

## NEWS LETTER

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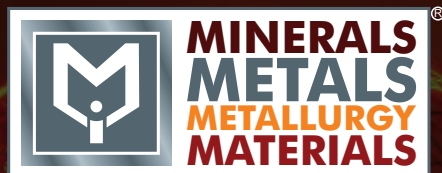


THE INDIAN INSTITUTE OF METALS - DELHI CHAPTER



### SHOW PREVIEW

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## MESSAGE FROM SHRI S S MOHANTY– PRESIDENT IIM



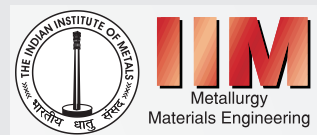
Dear All,

It gives me great pleasure to communicate with you for the first time as the President of IIM. It is indeed a great honor to assume charge as the President of IIM, the largest and most prestigious association of thinkers, technocrats, policy-makers, producers, suppliers and consumers linked to the metals sector in India.

We are today witnessing considerable volatility across all the sectors of our economy, and also tempered by the global slow-down. However, diligent efforts are underway by the Government to ease the policies' frame-work as well usher in new sops to impart a strong push to our economic indices and ensure inclusive growth.

It is in this context that a distinguished body like IIM can play a stellar role in harnessing and synergising efforts of a large group of industries from across the spectrum of mining, materials and metals sectors, as well as associated stake-holders viz. scientific, academic, research and policy-makers, to make possible the vision of placing India amongst the elite developed nations. We must strive to be at the forefront and bolster research activities for "Make in India" to be a tangible reality.

We at IIM need to expand our domain to closely work with other global metal institutes on regular basis to imbibe good practices, training methodologies & cost competitive technologies, and initiate exchange programs & industry visits. Concerted efforts for completion of the "Membership-Directory" quickly and creation of an "Expert panel" will serve in a big way to achieve this objective.



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Going forward from now, we are at the threshold of the mega annual event of IIM, the “NMD-ATM” which will be held at Coimbatore during 13-16th November, 2015 along with the International Symposium. The onus is on every one of us in the IIM family to step forward to contribute our might to ensure unprecedented success of the event.

I would like to request you to extend all possible help in organizing sponsorship, exhibition stalls and advertisements for the upcoming event. It would be in the best interest of IIM as a whole that your chapter facilitates in obtaining 2-3 advertisements each at a cost of Rs. 25000/- per advt. for the souvenir and also booking of 1-2 stalls each at a cost of Rs. 1.00 lakh per stall for the technical exhibition.

A few key issues on which I wish to seek your active co-operation are as follows:

1. Regular & timely audit of accounts of the chapter, and transfer to IIM-HQ.
2. Member mobilization drive to achieve 10% growth in membership each year.
3. Augment the resources of your chapter by organising technical programs; efforts should be directed to make your technical activities self-sustaining. To improve synergy, other nearby IIM chapters may also be invited to actively participate. Interaction with school students to guide, motivate and influence them in joining Metallurgical stream.
4. Increased technical activities of your chapter, such as technical talks and industry visits; interaction with local small scale metal industries and MSME; involvement of local technical institutes in these activities for promoting the metals/mining/materials sector.
5. Solicit Chapter's help in developing the membership directory and the “expert panel”.

I look forward to your whole-hearted support along with that of your chapter members in making IIM a more vibrant and globally recognized institute.

Please feel free to give your suggestions on any other issue of concern that you feel needs to be addressed by us in the ensuing days.

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# THE TREND FOR LARGE BLAST FURNACES – THE WAY FORWARD FOR FORTHCOMING INDIAN STEEL PLANTS



Shri S C Suri  
Hon. Member IIM & Editor-in-Chief,  
IIM DC Newsletter

Today, definitely, the expansion plans of all big steel manufacturers are based on installation of blast furnaces above 4,000 cbm. With India positioned as a developing country, nursing growth ambitions, it is an inevitable trend for blast furnaces to become increasingly larger if the country has to meet the mother of all steel targets. It may be recalled that the National Steel Policy 2012 entails a crude steel capacity of 300 million tons by 2025-26 (Vision 2025).

As a thumb-rule, one million ton of crude steel capacity addition requires an investment of Rs 4,000 crore. Thus, the steel sector requires investment in excess of Rs 800,000 crore by 2025-26. India's per capita steel consumption is still around 60 kg against the world average of 210 kg.

It must be kept in mind that larger the blast furnace, the higher would be the demand for the quality and consistency of raw material (read coking coal and iron ore) that is to be fed into it, which is a huge challenge in India at present.

"The BF route is the only viable one for large-scale production of high deformability steel and if our country's capacity is to grow towards 200 million tons per annum in the next few decades, we need to commission three large furnaces per year, despite their impressive scale".

New greenfield projects in India will all be based on large blast furnace, say experts. Smaller players might go in for smaller capacities as investments in large blast furnace are quite high. The specific investment of one 3-million tons per annum (mtpa) blast furnace is around s 2,500 crore (only blast furnace).

At present, large blast furnaces are under construction at Jindal Steel & Power's (JSPL's) Angul plant (4,500 cbm, start-up 2016), Tata KPO (4,300 cbm, start-up end-2015), NMDC (4,500 cbm, start-up likely 2017), SAIL Bhilai BF#8 (4,060 cbm, start-up likely 2016).

At present, Danieli is building a 4,506 m3 furnace for NMDC, which will be India's largest, once it is commissioned.

In mid-2014, the new-look Godavari blast furnace had been commissioned at Rashtriya Ispat Nigam Limited (RINL). This public sector steel major had upgraded Godavari at an investment of Rs 600 crore to increase the hot metal capacity of Visakhapatnam Steel Plant (VSP) by 5 lakh tons per annum. Godavari's volume was hiked from 3,200 cum to 3,800 cum through copper cooling plates and latest cast iron cooling plates in the place of the existing normal cast iron cooling plates.

## Mega Blast Furnaces – The Iron Ladies!

Kalyani at ISP, Durga at RSP, Godavari at RINL and many more... An even larger one is in the process of being created at NMDC's Nagarnar facility that is coming up... Plus-sized and volatile but invested with the regenerative power to be the source of the mother metal of iron, they are the steel mills' mystery women! Yes, we are talking about the mega blast furnaces! If India has to meet its Vision 2025 target of 300 million tons of crude steel capacity by 2025-26, then the expansion plans of all large steel manufacturers are based on installation of blast furnaces above 4,000 cbm. However, on the flipside, the larger the blast furnace, the insatiable appetite for higher volumes and better quality of raw materials increases in tandem, both of which are a challenge at present.

Overtaking "Durga" late last year as the largest blast furnace in the country was "Kalyani", a state-of-the-art furnace with a useful volume of 4,160 cubic metres and regarded as the culmination of a massive modernisation and expansion (MEP) drive at Steel Authority of India's (SAIL's) IISCO Steel Plant (ISP) at Burnpur, towards the installation of a 2.5-million-tons-per annum, state-of-the-art steel plant.

Durga is also a state-of-the-art BF that was built and set up in 2013 at SAIL's flagship, Rourkela Steel Plant (RSP), at an investment of around

Rs 1,600 crore and has a useful volume of 4,060 cubic metres and will take up the steel major's hot metal capacity by a whopping 2.5 million tons per annum. Further, it can produce an average 8,000 tons of hot metal per day and is the life force that will propel SAIL towards achieving its share in the country's Vision 2025 target in steel. Durga has been built using environment-friendly techniques, and boasts a lifespan of 20 years.

## Future Scenario

The blast furnace will, in future, be the dominant technology for iron making. But, especially in mature economies, the portion of electric steel-making will increase as more scrap will be available in the future.

Besides, there are also new technologies coming up like Corex and Fine which are in competition to the blast furnace by using coal and iron ore directly without involving pre-processing steps like a coking plant or sinter plant. These new processes also have an advantage from the environmental point of view.

In India, the blast furnace will increase its share of

hot metal production as many new large ones will come into production during the coming year.

What will be the right size for India will show the future as there is not enough experience with operating large furnaces above 4,000 cbm. Large blast furnaces are very sensitive to the raw material quality and in India the available iron ore quality is not favourable for operating large blast furnaces due to its high alumina content. A careful raw material selection and quality control is necessary to run a large blast furnace at stable conditions and for achieving optimal efficiency. Apart from the engineering and high technology that is associated with the BF today, there is still an aura of majesty about these huge cauldrons. Within the furnace, more than 1,000 chemical reactions take place, most of which are more or less out of control. This makes it even more fascinating. No one can take a look inside, we can only guess what is happening. Blast furnace operators and experts have taken years to develop their expertise and their know-how is valued across the globe.

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## PULVERISED COAL INJECTION SYSTEM FOR BLAST FURNACES

Mr. Gajendra Panwar  
Managing Director (India Operations)  
Danieli Corus India Pvt. Ltd, New Delhi

### Introduction

Pulverised Coal Injection (PCI) was the earliest known form of injection into the tuyeres of a Blast Furnace, when experiments were carried out in France in the second half of the nineteenth century, but it was not until the early sixties of the last century that PCI has been implemented successfully for hot metal production. Trials in several countries (USA, Britain & France) at this time had proved that the technology for pneumatic transport and injection of coal was available, but the relative ease and economics of the process were such that oil and natural gas became more popular injectants. AK Steel in the USA and Shougang in China were the exceptions, where PCI was used more than forty-five years ago and is still practiced today.

Auxiliary fuel injection, therefore, has been practiced for a number of years by iron makers to reduce the consumption of coke in the Blast Furnace and to increase Furnace productivity and stability of operation. The cost of coke is very high when compared to that of other types of tuyere injectants and replacing the use of coke with alternatives has the following benefits.

- Coke purchased from external sources could be minimised or eliminated altogether for plants with a coke shortage. The cost of building a new coke plant is about three times more than that for a PCI plant, for example, when equivalent carbon production is considered. Even a rebuild of an existing coke plant can be twice as expensive when compared to the cost of a new PCI plant
- The useful lifespan of existing coke batteries could be prolonged by running the

batteries at reduced throughput, thereby obviating the need for costly rebuilds

- Old, environmentally unsound coke plants could be shut down
- Reducing the output of an existing coke battery could improve the quality of the coke produced by using the extra process room created due to the lower production rates

Tuyere injectants also benefit the Blast Furnace process enormously. The cooling effect of the injectants in the raceway enables the use of higher hot blast temperatures and lower moisture additions, thereby reducing the total fuel consumption. The same cooling effect also permits the use of a higher concentration of oxygen in the hot blast, thus reducing the raceway gas volume and hence Blast Furnace pressure drop, thereby significantly increasing productivity. The use of injectants, along with the correct control strategy, can improve Blast Furnace stability and hot metal quality through improved thermal control.

