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INTRODUCTION

This News Letter contains the write-ups on the following:

- 1 Challenges to Steels from Aluminium by Shri R N Parbat, Past President, IIM
- 2 Current Trends in Production of Coal, Iron Ore and Steel by Shri S C Suri, Chairman, IIM DC
- 3 Quiz Contest "Metallica 2013" among School Students of NCR
- 4 Coal India's reserves deplete
- 5 Assocham urges Govt to improve iron ore supply, boost steel exports
- 6 Recession, business concerns behind Arcelor, Posco exit
- 7 Various news items relating to Ferrous and Non-Ferrous Sector.

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CHALLENGES TO STEELS FROM ALUMINIUM

R N. Parbat
Past President
The Indian Institute of Metals



Steel Industry is a highly developed business with a wide range of Products covering a large market. Its Process-Technology is also highly developed. India, despite being an early starter in the steel industry, lost out to Japan and US and now to China in its product innovation, market spread and manufacturing cost mainly due to the short sighted industrial and business policy of our Government and the Business Community. **Under the Control - Regime, the industry lost its competitive attitude** through complacence. Also price control measures, indirectly encouraged the industry to become less sensitive to cost, quality and operational efficiencies. This is true not only for Steel but also for all other industries including Non-Ferrous Metals.

When one talks about challenges to Steels from Non-Ferrous Metal like Aluminium, one can get satisfaction that in Quantity Terms, Non-Ferrous Metals offer hardly any challenge to Steels as the international market for major Non-Ferrous metals compared to Steels is not really significant.

Metal Production (Mio. t) in 2013 Projection (Mio. t) in 2020

	World	India	World	India
Iron & Steel	1375	77.0	2000	150
Aluminium	35	1.5	50	5
Copper	20	0.85	30	3
Zinc	12	0.5	25	2
Lead	8	0.050	12	0.070

However, **Steels have some challenges in Quality Terms from Aluminium.** Basic challenges to Indian Steels are primarily from the International Steel sector itself. Till late 1980s, the industry did not seriously apply its mind on Quality, Cost and Product- innovation. Steel products were picked up from the Stockyards in tonnes from Long, Short or Flat varieties. Industry had very little contact with the real customers. Industry was happy to treat the Stockists as Customers. **This was the First mistake.** On product range, the industry was happy with 80% of the low value Run-of –the-mill products and almost completely ignored the High value Specialty products. **This was the Second mistake.** The industry was tonnage minded and focused on a target of 25/30/40 million tonnes of Steel production with relatively low priority on Quality and Cost. **This was the Third mistake.** The Steel industry was inward looking and ignored the overseas opportunities and competition from outside. **This was the Fourth mistake.** In 1990s, as a follow-up of the economic liberalisation and the lessons learnt from own mistakes, the industry had initiated a number of **Major Initiatives to meet those Challenges in a competitive international market.** The need of the hour is to complete the modernisation work, infuse cost effective greener and energy efficient technologies, restructure the industry in the international pattern, acquire critical mass through brown field & green field expansions as well as merger and acquisition both in India and abroad with a focus on both national and international markets. The process has already started.

Iron & Steel industry is perceived as a highly polluting and energy-guzzling industry with limited scope for technological innovations and modern management. At the University-campus-interviews, the jobs in Iron & Steel industry is least preferred by young professionals. Quality of presentations made by Steel industry to the students is inferior compared to the sophisticated and highly professional presentations made by Service industries including IT sector. All these need to be corrected.

In the Non-Ferrous Metal industry, the only potential competitor is Aluminium. If one analyses the Actions taken by Aluminium industry in the last 30 years or so in the fields of technology, innovation, product design and aggressive marketing to remain competitive, one can perhaps learn a few lessons.

1. They have developed **On - Line High Technology Metal Cleaning and Cl/N/Ar degassing process.** But for this, Aluminium Can - Stock and Ultra light gauge (6 micron thick) Foil could not have been rolled through high speed (8000 FPM) 6 High and 4 High Cold Rolling Mills. Can Stock is rolled to 0.27 mm thickness with perfect uniformity in thickness and flatness, both across the width and along the length. Such Stock can only be processed through Ultra High Speed Can Making Lines (1000 Cans per minute).
2. Similarly, Ultra-Light Gauge Foils (0.006 mm thick) could not have been rolled without tears and perforations **to ensure barrier quality of Aluminium Foils,** unless efficient filtering system for liquid metal was available.
3. The industry had also simultaneously developed the **technique of maintaining cleanliness and hygiene of Hot Rolling Lubricant cum Coolant (an oil - water emulsion) and Cold Rolling**

Lubricant cum Coolant (a mineral oil with load bearing additive) through extensive research.

4. The industry had **moved out of Permanent Mould casting for wrought products way back in 1950s and developed Continuous casting of Properzi rods for wire-drawing and Semi Continuous Casting technique for Rolling Ingots & Extrusion Billets.**
5. In 1970s, the industry had developed capability for **Continuous Casting of 1 meter wide and 12 mm thick Strips initially through Belt Caster and then through Twin Roll Caster. Now it had perfected casting of 2 meter wide and 4 mm thick strip through 4 High Roll Caster for direct cold rolling to sheets and foils in the thickness range of 0.30 mm to 0.006 mm. This has revolutionised the Cost structure and Quality standard of Aluminium rolled products.**
6. **Extrudability of Aluminium alloys had been fully exploited by the industry through Product - Design and System - Design** like doors, windows, partitions, curtain walls, structural glazing, etc. Die making technology is being continuously upgraded to extrude thin walled, hollow and complicated shapes for snap-fitting. This advantage had led to a major commercial success in Building Energy Efficient Light Bodies for Trucks, Trailers and Light Commercial Vehicle on the principle of **DRIVE - IN the Chassis and DRIVE - OUT the body in 4 hours.**
7. **Light weight, energy-efficient, low emission and 100% recyclability of Aluminium have been commercially exploited in extensive use of aluminium alloy extrusions, sheets and castings in the body structure, body cladding and inside the engine of Buses, Trucks, Light Commercial Vehicles, Trailers, Rail Coaches, Wagons and NOW IN CAR ENGINES AND CAR BODIES.**
8. Aluminium industry has **signed multi billion dollar Agreements with major Auto Manufactures** like General Motors, Ford, Nissan, Volkswagen, Audi and a few others to pursue Joint Development of all Aluminium Structured Vehicle (ASV) which is safe on road with substantial improvement in fuel-efficiency and consequent reduction in Green House Gas (GHG) emission. This initiative has already yielded results. **A large number of ASVs are already on the roads in North America, Europe and Japan.** Through extensive research and development activities over the last 30 years, Aluminium industry has already developed alloys, their Cost-effective rolling, extrusion, casting as well as jointing techniques like snap-fitting in case of extrusions and gluing & spot-welding in case of sheets & plates. In fact, **the existing Assembly Lines for Steel-car-bodies can be used for Aluminium-car bodies also.** Aluminium industry is bullish about using around 10 million tonnes of Aluminium extrusions, sheets and castings in Automobile Industry by 2020 / 2025.
9. After successful development of **single alloy Beverage Can body, the Aluminium industry concentrated on Most Economic Can design, it's surface treatment like lacquering and painting from environmental considerations. 100 % collection of Used Beverage Cans (UBC) and development of High Technology, yet Low Cost and Environment Friendly Scrap Recycling Process has been the KEY SUCCESS FACTOR in the Commercial Success of Aluminium Beverage Cans.** Capital investment in a Recycling Plant is 5 - 7 % of an Integrated Mining, Alumina Refining and Smelting Operation. Energy cost is also only 5 % of Smelter metal.
10. Aluminium industry **spends thousands of millions of dollars in continuous up-gradation of Can Body Design. Better Can, low cost Can-stock and highly productive High Speed Can Making Lines are the driving principles behind its success.** Aluminium Can is the best engineered aluminium product.
11. **Metal cleanliness, Continuous casting of wide yet thin strip and hygienic cold rolling of Foil Stock and subsequent cold rolling of Packed foils at a high speed with very few Pin-holes in it, have led to the success of Aluminium as a flexible packaging material. After all aluminium foil**

is used for protecting medicines from external environment. Aluminium Foil is LIFE SAVER'S LIVE SAVER.

- 12. Aluminium Extrusions are best designed Structural Materials. The extrusion process allows right material in right quantity at the right place.** It also allows co - extrusion of two alloys, two metals or even a metal and a non - metal. **Thermally broken aluminium extrusions are extensively used for Window - Structures in very Cold and very Hot climates. All aluminium Rail coach and aluminium Traffic bridge on St. Lawrence river in Canada bear testimony to Aluminium alloys' highly favourable weight to strength ratio.**
- 13. Use of aluminium in a Four - Wheeler has the potential to reduce the weight of the car by 50 % with commensurate improvement in fuel efficiency (10 % reduction in weight results in 6% fuel saving) and reduction in GHG emissions (1 tonne of aluminium produced for Auto - industry reduces GHG emission by 20 tonnes). Aluminium when alloyed with Lithium has the potential to reduce the weight by further 12 – 15 %. Al-Li alloys are success stories in Aerospace Industry.**
- 14. Aluminium industry undertook research for many years to develop Aluminium Metal Matrix Composites as abrasion resistant, impact resistant, high temperature applications in Brake Pads in Aircraft, Sports Car and many other Sports items.** This is also used as a substrate for High Temperature Mirrors in the Telescopes mounted on Space Vehicles.
- 15. Aluminium industry has been spending millions of dollars in Research and Publicity to position ALUMINIUM as a HIGHLY ECO-FRIENDLY & SAFE MATERIAL.**
- 16. Alloying, Micro-alloying, Light gauging, Weight reduction, self-colour anodizing are the ways of life for Aluminium Products.**

Pharma & Aseptic packaging, Honey comb & Foamed Al structure, Single alloy 2-Piece easy open can, Light gauge Closures, Seals, Litho sheet, Auto body sheet, Aircraft sheets, etc. are some of the success stories.

IN CONCLUSION

Steel industry has also initiated a large number of technological, cost control, quality improvement, product innovation and market growth ACTIONS.

Aluminium is fighting a Major Battle in ever rising Energy Cost. It is also traded as a commodity in LME. Price fluctuation is a way of life for Aluminium. Yet, the industry has committed a fixed price for Aluminium over a period to the Auto industry to capture Auto market. Can and Auto industries have the reputation of driving the suppliers to the wall on price negotiation. Aluminium industry is not afraid. They are convinced that Aluminium as a material is most suited for those two applications and users of Aluminium Beverage Cans and All Aluminium Cars will get VALUE for money. These two areas, Steels may have to vacate. But, the major applications of Steels in Buildings, Structures, Infrastructure and Machine building still remain unchallenged.

