1_7nI

It is imperative that the individual estrangement caused by the noise pollution can have negative and harmful social and economic consequences. It is high time that Government of India should take immediate steps to completely ban manufacture, supply and installation of **Pressure Horns** in all types of motor vehicle to mitigate the nuisance of Noise Pollution and the laws are implemented as strictly as air pollution norms and ban of plastic bags are being implemented.

Furthermore, as a long term solutions awareness programmes should be launched country wide, looping in the various NGOs, media and others to sensitize the public on the problems of vehicular and all other sources of noise pollution and take them out from syndrome of habitual honking and noise making.

Malaysia– Truly Asia!

As I was flying to Kuala Lumpur, recently, to make a presentation at the Metal Events International Conference, my thoughts rolled back to my grand father who died in Penang during the World War. He was not a soldier; he had gone to the then "Malaya", alongwith his friends to engage themselves in trading and finance. My parents had told me so much about him during my childhood about his simple, Gandhian qualities; With the money earned overseas, he set up a primary school in his native village to spread the universal message of education and also ensured that a small railway station was set up there for the benefit of the commuting villagers. I thought that it was his way of CSR, "Citizen's Social Responsibility". On the whole, the Malaysian trip began with a nostalgic and emotional note.

Touching down at Kuala Lumpur International Airport in the evening, I boarded a jet like KLIA non stop Airport Express, which takes you to the city, a distance of 50 Kms in 18 minutes. Once I reached the City Centre, I took the monorail to Hotel Shangri-La where I stayed. Besides the conference part, I of course took some time for visiting galvanizing plants, sight seeing and some shopping too.

The name of the country "Malaya" originally came from the Tamil word "malai" which literally means a hill or a mountain. It is said officially that life began there in 1857 when Raja Abdullah ruled the country. Malaysia, after the merger of several territories, came into being in 1963, after 151 years of British rule. It became independent in 1957, when the Union Jack was lowered; the well known Tunku Abdul Rahman became the first Prime Minister and the country made giant strides and rapid growth.The political party National Front has been ruling the country for several decades. The country was rocked by an Asian Financial Crisis- a currency linked crisis- in the late nineties. Malaysia bounced once again back from its slide after a few years. Malaysia is a harmonius, secular nation (60% preach Islam) with the population consisting of native Malays, Chinese, Tamils, Thais, British, Dutch etc., The city of Kuala Lumpur houses Guan Yiu Temple (Chinese), a Buddist Temple, Shri Maha Mariamman Temple (Indian), Cathedral etc., English is the second most widely spoken language, after Malay. There is so much Indianness everywhere in KL; there is a famous Old Gian Singh building, Pudu Jail (Pudu means new in Tamil), metro stations like Maharajah, Sambandan etc., "Little India" in Kuala Lumpur, inaugurated by our Prime Minister last year, resembles Ajmal Khan Road in Delhi, Bhandra in Mumbai or T.Nagar in Chennai with numerous saree shops, jewellers, groceries, handicrafts, Indian restaurants of all types, electronic shops etc., Fortunately Little India is not crowded and it is very clean. There is also a China Town in Kuala Lumpur.

KL houses the most popular "Petronas Twin Tower", constructed in 1998, 452 metres high with 88 floors. It has a connecting bridge between the two towers at a level of 41st and 42nd floors. The tower is made of concrete, with stainless steel and glass facades resembling motifs in Islamic architecture. The Petronas Tower houses the offices of several blue chip companies, some Fortune 500 companies

besides malls, auditoria, entertainment spots, gyms, health clubs etc., The KL Tower, the telecom tower, is 421 metre high, tapered in shape, constructed with concrete and adjacent to the KL Tower is the Bukit Nanas Forest Reserves, the oldest and the only remaining tropical rain forest in the heart of the city.

For sightseeing, you have so many interesting spots like the Petronas Twin Tower, Crafts Complex, Heritage Museum, KL Memorial Library, National Monument, Orchid and Hibiscus Gardens etc., The Shri Maha Mariamman Temple, is much bigger than the Malai Mandir in Delhi, with about 600 steep and narrow steps where you also see, on one side of the temple, the finest couplets of Thirukkural (written by Saint Thiruvalluvar) besides the pictures and writings from some of ancient Tamil epics on the walls. It made me think that the overseas Indians are more emotionally attached and still preserve our heritage, literature, legacy etc., There is also a reptile museum on another side of the temple. This temple is a very popular attraction for tourists from many countries.