Due to ease of use, oil, followed by natural gas, were the popular injectants in the sixties and seventies. With the oil crises in the late 1970s, many companies stopped injecting oil into the Blast Furnaces and turned to alternative sources of fuel. Coal preparation and pneumatic conveying had become proven technologies by that time and this encouraged iron makers to consider coal as a suitable injectant. Most iron makers inject coal into their Blast Furnaces at present, the vast majority since 1980, due to its relatively low cost and beneficial effects on the Blast Furnace process.

## Advantages of Pulverised Coal Injection

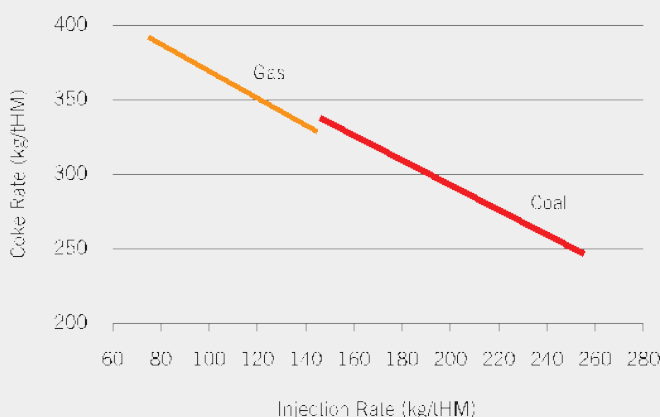
### Suitability

The selection of coal in preference to other types of injectants is based on the fact that the endothermic effect of coal on the high temperature heat supply to the lower furnace is the smallest of all injected fuels. This allows for high rates of injection, while maintaining acceptable flame temperature and top gas temperature, thereby demonstrating that coal has the greatest potential of all fuels for large volume injection and the largest gross coke savings.

### Cost

Coal is cheaper than purchased coke, even when the full preparation and injection costs are added to the coke price, for those iron making plants having a coke deficit. For plants which are considering building or rebuilding coke ovens, the capital cost of coal injection equipment is much less than that of a coke oven plant on the basis of an equivalent unit of fuel into the Blast Furnace.

### Replacement Ratio



Generally, it may be said that one unit of coal carbon will replace one unit of coke carbon and that coal hydrogen will also make a contribution to coke replacement, thus the value in using a particular coal being a function of many of its characteristics. During the long-term coal injection campaign at Tata IJmuiden in 1992 on Blast Furnace No 6, for instance, a coke replacement ratio of 1.08 was realised, mainly due to increased top gas utilisation and reduced heat losses from the Furnace.

### Environment

Since coke is replaced directly by coal in this process, the need for coke production decreases, thus reducing the need for environmentally polluting coke plants to be kept in operation or being built anew.

### Flexibility

A wide range of coal types may be injected in the coal injection process, including lower-cost non coking coals. In terms of volatile matter, the whole range from anthracites to lignites have been injected successfully, as have coals with different ash and sulphur levels, as shown by campaign runs at Tata IJmuiden.



## Increased Productivity

Coal injection, in combination with other blast parameters, enables the optimum raceway flame temperature to be achieved and controlled. Hydrocarbon injection alters the heat balance of the lower section of the Furnace. The combustion of fuels injected at temperatures less than 90 °C produces reducing gases with a lower heat content than is achieved by burning coke which has been pre heated to 1500 °C. Moreover, when injected fuel has a high hydrogen/carbon atomic ratio, less heat is evolved in the combustion of that fuel to CO and H<sub>2</sub>. Natural gas has a hydrogen/carbon ratio of 4:1. The comparative values for fuel oil and a bituminous coal are 1.5:1 and 0.75:1.

To balance the endothermic effect of tuyere injection and maintain a preset tuyere raceway adiabatic flame temperature (RAFT), the blast temperature or the oxygen content may be increased, or the blast humidity be reduced. Compared with other fuels, coal injection depresses the flame temperature the least, thus enabling blast steam additions to be stopped and maximising the benefits of this type of injection.

## Low Coke Rates

Since coal causes a lower depression in flame temperature per unit of injectant than oil or natural gas, it enables, for limiting blast temperature and/or oxygen enrichment levels, a higher injection rate to be achieved, and, consequently, lower coke rates. At Tata IJmuiden, for example, a coke rate of some 272 kg/THM was achieved at a Coal Injection rate of 212 kg/THM, during the extended campaign on high injection rates in 1992.

## Smoother Operation

Coal injection, together with oxygen enrichment, results in a smaller gas volume being produced in the Furnace, thus leading to a smoother, more stable, high productivity Blast Furnace operation with less hanging and slipping.

## Availability

With greater stability of supply from extensive reserves worldwide, coal prices should be lower than natural gas and oil in the long-term. The worldwide reserves and extraction rates of fossil fuels readily guarantee the security of coal

supplies for a very long time to come.

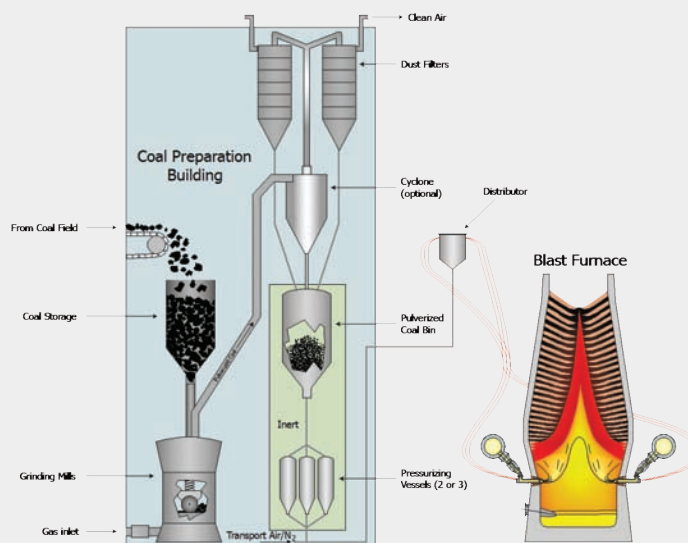
## Pulverised Coal Injection

### General

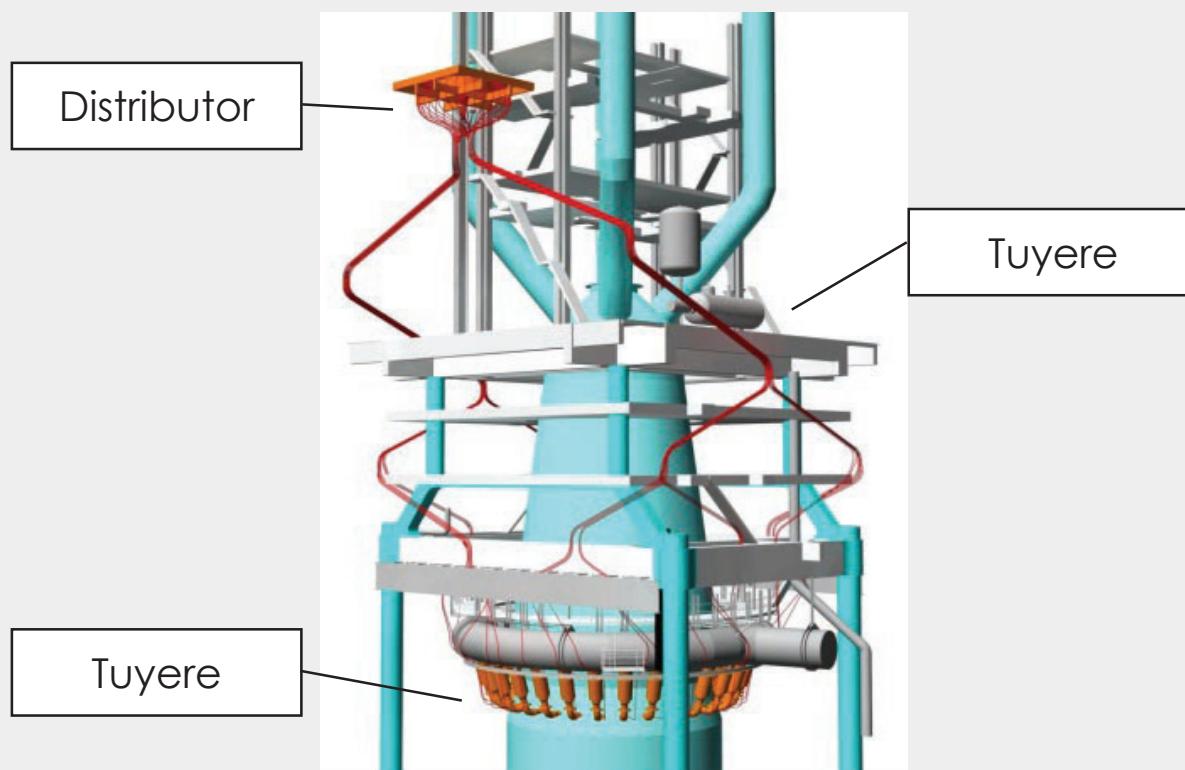
The Blast Furnace process has four primary demands on a PCI System.

- Reliability – the installation must be completely reliable, thus minimising production losses and process stability. High reliability/availability is of the essence to minimise the high costs associated with unnecessary Blast Furnace stops and process instability
- Coal distribution in the tuyeres – pulverised coal must be distributed with sufficient accuracy in the tuyeres to ensure process symmetry in the Furnace
- Particle size distribution – coal must be pulverised to a suitable size that ensures maximum combustion in the raceway
- Coal moisture – pulverised coal must be sufficiently dry for optimum handling, to maximise coke replacement and to maximise combustion in the raceway.

The ability of the PCI System to process a wide variety of coals with different handling characteristics has significant economic implications - this broadens the choice of coals that may be used, which, in turn, allows coals with higher value in use to be used, thereby maximising profit.







PCI Systems available today consist of two parts, the coal preparation part and the coal injection part. In the coal preparation part, the coal is cleaned, sized, pulverised and dried such that the pulverised coal is readily transported and meets the process norms required of the Blast Furnace. The injection part ensures that a reliable and constant supply of pulverised coal is injected into the Furnace in a uniform manner. The grinding part of most of the PCI Systems currently available is very similar and it is the difference in philosophy of the injection system that differentiates the various technologies on offer today.