Steel should build it's Future Business Strategy, banking on it's strengths and continue to innovate New Steels and New Applications in most cost effective manner. Application Engineering and Product Innovation SHOULD BE THE BUSINESS MANTRA OF STEEL INDUSTRY.

Let Aluminium also not remain complacent. Reduction technology is it's major weakness. What is beyond 350 / 500 KA pots? Is inert Anode a reality? Current technology is not only power guzzling, it is also a major contributor to Global Warming through emission of CO₂.

Iron & Steel industry has succeeded in introducing alternate Iron making (Direct Reduction, Corex Process, etc.) and alternate Steel making (BOF, Electric Arc Furnace and Induction

Furnace).

Aluminium technologists should take this challenge very seriously and the Aluminium Entrepreneurs should encourage research in energy efficient and environment friendly alternate Aluminium smelting technology. Indian Entrepreneurs in particular should also concentrate not only on Smelting operation but also on Value adding Downstream activities to widen the application of Aluminium in most cost effective, efficient and environment friendly manner.

Carbon Finger Print is a major concern for both Steel and Aluminium Industries. They have to find a commercial process for capture and sequestration of CO₂.

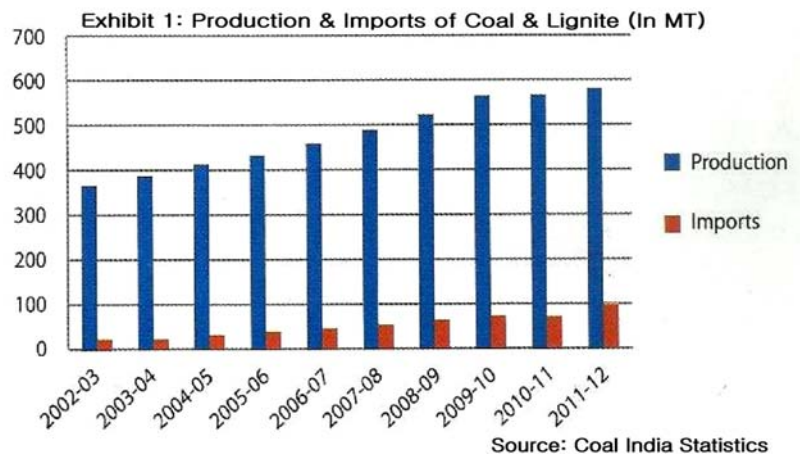
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Current Trends in Production of Coal, Iron Ore and Steel

S C Suri
Chairman, IIM DC
Honorary member, IIM

Coal

Today, almost 52% of India's primary energy needs are met by coal. India currently has 294 billion tonnes of coal and stands at the fifth position globally, with 7% of the world's proven coal reserves. Coal imports have recently been rising due to inadequate growth in domestic coal supplies. This is further supported by CAGR growth rates – CAGR of production over the ten year period (2002-2011) has been 5.27% while that of imports has been 17.45%.



During the Twelfth Plan Period, the demand for coal is projected to reach 980 MT, whereas domestic production is expected to touch 795 MT in the terminal year (2016-17).

According to estimates, domestic coal production will also need to grow at an average rate of 8% during the 12th Five Year Plan period. Even with this increase, there will be a need to import 185 million tonnes of coal in 2016-17.

Coking coal is a critical raw material for steel production and India despite having huge coal reserves is heavily dependent on its imports from other countries. Coking coal prices have risen significantly in past few years due to several factors such as ownership of coal assets by select players globally, increasing demand from countries like China and India and the depreciating rupee. The various domestic factors can be enlisted as follow:

1. Lack of focus on coking coal production:
 - ✓ Needs of steel companies not driving production aspiration of coal companies.
 - ✓ Stagnancy in allocation of coking coal blocks
 - ✓ Unviability of independent coking coal UG projects
2. Insufficient coking coal beneficiation capacity
3. Slow pace of implementation of Jharia Action Plan

Iron ore

Hematite's total resource is estimated to be around 17.88 billion tonnes has 8.09 billion tonnes under reserve category and 9.79 billion tonnes under the remaining resource category. The total resource of magnetite is estimated to be around 10.64 billion tonnes and has under reserve category a mere 0.02 billion tonnes while 10.62 billion tonnes are placed under remaining reserve category.

About 96% of the hematite reserves remain confined to the states Odisha, Jharkhand, Chhattisgarh, Karnataka and Goa. The remaining resources are spread in the states of Maharashtra, Madhya Pradesh, Uttar Pradesh, Rajasthan, Assam etc.

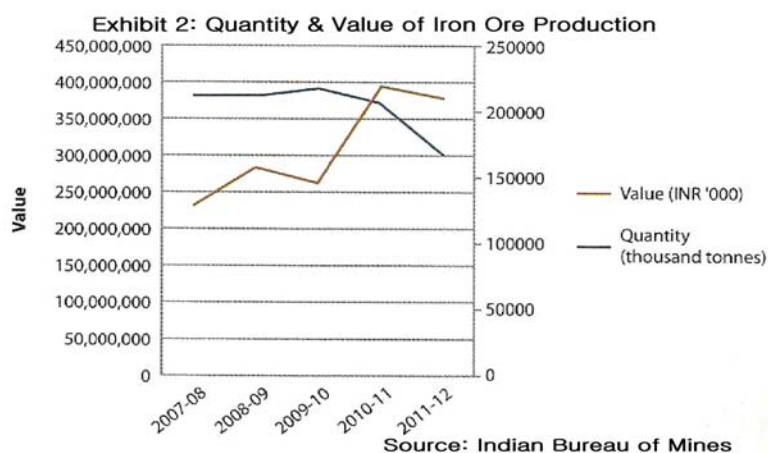


Exhibit: 3 Total Resources of Iron Ore as on April 1, 2010

	Total Reserves (in per cent)	Total Remaining Resources (in per cent)	Total Resources (in per cent)
Hematite	45.2	54.8	100
Magnetite	0.2	99.8	100
Total iron ore	28.4	71.6	100

Source: Indian Bureau of Mines

The existing reserves of Hematite (averaging around 63% Fe) are the only source of Iron Ore and these reserves may not last beyond the next 15-20 years. The high grade iron ore face the threat of depletion and in this scenario it is vital that the mining industry consider the exploitation of low grade iron ore in India.

Exhibit 4: Total Resources of Iron Ore as on April 1, 2010

Exports	2007-08	2008-09	2009-10	2010-11	2011-12
Quantity (in thousand tonnes)	68473	68904	101531	46890	47153
Value (in INR crores)	23399.70	21725.31	28366.17	21415.69	22184.40
Percentages shares to the value of Exports of All Minerals	24.6	19.9	22.2	12.3	12.7
Imports					
Quantity (in thousand tonnes)	293	69	897	1867	978
Value (in INR crores)	178.84	61.11	468.11	1028.48	688.58
Percentages shares to the value of Exports of All Minerals	0.1	-	0.1	0.2	0.1

Source: Indian Bureau of Mines

It is clearly visible from the exhibit that the exports have been on a downward trajectory and imports of iron ore have been simultaneously increasing. The reasons behind the above

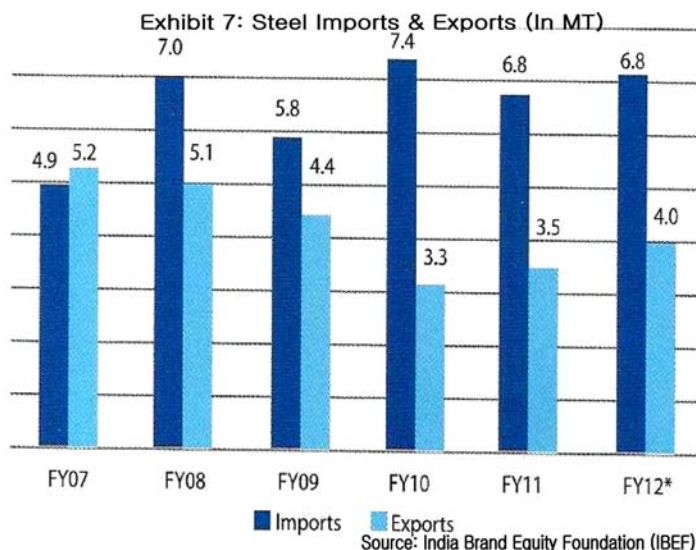
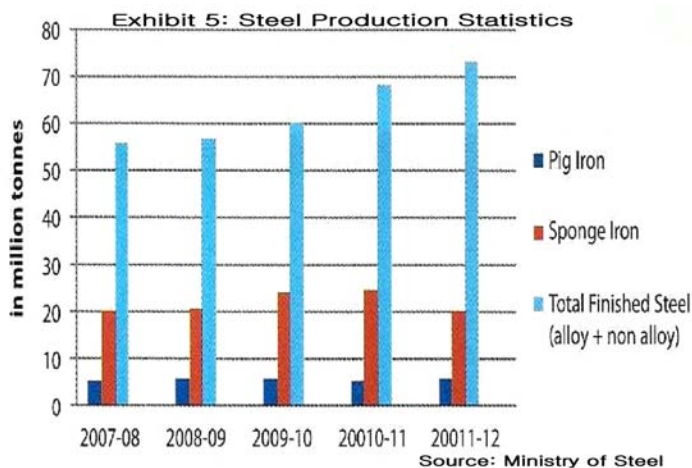
development can be analysed in the paragraphs below:

The continued ban of Iron Ore in Goa, delay in clearances for several mines in Karnataka and a cap on mining in Odisha have led to the prevalent situation. Apart from the above, increase in the export duty on iron ore from 20% to 30% on all grades of iron ore (except pellets) and differential freight charges on movement of iron ore for exports vis-à-vis domestic consumption have also dampened growth. The solution to the problem lies in the reduction of railway freight meant for exports. Ultimately, reducing railway freight will help the production of iron ore to restart quickly and in larger quantities as more material would be able to move from the mine heads as compared to the same being transported through trucks.

Steel

India is currently the fourth largest producer of crude steel in the world. Steel production increased at a CAGR of 7.7% over the period 2005-12. The Indian Steel Industry contributes nearly 2% of the nation's GDP and employs about 5 million people directly and 15 million people indirectly.

From the graphs it is evident that the demand has been outpacing production. In such a scenario, it is quite evident that the imports have been increasing at a CAGR of 6.8% over FY 07-12.