My trips to the galvanizing plants were very satisfactory and impressive. The industrial estates, where these units were located, were absolutely clean with concrete roads, proper sign boards, street lights, greeneries etc., (I immediately began to think about the industrial estates in many cities of India (several of which I have visited) where we commonly see "kutcha" roads, pot holes, water pools, tea shops, pan shops etc., Coming to the galvanizing units, they are producing galvanized steel structurals, telecom tower members, heat exchangers, steel gratings etc., The general housekeeping and the occupational safety precautions (workers were religeously wearing boots, handgloves, helmets etc.,) also impressed me, besides the quality of the products. These were ISO- 9000 and ISO-14000 units. I was quite surprised to see some boards in the shop floor written in Bangla language and when I asked the Plant Manager, he said that the workers were all from Bangla Desh! There were lesser number of operating shop floor personnel, for their high productions, indicating a significant level of automation.

Exports- particularly of Tin, electronics, oil and gas, palm oil and rubber- remain a significant driver of the economy. As an oil and gas exporter, Malaysia has profited from higher world oil prices. Malaysia tin reserves are ranked as the world's third largest. Among the identified mineral resources, a greater portion of reserves of barite, bauxite, bentonite, clays, copper, gold, iron ore, limestone, silica, and tin and its associated minerals have already been developed and exploited. Malaysia, orginally a middle-income country, has transformed itself since the 1970s from producer of raw materials into an emerging multi-sector economy. Malaysia is attempting to achieve high-income status by 2020. With that positive attitude, the visit which began on an emotional note, ended with a confident note when I landed at the home soil.

– L.Pugazhenthy
Past President, IIM (2008-09)

National Mineral Policy (NMP) 2008

The National Mineral Policy 2008 brought out by the Union Government aims at achieving the twin goals of large scale prospecting with optimal mining and attracting investments with the latest technology. **The salient features of the NMP include**:-

Role of the State

- The Central Government in consultation with State Governments shall formulate the legal measures (including corresponding amendments in the MMDR Act, the MCR and the MCDR) necessary for implementing NMP, 2008.
- Geological Survey of India (GSI), Indian Bureau of Mines (IBM) and the state Directorates of Geology and Mining (DGM) would be upgraded to the level of state-of-the-art.
- Private sector would be the main source of investment in reconnaissance and exploration and government agencies will work only in areas where private investment is not forthcoming despite the desirability.

Improving Regulatory Environment to Attract Private Investment

- Allocation of concessions to be fully transparent and seamless; the security of tenure to be

guaranteed.

- The first in time principle in the case in the case of sole applicant and the selection criteria in the case of multiple applicants.

Value Addition

- Preferences may be given to a value addition industry, but not at the cost of security of tenure to holder of concessionaire.
- To get advantage of multiplier effect of mineral development, value addition would be encouraged.

Regulation of Mining

- An open sky policy of non-exclusivity for reconnaissance work would be adopted to expedite the completion of reconnaissance of the entire country.
- Large Area Prospecting Licence (LAPL), a new instrument, would be introduced to attract investment and high technology.
- Duration of all concessions would be rationalized and the area of operations enlarged. A mining tenement registry and a mining atlas will be prepared by IBM in coordination with GSI, for the development of a proper inventory resources and reserves. The resource inventory will be in accordance with the latest version of the UNFC system as well as traditional IBM convention of resources and probable and proven reserves.
- Mine closure should be scientific, which would not only restore ecology and regenerate bio-mass but also ensure socio-economic well-being of the region.

Strategy of Development

- Guiding principle in the strategy of development of any mineral shall ordinarily be extraction cost relative to market price.
- To maximize gains from minerals, mineral development will be prioritized in terms of import substitution, value addition and export, in that order.
- Zero waste mining to be the ultimate goal.
- To ensure uninterrupted supply of the mineral raw materials from domestic sources, the user industry will be encouraged to develop long-term linkages with mineral producing units including equity participation.
- Indigenous mining equipment industry shall be strengthened. Induction of foreign technology and participation for mining equipment manufacturing shall be encouraged. Use of equipment and machinery, which improves efficiency, productivity, economics of mining and safety and health of persons involved shall be encouraged. Import of such equipment and machinery shall be freely allowed.
- Presently only mining projects involving a substantial component of machinery, equipment and buildings are being financed by the financial institutions. Steps shall be taken to facilitate financing of mine development and also of exploration projects.
- A framework of sustainable development will be designed to take care of biodiversity issues and for ensuring restoration of the ecological balance. Mineral development as well as protection of environment should get equal preference for sustainable development. The guiding principle shall be that a miner shall endeavour to leave a mining area in a better shape than he found it.
- Interest of indigenous (tribal) population must be protected. Project affected persons (PAPs) will be protected through comprehensive Relief and Rehabilitation (R & R) packages in line with National Rehabilitation and Resettlement Policy (NRRP).

Research and Development

- Appropriate technologies shall be developed to enable indigenous industries to utilize the minerals in which the country is abundantly endowed and as substitutes for minerals whose reserves are poor.