## Danieli Corus's System Highlights:

- Simple & Proven Technology
  - Air/nitrogen for transport: Flexibility
  - Injection rate determined by Feed Tank pressure
  - No special pipes, bends or coatings
  - No software/hardware control for equal distribution: The system is designed based

on equal pressure drop principle for injection lines. Therefore, the system is completely maintenance free

- Availability 98%
- 100% Automatic Control
- Flexibility of Coal Selection > 70 types of Coal
- Accuracy Feed Tank Control  $\pm 2\%$
- Accuracy Tuyere Injection Rates  $\pm 5\%$
- High & consistent injection rates (>270 kg/THM)
- Minimum maintenance costs
- Simple injection lances removable under full blast. The removable tip design increases the lance life, hence reduces the operating cost.
- Distance between PCI building and Blast Furnace as much as 1,600 m
- 66 references world-wide (Jindal, Tata, SAIL, NSC, POSCO, US Steel, BaoSteel, China Steel etc)

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## NON-FERROUS METALS INDUSTRY IN INDIA-CURRENT SCENARIO

L Pugazhenthly  
Past President,  
The Indian Institute of Metals

During the financial year 2014-15, the cumulative production of Aluminum, Copper and Zinc were 1600464, 765620 and 737830 tonnes respectively; the players are NALCO, HINDALCO, BALCO, Sesa Sterlite, Hindustan Copper Ltd, Birla Copper, Sterlite Inds, Hindustan Zinc Ltd and Binani Zinc. Besides the above, there are also recyclers in the country, pumping the metals into the country. They are not significant players, volume wise, except in Lead, where about 8 to 9 lakh tonnes of the metal are recycled from used lead batteries coming from the auto sector, invertors, telecom, UPS segment etc., The primary lead production during 2014- 15 was 127,142 tonnes.



Non ferrous metals like Aluminum, Copper, Zinc & Lead largely find applications in buildings & construction, automobiles as well as infrastructural sectors like power, telecom, railways, highways, renewable energy etc., In view of the slowdown in the above areas, consumption of nonferrous metals is not witnessing satisfactory levels of growth.

Of late, the demand for nonferrous metals has been severely dented by the cheaper imports coming from China and West Asia. As per the Aluminum Association of India, Aluminum imports have increased by more than 159% in 2015; in 2011 the Aluminum imports amounted to 881000 tonnes. Aluminum industry in India is already talking seriously about production cutbacks, job cuts etc.,

which are totally undesirable. In addition, the Free Trade Agreement with countries like South Korea have resulted in more imports of Zinc, at cheaper prices. Moreover India now wants to enter into FTAs with the European Union, Australia and China under a Comprehensive Economic Partnership Agreement. These agreements are bound to push the last nail into the ailing domestic nonferrous metals industry. Cheaper steel imports from China have already hit the domestic steel industry very badly; even the recent 2.5% hike in import duty is not adequate for the steel industry because of the increased input costs, transport charges, interest rate etc.,

To conclude, when the Indian economy is not in a sound health, with sluggish demand for steel and nonferrous metals, the Govt of India should postpone, for the time being, signing any FTAs with other countries, regions etc., More importantly, realizing the gravity of the situation, the Indian govt should impose safeguard duties at the earliest, wherever serious injuries have occurred.

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### IIM DC Quiz Contest "Metallica 2015"



A Quiz Contest "**Metallica 2015**" for senior school students was organized at *The Indian Institute of Metals – Delhi Chapter* on 8th August 2015. The prime 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 Quiz was sponsored by Steel Authority of India Ltd (SAIL), Jindal Steel & Power Ltd (JSPL) and M/s Outokumpu, a global leader in stainless steel.**

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

1	Amity International School	Gurgaon
2	Apeejay School	Pitampura, New Delhi
3	Andhra Education Society	Karol Bagh, New Delhi
4	Bal Bharti Public School	GRH Marg, New Delhi
5	Cambridge Foundation School	Rajouri Garden, New Delhi
6	Delhi Public School	Mathura Road, New Delhi
7	Delhi Public School	Sushant Lok, Gurgaon
8	G D Goenka Public School	Rohini, New Delhi
9	Mount Carmel School	Anand Niketan, New Delhi
10	Manav Sthali School	New Rajendra Nagar, New Delhi
11	N C Jindal Public School	West Punjabi Bagh, New Delhi
12	R D Rajpal School	Dwarka, New Delhi
13	Ryan International School	Rohini, Delhi
14	St. George's School	Alak Nanda, New Delhi
15	St. Paul's School	Hauz Khas, New Delhi
16	The Srijan School	Model Town, Delhi
17	The Indian School	Sadiq Nagar, New Delhi



At the outset, Shri K L Mehrotra, Chairman, Delhi Chapter of IIM, 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.



Dr. Vipin Jain, Hon. Jt. Secretary of Delhi Chapter coordinated effectively the preparatory activities culminating in successful completion of the contest. He announced the modus operandi of the operation of the contest. Shri Gautam Bhatia, Member, Executive Committee, Shri Deepak Vaidya, Member, Executive Committee and Ms. Kiran Bamrara from M/s Outokumpu facilitated the process of conduct of the contest.

The contest consisted of two phases. In the Elimination round, seventeen teams were administered a written test of one hour duration. After evaluation of the performance of the seventeen teams in the written test, the following four teams qualified for the final round.





- 1 Apeejay School
- 2 Cambridge Foundation School
- 3 G D Goenka Public School
- 4 Ryan International School



These four teams were administered various questions through four different rounds; viz., Warm-up, Time-out, Buzzer and Fire rounds. After completion of all the Rounds, Evaluation Committee examined the performance of the four teams. Simultaneously, when the performance of the four teams was being evaluated, the interim time was utilized by asking various Open-House questions from students relating to metals and minerals industry. A number of oral questions relating to metallurgical and associated fields were administered by Shri S C Suri, Shri K K Mehrotra, Shri Deepak Vaidya, Shri Gautam Bhatia and Ms. Kiran Bamrara. A cash award of Rs. 100/- each was given to the students who gave correct answers.



After evaluation of the performance of the four teams, the team of two students namely **A Shashank Vishwanath & Kheelit Pruthi** from **Cambridge Foundation School** was adjudged the **Winner Team**. The team consisting of **Anshul Mandawat & Kushagra Juneja** from **Apeejay School** was declared the Runner-up team.



The winning team was given a trophy and a cash prize of Rs. 5000/-. A trophy and a prize of Rs. 3000/- was given to Runner-up team. Rs. 1000/- each



was given as consolation prize to the remaining two participating teams in the Final Round viz. G D Goenka Public School and Ryan International School.

All individual students from seventeen participating schools, were given Certificates

of participation. In addition, teachers of all the participating schools were handed over suitable mementoes for retaining in their schools on behalf of IIM Delhi Chapter.







The quiz event was suitably photographed.

The winning team consisting of **A Shashank Vishwanath & Kheelit Pruthi** from **Cambridge Foundation School** along with an accompanying teacher to be nominated by this school will be sponsored for Prof. Brahm Prakash Memorial Materials Quiz to be held at Kalpakkam on 19th September 2015. To and fro travel expenses (limited to AC 2 Tier train fare) of the team & the accompanying teacher will be borne by Delhi Chapter. Kalpakkam Chapter would take care of local hospitality.

On behalf of the IIM-Delhi Chapter, a small gift item was given to all the students, teachers and all others participants of the event.

Several members of the IIM DC and the Executive Committee members participated in the event. About 80 persons participated in the Event.

The programme ended with a lunch.

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## LEADERSHIP AS A SELF-DEVELOPMENT PROCESS

A talk "Leadership As a Self-Development Process" was organized at our Chapter on 22nd August 2015. The talk was delivered by Maj. Gen. (Retd.) R C Suri.

At the outset Shri K L Mehrotra, Chairman spoke about the activities of Delhi Chapter and welcomed Maj. Gen. (Retd.) R C Suri.





Thereafter Shri S C Suri, Former Chairman, Delhi Chapter, spoke about the Speaker. Thereafter Shri S C Suri handed over the stage to the Speaker for delivering of the Talk.



"Leaders are a basic and one of the scarcest resource of any organization. Unlike other factors of production like capital, labour, technology etc. it is difficult to replace leadership by outside interventions. Each successful project can be ultimately traced to a good leader. Leadership is what gives an organization a tool to translate



Maj. Gen. (Retd.) R C Suri thanked in Delhi Chapter for inviting him to the Talk. The salient points brought out by the Speaker are as under:



its vision into reality. In spite of its importance, leadership still remains most studied but least understood subject. It is a myth that Leaders are born and cannot be made. It has to be cultivated through vision and hard work as a self-development process.



One of the most easily understood definition of the leadership is given by one Lord Moran- a British physician. He defined it as "Leadership is the capacity to frame plans that will succeed and faculty to persuade others to carry them out in face of all impediments."

It was expected that with the advent of modern management education, the organisations will be led more effectively. But it has been belied. Most organisations are now better managed but under led. It is so as the difference between Management and Leadership is not clearly understood. Management controls complexity and Leadership produces useful change- often dramatically. In words of one Warren Bennis "Mangers do things right whereas the Leaders do the right things"

## Why are Leaders so rare?

Leaders are rare because the combination of qualities required to become a good leader are not easy to come about. A Leader has to be a 'gentle person' with a inner hard core based on the foundation of selflessness coupled with an ideal. An Ideal has to be developed as a Vision. Vision has to be Credible, Challenging, Clear, Consistent with the role of the organization, provide a bridge from present to the future and something in which the organization believes

whole-heartedly.

Vision becomes reality through process of envisioning, activation, support of people involved in carrying out the vision, implementing, ensuring through proper control and recognizing and rewarding people involved in change.

Leader has to have the knowledge of the profession but more importantly knowledge of handling the people. Leader also has to be a person of character, possess courage, will power to persist and initiative to seize opportunities to overcome impediments.

Developing above attributes in oneself is through meditating on present inadequacies, and with thought and action develop new tendencies till they become a habit. With efforts, the above process of self-development will succeed".

There was lively Question-Answer Session after conclusion of the Talk.

On behalf of Delhi Chapter, a trophy and a memento was presented to the speaker by Chairman.

The Talk was attended by about 30 persons.

The programme concluded with lunch.

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## Experience Sharing on Leadership Development



Manoranjan Ram, Honorary Secretary of IIM Delhi Chapter, was invited by Steel Authority of India Limited (SAIL), Management Training Institute (MTI), Ranchi, as a Guest Faculty to take a session during the MTI programme on "Leadership Principles and Practices". The participants were the young Assistant General Managers (AGM) of various units of SAIL.