The current perspective with respect to steel production in the country is that the per capita steel consumption is expected to rise due to growing urbanization and infrastructure investment. In such a scenario, it is extremely crucial that internal capacities are improved and all the backward and forward linkages are strengthened towards enhancing production capacity. It is in this regard only that the National Steel Policy, 2005 is currently being reviewed keeping in mind the rapid developments in the domestic steel industry (both on the supply and demand sides).

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IIM DC Quiz Contest “Metallica 2013”

A Quiz Contest “**Metallica 2013**” for school students was organized at *The Indian Institute of Metals – Delhi Chapter* on 7th September 2013.

The quiz was jointly sponsored by The Indian Institute of Metals – Delhi Chapter and Jindal Steel & Power Ltd.

The basic objective of the Quiz Contest was to motivate and encourage senior level school students for associating themselves in future growth in the fields of Metallurgy & related disciplines. The broad syllabus of the Quiz was circulated to the schools, in advance, to enable the students to prepare for the quiz.



A team of two students each of the following thirteen schools from National Capital Region of Delhi participated in the Quiz Contest:

- | | | |
|----|-----------------------------|------------------------------|
| 1 | Amity International School | Gurgaon |
| 2 | Andhra Education Society | Karol Bagh, New Delhi |
| 3 | Apeejay School | Pitampura, New Delhi |
| 4 | Cambridge Foundation School | Rajouri Garden, New Delhi |
| 5 | Delhi Public School | Mathura Road, New Delhi |
| 6 | G D Goenka Public School | Rohini, New Delhi |
| 7 | G D Salwan Public School | Rajinder Nagar, New Delhi |
| 8 | Manav Sthali School | New Rajinder Nagar Delhi |
| 9 | Mount Carmel School | Anand Niketan, New Delhi |
| 10 | N C Jindal Public School | West Punjabi Bagh, New Delhi |
| 11 | Rukmini Devi Public School | Pitampura, New Delhi |
| 12 | St. Paul's School | Hauz Khas, New Delhi |
| 13 | The Indian School | Sadiq Nagar, New Delhi |

At the outset, Chairman IIM DC Shri S C Suri welcomed the teachers and the students of schools who were participating in the Quiz Contest. He briefly described the activities being undertaken by the IIM fraternity. He also spoke about the importance of metallurgy in the industrial activity of our country. Shri G I S Chauhan, Hony. Joint Secretary, IIM DC, explained the modus operandi of the Quiz Contest to the students.



Shri Vipin Jain & Shri G I S Chauhan, Hony. Jt. Secretaries of Delhi Chapter and Dr. (Mrs). Malti Goel & Mr. G. Panwar, members of Executive Committee IIM DC conducted different rounds of the Contest.



The contest consisted of two phases. In the *Elimination round*, thirteen teams were divided into two groups. Each group was administered a written test of 35 questions, independently. Two teams out of each group were selected for *Final round*. In the Final Round, four teams (Apeejay, G D Goenka, Indian School & St. Paul's Schools) were administered various questions through different modes of quiz (viz. direct questions/pass-over questions, buzzer & fire mode questions and tie-breaker questions). After completion of the *Final Round*, Evaluation Committee (comprising Shri V C Singhal Vice Chairman, Shri Manoranjan Ram Hony. Secretary, Shri Vipin Jain Hony. Jt. Secretary and Dr. Malti Goel from the Delhi Chapter) evaluated the performance of the four teams.



Simultaneously, when the evaluation of the performance of the four teams was in progress, the interim time was utilized by Shri G I S Chauhan by asking various *Open House* questions from individual students. These questions were basically focussed on the general knowledge related to Metals and Metal Industries. A cash award of ₹ 100 for each correct answer in this *Open Round* was awarded. Shri K L Mehrotra Vice-Chairman also interacted with students during this period, highlighting various aspects of Metallurgical industries in India.





After evaluation of the performance of the four teams, the team of two students namely **Vivek Goyal and Milli Rawat of G D Goenka School** was adjudged the **Winner Team**. The team consisting of *Sidharth Rawat and Arush Harit of St. Paul's School* was declared the *Runner-up team*.

The winning team was given a cash prize of ₹ 5000/-. The Runner-up prize of ₹ 3000/- was given to Runner-up team. ₹ 1000/- each was given to the remaining two participating teams in the *Final Round* viz. Apeejay & The Indian School, as Consolation Prizes.

All the individual students who took part in the Quiz were given Certificates of participation. In addition, teachers of all the participating schools were handed over suitable mementoes for retaining in the schools, on behalf of IIM Delhi Chapter.

The quiz event was suitably photographed.



For the last few years IIM DC has been organizing the Quiz Event every year. This is the first time that as many as thirteen schools have participated in the Quiz Contest.

Several members of the IIM DC and the Executive Committee members participated in the event. About 70 persons participated in the Event.



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[Coal India's reserves depleting](#)

Greenpeace in its report released recently said Coal India (CIL)'s reserves are fast depleting. It said CIL is left with just 18.2 billion tonnes of extractable coal, according to the United Nations reserve classification system. Even these reserves would exhaust in about 17 years, it added. CIL produced 1.05 billion tonnes of coal between April 2011 and August 2013. Therefore, its extractable reserve figure should now stand at 17.15 billion tonnes. Approximately, 90 per cent of India's coal inventory is non-coking coal. Using this yardstick, CIL's extractable non-coking reserves (2011) were estimated at 15.4 billion tonnes. CIL and the government target eight per cent rate of growth in production from 2012. If this rate were to be applied to CIL's reserves, the company would exhaust extractable coal supplies by 2030. If CIL maintains a more realistic five per cent growth rate, the reserves would be exhausted by 2034. Greenpeace pointed out that CIL had failed to disclose to the stock exchanges an internal assessment which showed its extractable coal reserves were 16 per cent less than stated at the time of its 2010 listing, a violation of Indian stock exchange rules. Further, Coal India was misleading potential shareholders by concealing the true level of its extractable reserves, as it prepares to sell additional shares to international investors.

Greenpeace Campaigner Mr.Ashish Fernandes told reporters that Greenpeace India has filed a complaint with the Securities and Exchange Board of India (Sebi) against CIL for concealing material evidence on the scale of their coal reserves, in contravention of the terms of the Listing Agreement under the Indian Securities Contracts Regulations Act, 1956.

An email sent to Sebi did not elicit any response. Mr. Fernandes added, "Coal India is trying to deceive its present and future shareholders by hiding the fact that its extractable reserves are almost a fifth less than it claims. Coal India has a legal duty to tell the truth and they are failing to do that." Mr. Fernandes said the new data about Coal India's reserves also casts doubt on the government's ability to sustain its planned investment in coal-fired power plants. CIL accounts for 80 per cent of the country's coal production. Even though the company is struggling to supply existing power plants, India has plans to add more coal-fired plants to produce 100,000 MW by 2017. Spiralling coal imports have led to higher power tariffs and also played a role in India's ballooning current account deficit. Supreme Court Advocate Mr. Shaunak Kashyap said, "Coal India is in violation of statutory provisions particularly the Sebi Act, the Listing Agreement under the Securities Contracts Regulations Act, 1956, and Sebi's April 3, 2006 circular relating to disclosure of material events. It is a matter of grave concern that a government-controlled company has failed to notify the exchanges of this reduction in their reserves, something that has serious implications for both investors and the country at large."

Source: Business Standard

Assocham urges govt to improve iron ore supply, boost steel exports

The Associated Chambers of Commerce and Industry of India (Assocham) has urged the Centre to increase iron ore supply for domestic steel industry, which is currently running at very low capacity due to raw material problem. According to the apex industry body, such a move would bring down steel imports worth a whopping \$6 billion, promote steel exports and curb the current account deficit (CAD). "Iron ore exports of 100 million tonnes (mt) would earn India \$10 billion, while the country would earn \$8-9 billion through exports of just 10 mt steel. Besides, value addition to the raw material would lead to employment generation, capacity building and various other benefits," highlighted a study titled "Iron Ore Exports: Threat for Indian Steel Industry" conducted by Assocham. "Rupee depreciation has made domestic steel sector 22 per cent more competitive, giving a huge impetus to exports of finished steel. On the other hand, relaxing the exports restrictions on iron ore would further worsen India's CAD," said an Assocham spokesperson.

Stating that both demand and production of steel is growing steadily, the study projected India's steel production might reach 81 mt in the current year against 78 mt in 2012-13. This necessitates supply of about 140 mt of iron ore. In contrast, the iron ore output in the country, which is on a decline, is expected to remain in the range of 100-110 mt, bringing in a shortfall of 30 mt. "Thus, any relaxation of iron ore export duty will further worsen the situation, thereby making it difficult for domestic steel producers to survive," said the chamber's spokesperson.

Owing to the unavailability of iron ore, capacity utilisation of crude steel in India has come down to about 82 per cent from 88 per cent a year ago, the Assocham study noted. Rampant shortage of iron ore has also led to huge imports of iron and other steel-making raw materials. In FY13, India imported various metallics worth \$9 billion for iron ore and steel industries, thereby increasing the CAD significantly. "There has a sudden jump of 66 per cent in import of scrap from about 5 mt in 2011-12 to over 8 mt in 2012-13," said the study. "Likewise, there has been a huge jump of 1,475 per cent in import of direct reduced iron (DRI) and hot-briquette iron (HBI) - from less than 50,000 tonnes a year ago to over 750,000 tonnes in the current year," it added. According to the data compiled by Assocham, India has ample of agglomeration capacity as pellet plants capacity is likely to reach 85 mt by 2014-15 from about 64 mt in 2012-13. Similarly, sinter capacity is also scheduled to grow to 86

mt by 2014-15 from current level of 75 mt. Therefore, the justification of the exporters that iron fines are being exported because India does not have the capacity to use them is a myth, the report stated. Considering that iron ore production in the country is likely to drop, the production of fines will remain at 60 mt in the current year, against 88 mt in 2012-13 and hence, pellet and sinter plant will continue to operate below rated capacity, the study projected.