Source: SIMI

World Steel's Short Range Outlook

The World Steel Association (worldsteel) has released its April 2011 short range outlook (SRO) for 2011 and 2012. Worldsteel forecasts that apparent steel use will increase by 5.9% to 1,359 mmt in 2011, following 13.2% growth in 2010. In 2012, it is forecast that world steel demand will grow further by 6.0% to reach a new record of 1,441 mmt.

This forecast suggests that by 2012, steel use in the developed world will still be at 14% below the 2007 level whereas in the emerging and developing economies, it will be 38% above. In 2012, the emerging and developing economies will account for 72% of world steel demand in contrast to 61% in 2007.

The worldsteel Economics Committee met in Beijing in March 2011 to discuss the SRO, just before the natural disaster in Japan. The forecast has not been revised yet due to the difficulty of assessing the impact of the earthquake and tsunami.

Commenting, Daniel Novegil, Chairman of the worldsteel Economics Committee said, 2010 saw a steady recovery of steel demand which began in the second half of 2009 driven by stimulus packages globally, the resilience of emerging economies and an overall market recovery. In 2011, we expect to see a further 5.9% growth in world steel demand.

Our forecast is based on a stable and steady recovery of the world economy. There are however uncertainties deriving from financial fragilities in Europe, unrest in some oil producing countries in the Middle East and the earthquake in Japan, which could have a negative impact on the recovery and thereby affect steel demand. At worldsteel board meeting the industry again expressed its condolences and support to its Japanese members.

China's apparent steel use in 2011 is expected to increase by 5.0% to 605 mmt following 5.1% growth in 2010. Given the pace of steel production in the first quarter of 2011, Chinese apparent steel use could be even higher. However, it is expected that the Chinese government's efforts to cool down the overheating economy, particularly the real estate sector, will impact Chinese steel demand somewhat later this year. In 2012, Chinese steel demand is expected to maintain 5.0% growth, which will bring China's apparent steel use to 635 mmt.

India is expected to show strong growth in steel use in the coming years due to its strong domestic economy, massive infrastructure needs and expansion of industrial production. In 2011, India's steel use is forecast to grow by 13.3% to reach 68.7 mmt. In 2012, the growth rate is forecast to accelerate further to 14.3%.

The rebound in apparent steel use in the US is forecast to continue with growth of 13.0% to 90.5 mmt in 2011, reflecting the second round of quantitative easing and new fiscal policy initiatives that gave a boost to economic activities and sentiments in industrial and energy markets. Construction markets remain at depressed levels. In 2012, steel use in the US is expected to grow by 6.9% to 96.7 mmt, bringing it back to 90% of the 2007 level. For NAFTA as a whole, apparent steel use will grow by 10.9% and 6.3% in 2011 and 2012 respectively.

In Central and South America, apparent steel use is forecast to grow by 6.6% in 2011 to 48.8 mmt. In 2012, the region's apparent steel use is forecast to grow by 8.3% to 52.8 mmt, almost 30% higher than the 2007 level.

Apparent steel use in the EU is forecast to grow by 4.9% to 151.8 mmt in 2011 on the back of an export-driven industrial rebound. The largest economy eurozone countries like Germany and France are forecast to enjoy solid recovery in steel use mainly in the automotive and machine building sectors. Other economies (i.e., Greece, Ireland, Portugal and Spain) are projected to show slow growth in steel use particularly as a result of weak construction activity. In 2012, the region will see an increase of 3.7% to 157.5 mmt in its apparent steel use, bringing it back to 80% of the 2007 peak.

Japan's steel use was expected to decline by -1.2% to 63 mmt in 2011 as stimulus measures expire. However, the forecast was prepared before the natural disaster and it is too early to fully grasp the implications of these recent tragic events. In 2012, apparent steel use in Japan was forecast to remain around 63 mmt, 78% of the 2007 level. The impact of the earthquake and tsunami points to a significant downward adjustment in steel use for 2011 and upward adjustment for 2012.

The recovery of steel use in the CIS has been surprisingly healthy due mainly to an unexpectedly strong rebound from steel-using sectors in Russia. As domestic demand and business investment continue to grow healthily in the region, apparent steel use is expected to grow by 7.5% to 52.1 mmt in 2011 and then by 8.9% to 56.7 mmt in 2012.

Steel demand in the Mexico and North American Countries (MENA) region is expected to remain stagnant in 2011, mainly due to downward revisions from North American countries. However, boosted by high oil prices, steel use in MENA is forecast to resume growth in 2012 at a rate of 7.9%. Given the political situation in the region, there are considerable uncertainties to the current forecasts.