Here below is a brief synopsis of the session taken by Mr. Manoranjan Ram. The theme of his session was "Experience Sharing on Leadership Development."

Firm is the locomotive of Market Economy. The sole objective of a firm is to make Profit and Growth. The retained profit of a financial year is ploughed back to the firm and hence it enables the firm to change its Configuration, i.e. the profit facilitates



the firm to become bigger in size or capacity. Thus, a firm operates in a positive feedback loop with a constant desire to change its Configuration; this is called **PFSCC** (Positive Feedback with System Configuration Change) mode of functioning of a firm.

Leaders are required to drive this complex locomotive in a controlled manner.

As both the Profit and Growth are important for a firm, therefore, each activity of a leader should be focused towards the people (employees) and revenue earned (by the firm).

Excellence today is no guarantee of excellence tomorrow. McKinsey published "In search of Excellence" in 1982, they hailed 43 companies as excellent. By 2006 (well before the financial crisis), 20% no longer existed, 46% were struggling and only 33% were still high performers<sup>1</sup>.

Only a third of excellent companies manage to stay that way for decades. The secret lies in managing the performance and health of the firm so that it can sustain excellence over time. Performance can be managed by the Managers; however, leadership practice at each levels of an organisational hierarchy is required to manage the "health" of an organisation. Here, the "Health" may be defined as an organization's ability to adapt to the changes in the market forces.

To initiate collective change, organizations must unleash the full potential of individuals. The LEADERSHIP is a process by which the employee in the bottom of the pyramid can influence others to accomplish a mission.

Mr. Ram, shared his experience in SAIL and ArcelorMittal, and narrated the following two path-breaking events in which he was also a part of the Change Process.

- Turnaround of Rourkela Steel Plant (during 2001 – 2005)
- Project "Blue Camel" – ArcelorMittal Jubail, Saudi Arabia (during 2011 – 2012)

The session was well appreciated by the participants. The main takeaway of his session was - "executives should develop a habit to question

the status quo and measure their physical actions in terms of financial numbers."

Manoranjan Ram is currently working in Paul Wurth India, SMS Group as Senior General Manager – Sales and Marketing. Before joining Paul Wurth, he worked 15 years in SAIL and 5 years in ArcelorMittal.

## 1. Based on the analysis in Stuart Cranier and Des Dearlove, "Excellence revisited," Business Strategy Review, March 2002, updated to 2006.

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### The Chemistry and Structure of Iron & Steel

Archaeological evidence suggests that people have been using iron for at least 5,000 years. Iron is the cheapest and one of the most abundant of all metals, comprising nearly 5.6% of the earth's crust and nearly all earth's core. Iron is primarily obtained from the minerals hematite ( $\text{Fe}_2\text{O}_3$ ) and magnetite ( $\text{Fe}_3\text{O}_4$ ). The minerals such as taconite, limonite ( $\text{FeO} \cdot (\text{OH}) \cdot n\text{H}_2\text{O}$ ) and siderite ( $\text{FeCO}_3$ ) are other important sources. Steel made from minerals of iron typically contain between 0.3% and 1.5% carbon, depending on the desired characteristics.

Pure iron:	Iron in the pure state is a very soft, grey metal and of no commercial use.
Wrought iron:	It has approximately 0.05% carbon, is stronger than most other pure metals and can be made into weapons, arms, and our cooking pots and vessels.
Cast iron:	It is grey in colour and contains 2-4% carbon. Cast iron is very brittle due to carbon rosettes in the structure acting as stress-raisers. It is possible to use heat treatment on cast iron to improve its structure, making iron ductile and malleable.
Steel:	It contains 0.01 to 1.5% carbon. It exhibits a wide range of properties due to variation in



carbon content, cold working, heat treatment, addition of alloying elements etc.

C%	PROPERTIES	APPLICATION
0.01 - 0.1	Soft, ductile, no useful hardening by heat treatment except by normalizing but can be hardened, and is weldable	Pressings, where high formability is required
0.1 - 0.25	Strong, ductile no useful hardening by heat treatment except by normalizing but can be hardened, and is weldable	General engineering uses for a mild steel
0.25 - 0.6	Very strong, heat treatable to produce a wide range of properties in quenched and tempered conditions, difficult to weld	Bar and forgings for a wide range of engineering components, connecting rods, hammers, axle shafts requiring strength and toughness
0.6 - 0.9	Strong, whether heat treated or not, lower ductility with lesser carbon content	Tools, wear resistant (Piano)

## Micro-structure of steel

Steel has the following five main constituents:

- Ferrite:** This structure of pure iron has a body centered cubic (BCC), known as  $\alpha$  iron, it is soft and ductile and imparts these properties to the steel, also there's very little carbon (0.01% carbon will dissolve in ferrite at room temperature).
- Austenite:** This is the structure of iron at high temperature (over 912°C) has a face centered cubic (FCC) crystal structure known as  $\gamma$  iron. This material is important in that it is the structure from which other structures are formed when the material cools down from the elevated temperature.
- Cementite:** A compound of iron and carbon ( $\text{Fe}_3\text{C}$ ), iron carbide, it is hard and brittle and its presence in steel causes an

increase in hardness and reduction in ductility and toughness.

**Pearlite:**

Laminated structure formed of alternate layers of ferrite and cementite, it combines the hardness and strength of cementite with the ductility of ferrite and is the key to a wide range of properties of steel. The laminar structure also acts as a barrier to crack movement as in composites. This gives it toughness.

**Martensite:**

A very hard needle-like structure of iron and carbon, only formed by very rapid cooling from the austenite structure, it needs to be modified by tempering to achieve acceptable properties.

Source: Steel 360

## Changing Dynamics of Alloy Industry

Akin to steel, the alloy industry is notably shifting on the course of expansion and recent dynamics of the industry paint a much re-contoured picture with additions and combinations

Corroborating the assertion is the increasing capacity of alloy industry in Malaysia. Via producers like AML, OM Holdings, ASMAG, Sakura Ferroalloys and others, there's an upcoming ferro alloy capacity of about 0.7 mnt pa in the industry. Initial production at some of these Malaysian units has already begun.

Malaysia's Sakura Ferro alloys is a joint venture between South Africa's Assmang, Japan's Sumitomo Corp and Taiwan's China Steel Corp. Assmang will supply the manganese ore required to feed Sakura's ferro alloy production, while China Steel will be one of the off takers of the plant's output. Assmang has 54.36% share in the joint venture, Sumitomo 26.64% stake and China Steel has 19% interest. The company to be commissioned shortly will produce ferro

manganese and silico manganese. Besides domestic sales within Malaysia, the company plans to target export to India, Japan and Taiwan and other major steelmakers in Asia.

Pertama Ferro Alloys, formerly called AML Manganese (Malaysia), as the first large-scale manganese alloys and ferro silicon plant in Malaysia, plans to establish itself as a global ferro alloy production leader and supply manganese alloy products for steel industry worldwide. The products of the plant will be manganese alloys, ferro silicon and electrolytic manganese metal (EMM). The company has already begun its production with ferro silicon. In coming days, production in full capacity will begin for manganese alloys and low carbon alloys.

Malaysia's producers enjoy full support of their government under the Sarawak Corridor of Renewable Energy (SCORE) government development initiative. Moreover, hydel power tariff is about INR 2.4 to INR 2.5 a unit, and the government has long term power tariff agreements with the industry. The above producers have their captive manganese ore mines. Some other companies with manganese ore mines have share holding in Pertama Ferro Alloys. The scenario that seems to be building up will pose difficulties for the Indian industry when Indian producers will have a hard time finding a level playing field to compete with the Malaysian counterparts in the coming days.

In India, the market scenario is changing rapidly due to increase in power tariff in various states, prices of raw materials such as manganese ore and domestic, and export market dynamics. Amid slumped, sluggish and volatile market conditions, the recent power tariff hikes have been tough on the ferro alloy industry. Power cost in Chhattisgarh increased from INR 4.65 per unit to about INR 5.34 for HT supply for the industry. However, producers having captive power plant are unaffected from this increase. Similarly, power tariffs in Madhya Pradesh increased from INR 5.3 per unit to about INR 6 for the industry. On the other hand, power tariff of DVC in West Bengal decreased for the industry by 30 paise per unit after subsidy. Although, new capacities are being added, they are at early stages yet, and the impact of it on Indian or global industry cannot be fully deduced. However, the apparent changes at present project an enhanced future for the industry.

Source: Steel 360

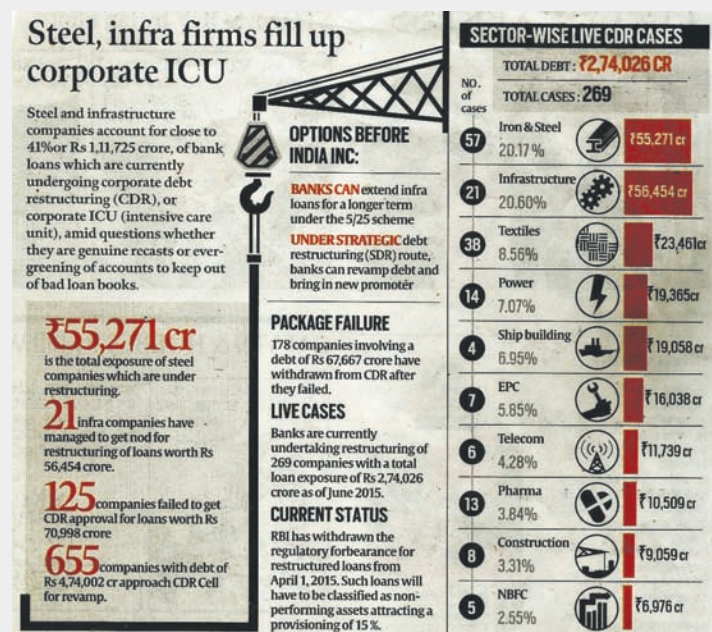
## Difficult Times for Indian Aluminium Industry

Struggling to cope with rising Chinese import, low demand and increasing coal prices, the Indian aluminium industry has urged the government to increase import duty on aluminium to 10%.

"We have curtailed production at our Hirakud Smelter due to limited supply of coal after we lost the Talabira block and due to some logistics problem. Our annual coal requirement is 16.5 mnt, but the coal blocks we have bagged in the auction will not be sufficient to meet the requirement. Therefore, we will definitely participate in the upcoming coal block auction", said Satish Pai, Deputy Managing Director, Hindalco Industries.