Source: Business Standard

Recession, business concerns behind Arcelor, Posco exit: SteelMin

Recession in the global steel market coupled with "business concerns" may have driven steel giants ArcelorMittal and Posco to resort to scrapping their Indian projects worth \$18 billion, Steel Mr. Minister Beni Prasad Verma said recently, breaking silence on their pullout. He was confident that their move will not impact Indian steel capacity in view of modernisation drive by domestic players like SAIL and capacity augmentation by private players. "There is recession in the international steel market at present. They (ArcelorMittal and Posco) have their own business concerns. They must have taken the decision in view of their profit or loss," Verma told PTI. His remarks follow scrapping of \$12 billion steel mill project in Odisha in the biggest foreign investment pullout by ArcelorMittal. It was a day after South Korean major Posco pulled out of \$6 billion project from Karnataka over delays in land acquisition, securing raw material linkages and other problems. While Posco attributed "given market conditions and significant delay in acquiring the required land" as the reason to scrap 6 MT Karnataka project, ArcelorMittal cited inordinate delays in land acquisition and problems in securing iron ore linkages for exiting from 12 MT Odisha project. Verma also said that the world's largest steelmaker ArcelorMittal had yet to come to India. "ArcelorMittal didn't come here, so there is no question of their withdrawal."

When asked whether the pull-outs were going to impact the Indian steel sector, Verma said it would not affect the steelmaking capacity as domestic players like SAIL, RINL and NMDC had already initiated modernisation and expansion drives while many private players were augmenting their capacity.

"We are increasing our domestic capacity and consumption. We will be producing quality steel. We have set a target of 200 MT capacity by 2020, which will be further enhanced to 300 MT by 2025. Modernisation by domestic players will be completed soon and the production will enhance. Private sector is also increasing its capacity," he said. Steel Authority of India Ltd (SAIL) is ramping up capacity to 24 MT by next year, from about 14 MT at present, and plans to take it to 50 MT by 2022 at an expenditure of Rs 1.2 lakh crore. RINL is on the verge of commissioning its brownfield expansion to 6.3 MTPA and getting ready to embark on raising it further to 11 MTPA. Private players like Tata Steel had added a new 3 MTPA capacity at the Jamshedpur plant and is setting up initial 3 MTPA plant in Odisha. The country's steel capacity at present is about 90 MT and Prime Minister Manmohan Singh recently stressed the need to take it to 300 MT by 2025.

Source: Business Standard

SAIL Bhilai adjudged winner of PM's Trophy for Best Integrated Steel Plant for the 11th time

Bhilai Steel Plant (BSP), a unit of Steel Authority of India Limited (SAIL) has been adjudged the winner of the much coveted Prime Minister's Trophy for 'Best Integrated Steel Plant' in the country for assessment year 2011-12. With this, BSP has achieved the unparalleled distinction of being the only steel plant in the country, public or private, to have been honoured with the prestigious PM's trophy 11 out of the 20 times since the award has been instituted.

Carrying a cash prize of Rs 2 crore, the award is given in recognition of 'outstanding performance in this vital sector of the national economy, which draws heavily on resources of capital and skilled manpower'. The announcement has come close on the heels of the launch of INS-Vikrant, India's first indigenous Aircraft Carrier from the Kochi Shipyard, fabricated largely from special steel plates rolled in SAIL's BSP and other units.

Known for its culture of excellence and dedication to quality, the plant has achieved distinction in various enabling parameters including leadership, policy & strategy, people development, resource management and process management. Its deployment of modern IT-driven business & knowledge tools to bring in excellence and continuous improvement in business performance, environment conservation, fulfilment of corporate social responsibilities and sustainability practices, among others, has enabled it maintain a position of excellence in the Indian Steel Industry.

Source: Business Standard

Bokaro Steel in a campaign to rid itself of legacy burden

The travails of Bokaro Steel Plant, with its capacity dedicated to flat products, have much to do with a maintenance backlog, logistical challenges of transporting large quantities of coke and sintered iron ore from multiple sources and an industry-unfriendly external environment. The historical legacy standing in the way of Bokaro living up to its promise principally includes a lack of attention to keeping all the eight coke oven batteries in shape and building a new sinter plant. Such infirmities are forcing Bokaro to depend on external sources, including other Steel Authority of India Limited (SAIL) mills, for making good the shortfall in its own production of coke and sinter, two critical steelmaking inputs.

STEELING UP						
Capacity increase after expansion (in million tonnes a year)						
Plant	Hot metal		Crude steel		Saleable steel	
	2012-13	After expansion	2012-13	After expansion	2012-13	After expansion
Bhilai Steel	5.2	7.5	5	7	4.4	6.6
Durgapur Steel	2.2	2.5	2.0	2.2	1.9	2.1
Rourkela Steel	2.4	4.5	2.2	4.2	2.1	4.0
Bokaro Steel	4.1	5.8	3.8	4.6	3.3	4.2
IISCO Steel	0.2	2.9	0.1	2.5	0.2	2.4
Visvesvaraya Iron & Steel	0.1	0.3	0.1	0.2	0.1	0.2
Alloy Steels	-	-	0.1	0.5	0.1	0.4
Salem Steel	-	-	0.1	0.2	0.3	0.3
Total	14.2	23.5	13.4	21.4	12.4	20.2

Source: Steel Authority of India

Chief Executive Mr. Anutosh Maitra said the plant had to "outsource" 870,000 tonnes of coke in 2012-13. At its current capacity, annual coke requirements are estimated at 2.4 million tonnes (mt). The mill's import dependence would continue till the laid-off coke oven batteries are brought to life. The urgency of battery rehabilitation is underlined by the fact that not only does the cost of coke rise when supplies come from outside, but material is lost, too, as fines are generated in long-distance hauling. To the extent coke is not produced in-house, gas generation is denied, creating energy holes. What adds to the woes is a reliance on supplies of sinter and pellets for making, in industry parlance, the "ideal prepared burden" for blast furnace. When profits fell from Rs 703.43 crore in 2011-12 to Rs 307.5 crore last year, the mill had to haul 650,000 tonnes of sintered ore from outside. This happened when poor demand pulled down steel prices across the globe, leaving little or no margins for producers. In fact, the loss of Rs 54 crore in the first quarter of 2013-14 was not least due to the legacy burden.

Mr. Maitra, appointed chief executive in April last year, has his task cut out - ridding Bokaro of burdensome legacies, including work ethos not in line with the times. Only then would the mill, built over a 32,000 acres as the mirror image of a Russian Severstal steel plant, be able to realise its potential. For whatever reasons, in the current phase of SAIL's modernisation and

expansion, its allocation towards Bokaro has been a modest Rs 6,325 crore. However, SAIL would end spending Rs 72,000 crore to lift its hot metal production in phases from 14.3 mt in 2012-13 to 23.5 mt. At Bokaro, capacity is to rise modestly to 5.77 mt from 4.58 mt, owing to major repairs of blast furnace-I, to be over by March 2015. More important, the use of the modernisation budget would provide a major push to value addition by the SAIL unit in Jharkhand, as it is finally set to commission the third cold rolling mill (CRM) in December 2013. The new 1.2 mt CRM supplied by Siemens VAI would allow endless rolling of coils at the "highest degree of cleanliness and low-energy use." Some varieties of coils to be made in the mill would be ideal for use in certain automobile segments. The mill's galvanising line is designed to double the amount of zinc on the sheet side to be exposed to nature. Bokaro expects its new CR galvanised sheet to be a hit.

SAIL Chairman Mr. Chandra Shekhar Verma wants to overcome the shortcomings at Bokaro by starting projects outside the current phase of the group's modernisation programme. He wants Bokaro to be 14 mt by 2025, when SAIL would have a combined capacity of 50 mt. Backed by the Chairman, Mr. Maitra has readied Bokaro to build a sinter plant covering 360 sq m, with an annual capacity of 3.7 mt. The plant should be ready in two-and-a-half years. Mr. Maitra has secured the SAIL board's approval to build a 1.2-mt pellet plant using iron ore fines. Because of their permeability, the right proportion of pellets in the "prepared blend" would lead to an improvement in blast furnace productivity. Despite constraints, Bokaro's belt-tightening resulted in the coke rate rising to 509 kg/tonne of hot metal in 2012-13 from 516 kg in 2011-12. At that time, Mr. Maitra had been at Bokaro for about a year. Despite having to deal with multiple unions, he steered the mill to achieving a productivity rate of 321 tonnes of crude steel a man year in 2012-13, much higher than SAIL's average. Over the years, there has been a disconnect between the mill and many of its once loyal customers. That Mr. Maitra, in a marketing drive, is meeting big and medium customers to ensure they start buying more steel from his mill is good for Bokaro. This has started paying, as bigger order flows from pipe makers Jindal Industries and Avon Cycles show.

Source: Business Standard

Steel minister stress to boost consumption in rural areas

Business Standard reported that concerned over huge gap in steel consumption between rural and urban areas, the steel ministry has stressed upon the need for constructing plants in far flung areas. The per capita steel consumption in rural areas in the country remains at abysmally low at 10 kg per annum as compared to 60 kg in urban areas. An official statement by the Ministry said that "In order to increase the demand of steel in rural areas and to boost steel consumption, the Minister of Steel, Mr. Beni Prasad Verma has been stressing on the need for setting up Steel Processing Units." It said that the effort is aimed at bridging the disparity between the consumption of steel in urban and rural areas. The statement said that "With the setting up of these factories various steel products will be made available to remote rural districts at cost effective prices. Apart from this, these units will also provide avenues for employment and facilitate for rapid development of the region."

Source: Steel Guru

NINL may raise pig iron output to exploit weak rupee

Neelachal Ispat Nigam Ltd (NINL), the biggest producer and exporter of pig iron, is looking to expand output to take advantage of the prevailing weak rupee scenario. The company, jointly promoted by MMTC Ltd and the Odisha government, recently sold 30,000 tonne pig iron at \$390.20 (or Rs 22,400) per tonne at Paradip port, its first deal after it began billet

production in May. Even though the rates are lower than our last deal of \$407 per tonne, rupee wise it does not make any difference. We might consider increasing pig iron output if conditions remain favourable for us, said Mr. S P Padhi, Director (Finance) of NINL. The company, which used to produce 65,000 tonne pig iron every month, had recently slashed output to less than 50,000 per month as it was keeping some amount of hot metal for billet making. For 2013-14, it had announced to produce 400,000 tonne of pig iron and billet. In the subsequent years, pig iron production is likely to decline as the company intends to produce 1.1 million tonne billets. We are getting good sales inquiries for our new product- billet. However, if we are able to get more iron ore, we will go for more pig iron production. NINL has been granted mining lease by the Odisha government over 872 hectares in Sundergarh and Keonjhar districts. The mines have an estimated reserve of 110 million tonne of iron ore and are yet to be excavated. The company is currently depending upon MMTC and state-run Odisha Mining Corporation (OMC) for iron ore supply. NINL produces around 5.5 million tonne of pig iron every year. The company incurred about Rs 100 crore loss in the last fiscal due to poor demand for pig iron in both global and local markets. It mainly supplies pig iron to Southeast Asian countries.