	ASU, Mt			Growth Rates, %		
	2010	2011(f)	2012(f)	2010	2011(f)	2012(f)
European Union (27)	144.8	8151.5	157.5	21.2	4.9	3.7
Other Europe	29.6	32.8	35.2	23.8	11.0	7.3
CIS	48.5	52.1	56.7	34.3	7.5	8.9
NAFTA	110.3	122.3	130.0	33.0	10.9	6.3
Central & South America	45.8	48.8	52.8	36.4	6.6	8.3
Africa	25.9	25.1	27.4	-3.6	-3.1	9.1
Middle East	45.3	46.5	49.9	7.2	2.6	7.3
Asia & Oceania	833.6	879.9	931.1	8.4	5.5	5.8
World	**1283.6**	**1359.2**	**1440.6**	**13.2**	**5.9**	**6.0**
Developed Economies	373.1	392.0	406.8	24.7	5.1	3.8
Emerging & Developing Economies	910.5	967.2	1033.8	9.1	6.2	6.9
China	576.0	604.8	635.0	5.1	5.0	5.0
BRIC	698.9	738.8	784.7	8.0	5.7	6.2
MENA	60.6	60.5	65.3	2.4	-0.1	7.9
World Excl. China	707.6	754.5	805.6	20.7	6.6	6.8

Source: Steel Tech. April 2011

India to become second largest steel producing nation in 2012

Minister of State for Steel, Mr. Beni Prasad Verma said that with a targeted production capacity of 120 million tonnes by 2012, India is expected to become the second largest steel producing nation. Mr. Verma, while addressing the 'Indian Steel: Moving to the Next Orbit' at CII Steel Summit 2011 said "It is indeed a matter of pride that India is the largest producer of sponge iron in the world. During the last five years, the country has achieved a compounded average growth rate of over 9.2 per cent in consumption of steel."

"With this consumption base and the targeted growth in GDP coupled with the emphasis of the Government on infrastructure, housing and other steel consuming sectors the future of steel is positive. Expressing confidence that demand of steel would increase manifolds, Mr. Verma said that there is a need to ensure that production also keeps pace with the level of consumption.

He said "Substantial capacity is getting added in both Public as well as Private sectors. Most of the major steel projects, particularly those in the brown field sites are progressing as per schedule. New players are also emerging in the field of steel making with significant prospects." Mr. Verma added that "The mini steel sector has also been playing an important role in the economy in generating employment and meeting localized demand of steel. Substantial capacity has been also added in this sector and this segment is expected to grow further in years to come."

Source: Steel Guru

'Days of consumption without thought are over', says SAIL Chairman

"SAIL is using the foundation of sustainable development to become a global player." This was stated by Mr. C.S. Verma, Chairman, Steel Authority of India Ltd (SAIL), while addressing the inaugural session of a two-day international seminar on 'Achieving Sustainable Corporate Growth: Exploring New Frontiers in Technology & Management'. The seminar, organized jointly by Maharatna SAIL and National HRD Network at SAIL's Management Training was attended by around 500 delegates from various countries around the world representing academia and industry. Noted economist and former Indian Ambassador to the US Mr. Abid Hussain was the chief guest at the inaugural session of the seminar. Also present were former Secretary, Ministry of Corporate Affairs Mr. R. Bandyopadhyay and SAIL Director (Personnel) Mr. B.B. Singh.

Contending that "the days of consumption without thought are over," Mr. Verma said that "many

leading companies have adopted sustainable development as a major corporate strategy and a driver for innovation that yields both bottom- and top-line returns." Speaking at length on the various measures that corporates should take to make sustainable development and growth a reality, he informed the participants that the Indian steel industry is also putting in concerted efforts and adopting a multi-pronged strategy towards greater sustainable practices.

SAIL, said Mr. Verma, has been able to achieve substantial success on the environment protection front, which is a major criterion for sustainable development, through concerted interventions and efforts during the last six years. For instance, he said, air emissions were reduced to 1.12 kgs per tonne of crude steel produced by the SAIL plants in FY '11, a reduction of 55%. Specific effluent discharge of 2.5 m3 per tonne of finished steel, a reduction of 16%, has also been achieved. With continuing thrust on solid waste management at the integrated steel plants, an improvement of around 16% has been achieved. Around 0.18 million saplings have been planted in and around SAIL plants and mines during FY'11, resulting in cumulative plantation of 17.67 million saplings till date.

In his address, Mr. Abid Hussain said that the new corporate *mantra* should focus on "maximizing resources for more rather than for few". He underlined "distributive justice, development and inclusive growth" as the main issues of sustainable development. Also speaking on the occasion, former Secretary Mr. R. Bandyopadhyay urged participants to "keep the big picture in mind and think different".

The purpose of the seminar was to examine the challenges and gain insight into effective approaches of sustainable growth, add value to initiatives by experience sharing and arrive at common approaches and strategies as possible solutions for organizations and institutions.

Source: Steel guru

Steel prices unlikely to go up in domestic market'

Tata Sons have stated that domestic steel prices are not likely to go up but the pressure on margins is likely to continue due to higher input costs. "Even if the input costs are high, steel producers cannot raise prices as there is a surplus of steel in the international market, which will lead to imports," company's Director, Dr. JJ Irani, said on the sidelines of a function in Mumbai. However, he said, the pressure on the margins is likely to continue for some time.