At a time when cheap aluminium exports from China are flooding the Indian market, India's leading aluminium producers are struggling with limited coal supply, subdued demand and low international prices. The situation is so grim that a leading producer like Vedanta indicated that it may take 'drastic' measures, while some aluminium producers have already curtailed production.

Since cost of energy contributes to almost half of the cost of production of aluminium, rising price



of coal and limited supply have been the major factors that have severely affected companies in the industry. Amid these circumstances, Indonesian government's decision to levy 1.5% tax on steam coal from August'15 will worsen the situation further.

## Top Producers Suffering

Hindalco, India's largest aluminium producer and Birla Group's flagship company, has already curtailed production at its Hirakud smelter owing to limited supply of coal after it lost the Talabira coal block. Meanwhile, the company bagged three coal blocks in Jharkhand and Chhattisgarh in Schedule II e-auction held in February'15. The company has indicated that it will bid for few other coal blocks in the upcoming third round of auction in August'15 as it is ramping up its smelting capacity to 213,000 tonnes.

It seems Vedanta has been a serious victim of the current situation. The company's Odisha plant is facing troubles in sourcing raw materials like bauxite and coal. The smelter at Jharsuguda (Odisha) has its own coal fired captive power plant. However, the power plant is facing difficulties in sourcing its entire coal requirement from MCL, and has to import from Indonesia, according to Dr. Mukesh Kumar, President, Vedanta Group.

It is not only the private producers who are struggling. Public sector producer Nalco is also facing difficulties sourcing thermal coal. For several years, Nalco has been facing problem in coal supply from MCL. Last year, the company had to shut down some of the pots as its coal stock hit critical level. Also, cancellation of the 67.49 mnt Utkal-E coal block has also shattered Nalco's hope to secure its coal supply.

## Rising Import

With the surge of more than 1.5 mnt pa import of aluminium in the country, the share of domestic producers in the Indian market has dropped drastically to 45% in 2014-15 from 60% in 2010-11, mainly due to surging imports from China and West Asian countries.

"These foreign aluminium companies are hugely benefitting from substantial government

patronage and incentives, lower coal based power tariff and cheap gas based power. Whereas, the performance of domestic players in aluminium is marred by sharp increase in coal prices, which has increased nearly 24% over past 3 years, no government subsidy and dependence on alumina import", said Vedanta's CEO Mr. Pati.

The rising imports are further delaying the expansion plans of all the companies including Vedanta's 1.25 mnt pa SEZ, which remains idle in want of raw material. Today, imports are substantially cheaper than the domestic product as other countries are supporting their aluminium industry through incentives to safeguard their interests.

Source: Steel 360

## A troubled time for India's steel industry

The sharp decline in global commodity prices is generally good news for the Indian economy. There could be one exception to the rule: steel. Global steel prices are now at their lowest level since 2003—and steadily falling. This has created problems for the steel industry in many countries. Even global giants such as US Steel, Posco and Nippon Steel have seen profits come under pressure in their latest quarters. Indian steel companies are unlikely to be exceptions to the overall global trend.

A further deterioration in the financial health of Indian steel companies can add to the problems that banks are currently facing. Investment bank Credit Suisse estimates that the \$50 billion of debt in the books of the major steel companies is around 15 times their collective operating profit in fiscal year 2015. That is very high. The recent decline in global steel prices could worsen the arithmetic. In fact, the Credit Suisse analysts believe that the cash costs of Indian steel companies were higher than steel prices in China. In other words, they would make losses at current prices even if they have no interest costs to pay. Banks have good reason to worry. Lending to the steel industry accounts for around a 10th of the bad loans of the Indian banking system, according to the latest Financial Stability Report published by the Reserve Bank of India in June. The other major contributors to the problem are loans to textile companies, power distributors and infrastructure projects. But



the domestic steel industry is particularly exposed to global price shocks. But that is not the entire story. The Financial Stability Report also notes: "Five out of the top 10 private steel producing companies are under severe stress on account of delayed implementation of their projects due to land acquisition and environmental clearances, among other factors."

The sectoral credit stress tests conducted by the central bank show that the steel industry is least able to withstand shocks. The sensitivity analysis showed that the most significant effect of a single sector shock would be on the steel industry exposures, in terms of restructured assets becoming non-performing assets. Steel makers in many countries are already complaining about dumping by Chinese steel makers. A Bloomberg report cites Chinese customs data to show that steel exports from China shot up by 28% to 52.4 million tonnes in the six months to July. China is thus pushing down steel prices in two ways: its economic slowdown has reduced global demand for steel while domestic overcapacity is pushing firms to cut prices aggressively to sell abroad.

Some reports suggest that the Indian government is already under pressure to impose higher tariffs on steel imports. Anti-dumping action has also been initiated against imports of some steel varieties from China, South Korea and Malaysia. But there is an interesting twist to this tale: the US commerce department has said Indian steel companies are among those that are said to be dumping the alloy in the US market. It seems as if a mild trade war is brewing. It is quite likely that the coming months will see calls for higher protective tariffs, regulatory forbearance on bad loans, some attempts to sell assets to reduce debt, and some general complaints that projects got into trouble not because of business risks but regulatory problems in the last years of the previous government. History has a useful lesson to offer. The Indian steel industry has been through a similar situation in the early years of this century: high levels of debt, excess capacity, low global prices, Chinese dumping, demands for protection and failure to service bank loans. The way out of the mess was a long one. Hard decisions had to be taken. Neither steel company managements

nor the bankers who have lent to the industry can afford to ignore this harsh reality.

Source: Metaljunction

## **WSA considers India to record highest steel consumption growth**

India's steel consumption growth is likely to be the highest both in current year and the next at 6.2 percent and 7.3 percent, respectively, while all other major consuming countries such as China, the US, Japan and Korea are expected to witness a sharp decline, according to World Steel Association (WSA) in its first short range outlook for 2015. The short range outlook, prepared by the largest industry body's Economic Studies Committee consisting of chief economists of over 40 member companies twice in a year, also forecast continued negative growth in consumption in China in 2015 and 2016 due to its government's re-balancing efforts, which has a huge bearing on the real estate market. China posted negative steel growth in 2014 for the first time since 1995. The use of steel in China shrunk by 3.3% to 710.8 MT in 2014. WSA, whose members contribute 85% of the global steel production, sees "increased optimism" about India and forecasts India's steel use to go up to 80 MT in 2015 and further to 85.8 MT in 2016 from 75.3 MT in 2014, up 2.2% from the previous year. The committee sees slower growth in steel demand internationally which is likely to average at 0.5% in the current year, down from 0.6% in 2014, to stand at 1,544 MT. however, the global average will be higher at 1.4% in 2016 to touch at 1,565 MT, it said.

Source: JPC Bulletin

## **JSW Steel raises \$250 million to Fund Capacity Expansion**

JSW Steel drew down \$250 million (about Rs 1,500 crore) from its existing line of credit with Axis Bank of Rs 2,200 crore in the last week of March for expanding its steel-making facility at Dolvi, Maharashtra, Joint MD and group CFO, Seshagiri Rao told as the steel maker continues to add capacity in a poor demand environment. The Sajjan Jindal-led JSW Steel is expanding steel-making capacity at its plant in Dolvi to 5 million tonne per annum from 3.3 million tonnes per annum. It is scheduled to be completed by second quarter of the new

financial year and will cost the company about Rs 3,300 crore. About 700 crore of Axis loan is in rupee currency, which is expected to be withdrawn later, Rao said. Axis Bank syndicated the \$250-million loan with eight international and Indian lenders. Indian steel consumption grew only 1.4 percent from April to December, according to a report by Joint Plant Committee (JPC), a unit of the Steel Ministry. The situation got worse with cheap imports from China and Russia flowing into the market.

Source: JPC Bulletin

## **Steel imports hit record high, surge 71% in FY15**

Steel imports by India surged by a whopping 71 percent to touch a record high of 9.31 million tonnes in 2014, putting pressure on the already squeezed margins of domestic firms. India had imported 7.38 million tonnes of steel in 2009-10, 6.66 million tonnes in 2010-11, 6.86 million tonnes in 2011-12, 7.93 million tonnes in 2012-13 and 5.45 million tonnes in 2013-14. Exports, however, have been at slower pace than imports, especially in more recent years. Shipments of steel stood at 3.25 million tonnes in 2009-10 and 5.98 million tonnes in 2013-14, only to plunge 8 percent to 5.5 million tonnes last fiscal. Due to rising imports from countries like China, Japan and Russia, domestic steel industry is struggling to retain margins. Cost structure in these countries has significantly come down. The problem of the domestic steel industry got compounded with the subdued demand. Though the last fiscal was better compared to the previous one, it still remains below potential. Real consumption of the alloy grew by 3.1 percent to stand at 76.35 million tonnes in the last fiscal compared to 59.34 million tonnes in 2009-10, 66.42 million tonnes in 2010-11, 71.02 million tonnes in 2011-12, 73.48 million tonnes in 2012-13, 74.09 million tonnes in 2013-14. Steel imports to India attract duties between 5 percent and 7.5 percent. Domestic industry has been clamouring for raising the duty to at least 10 percent. The steel ministry has also written to its finance counterpart to raise the duty.

Source: JPC Bulletin

## **India taking small steps to move up steel capacity order**

Even as steel production is on the decline globally owing primarily to falling Chinese output, India remains the only exception among the major producing nations.

According to the World Steel Association's recent data, India's steel production grew by an impressive 6.7 percent in the first four months of the current year vis-à-vis a decline of 1.3 percent in China, the highest producer by a wide margin and 1.7 percent, globally.

India, now the world's third largest producer, produced 29.97 million tons (mt) of steel during the January-April period of the current year compared to 28.09 mt in the same period a year ago.

China's production fell to 270 mt from 274 mt a year earlier during the period.

Output in Japan fell by 3.7 percent to 35 mt during the period.

Production in the US also dipped 8.5 percent to 26.3 mt during the period.

Global production came down to 536 mt in January-April from 546 mt a year ago.

JSW tops the industry in capacity utilisation. In the fourth quarter, it operated its plants at 90 percent rated capacity. In comparison, Tata Steel India operated at 80 percent capacity due to raw material shortage. "JSW's revenue run-rate clearly indicates that it had higher utilisation levels compared to its peers in the March quarter," said an analyst with a local brokerage house.