Source: Business Standard

NINL hopes to return to black riding on billet output

Pig iron maker Neelachal Ispat Nigam Limited (NINL), which incurred about Rs 100 crore loss in the last fiscal due to poor demand for pig iron, hopes to return to profit mode in the current year riding on the economic advantage of its newly set up steel making unit. NINL, jointly promoted by MMTC and the Odisha government, operates a steel plant at Kalinganagar in Jajpur district. The company has started getting queries on sale of billets following recent commissioning of its steel melting shop (SMS) and billet caster units. "Steel Authority of India Ltd (SAIL) is in talks with us to buy out entire billet produced by us. Visa Steel has also approached us. We see a great scope for billet," said Mr. S P Patnaik, managing director of NINL. NINL has the capacity to produce 1.1 million tonne crude steel, out of which 900,000 tonne would be billets and the rest pig iron. In the current fiscal, the company plans to produce equal amount of pig iron and billets with the proposal to scale up the output of billets gradually. India's annual long steel production is about 33 million tonne with billets comprising the lion's share. The billets are primarily used in construction sector. However, high carbon content billets are also used in making automobile parts and manufacturing of pump shafts. "Since NINL billet quality is upto the mark, we hope our product will have a good demand for specialised uses," said P K Mishra, joint managing director of the company. Billets are semi-finished long steel products, which are processed further at rolling mills to get desired shape and sizes. It can be processed into making spring steel, gears for automobiles.

Source: Business Standard

Exposure to steel sector a concern: SBI Chief

State Bank of India (SBI), the country's biggest lender admitted it was facing slippages in steel and mining sectors where it has a total pan-India exposure of Rs 19,000 crore amid mining curbs and subdued demand for steel. "Presently, we are concerned about the steel sector. Due to recent restrictions on mining because of environment reasons or excess production, mining activity has dwindled not only in Odisha but also in Karnataka and Goa. SBI has seen slippages in steel and mining sectors but we have decided to be a little more patient as we expect mining sector to revive", SBI Chairman Mr. Pratip Chaudhuri told newsmen here. The SBI chief said his bank has an exposure of Rs 18,000 crore in the steel sector including Rs

4000 crore in Odisha and Rs 1000 crore in the mining sector. Pointing out that the credit deployment situation is challenging, Mr. Chaudhuri said, "Investments in power, steel, aluminium, other metals and fertilizers, the sectors that can absorb huge amount of credit, have slowed down, affecting credit offtake." Commenting on the bank's financial performance, he said, "SBI has logged Rs 7400 crore net profit in the first half (April-September period) of 2012-13. We hope to close the fiscal with a net profit of Rs 14,000-15,000 crore, compared to Rs 11,700 crore in 2011-12." SBI's total deposits in Odisha stand at Rs 42,600 crore and advances at Rs 30,000 crore with the bank maintaining a CD (credit deposit) ratio of 70 per cent. According to Mr. Chaudhuri, SBI has offered credit of Rs 2,800 crore, Rs 6,000 crore and Rs 926 crore to the agriculture, SME (small and medium enterprises) and education sectors respectively. The bank has also extended Rs 562 crore to 78,000 self-help groups (SHGs) in the state. "SBI has extended credit to all major industrial players in the state like National Thermal Power Corporation Ltd (NTPC), Vedanta Aluminium Ltd, Bhushan Steel, Neelachal Ispat Nigam Ltd (NINL), Paradip refinery of Indian Oil Corporation Ltd (IOCL) and J K Paper," he said. SBI which has a network of 695 branches in the state intends to scale it up to 700 by February. The new branches will be set up in backward districts like Koraput, Rayagada, Kandhamal, Malkangiri and Kalahandi. It has 403 branches in rural areas, 158 in semi-urban and 134 in urban locations.

Source: Business Standard

SAIL-NINL merger proposal scrapped

The proposal to merge SAIL and Neelachal Ispat Nigam has been scrapped as the Commerce Ministry is not willing to give away the country's largest pig iron producer, sources said. State-run trading company MMTC, which falls under the administrative control of the Commerce Ministry, is the principal promoter of Neelachal Ispat Nigam (NINL). "The merger between SAIL and NINL is not going to happen. In a recent meeting with the Department of Disinvestment, the Commerce Ministry has conveyed its message that it does not want to part with NINL," a source in the steel ministry said. Representatives of NINL, Steel Authority of India (SAIL) and their respective ministries were present in a meeting convened by the Disinvestment Department. Talks on SAIL-NINL merger had been going on for over seven years now. A Committee of Secretaries had given the go-ahead to the proposal in July 2005. "Following their communication, the matter has been put to rest and the steel ministry has also decided not to pursue the matter from here on," a source said. NINL is country's largest pig iron producer and runs a 1.1 million tonnes per annum steel plant in Odisha. Industrial Promotion and Investment Corporation of Odisha has also stake in NINL. Industry sources said that the merger would have been a win-win situation from both for NINL and SAIL. The iron ore mines owned by NINL could prove beneficial for the steel maker. On the other hand, NINL could have been benefited with SAIL's expertise on running steel mills. The Commerce Ministry, which was earlier willing to give NINL to any company in the steel ministry, now wants to retain it, sources said, as it sees that NINL has the potential to grow big in the days to come. Source:

Source: Business Standard

SAIL plans second special steel venture with Kobe

Business Standard reported that the Steel Authority of India Ltd is exploring the possibility of setting up a special steel venture with Japan's Kobe Steel. Mr C S Verma, SAIL chairman said that "We are discussing the possibility. Investment, location and equity structure have not been decided. The special steel could be used in the defence sector or automobiles." Mr Verma said that "Kobe is a pioneer in the special steel area and hence, we are discussing

various ventures, which would be separate from the iron nugget one." If it materializes, it would be SAIL's second venture with Kobe. Last year, SAIL had signed an MoU with Kobe for an iron nugget plant, using the Japanese steelmaker's ITmk3 technology, for a 0.5 million tonne pilot project. The project would come up at SAIL's Alloy Steels Plant in Durgapur

Source: Steel Guru

Domestic steel companies to step up exports

Domestic steel companies are increasingly targeting a substantial chunk of their production for exports to reap the benefits of a falling rupee and offset dwindling margins in a dull domestic market. This could perhaps also mark the first time that Indian steel companies are embarking on decisive export marketing strategies. While the rupee fall and slow demand at home is acting as an immediate trigger, a more compelling reason for exports could be to find alternative markets for their expanded production capacity and a more enriched product basket. Taking advantage of its shore-based location Rashtriya Ispat Nigam Ltd (RINL), which runs Vizag steel plant, said it has drawn up a decisive marketing strategy to beat the prolonged slowdown in steel market at home. While one leg of it rests on targeting 25% of RINL output for exports and opening up new geographical market segments, the other part depends on enriching its product basket with customised high-end products to a develop niche market. For the first time ever, RINL has created an International Marketing Division (IMD) headed by a general manager. "The company's first international marketing office will open at the World Trade Centre in Colombo which will also be RINL's export hub," TK Chand, director (commercial) said. RINL wants to create a market presence in South Asia, South East Asia, Central Asia, Middle East Asia and African countries. Apart from Nepal and Myanmar, the company also hopes to export high value oil & gas sector products like API rounds and seamless tubes to Iraq. A leading exporter of pig iron, it hopes to emerge as a top exporter of long products in steel. The country's largest steel company, Steel Authority of India Limited (SAIL) is also aiming to nearly double export volumes to 7 lakh tonne this year. Export revenues, too, are likely to double to Rs 2,500 crore in FY14, CS Verma said recently. JSW Steel, the largest private steel player, is planning to export nearly 3-4 million tonne (mt) of steel in the current fiscal. Last year, JSW had exported 1.9 mt. "Fall in rupee and product mix of Indian companies have made them much more competitive in international markets," JSW Steel's joint MD and group CFO Mr. Seshagiri Rao said. JSW has added new markets like China, Japan, South Korea and US to its export basket in recent times. Earlier, it used to sell its products to Middle East, South-East Asian and African countries, he added. Essar Steel, one of the largest exporters from India, said it plans to step up exports 20-25% this year.

Source: The Economic Times

RINL aims to double exports to INR 1200 crore in near term

PTI reported that Rashtriya Ispat Nigam Ltd may see its export revenue more than doubling to around INR 1,200 crore in the near future on the rupee depreciation and an increased thrust on overseas shipments. Mr T K Chand director of RINL said in an email reply to PTI that "Exports during 2012 to 13 was around 8 per cent of the total volume of iron and steel. This fiscal, more volume of steel is going to be exported. From the existing level of INR 500 crore, the revenue from exports may go up to INR 1,000 to INR 1,200 crore." He said that with ramping up of production, RINL aims to increase export composition to go up to 15 to 20% of its product volume in next 3 to 4 years from 8% in the last fiscal. As per the company, it plans to set up steel processing units in Sri Lanka and other neighbouring countries to roll its billets in these regions. Mr Chand said that "RINL has already entered into MoUs and is also planning to enter into new MOUs for exports." The steel firm, currently under expansion phase, plans to

increase its total export volume to 1 million tonne in 2016 to 17. He said that "With increase in production, exports will accordingly increase touching one million tonnes in 2016 to 17." With the sharp depreciation of rupee in the recent months, all steel manufacturers are increasing their efforts to export more for higher realization and also to offset the impact of coking coal import. The PSU said that pig iron export, in which it is a major player, will also go up in the future. Mr Chand added that "In pig iron exports, RINL is the top exporter of the country and is at present having 59% share of country's exports. With its capacity increasing, the share is likely to go up."

Source: Steel Guru

RINL aims to increase steel production to 7.3 million tonnes

Economic Times reported that state run steel major Rashtriya Ispat Nigam Limited expects to achieve a production capacity of 7.3 million tonne per annum in the next 18 to 20 months. At present, the steel maker is producing 3 million tonne, which will be scaled up to 6.3 million tonne by the end of the ongoing fiscal. Addressing the company's Annual General Meeting, Rashtriya Ispat Nigam Limited CMD Mr A P Choudhary said that the company has registered a profit after tax of INR 353 crore for the year 2012 to 13, with a turnover of INR 13,553 crore. A press release said that "He also mentioned that the company is moving ahead in capacity building and is all set to achieve 7.3 million tonne per annum progressively within the next 18 to 20 months." It added that "Input costs, especially basic raw materials like iron ore and ferro alloys have adversely affected the bottom line growth. Further, the depreciation in rupee against dollar has had its adverse impact."