Dr. Irani said the high input prices will not sustain and producers of coking coal and iron ore are likely to soften the prices in another six months, particularly of iron ore. Tata Steel is likely to increase its capacity by 6 million tonnes (MT) in India in next five years, he said. "Presently our installed capacity is 10 MT per annum (MTPA) at the Jamshedpur facility and with our Orissa project, which is likely begin this year will increase the capacity by another few million taking the total to about 16 MT in the next five years," he said.

Tata Steel has a Rs 2,300 crore greenfield project in Kalinganagar in Orissa. The company had signed a MoU with the Orissa government way back in November, 2004 for setting up a 6—MTPA integrated steel plant at the Kalinganagar Industrial Complex in Jajpur district of the state. The domestic steel major produced 6.85 MT in FY11 at its Jamshedpur facility. Considered as the world's second most geographically diversified steel producer with presence in 26 countries, Tata Steel Group is among the top 10 global steel companies, with an annual crude steel making capacity of over 28 MT.

Source: Business Line

Tata Steel's All-Round Improved Performance in FY 2010-11

Tata Steel completed the fiscal 2010-11 with an all-round increase in its hot metal, crude steel and saleable steel production and sales over last year. The crude steel production at 6.855 million tonnes exceeded the installed capacity of 6.8 million tonnes in the second year after commissioning of the expansion project.

Key production and sales data for the year are given below:

Production & Sales Performance

Items	**April-March**		
	FY'10	FY'11	% Change
Hot Metal	7231	7503	3.8
Crude Steel	6564	6855	4.4
Saleable Steel	6439	6691	3.9
Sales	6169	6414	4.0

Source: Steel Tech, April 2011

Tata Soars into the Top 50 Most Valuable Global Brands

Tata brand has been ranked as the first Indian brand to be in the top 50 club of global brands as per Brand Finance's Global 500 2011 report.

The group's brand value is pegged at US $15.8 billion as compared to US $11.21 billion in 2010. As per the Brand Finance's Global 500 report 2007 report, the brand value of Tata was US $7.38 billion, indicating there has been 100% appreciation for its brand value.

There has been a steady progress in the Tata brand value to reach the 50th position among the other global brands. In 2007, Tata brand was ranked 103 and now in 2011, it is ranked among the top 50. The key companies and brands that have been considered by Brand Finance to add the brand value to the group are Tata Motors group (JLR brand value, Tata Motors India and JV's and subsidiaries), the Tata Steel group (Tata Steel Limited and Tata Steel Europe) and Tata Consultancy Services.

Mr. R Gopalakrishnan, Director, Tata Sons said, "Tata managers have been focused on doing the right things for the business and the stake holders. The brand perception is the outcome of their efforts and is not a planned perception change, to that extent it's a source of satisfaction for the employees".

Source: Steel Tech, April 2011

Tata Steel Setting-up Continuous Annealing and Processing Line at Jamshedpur

Tata Steel is setting up a 600000 tonne per annum Continuous Annealing and processing Line (CAPL) at its Jamshedpur Works. This will be done in joint venture between Tata Steel and NSC which will be India's first Continuous and Processing Line for the production of automotive cold-rolled steels. Mr. H M Nerurkar, Managing Director, Tata Steel; Mr. S Higuchi, Managing Director, Flat Products, Nippon Steel Corporation (NSC); Mr. Raghunath Pandey, President, Tata Workers' Union and other dignitaries were present at the ground-breaking ceremony held on 25th April 2011. This facility will address the growing localisation needs of India automotive customers for high-grade cold-rolled steel sheet and contribute to further expansion of the Indian automotive industry. Mr. Nerurkar said, This project will not only set benchmarks in product quality but also in new product development and customer service.

Source: Steel Tech, April 2011

Tata Steel Wins the "The Business World Most Respected Company Award 2011"

Tata Steel has won 'The Businessworld Most Respected Company Award 2011' in the Metals category. The award is a result of the findings of a two-phased, sector-wise survey that was conducted across 20 industry verticals by the Businessworld magazine. The various parameters under which companies were evaluated included financial performance and returns, innovativeness, depth and quality of top management, ethics and transparency, global competitiveness, quality of products and services and people & talent management practices. Tata Steel's Resident Executive in New Delhi, Mr. Sanjay Nath Singh, received the award from the Union Finance Minister, Mr. Pranab Mukherjee. Businessworld has stated that Tata Steel ranked "way ahead of others on all seven parameters of the Most Respected Companies Survey 2011".