Sajjan Jindal-owned JSW Steel is now also the largest steel-maker, revenue-wise, in the country, ahead of long-time market leader Steel Authority of India (SAIL). Last year, the company had overtaken Tata Steel to become No. 2 in the industry.

JSW Steel reported net sales of Rs 52,971 crore in the year ended March 2015 against Rs 45,710 crore reported by SAIL. In comparison, Tata Steel's India operations reported net sales of Rs 33,666 crore in the same period.



Including its global operations, however, Tata Steel remains the largest with revenues of Rs 139,503 crore. That's the reason why Tata Steel is not losing much sweat over the rise of JSW. "Tata Steel remains the preferred choice for marquee customers and we sell every bit of steel that we produce in India," said T V Narendran, Chief Executive Officer of the India operations of Tata Steel, at the company's earnings conference.

Analysts say the top slot in the domestic up for JSW Steel and is the culmination of its long-term plan to close the capacity and product portfolio gap with its two larger peers. The company has been steadily raising its production capacity in the home market through brownfield expansion and strategic acquisitions.

Analysts, however, say a single quarter performance may be too short a period to judge whether JSW Steel can sustain its position at the top as the largest steel maker in the domestic market. Tata Steel is close to commissioning its 3 million tons greenfield unit in Odisha while SAIL is raising its capacity to 23 million tons.

Also, JSW has a lot of ground to cover on profitability. At the operating level, Tata Steel India was the highest at Rs 8,011 crore in the year ended March (down 35 percent y-o-y), followed by JSW Steel, which witnessed a marginal fall of 0.25 percent on a year-on-year basis to Rs 5,967 crore. SAIL though showed a 19 percent increase on year-on-year basis at the operating level to Rs 2,858 crore in FY15.

In terms of net profits, JSW Steel is much lower than its peers. It recorded a net profit of Rs 1,796 crore in FY15 (up 75 percent from the preceding year). SAIL saw its profits at Rs 2,117 crore, down 24 percent from the same period last year on high finance cost. Tata Steel India led this list, reporting a net profit at Rs 6,439 crore.

## In capacity addition mode

The country's major steel-makers are set to add around 24 million tons per annum (mtpa) capacity through brownfield expansions by 2017-18, involving investments to the tune of Rs one lakh crore.

The current capacity of the 10 major Indian steel-

makers stands at 54.5 mtpa and this will go up to 78.5 mtpa by FY18 with the ongoing capacity expansions at their existing plant locations, according to industry data.

Over half of the proposed expansions will come from the two state-run firms – Steel Authority of India (SAIL) and Rashtriya Ispat Nigam (RINL). It normally takes investments of about Rs 4,000 crore to hike steel capacity by one million ton.

SAIL's capacity expansion in all of its five major plants will take its capacity to 21.40 mtpa from the current 12.84 mtpa, while RINL is on the verge of completing its expansion to 7 mtpa from the present 3 mtpa.

Tata Steel's capacity will increase, through brownfield expansions, at its Jamshedpur facility to 9.7 mtpa from the present 6.8 mtpa. Capacity of JSW Steel would also go up to 16.5 mtpa from 14.3 mtpa at present.

Essar Steel, which has recently increased capacity at its Hazira plant to 10 mtpa, however, is not going for a further increase, data showed.

Among the firms having lower capacity presently, Jindal Steel and Power's capacity through brownfield expansions will go up by 0.75 mtpa to 4.25 mtpa by FY18.

Bhushan Steel would add around 2 mtpa capacity to take the tally to 5.2 mtpa. Monnet Ispat & Energy and Visa Steel are also expanding their respective capacities.

India's total steel-making capacity, including that of the secondary producers, at the end of 2011-12 stood at 89.29 mtpa and at 101 mt in 2013-14. The country is expected to become the second-largest producer of crude steel in the world soon, provided all requirements for creation of fresh capacity are adequately met and is projected to expand to 200 mtpa by 2020.

## Small steps to 300 mt

India plans to ramp up its steel capacity to 300 million tons (mt) from 88 mt by 2025, according to a blueprint for expansion drawn up by the steel ministry.

Steel Minister Narendra Singh Tomar said, "SAIL alone will double its capacity to 50 mt during

this period, while another 24 mt will be added by four new plants to be set up as special purpose vehicles (SPVs)."

SAIL's current expansion programme to raise its capacity to 23 mt will be over in another four months with the upgrade of its Bhilai facility. The state-run company is being asked to go in for another wave of expansion to take its capacity to 50 mt in 10 years.

The four SPVs, in which state governments and PSUs will invest, are expected to set up plants in Chhattisgarh, Jharkhand, Odisha and Karnataka.

These plants are expected to have an initial capacity of 3 mt each, to be doubled to 6 mt in the next phase.

The blueprint also envisage foreign steel makers setting up base in the country, especially to make higher grades of steel.

"We encouraged SAIL to join hands with ArcelorMittal to set up an automotive steel venture. We want foreign players to come in and make similar high-grade steel in India," the minister said.

However, it has been difficult to get the foreigners part with their technology.

Attempts to persuade multinationals to transfer technology for cold rolled non-grain oriented steel (used to make electrical equipment) have been unsuccessful.

"We realise that one of our weaknesses has been in the area of steel research. We are setting up a Rs 200 crore Steel Research & Technology Mission with Rs 100 crore to be given by steel majors such as SAIL. The mission will focus on new grades of steel for specialised use," said Tomar.

"The next two months, we will work with them," said the minister. Officials said at least a third of the 300 mt capacity would be accounted for by the small players.

The government will also implement a new Act which calls for the auction of iron ore mines, grant of leases for 50 years and a faster renewal and grant of licences.

Besides, "we realise that the best way to get a good price for mining areas is to have proper

geological surveys done for the mines we will put up for auction," said Tomar.

Steel mills to come up shortly

Two most coveted and much-awaited steel plants would be up for operations shortly.

They are the Kalinganagar project by Tata Steel the Nagarnar project by NMDC.

## Kalinganagar Project (KPO) update

Construction of KPO has progressed well and heating of the coke ovens commenced in the second week of May after all clearances were received.

The project will follow a commissioning sequence over the next six months as each facility gets commissioned. Commercial production is expected to commence in H2FY16.

The Kalinganagar Steel Plant is a state-of-the-art, 3-million tons plant that will increase production capacity, widen the product portfolio and diversify the customer base.

T V Narendran, Managing Director of Tata Steel India and South East Asia, said: "It has been a very challenging year of the steel industry with several macro headwinds at play. Despite this, we continued to outperform the industry and registered growth in deliveries in a relatively flat steel market. Our focus on our marketing franchise, strong customer relationships and various cost saving initiatives helped us weather the weak business environment."

He added: "We are focused on implementing our 3-mtpa greenfield expansion at Kalinganagar, Odisha, which we expect to commission this year. In addition, the first phase of our Gopalpur ferrochrome plant will start operation by October 2015".

## NMDC' Nagarnar Project

State-owned iron ore miner NMDC Limited will complete construction of its 3 million-tons-per-annum (mtpa) integrated steel plant a Nagarnar in Chhattisgarh by 2016.

"The plant is in an advanced stage of erection. The erection will be completed by December 2016," NMDC Chairman and Managing director



Narendra Kothari said on the sidelines of the Movement for Efficiency and Transparency (MET) event held recently by mjunction services limited.

The country's largest iron-ore producer and exporter is setting up the steel plant as part of its expansion, value addition and forward integration programme. The project, coming up some 16 km from Jagdalpur, would be set up at an estimated Rs 15,525-crore outlay.

Kothari said NMDC had reserves to the tune of Rs 20,000 crore and it had embarked on an ambitious capital-expenditure programme to expand its operations. This included enhancement of iron ore production from the current level of 30 mtpa to about 70 mtpa by 2018-19, and 100 mtpa by 2021-22.

Source: Steel Insights

## **Sponge iron makers face tough times on weak demand**

Sluggish demand for finished steel products amid stubborn iron ore rates in the domestic market is giving sponge iron producer a touch time. The market for sponge iron has been further dented with steel makers preferring imported steel scraps to sponge iron to cut production cost. Besides, traders finding it competitive to buy finished steel than producing it, sponge iron producers added that the metal scraps were easy to melt and required less fuel. Since scrap rates had declined globally and were competing with sponge iron in the domestic market, buyers were preferring scrap.

Source: JPC Bulletin

## **Worldsteel Short Range Outlook 2015 – 2016**

The World Steel Association (Worldsteel) has released recently its Short Range Outlook (SRO) for 2015 and 2016. It forecasts that global apparent steel use will increase by 0.5% to 1,544 Mt in 2015 following growth of 0.6% in 2014. In 2016 it is forecast that world steel demand will grow by 1.4% and will reach 1,565 Mt.

## **Slow growth for global steel demand**

Commenting on the outlook, Hans Jurgen Kerkhoff, Chairman of the Worldsteel Economics Committee said, "We are releasing a restrained

growth outlook for the global steel industry mainly due to the deceleration in China. The outlook also reflects the influence of major structural adjustments in most economies, particularly owing to limited investment growth post 2008. As these changes take effect, the steel industry will experience a slower pace of growth, it will focus on operational efficiencies and on the value that steel products generate for customers and society."

"While we continue to face some downside risks coming from some parts of Europe – geopolitical instability, international capital flow volatility and the economic slowdown in China – the impact of these risks has come down. We have also started to see some encouraging developments. We hear increasingly positive news from developed economies, especially signs of firming recovery momentum in the Eurozone. In the developing and emerging world, we see increased optimism about India and growth in steel use in some MENA and ASEAN countries. While these developments will not we expect to see gradually improving growth prospects beyond 2016," Kerkhoff concluded.

An interesting factor which has become increasingly apparent is that in some developing economics the steel markets are beginning to exhibit the characteristics of mature markets.

## **China**

Chinese steel demand in 2014 saw negative growth for the first time since 1995 due to the Government's rebalancing efforts that had a major impact on the real estate market. This situation is likely to remain unchanged in the short term and Chinese steel use will continue to record negative growth of 0.5% in both 2015 and 2016. In the medium term no strong rebound is expected. Some uncertainty remains regarding the impact of government measures aimed at stabilising the decelerating economy.

The rebalancing of the Chinese economy is inevitable as China enters its next stage of development, but it will take time. In the short term, it has global consequences for the steel industry in terms of trade flows and possible intensification of trade frictions, resulting from significant increases in steel imports in many economies during 2014.

## Oil Prices

The sharp decline in oil prices influenced the forecast, though its impact varies between countries. On the one hand, it has a negative impact on steel demand for infrastructure investments financed from oil revenues; on the other hand it helps business sectors and consumers in oil importing countries, thus creating better growth prospects.