Source: Steel Guru

Indian Steel Corporation and Mitsui scraps Kutch project

Economic Times reported that Japanese conglomerate Mitsui & Co and its Indian partner Ruchi Group's Indian Steel Corporation Ltd have scrapped their steel SEZ project in Kutch. Instead of an SEZ, the company is now planning to set up a steel plant to cater to the domestic market but even this plan is uncertain due to gloomy economic scenario. Mitsui and Ruchi Group have a 20:80 JV company called ISC. Mitsui is a USD 50 billion company while its Indian partner Ruchi Group's turnover stands at INR 30,000 crore. Mr Umesh Shahra, MD, Indian Steel Corporation said that "Three years ago, we had applied to the state government to allocate us 1,800 to 2,000 hectares in Kutch." In 2010 the JV company ISC had planned to set up a steel SEZ project at Tagdi village in Kutch district. After scraping the SEZ project, the company planned only to set up a steel plant at Kutch. He said that "We have also kept the steel plant project on hold, the major reason is the economic slowdown which has resulted in the fall of domestic steel consumption to 4%, which used to be 10 to 12% during 2010." Global slowdown had lead many companies like Welspun, Essar Steel, Pradip Overseas, Gallops's multi product SEZ and Strength Real Estate to drop their SEZ projects on account of fall in demand. Recently, in January, Reliance Industries 40% SEZ in Jamnagar was de-notified in order to cater to the domestic market. For the time being, the company is planning to focus on developing new products. ISC recently launched Ultrashine XL, which the company claims to be an innovative colour coated profile sheet of 4 ft width, having application in residential, commercial and industrial roofing.

Source: Steel Guru

Cars in slow lane, steel firms eye demand from auto sector

Notwithstanding the automobile sector's slowdown, steel companies are aggressively expanding their product portfolio to cater to the demands of this industry. Examples are Steel

Authority of India (SAIL), Tata Steel, Jindal Steel & Power and Essar Steel. They are working on developing high-grade steel for the automobile sector, currently being imported. The general slowdown has impacted the infrastructure- construction and automobiles sector, two main drivers of the steel industry. They consume, respectively, 62 per cent and 10 per cent of the country's steel output. Tata and Essar are focusing on localisation of automotive steel grades. A Tata steel spokesperson said it would commission a continuous annealing line to produce steels currently imported. The line is a joint venture with Nippon Steel & Sumitomo Metal. Essar Steel's president, sales and marketing, Alok Gupta said the company was engaging with automobile customers to develop new products to replace imports. SAIL chairman C S Verma said, "as a part of our massive modernisation and expansion plan, currently underway, we are coming up with a state-of-art cold rolling mill at Bokaro Steel Plant. This will increase our supply of CR coils to auto majors and component manufacturers. We will also be offering galvannealed steel, mainly used in the auto sector." SAIL will also expand its service centre base to cater to cut- to-size and ready-to-use materials needed by the auto segment. SAIL also supplies specialised steel for armoured vehicles in the military. For the first time, JSPL will also cater to auto clients once its Angul-II unit in Odisha gets ready by 2016. It is setting up a cold rolling mill in Angul, said chief executive Ravi Uppal. Jayanta Roy, senior vice-president and co-head, corporate sector ratings, Icra, said: "Steel companies are planning to offer import-substitution steel to the auto industry. The auto sector goes through cyclical ups and downs but steel being a long-gestation and capital-intensive industry, capacities have to be planned well in advance for maintaining growth."

The specialised steel segment, including high-grade steel for the auto sector, will see more action as the high-end and niche segment should offer higher margins to steel companies compared to the commodity steel market, where competition is high, he said. India is also becoming an export hub for the auto industry. "There is likely to be a demand-supply mismatch, with significant capacities being commissioned this year. Unless the infra and other sectors get back on track, it will be a difficult road for the steel industry in the near term," Roy added. The companies are optimistic. "Due to India's low vehicle penetration, need of housing and infrastructure, the slowdown is temporary in these sectors," says Tata Steel. The company sells a little over a million tonnes of flat products to the automotive industry, which is 20-25 per cent of its total flat product sales. It supplies all three types of products — hot-rolled, cold-rolled and galvanised steel for various types of automotive applications such as skin panel, wheels, chassis and structural members. Essar Steel's Gupta said, "The India growth story in the long term is intact. However, currently the sentiment is bad. The government needs to take steps to bring back the favourable investment climate. Essar has made huge investment in setting up world-class facilities to cater to the demands of India's growth and we hope the business sentiments will be back on track soon." "For Essar, auto constitutes for about 15% of total sales volume. Essar is also offering entire spectrum of flat steel currently to auto OEMs.

Source: Business Standard

Indian Steel Corp launches 4-ft-wide colour coated profile sheet

Indian Steel Corporation Ltd, a joint venture of Ruchi Group and Japan-based Mitsui & Company, on Monday launched "Ultrashine XL", India's first colour-coated profile sheet now available in four-feet width. Available in different colours, these sheets are best suited for residential, commercial, industrial roofings, airports, stadiums etc, said Umesh Shahra, Managing Director. Indian Steel, having a six lakh tonne capacity secondary steel manufacturing facility in Kutch district, would also introduce shortly the teakwood and

embossed pattern textures for interiors, he said. Mitsui has a 20 per cent stake in the venture, which has procured technology from a European company, CMI. The durable colour coated profit sheets have a longer paint life and stronger enough to withstand high wind velocity of up to 180 km per hour unlike traditional sheets that can withstand winds up to 120 km per hour. The joint venture has so far invested Rs 1,400 crore on its plant spread over 150 acres from 2004 onwards. In the first phase, it invested Rs 350 crore on a capacity of two lakh tonnes in the first phase and another Rs 1,050 crore in the second phase to achieve the six lakh ton capacity, Shahra said. The estimated market size in colour-coated profile sheet in India is about Rs 700 crore or one million tonnes. The colour coated sheets' market is growing at 35 per cent unlike steel sector's 4-5 per cent growth.

Source: Business Line

Steel technology to improve production

The shortage of iron ore has forced metallurgists to look for alternative source of raw material and its preservation from the waste to narrow down the demand – supply gap. Dr R H Tupkary, former professor and head of Metallurgical Engineering at Visvesvaraya Regional College of Engineering (VRCE), Nagpur, has developed an innovative technology which can improve steel production by 0.5-1.5%. Known as Tupkary technology, this technological breakthrough has already been successfully demonstrated at JSW's Vijayanagar steel plant. "When iron ore mining growth is already negative - win whatever iron is going as waste. Amidst all pervasive gloom and set-backs to metal and mining sector, here is the invention, which is all set to enhance production, productivity and profit of every steel plant, for a pittance," said Tupkary who authored two metallurgical books, 'Modern Steel-making' and 'Modern Iron-making'. "This technology, outcome of five years long research, can improve steel production by 0.5-1.5% annually and in simple terms when iron ore mining is in trouble, the steel producers across the world can earn a total additional Rs 15,000 - 25,000 crores using Tupkary technology which separates and recovers iron from slag when both are in molten condition, without losing any iron by way of oxidation." In the traditional method steel, equivalent to 5 to 15% of slag weight, is lost in slag and existing magnetic process is costly, uneconomical and spreads pollution. Through extensive trials at JSW's Vijayanagar Plant it has been industrially proved to be not only viable but economically very advantageous as an alternative to magnetic processing of molten slag. It is cost effective, viable and eco-friendly, said Tupkary,

Patent application has already been filed for this technology in India. For international patenting PCT search was asked for and has obtained certification that it is a 'novelty', not in existence before, 'inventive' as has been not thought of in any form before and has direct 'industrial applicability'. It will make the patenting in overseas countries as well very easy. At the present level of world steel production of over 1400 million tonne per annum, adoption of Tupkary technology means value addition of anything in the range of Rs 10,000 – Rs 25,000 crores (USD 2,000- 4,000 million) with attendant saving of equivalent natural resources of iron and efforts in the direction of making steel plants more green and decreasing electric power consumption thereby claiming tremendous amount of carbon credit. Lot of land will be freed in the plant for other uses. The left-over slag is more suitable for cement-making, asserts Dr Tupkary who was pained by extent of wastage and decided to utilise every grain of slag using his expertise, he added.

Source: Business Standard

Power ministry seeks fresh coal linkages

With fuel supply in place for 78,000 Mw of stressed power generation capacity, the power ministry has asked the coal ministry to commit fresh coal linkages for an additional 33,000 Mw coal-based capacity projected for commissioning in the 13th Five-Year Plan period beginning April 2017. "The coal ministry has not awarded any new linkages (letters of intent followed by fuel supply agreements) since 2010, which has led to non-finalisation of fresh orders for future projects," the power ministry said in a letter to the coal ministry. Between 2006 and 2010, the coal ministry had awarded linkages for 103,000 Mw. With lack of green clearances impacting the output of Coal India, no new linkages have been given since then. "The coal ministry is requested to consider fresh linkage for the 13th Plan projects in the next three months. In the absence of a clear picture regarding linkages, the capacity addition programme would be adversely affected," said the power ministry. India wants to add a total of 86,000 Mw power generation capacity in the 13th Plan period. Around 66,000 Mw of this will be coal-based. Further, 40,000 Mw of this capacity will either be based on existing linkages or come up on captive coal blocks. This will leave 26,000 Mw without firm coal supply. However, the power ministry wants the coal ministry to provide additional linkages for 33,000 Mw in view of likely delays in environment and forest clearances and land acquisition. "For the remaining 26,000 Mw capacity addition, we need to plan for 30 per cent additional linkage because of uncertainties," said the ministry. Coal India had told the ministry in July that its incremental production by the end of the 13th Plan period in 2021-22 is likely to be around 180 million tonnes. Around 80 per cent of this – 144 mt – would be available for the power sector, which would support 30,000 Mw capacity. Additional production from captive coal blocks is likely to be around 100 mt, which would support another 20,000 Mw.