Source: Steel Tech, April 2011

Mr. H M Nerurkar Conferred the CEO with HR Orientation Award

Mr. H M Nerurkar, Managing Director, Tata Steel, has received the CEO with HR Orientation Award from STAR News. The title was conferred on Mr. Nerurkar in recognition of his "outstanding contribution to human resources development, leadership and capability building within the organization, according to STAR News. The STAR News Talent Leadership and HR Awards 2011 were aimed at recognizing organizations that lay emphasis on "impactful human capital strategies". The awards serve as an excellent platform to promote and recognize excellence within the HR profession by highlighting leading organizational HR practices and HR individuals.

Source: Steel Tech, April 2011

JSPL Proposes Mega Investment at Angul in Orissa

Optimistic of commissioning the proposed 6 Mtpa steel project in Orissa by 2013, Mr. Naveen Jindal, Executive Vice Chairman and Managing Director of JSPL said that "The Capacity of the proposed 6

Mtpa steel plant will be expanded to 20 Mtpa in the next 10 years. This will be the biggest steel plant in the world". He said the company had already invested Rs. 10,000 crore and placed order for another Rs. 5,000 crore for its Orissa steel project. While JSPL would invest Rs. 45,000 to Rs. 50,000 crore in steel sector, another Rs. 50,000 crore would be invested in its proposed Coal to Liquid plant. Mr. Jindal said "The company likely to invest Rs. 110,000 crore in next 10 years claiming that the environmental clearance to its project was not conditional.

Source: Steel Tech, April 2011

JSW Steel to Infuse Rs. 3800 Crore in Ispat Industries

JSW Steel Plant plans to infuse Rs. 3800 crore in Ispat Industries in the next 2 to 3 years. Mr. Jayant Acharya, Director (Commercial and Marketing) of JSW Steel said that the integration with Ispat is going on well, to take its capacity to 5 Mt from the current 3.3 Mtpa. Talking about the expansion plans, he said that the company had initially planned for 32 Mtpa by 2020, but with the acquisition of Ispat, it will be over 40 Mtpa by 2020. JSW Steel has acquired nearly 45% stake in debt ridden Ispat Industries for Rs. 2,157 crore in December 2010.

Source: Steel Tech, April 2011

Essar Steel Commissions Compact Strip production Mill

Essar Steel has commissioned its state-of-the-art Compact Strip Production Mill (CSP Mill) with a capacity of 3.5 Mtpa. This is a key part of Essar Steel plans for expanding its steel production capacity at its Hazira complex from 4.6 Mtpa to 10 Mtpa. The expansion is being done at a cost Rs. 13,500 crores. The total investment in Essar's Hazira steel complex is Rs. 30,000 crores. The plant is capable of producing strips of thickness as low as 0.8 mm, which is the thinnest rolled steel in India. The CSP mill was supplied by SMS Siemag Germany. The CSP mill is equipped with the most advanced level automation system. The products from the mill have diverse applications in General Engineering, Line Pipes for Hydrocarbon Industry, Welded Tubes, Electrical Steel, automotive industry and LPG. The mill is capable of producing High strength steels including Dual Phase steel. As part of this expansion, Essar Steel has already commissioned two iron making units – a blast furnace with a capacity of 1.73 Mtpa and a DRI unit of 1.74 Mtpa, a conarc furnace of 2.5 Mtpa and a continuous caster of 1.45 Mtpa. Further, the company also recently commissioned India's first 5-m wide plate mill with a capacity of 1.5 Mtpa and a pipe mill with an annual capacity of 0.6 Mtpa. In addition, Essar has also invested in supporting infrastructure at Hazira that include power plants of 1015 MW at cost of Rs. 3450 crores and a all-weather port of 30 Mtpa at a cost of Rs. 1350 crore.

Source: Steel Tech, April 2011

NMDC to Spend Rs. 3309 Crore in Capacity Expansion

The country's top iron ore producer National Mineral Development Corporation (NMDC) plans to invest Rs. 3,309 crore on expansion projects in 2011-12 and a bulk of the amount will be spent on building a 3 Mtpa steel plant in Chhattisgarh plant this fiscal. Work on the Chhattisgarh plant is on full stream and it is expected to be the fastest developed steel plant in the country. Mr. Rana Som, CMD of National Mineral Development Corporation said that NMDC has signed an agreement with a consortium comprising SVAI of Austria and Nagarjuna Construction Company for turnkey execution of a sinter plant complex at Rs. 750 crore. Another important contract has been finalized with Daneilli Corus and Tata Projects Ltd. at Rs. 1731 crore for erection of blast furnace marking an important event towards setting up of its 3 Mtpa steel plant. The sinter plant will be catering to 80% of the ferrous feed to the blast furnace. The schedule of the project is 33 months from the effective date of contract. Mr. Rana Som said that four other packages would be finalized during the course of the current year and two of them, BOF and raw material handling plant, shortly. He stated "Our target is to start commercial production in 2014".