As inflationary pressure is alleviated, further relaxation of monetary policy by the Central Banks is possible in countries with high inflation, which will eventually strengthen the recovery of underlying real steel use. As economies adjust to lower oil prices, it may lead to reduced demand for steel in some economies in the short term, but should support economic growth and demand for steel in the medium term.

## The developed world

The developed world showed growth in steel demand of 6.2% in 2014 on the back of strong US fundamentals and a firming EU recovery. However,

growth in the developed world is set to moderate in 2015 due partly to the high base effect, but also less favourable steel market environments in the US, Japan and South Korea. The recovery in the EU, although becoming regionally broader based, is still constrained by weak investment activity and high unemployment. Steel demand in the developed economies will grow by 0.2% in 2015 and by 1.8% in 2016.

## The developing world (excluding China)

The developing economies (excluding China) posted low growth of 2.3% in 2014, in particular because of the continued deterioration in the Brazilian and Russian steel markets. Growth momentum in the developing economies is expected to remain generally weak in 2015, however, we expect positive growth in some economies such as India, Indonesia, Vietnam and Egypt, where steel markets are still developing. Steel demand is expected to grow by 4.0% in 2016 after growing by 2.4% 2015. Short Range Outlook of Apparent Steel use, finished steel products (2014-2016) is shown in Table 1.

**Table 1: Apparent Steel use (ASU) in million tonnes**

Regions	Year			Y-o-Y growth rates,%		
	2014	2015(f)	2016(f)	2014	2015(f)	2016(f)
European Union (28)	146.8	149.9	154.1	4.5	2.1	2.8
Other Europe	37.0	38.0	38.5	0.2	2.8	1.1
CIS	56.5	52.4	52.2	-4.9	-7.3	-0.3
NAFTA	144.6	143.3	145.1	11.3	-0.9	1.3
Central & South America	48.1	46.5	48.1	-3.9	-3.4	3.4
Africa	36.9	39.6	41.5	4.2	7.4	4.9
Middle East	51.9	53.3	55.6	3.7	2.8	4.2
Asia and Oceania	1015.6	1021.5	1030.4	-1.0	0.6	0.9
<b>World</b>	<b>1537.3</b>	<b>1544.4</b>	<b>1565.5</b>	<b>0.6</b>	<b>0.5</b>	<b>1.4</b>
Developed Economies	411.9	412.6	420.3	6.2	0.2	1.8
Emerging & Developing Economies	1125.5	1131.8	1145.2	-1.3	0.6	1.2
China	710.8	707.2	703.7	-3.3	-0.5	-0.5
BRIC	853.9	850.1	852.6	-2.9	-0.4	0.3
MENA	70.1	72.9	76.3	5.0	4.1	4.7
Em. & Dev. Economies excl. China	414.7	424.5	441.5	2.3	2.4	4.0
World excl. China	826.6	837.2	861.8	4.2	1.3	2.9

Source: Steel Tech



**Table 2: Top 10 Steel using countries – 2014 to 2016 (Mt)**

Countries	Year			Y-o-Y growth rates, %		
	2014	2015f	2016f	2014	2015f	2016f
China	710.8	707.2	703.7	-3.3	-0.5	-0.5
United States	106.9	106.5	107.2	11.7	-0.4	0.7
India	75.3	80.0	85.8	2.2	6.2	7.3
Japan	67.5	65.9	66.6	3.5	-2.4	1.1
South Korea	55.4	56.9	58.0	7.0	2.7	2.0
Russia	43.1	40.2	39.6	-1.4	-6.7	-1.6
Germany	39.2	39.8	40.7	3.0	1.5	2.3
Turkey	30.7	31.7	32.0	-1.8	3.0	1.1
Brazil	24.6	22.7	23.4	-6.8	-7.8	3.1
Mexico	22.5	23.1	24.0	11.7	2.6	3.9

## Steel Cos Losing Steam on Low Demand, Cheap Imports

The ABC's of Success	
<b>A</b>	<b>AFFIRM</b> that you can do it. You can succeed. You deserved to succeed as much as anyone else
<b>B</b>	<b>BELIEVE</b> that somehow, some time, somewhere, through someone's help, you can achieve your heart's highest goal.
<b>C</b>	<b>COMMIT</b> yourself to a dream.
<b>D</b>	<b>DARE</b> to try. Dare to love. Dare to make a commitment. Dare to take a risk.
<b>E</b>	<b>EDUCATE</b> yourself in the field you want not just for a living.
<b>F</b>	<b>FIND</b> the talent, the possibilities, time, money, and the way.
<b>G</b>	<b>GIVING</b> attitude is the secret of successful living
<b>H</b>	<b>HOPE</b> is holding on, praying expectantly, never giving up, and never quitting inspite of hurdles or obstacles
<b>I</b>	<b>IMAGINE</b> that what you think that you become. Imagine the way you want to, what you want to be and you will be that.
<b>J</b>	<b>JUNK</b> the junk food of your mind – the negative thoughts/fears.
<b>K</b>	<b>KNOCK</b> out depression, discouragement and all kinds of forecasts of gloom and doom. You can control how you react.
<b>L</b>	<b>LAUGH</b> at yourself. Have a sense of humour.
<b>M</b>	<b>MAKE IT HAPPEN</b> by your positive thinking and planned action.
<b>N</b>	<b>NEGOTIATE</b> the ends/bends of your life's journey skillfully.
<b>O</b>	<b>OVERLOOK AND OVERCOME</b> your own/others weaknesses and shortcomings. No one is born perfect.
<b>P</b>	<b>PERSEVERE</b> – don't ever give up. Tough times never last, but tough people do
<b>Q</b>	<b>QUIT</b> complaining because life isn't as nice as you want it, or you don't have all that you want. Start Acting.
<b>R</b>	<b>REORGANISE</b> when you don't succeed. Restructure. Re engineer.
<b>S</b>	<b>SHARE</b> the credit, the power, the glory, the success.
<b>T</b>	<b>TRADE OFF</b> what you will give in order to keep what you've got. What you will give in order to get what you want.
<b>U</b>	<b>UNLOCK</b> your human values you never experienced before – faith, hope and love.
<b>V</b>	<b>VISUALISE</b> the dream before you. Don't ever lose the vision. Form, Firm, and Frame your Vision.
<b>W</b>	<b>WORK</b> your way to success. There is no substitute for work. Work is your contribution to the world. The price you pay for all you get.
<b>X</b>	<b>X-RAY</b> yourself, your motives, your values and principles.
<b>Y</b>	<b>YIELD</b> yourself to God. Yield not to temptations/failures.
<b>Z</b>	<b>ZEST</b> is the secret of energetic working. Live every moment joyfully. Living life powerfully and the life you love.

Low domestic demand and cheap imports could force Indian steelmakers to go slow on output, a move that can could India's target of producing 300 million tonnes of the alloy by 2025.

With China devaluing its currency twice this week, the domestic steel industry appears less confident about its prospects. Steelmakers ET spoke with did not want to go on record and question the sustainability of the country's production target. But internal debates are getting louder and worry line deepening across the sector, as it becomes clearer that without stringent policy measures, flow of cheap imports will continue hurting the sector.

"We have set a target of 300 MT by 2025, but we need to have safeguard duty of 25-30% to protect the native industry from imports. China already has an advantage in terms of transport infrastructure, low cost of funds and energy, etc," said Ravi Uppal, managing director and CEO of Jindal Steel and Power Ltd, a leading steelmaker.

In the first five months of 2015, India has become the third largest steel producer and is on track to emerge as the second largest soon. Last fiscal, the country was at No. 4 with output at 88.25 MT.

Also, per capita steel consumption in India is about 60 kg compared with the world average of 216 kg, which also supports estimates about the sector's growth potential. However, the bigger question is whether this level of production is sustainable.

"None of the large steel project like Posco have come up. Also, 'Make in India' is still at a concept stage, and industry is yet to feel its impact on the ground. The government will have to take a concerted approach to realize this target of 300 MT by attacking the demand side and tackling the supply side as well," said R Muralidharn, senior director, Deloitte in India. "To check imports, we will need to have anti-dumping and safeguard duties in place. To generate steel demand at home, massive investment is required in infrastructure over the next few years."

Industry watchers say that not enough is being done to create demand – be it in terms of infrastructure creation in new ports, bridges, airports, roadways, etc. In addition, the flood of cheap imports in the last 1-2 years threatens to upset the game plan of steel companies. This is already leading to lower capacity utilization across the sector. In fact utilization rates in 10-12 industries sectors are wallowing at 5-years lows and this is thwarting capital investment, particularly private sector investment which is estimated to go down by 8% this fiscal, according to a report by Crisil.

China's strategy to export its nearly 360 MT of surplus steel will affect every global steel player. For Indian companies, the incentive to export appears to be shrinking.

"Despite increasing global presence, Indian players have faced fall in realizations as domestic price are derived on the basis of landed cost parity, shrinking export markets, as Indian steel has to compete with cheaper Chinese products and higher imports affecting domestic sales volume of the Indian steel industry," CARE Rating said.

It also said FDI in the country is also likely to get affected, which will result in sluggish steel demand from end-user industries.

Source: Economic Times

## Top 7 Iron ore Miners in India

Indian iron ore mining industry in FY15 was in a downtrend and the year was challenging for the miners. The miners seemed to be surrounded by various uncertainties, which drove iron ore production figures downward. The mining suspension imposed by the Supreme Court in

May'14 in Odisha and Jharkhand, now revoked, was one of the major threats to the industry. Secondly, royalty hike from 10% to 15% was another major hurdle that the industry had to face during FY15. In addition, India, who was one of the key exporters in past few years, became a net importer of iron ore in FY15.

## Indian Iron ore Production in FY15

Indian iron ore production in FY15 took a hit by 20%. The country produced 123 mnt ore in FY15; it was 153 mnt in FY14. Odisha, the primary iron ore producing state in India contributed 50% of country's total production in FY15, followed by Chhattisgarh, Jharkhand and Karnataka. The production may ramp up this fiscal on account of removal of mining ban imposed on many mines located in Odisha and Jharkhand.

The long awaited MMDR Act gave miners some relief when it came into action in the beginning of 2015. The act gave clear guidance to simplify mining procedure as well as to make mining process more transparent. It gave new hopes to the state miners, granting mineral concessions through auctions by the respective state governments, bringing transparency.

## Top 7 Iron Ore Producing Companies: FY15 Reminiscence

The 7 leading iron ore producing companies contributed around 80% of India's total Iron ore production in FY15.