Source: Business Standard

Coal India awaits response from Limpopo government on mines acquisition

State-owned Coal India is yet to receive a response from the Limpopo provincial government on the willingness expressed by the PSU in acquiring mines owned by the government of South Africa, a move that may delay the company's plans of acquisition of mines overseas. "A couple of months back Coal India (CIL) had written to the Limpopo government stating that it wants to acquire only those mines which are owned by the government of South Africa," a source said. "However, Coal India is yet to receive a response on the same from the Limpopo government," the source added. CILBSE 1.20 % had earlier appointed Deloitte to help the coal PSU to form a subsidiary firm in South Africa to acquire mines. The state-owned miner has already signed a pact with the government of Limpopo, South Africa, for jointly identifying, exploring and developing coal mines. The government had said that to execute the pact which CIL signed with Limpopo, it would be required to set up a subsidiary in South Africa. The government of Limpopo, the northernmost province of South Africa, had approached CIL requesting it to form a joint venture with one of its public sector firms for acquiring coal mines there. CIL has proposed a capital outlay of Rs 25,400 crore in the 12th Five Year Plan, plus an ad-hoc provision of Rs 35,000 crore to acquire coal assets abroad and develop the acquired coal blocks in Mozambique, according to the coal PSU. The capital expenditure for the current fiscal has been envisaged at Rs 5,000 crore, along with additional ad-hoc provision of Rs 4,000 crore to acquire coal assets abroad and develop coal blocks in Mozambique, the company had said.

Source: The Economic Times

JSPL hopeful of CCI nod for coal-to-liquid project

The Naveen Jindal-promoted Jindal Steel and Power Ltd (JSPL) is hopeful the Union cabinet will approve its Rs 77,450-crore coal-to-liquid (CTL) project in Odisha. The project, hailed as the first of its kind, would convert coal into petroleum products such as diesel and naphtha, reducing the country's dependence on imported crude oil. The venture has recorded delays in securing a prospecting licence for an attached coal block, Ramchandi Promotional, as well as a forest clearance from the state government. JSPL has presented the issues awaiting resolution before the Cabinet Committee on Investment (CCI). "We had requested the petroleum ministry to accept our application to CCI, as the administrative ministry (which is a procedural requirement of CCI) and we believe the ministry has accepted our submission. Now, we believe CCI will consider our request to facilitate the grant of necessary approvals from the state or central governments," a company spokesperson told Business Standard in reply to an e-mail questionnaire. The Ramchandi Promotional block, which has estimated reserves of 1,500 million tonnes, was allocated to JSPL in 2009 and production from the block is set to commence in November 2014.

Source: Business Standard, 24 Sept 2013

Hindalco revenue to double after 3 projects goes on stream

Hindalco Industries stands to benefit from the weakening of the rupee against the dollar, as copper and aluminium prices are dollar denominated.

Mr Mr Kumar Mangalam Birla chairman of Hindalco Industries said that "The only foreign loan we (Hindalco Industries) have is of USD 100 million and so the impact of rupee devaluation will be extremely marginal. In the year ended March, the company's exports worth INR 7,500 crore accounted for 30% of total production. To sell more in the domestic market was a conscious decision of the company." Mr Birla said that regarding its 3 new projects on their completion, Hindalco's revenue would double to INR 16,000 crore from INR 8,000 crore at present and the earnings before interest, taxes, amortization and depreciation would rise to INR 6,000 crore from INR 2,000 crore at present. These projects are the Mahan aluminium smelter in Madhya Pradesh and Utkal alumina refinery and Aditya Aluminium smelter expected to come up by December in Odisha. Once these projects go on stream, the capital expenditure of the company will drop to INR 2,000 crore in financial year 2015 and INR 1,500 crore in the next. Mr Birla said that the company is currently in transition and so the impact of expansion is being felt. Once the projects are commissioned, it will be one of the low cost operations of the company.

Source: Steel Guru

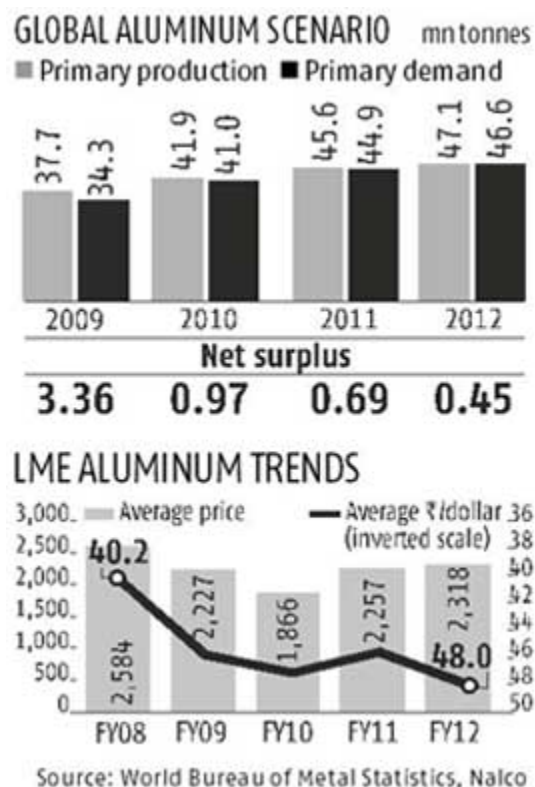
Aluminium producers unnerved by falling premia

Their low costs notwithstanding, Indian aluminium makers are treading on thin ice of profitability. Aluminium is trading at a four-year low on the London Metal Exchange (LME). At these prices, large swathes of global aluminium capacity are not recovering cash costs. If the industry here has managed to keep its head above water, it is because of the high premia buyers are paying over the LME cash price to secure physical metal. In this business, a few groups across the world, including Hindalco, are faring better than the rest, owing to their portfolios of value-added products (VAP). Such products are far less prone to price fluctuations than aluminium, as a commodity. According to Hindalco Managing Director Debu Bhattacharya, pursuing a "focused strategy of value maximisation", the company raised VAP sales four per cent to 2,40,000 tonnes in 2012-13, while aluminium production fell six per cent to 5,42,000 tonnes. The acquisition of Novelis, the world leader in VAP, in 2007 created an ideal environment for Hindalco to seek to make products requiring the use of

complex engineering, the first time in India. Soon, its product portfolio would be enriched by the addition of can body stock and ultra-thin gauge foils, resulting from the transfer of machines from Novelis. The further Hindalco travels along the VAP route, the more it would be shielded from the anticipated falls in aluminium ingot premia. In fact, the premia have remained under pressure due to skittishness about the likely impact of the new warehousing rules LME had proposed on July 1. Such rules would require LME registered warehouses with buyers queuing for more than 100 calendar days to deliver more aluminium ingot than they receive. While these rules are subject to a three-month consultation and LME would take a decision, the premia have come under pressure. Moreover, the change of warehousing management rules, if any, would be implemented from April 2014. But the movement of aluminium ingot prices and the premia producers demand for ready delivery since LME announced the proposed warehouse load-out norms shows the market is increasingly turning jittery. The pace for the Indian aluminium market is set by price movements at LME and the premia prevailing in major markets. In a report, Metal Bulletin said the European spot primary aluminium business was drying up, with premium bids falling short of producers' expectations, as many buyers had decided to wait for "further dips in premium before covering their fourth quarter needs". In any case, since the July LME announcement, duty-paid premia in Europe and the US have lost ground.

Our industry officials are watching with interest the battle of wits aluminium producers and Japanese buyers are now engaged in for determination of premia for the December quarter. In anticipation of a modest demand recovery in aluminium-using sectors, some leading US and European producers are asking for premia of \$250 a tonne for shipments to Japan in the next quarter, the same as this quarter. But emboldened by premia falling in the West, Japanese buyers are asking for lower rates. Producers, on the other hand, feel the improving Japanese demand for automobiles and houses and declining aluminium stocks justifies unchanged premia. Arguments and counter-arguments would continue for some time, before the fourth quarter premia likely settle at about \$240 a tonne. Why is there so much focus on premia? It is simply because with LME aluminium prices down about a third since the May 2011 peak of \$2,803 a tonne, in premia, smelters have found major sustenance. In the past, producers could demand and get premia well in excess of \$300 a tonne, as large volumes of aluminium resulting from supply exceeding demand found their way into LME warehouses. Currently, LME-registered warehouses have stocks of about 5.5 million tonnes (mt). Much of this inventory is tied up in financing deals. The system has worked, as low financing costs have allowed forward sales. In the interim, the low cost of storing is an added advantage. But what forced LME to propose changes in warehouse rules, along with stronger scrutiny by regulators, was the lengthening of queues seeking metal deliveries.

The warehouse reforms would lead to liquidation of LME warehouse stocks. Liquidation would not, however, happen in torrents. The release of stocks, irrespective of the size, would affect



market sentiment, leading to a fall in aluminium prices and premia. Reuters has quoted financial services group Nomura saying the changes in LME rules would shave warehousing profitability \$127 a tonne in Europe and \$82 a tonne in the US. If that happens, there should be a corresponding shrinkage in premia in those two markets. A BNP Paribas official says physical premia are destined to fall "although these may take some years to return to historically normal levels". Nomura doesn't rule out the possibility of LME aluminium prices sliding to a low of \$1,500 a tonne, amid stock liquidation. Will this not provide a push to further idling of aluminium smelting capacity?

Source: Business Standard

PM's council pegs FY14 GDP growth at 5.3%

Prime Minister's Economic Advisory Council (PMEAC) has pegged India's Gross Domestic Product (GDP) growth at 5.3% for the current financial year. This is way down from their earlier estimates of 6.4% but higher than sub-5% growth projected by various brokerage firms and independent economists. C Rangarajan, Chairman of PMEAC said in a press conference that containing the fiscal deficit within the budgeted target of 4.8% of GDP could be a challenge. In order to achieve the 4.8% fiscal deficit target, action will have to be taken during the year particularly in the case of subsidies. Talking about the food security Bill's burden on the fiscal deficit, Rangarajan said, "As far as current year goes, the burden will not be heavy because implementation will take time." He added that there should be a cap on the total subsidies. "If food subsidy is paramount then other subsidies should be brought down consequently", Rangarajan said. Rangarajan projected FY14 CAD at \$70 bn or 3.8% of GDP. The Council attributed the rise in CAD to gold and oil.

"Agriculture will grow at 4.8% as a result of well distributed monsoon," he said. Agriculture grew at 1.9% in 2012-13. He added that industry is projected to grow at 2.7% in 2013-14. Manufacturing has been pegged at 1.5% for the current financial year while services are projected to grow at 6.6%, PMEAC said. The PMEAC forecast the wholesale inflation at 5.5% for the current financial year. "Good performance of agriculture will have moderate impact on inflation, however, depreciated rupee can add pressure to this", the Council said. Reserve Bank of India (RBI) must maintain its current monetary stance until the rupee stabilises, Rangarajan said. PMEAC pegged net foreign direct investment (FDI) flows at \$21.7 billion for the current fiscal year, down from an earlier estimate of \$24 billion. The trade deficit would remain at \$ 105 billion for 2013-14, it said. India's economy grew at 4.4% in the three months to June -- the slowest quarterly rate since the global financial crisis -- hurt by a contraction in mining and manufacturing.