Source: Steel Tech, April 2011

SAIL Announces MoU with Afripalm

The Steel Authority of India Ltd (SAIL) has made a formal announcement declaring its recent tie-up with Afripalm Resources in order to initiate a study on developing a steel plant in South Africa. The study would help SAIL monitor the feasibility status for the plant there. SAIL has entered a Memorandum of Understanding (MoU) with the organization, which took place about two months back. SAIL has already declared its plans of setting up as many as four new plants of 3 Mtpa

capacity overseas, including Oman, Mongolia, Indonesia as well as South Africa with an estimated investment of US$ 12 billion. These plants are likely to get finalized in the fiscal 2011-12.

Source: Steel Tech, April 2011

JSPL Wins 25 year Coal License in Mozambique

Mozambique has awarded India's Jindal Steel & Power a 25 year license to explore and mine for coal in the Northwest Tete Province, in return for a US$ 180 million investments. JSPL will invest US$ 180 million in the Tete Coal mine, as part of a project that will cover 2,154 hectares and directly employ 1,500 people. The deal was to be formally signed shortly and the Government will own a 10% stake.

Source: Steel Tech, April 2011

Top 10 Steel Producing Countries in 2010

Rank	Country	2010, Mt	2009, Mt	% 2010/2009
1	China	626.7	573.6	9.3
2	Japan	109.6	87.5	25.2
3	United States	80.6	58.2	38.5
4	Russia	67.0	60.0	11.7
5	India	66.8	62.8	6.4
6	South Korea	58.5	48.6	20.3
7	Germany	43.8	32.7	34.1
8	Ukraine	33.6	29.9	12.4
9	Brazil	32.8	26.5	23.8
10	Turkey	29.0	25.3	14.6

Source: Steel Tech, April 2011

Global DRI Production

	2009	2010	Change	Share
Total	53137	56555	6%	
India	20754	20650	-1%	36.5%
Iran	8099	9350	15%	16.5%
Mexico	4147	5455	32%	9.6%
Saudi Arabia	4623	4937	7%	8.7%
Venezuela	5508	3760	-32%	6.6%
Qatar	2097	2150	3%	3.8%
South Africa	1340	1845	38%	3.3%
Trinidad & Tobago	1182	1752	48%	3.1%
Argentina	807	1566	94%	2.8%
Libya	1077	1425	32%	2.5%
Canada	342	600	75%	1.1%
Peru	100	100	0%	0.2%

Source: Steel Tech, April 2011

Trend of India DRI Production

Year	Volume	Change	%
2001	5,720		
2002	5,731	11	02%
2003	7,051	1,320	23.0%
2004	9,121	2,070	29.4%
2005	12,052	2,931	32.1%
2006	15,032	2,980	24.7%
2007	18,056	3,024	20.1%
2008	20,150	2,094	11.6%
2009	20,754	604	3.0%
2010	20,650	-104	-0.5%

Source: Steel Tech, April 2011

World Stainless Steel Production Zooms

The global crude stainless steel output for 2010 reached an all-time high total of 30.45 Mt, 7.4% more than the previous record figure of 2006. Overall worldwide production for last year is expected to

equate to an increase of nearly 24% over 2009, which represented the low point of the recent global slump. The share of 300 type grades (nickel austenitic) was 57.5% in 2010. The surprisingly high volume results from a stronger than expected production in the non organized sector in India and the private producers in China. For 211, a moderate production growth of about 7% is expected.

Source: WSA Data

SAIL to Develop Chiria with State-of-the-art Environment-friendly Technology

Grant of forest clearance by the Ministry of Environment and Forest (MoEF) for Ajitaburu, Budhaburu and Sukri-Latur leases of Chiria iron ore mines in Jharkhand has given a boost to the continuing efforts of SAIL towards strengthening raw material security. Development of the Chiria mines, the only compact deposit, which can sustain large, mechanized mines of 30-50 Mtpa capacity, is vital for the existing and future expansion plans of SAIL. Over the next 50 years, around 40% of the iron ore requirement of SAIL would be met from the Chiria mines. After depletion of SAIL's existing mines in the eastern region, the Chiria mines will be the sole source of iron ore for SAIL's four integrated steel plants located at Bokaro, Burnpur, Durgapur and Roukela. The Company has already initiated actions for development of state-of-the-art mechanized mines in Chiria, initially with a capacity of 7 Mtpa. SAIL has appointed a consultant of global repute – M/s Hatch Associates of Australia, for preparation of a detailed project report (DPR). For efficient use of iron ore, the best beneficiation technologies available in the world today will be provided in the DPR. Mechanized mining is expected to become operational in Chiria by around three years' time. The estimated cost for development of the Chiria mines is about Rs. 5,000 crore. In order to ensure environmental protection, SAIL has decided to carry out only mining and crushing activities in the mines. The iron ore will then be taken out of the forest area through a conveyor system. Installation of the most modern type of conveyor system, with very low level of noise and without even the need for a service road for maintenance activities, has been planned. Such a system will ensure that impact of mining on flora and fauna in the area is zero. In addition, processing, beneficiation, tailing pond blending, stockpiling, railway sidings, infrastructure facilities, township, etc. will be kept outside the lease-hold area at a distance of over 15 KM in non-forested land. SAIL plans to install the best available beneficiation technology to ensure maximum recovery of iron value with zero discharge to any river or stream. SAIL will also make a substantial contribution over the next five years on a wildlife and biodiversity programme in the Saranda forest area, besides earmarking at least 2% of net profit for CSR activities every year.