Source: Business Standard

Macroeconomic indicators - Mr Rangarajan lowers GDP growth estimate

The Financial Express reported that listing fiscal and current account deficits as challenges facing the economy, Prime Minister's key advisor lowered the growth forecast for the current fiscal to 5.3% from 6.4% projected earlier and suggested oil subsidy reduction to keep public finances under check. Releasing the Economic Outlook for 2013 to 14, PM's Economic Advisory Council Chairman Mr C Rangarajan listed host of measures like easier FDI norms, increasing coal output and stable tax regime to boost growth in medium to long term. It said that "The council is looking at a rate of economic growth of 5.3% in 2013 to 14, lower than that indicated 6.4% in its April 2013 review, currency related disruptions has impacted the momentum of recovery." RBI too had earlier lowered its growth projection for this fiscal to 5.5% from 5.7%. The GDP grew by 5% in 2012 to 13. Terming high Current Account Deficit as

the "main concern at present", Mr Rangarajan said that it was expected to come down to USD 70 billion or 3.8% of GDP in 2013 to 14 from USD 88.2 billion or 4.8% a year ago. However, he added that in view of the likely decline in net capital inflows India will have to draw down its reserves by around USD 9 billion to bridge the CAD.

Source: Steel Guru

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SOME THOUGHTS ON MOTIVATION

P K Chatterjee
Hon. Treasurer, IIM-DC

Technically the term "Motivation" can be traced to the Latin word "Movere" which means, "To Move". A few definitions are listed below:

- ❖ "A motive is an inner state that energizes, activities, or moves (hence motivation), and that directs or channels behaviour toward goals".
- ❖ "A motive is a restlessness, a lack, a yen, a force. Once in a grip of a motive, the organism does something. It most generally does something to reduce the restlessness, to remedy the lack, to alleviate the yen, to mitigate the force".
- ❖ "Motivation represents an unsatisfied need which creates a state of tension or disequilibrium, causing the individual to move in a goal direct pattern towards restoring a state of equilibrium, by satisfying the need."
- ❖ Thus motivation is a general term applying to the entire class of drives, desires, needs, wishes, wants and similar forces.
- ❖ Managers motivate their subordinates by doing those things, which they hope will satisfy these drives and desires and induce the subordinates to act a desired manner.
- ❖ A motivation is a basic psychological process: an important process in understanding behaviour. However motivation need not be thought of as the only explanation of behaviour. It interacts with and acts in combination with other mediating processes and environment.
- ❖ Psychologists feel that all behaviour is motivated and that people have reasons for doing the things they do, or for behaving in the manner that they do.
- ❖ All behaviour is thus designed, to achieve certain goals and objectives. Such goals directed behaviour resolves around the desire for need satisfaction. The needs set up drives to accomplish goals. Motivation consists of the three interacting and interdependent elements of needs, drives and goals.
- ❖ The purpose of motivation is to create conditions in which people are willing to work with zeal, initiative interest and enthusiasm, with a high personal and group moral satisfaction, with a sense of responsibility, loyalty, discipline and with pride and confidence in most cohesive manner so that the goals of an organization are achieved effectively.
- ❖ Clarence Francis Chairman of General Foods Corporation, USA said: "You can buy a man's time, you can buy a man's physical presence at a given place; you can even

buy a measured number of skilled muscular motions per hour or day; But you cannot buy enthusiasm, you cannot buy initiative; you cannot buy loyalty; you cannot buy devotion of hearts, minds and souls. You have to earn these things."

- ❖ If a manager wants to get work done by his employees, he may either holdout a promise of a reward for them for doing work in a better or improved way, he may constrain them by instilling fear in them or by using force, to do the desired work. Thus, he may utilize a positive or a negative motivation.
- ❖ A positive motivation involves the possibility of increased motive satisfaction while negative motivation involves the possibility of decreased motive satisfaction.
- ❖ Positive motivation is a process of attempting to influence others to do through the possibility of pain or reward. People work for incentives in the form of the 4P's of motivation Praise, Prestige, Promotion and Pay cheque.
- ❖ An incentive motivating is the "Pull" mechanism. The receipt of awards, due recognition, and praise for work well done definitely lead to good team-spirit, co-operation, feeling of happiness along with high standard of performance.
- ❖ Negative motivation is based on force and fear. Fear causes person to act in a certain way because they are afraid of the consequences. If workers do not work, they are threatened with lay-off and demotion. Hence, negative motivation is a "Push" mechanism.
- ❖ In spite of some limitations, negative motivation has been used and should be used to achieve desired behaviour.
- ❖ It is a fact that sometimes absence of negative motivation is interpreted by the workers as a sign of powerless or weak management. Hence, if the situation demands the use of fear motivation as in case of a fire, a breakdown, a panic or a riot, negative motivation should be effectively used. Many a time positive motivation just doesn't work which makes it essential to use force and fear to get the desired result.
- ❖ The concept of motivation is central to the field of human resource management though motivation is generally interpreted as a positive tool in influencing behaviour through the use of positive motivators, the use of and need of negative motivation cannot be ignored at any cost. As long as there has to be maintenance of industrial discipline, negative motivators will always be there. It is because, discipline has three functions to perform: i) Preventive function ii) Punitive function iii) Reforming function.
- ❖ All the above three functions highlight the need and utility of negative motivation for the basic purpose of them is to stop the recurrence of deviant and impermissible behaviour, but ultimately for the fulfilment of the organizational goals effectively and efficiently. Thus, there has to be a mutual co-existence of 'Incentives' and 'Sanctions' in any industry. In fact, negative motivation is since non quo i.e., incapable and imperative.
- ❖ It is the responsibility of the management to blend the positive and negative motivators effectively and use them for the achievement of the organizational objective in the best possible manner.

DO YOU KNOW?

Contributed by Shri Raj Tiwari
Past Chairman, IIMDC

- ❖ How the “RULE OF THUMB “has come?
 - In the year 1400 in England, man was allowed to beat his wife with a stick no thicker than his thumb and so we have rule of thumb.
- ❖ How the word “GOLF” is born?
 - This game was first played in Scotland and initially it was called “Game Only Ladies Forbidden.”
- ❖ Is it possible to lick your elbow?
 - No, it is impossible.
- ❖ What was the original colour of Coca Cola?
 - It was green
- ❖ What is so different about hair of intelligent people?
 - Their hair has more zinc and copper than others.
- ❖ First Novel ever written on Type writer?
 - Tom Sawyer
- ❖ Do you know the answer of this multiplication $111\ 111\ 111 \times 111\ 111\ 111$?
 - 12345678 9 87654321
- ❖ Who the kings in deck of playing cards represents?
 - Diamond : Julius Caser, Club : Alexander the Great, Spades : King David, Heart: Charlemagne
- ❖ What is the only food that does not spoil?
 - Honey
- ❖ What do bullet proof vest, laser printer, wind shield and fire escape have in common?
 - All these were invented by women.

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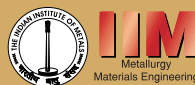
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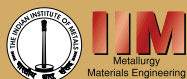


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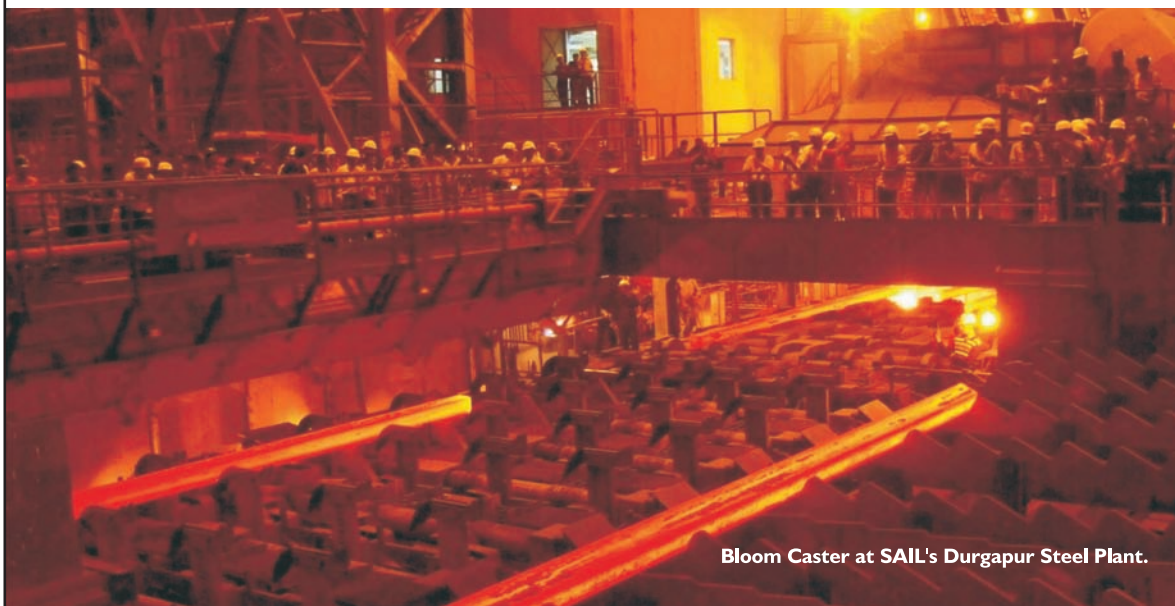
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SAIL - A Maharatna Company



Bloom Caster at SAIL's Durgapur Steel Plant.

Steel Authority of India Ltd. (SAIL), owns and operates five integrated steel plants at Bhilai, Durgapur, Bokaro, Rourkela and Burnpur; three special steel plants at Salem, Durgapur and Bhadravati; and a ferro alloy plant at Chandrapur. SAIL also produces iron-ore. It has its own captive mines that fulfil its iron ore requirements. SAIL has been awarded the prestigious status of a *Maharatna* by the Government of India.

- All its production units are ISO 9001:2000 certified.
- Current annual production of crude steel is around 14 Million Tonnes (MT). Produced over 350 million tonnes of crude steel since its inception.
- SAIL's product basket comprises Flat products, Long products and Pipes,
- including branded products such as SAIL TMT, SAIL JYOTI GP/GC Sheets.
- Supplier to strategic sectors like defense, atomic energy, power, infrastructure, heavy machinery, oil & gas, railways, etc.
- Supplier of rails to the Indian Railways.
- Major production units are ISO:14001 certified.

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