Source: Steel Tech, April 2011

SAIL Takes management Control of Steel Complex Ltd in Kerala

SAIL has formally acquired 50% of the shares of Steel Complex Ltd. (SCL) in Kozhikode held by the Government of Kerala and taken over the operations of SCL. SAIL-SCL Limited, the Joint Venture Company resulting from the acquisition, will work towards the revival of SCL by setting up a new rolling mill of 65,000 tpa capacity for producing high grade (Fe 500 and above) TMT bars at an estimated investment of Rs. 45 crore. SAIL-SCL Ltd presently has the capacity to produce 55,000 tpa liquid steel through the electric arc furnace route and continuously cast billets. The JV aims to tackle issues such as shortage of working capital and non-availability of good quality scrap by ensuring uninterrupted supply of scrap to maintain the efficiency of operations and adding value to its products by converting billets into TMT bars. The possibility of marketing SCL products by harnessing SAIL's nationwide dealer network is being explored.

Source: Steel Tech, April 2011

SAIL lifts SCOPE Meritorious Award for Environmental Excellence and Sustainable Development for FY' 10

President of India Her Excellency Smt. Pratibha Devisingh Patil presented the SCOPE Meritorious Award for Environmental Excellence & Sustainable Development for the year 2009-10 to Steel Authority of India Ltd (SAIL).

According to Mr. C S Verma, Chairman, SAIL "Maharatna SAIL is using the foundation of sustainable development to become a global player". Over the last six years, concerted and committed efforts made by SAIL towards environment protection, which is one of the major criteria for achieving sustainable development, have yielded significant success. Air emissions have been reduced to 1.12 Kg per tonne of crude steel in FY' 11, a reduction of 55%; specific effluent discharge level of 2.5 M^3 per tonne of finished steel has been achieved, a reduction of 16%; and continued thrust on solid

waste management has held to an improvement of over 16%. SAIL has been a torchbearer in the field of Environment Management in the country. As a responsible corporate citizen, SAIL started initiatives in the late 1980s with the formation of a Corporate Environment Management Division and Environment departments at all its plants/units, with the latest monitoring equipment and specialized training of all departmental executives. About 120 environmental schemes involving a financial commitment of Rs. 418 crore were implemented between 1993 and '97. Besides, nearly Rs. 480 crore were invested exclusively on pollution control measures under the modernization programme of SAIL during the late Nineties. Rs. 250 crore were also spent on departmentally organized addition, modification and replacement (AMR) schemes.

Source: Steel Tech, April 2011

JAPAN IN MOMENT OF SORROW IN RECENT TSUNAMI

10 Things to Learn From Japan

1. ***THE CALM*** : *Not a single visual of chest-beating or wild grief. Sorrow itself has been elevated*
2. ***THE DIGNITY*** : *Disciplined queues for water and groceries. Not a rough word or a crude gesture.*
3. ***THE ABILITY*** : *The incredible architects, for instance. Buildings swayed but didn't fall.*
4. ***THE GRACE*** : *People bought only what they needed for the present, so everybody could get something.*
5. ***THE ORDER*** : *No looting in shops. No honking and no overtaking on the roads. Just understanding.*
6. ***THE SACRIFIES*** : *Fifty workers stayed back to pump sea water in the N-reactors. How will they ever be repaid?*
7. ***THE TENDERNESS*** : *Restaurants cut prices. An unguarded ATM is left alone. The strong cared just for the weak.*
8. ***THE TRAINING*** : *The old and the children, everyone knew exactly what to do. And they did just that.*
9. ***THE MEDIA*** : *They showed magnificent restraint in the bulletins. No silly reporters. Only calm reportage.*
10. ***THE CONSCIENCE*** : *When the power went off in a store, people put things back on the shelves and left quietly.*

Source: Steel Tech, April 2011

Zinc Production in India

Year	Hindustan Zinc	Binani Zinc
2001-02	172140	29000
2002-03	207006	28459
2003-04	188514	29218
2004-05	212444	26346
2005-06	278684	17747
2006-07	348299	39624
2007-08	426323	31903
2008-09	551724	30443
2009-10	578411	35552
2010-11	712471	32662

Source: ILZDA