### NMDC

National Mineral Development Corporation (NMDC), India's largest state owned miner, stood at the top most position for production in FY15. The company produced 30.5 mnt iron ore last fiscal and 30.2 mnt in FY14. Production from Chhattisgarh figured at 21 mnt and from Karnataka at 9.5 mnt in FY15. In FY14, the company produced 20.9 mnt ore from Chhattisgarh and 9.3 mnt from Karnataka. NMDC has plans to ramp up its production to 35 mnt in the current fiscal.

### SAIL

SAIL (Steel Authority of India), India's second largest mining giant, meets its total requirement of iron ore from captive mines. The company's captive mines, namely, Bolani and Barsua in Odisha, Gua

Mines in Jharkhand and Dalli Rajahara Mines in Chhattisgarh produced 23.1 mnt iron ore in FY15. The captive production in FY14 was 25.3 mnt. In November 2014, the company received mining lease for resumption of Gua mines located in Jharkhand after a gap of two years.

## Tata Steel

India's third largest steel producer, Tata Steel produced 13.5 mnt iron ore in FY15. The company owns captive mines in Odisha and Jharkhand. In May'14, the Supreme Court had ordered to ban 26 iron ore and manganese ore mines which included 7 iron ore mines of Tata Steel. The government had closed those mines due to non-fulfillment of necessary statutory clearances. Due to these circumstances, Tata Steel imported 3.4 mnt iron ore in FY15 to meet its operational requirement of various plants.

The company's iron ore production in FY15 stood at 13.5 mnt, out of which 8.3 mnt was from Odisha and 5.5 mnt was from Jharkhand. In FY14, production from Odisha was 10.2 mnt and 7.12 mnt from Jharkhand.

## Rungta Mines

Rungta Mines, Odisha's major merchant mines, having total production capacity of 26 mnt produced 11.6 mnt iron ore in FY15. Out of the total, 10.6 mnt was from Odisha and 1 mnt from Jharkhand. However, if we talk about FY14, production from Odisha was 12.9 mnt whereas from Jharkhand it was 1 mnt. Major ill effects for lesser production in FY15 can be again attributed to mining ban in Odisha and Jharkhand.

The beginning of 2015 turned out to be lucky for Rungta as it was granted environment clearance (EC) nod for product enhancement by Union Ministry of Environment & Forest for its Jajang iron ore mines. The EC limit was extended from 5.5 mnt to 16.5 mnt.

## Serajuddin Mines

Serajuddin & Co, a Odisha based merchant miner, produced 6.5 mnt iron ore in FY15 which was 8.3 mnt in FY14. Prime reason behind reduction in production was again listed as banning of mines in major iron ore producing states. The miner has been granted EC nod from 4.5 mnt to 15.15 mnt pa by the state government.

## Indrani Patnaik

Indrani Patnaik, Odisha based merchant miner produced 3.8 mnt in FY15, and it had produced 4.0 mnt iron in FY14. Current production capacity is 4 mnt pa.

## OMC

Odisha Mining Corporation (OMC), a joint venture of Government of Odisha and Government of India produced 2.3 mnt iron ore in FY15; it had produced 2.0 mnt ore in FY14. The company increased its production by up to 15% in FY15. Its major mines are Koira, Daitari, Gandhamardan and Barbil located in Keonjhar and Sundargarh districts of Odisha.

Source: Steel 360

## State-wise Break-up of Indian Coal Resource

(Million Tonne)

State	Resource
Jharkhand	81048.77
Odisha	75799.08
Chhattisgarh	54912.20
West Bengal	31434.63
Madhya Pradesh	26535.79
Telangana	21211.35
Maharashtra	11253.24
Andhra Pradesh	1580.70
Uttar Pradesh	1061.80
Meghalaya	576.48
Assam	514.65
Nagaland	315.41
Bihar	160.00
Sikkim	101.23
Arunachal Pradesh	90.23
<b>Total</b>	<b>306595.56</b>

Source: Steel 360

## MSMEs to drive 'Make in India' Vision

*The success of government's vision of make in India will be heavily dependent on the performance of MSME sector, the bedrock of true local manufacturing.*



The role of micro, small and medium enterprises (MSMEs) in the economic and social development of the country is well established. The MSME sector is a nursery of entrepreneurship, often driven by individual creativity and innovation.

This sector contributes 8 percent of the country's GDP, 45 percent of the manufactured output and 40 percent of its exports. The MSMEs provide employment to about 60 million persons through 26 million enterprises. The labour to capital ratio in MSME sector is much higher than in the large industries. The geographic distribution of the MSMEs is also more even.

Thus, MSMEs are important for the national objectives of growth with quality and inclusion. The MSME sector in India is highly heterogeneous in terms of the size of the enterprises, variety of products and services produced and the levels of technology employed. While one end of the MSME spectrum contains highly innovative and high growth enterprises, more than 94 percent of MSMEs are unregistered, with a large number established in the informal or unorganized sector. Besides the growth potential of the sector and its critical role in the manufacturing and value chains, the heterogeneity and the unorganised nature of the Indian MSMEs are important aspects for policy making and programme implementation.

The sector is the second largest employer after agriculture. The MSMEs of India would be the cradle for the "Make in India" vision that the current government has set. This would be the nursery where small existing businesses have the potential to become world beaters tomorrow. The larger players amongst the MSME space also are in a unique position to become global players attracting partners with technology and funds.

Our MSME Policy must encourage establishment and growth of our units. Let it be understood that big businesses evolve from small business only and go on to become several large companies. Examples are "Honda" to Microsoft, from "Infosys" to "HCL" in India. The first objective of this Policy thus must be not only to encourage establishment and growth, but also emphasise on growth.

What are the steps that should be undertaken to ensure that there is flow of credit to MSMEs? Can a credit bureau to record SMEs credit history

for the banking sector's risk evaluation and loan appraisals. The high interest rates often make an otherwise internationally competitive MSME loose with competitive edge. On the other hand, a broad debt is available at the very low rate of interest.

Should the Government consider a mechanism of pooling the needs of MSMEs and acting as an intermediary for providing debt at international prices (but including exchange risk coverage) to MSMEs. What can be the alternative models for financing of MSMEs at the start-up stage and at the growth stage, apart from bank credit? How to have a robust and supporting financial regime framework which encourages credit of MSME?

Overall framework should provide an enabling environment, an easy comprehension to MSMEs and act as a growth accelerator for the MSMEs. These frameworks singly or collectively then need to be dovetailed to the needs of different segments within the MSME such as village and rural industries, traditional industries, handicrafts and handlooms, other industries such as defence manufacturing, electronics services design and manufacturing industries, machine tool industries, casting and forging industries, industries where MSMEs are part of the value chain manufacturing in strategic industries such as aerospace, shipping, renewable energy like solar and wind etc., employment intensive industries such as textiles, readymade garments, leather and footwear, gems and jewellery, industries where India enjoys a comparative advantage such as automobile and pharmaceutical etc.

The same framework, in principle, also needs to concentrate on providing value additions, induction of knowledge and innovation, framework for manufacturing and service excellence as well as productivity with zero defect outcomes and finally should have growth acceleration for the larger industries, say with a turnover of more than Rs 100 crore.

The MSME sector is often driven by individual creativity. A major strength of the sector is its potential for greater innovation both in terms of products and processes. The sector is estimated to have 2.6 crore enterprises. An inherent strength of the sector is that these enterprises can be

set up with very small amounts of investments and have the locational flexibility to be located anywhere in the country. Their employment potential is higher compared to large enterprises. They are amenable to ancillarisation and thus have natural linkages with large enterprises.

It is envisioned that the sector will have a healthy growth with a large number of enterprises being set up and their graduation into small and medium enterprises.

Source: Business Standard

## MECL'S SERVICES HAVE HELPED ENRICH INDIA'S MINERAL INVENTORY

The Mineral Exploration Corporation Limited (MECL) is a Premier and Miniratna Public sector Enterprise under ministry of mines, engaged in detailed exploration of various minerals since October, 1972 in India and abroad. The company is reworking on the core areas, to take on the growing competition. MECL's CMD, Dr. Gopal Dhawan told HT, that his team is confident of becoming a Navaratna company, by fulfilling the national priorities expected of this sector. Excerpts:

**Q. Why should MECL be the first option for a customer?**

A: MECL has all facilities for detailed mineral exploration under one roof – right from planning of exploration scheme to preparation of geological reports, including 3-D Ore body modelling, while other companies provides only a part of mineral exploration services mainly drilling.

**Q. What has been MECL's contribution to the country?**

A: MECL has been carrying out detailed mineral exploration in the country over the past four decades. Our dedicated services have helped in enriching the mineral inventory of the country. Our company has prepared 153 detailed geological reports adding about 5.6 billion tonnes of resources/ reserves of different minerals viz, gold, copper, lead-zinc, limestone, dolomite. In addition to this, MECL has added another 104 billion tonnes and 39 billion tonnes reserves/resources for coal and lignite respectively.

**Q. How and which states have benefitted by the reports?**

A: Based on MECL's geological reports some

of major mines like Panchpatmali bauxite mine and Bhaplimalli bauxite mine in Odisha, Malanjkhand copper mine in Madhya Pradesh, Chigargunta gold mine in Andhra Pradesh and UTI gold deposit in Karnataka. As a promotional activity, MECL has offered 58 geological reports for gold, copper, lead-zinc, phosphorus, diamond, etc., of G-1/G-2 level of exploration standards to Rajasthan, Jharkhand, Andhra Pradesh, Assam, Odisha, Maharashtra, Madhya Pradesh, Karnataka, Kerala and West Bengal.

**Q. Are you planning to get into allied activities?**

A: We are already performing a number of allied activities. MECL has identified a number of new allied activities. The important ones are – expansion of core activities matching with current market with current market trend, modernisation of drilling fleet, chemical, physical and petrology laboratories, preparation of feasibility reports, drilling for investigation of geothermal energy and geotechnical studies, identified & acquire more blocks for mining leases, expansion of exploration activities abroad and production mining of Serengdag bauxite deposit.

Source: Hindustan Times

### From Metallurgy Grad to Net Geek

Here are five things that you should know about the new CEO of Google

1. Sundar Pichai was born in Chennai on July 12, 1972. He studied Metallurgical Engineering in IIT-Kharagpur. He received an MS degree from Stanford University and an MBA from the Wharton School at the University of Pennsylvania. He joined Google in 2004 as

vice-president of product management. Previously, Pichai worked at Applied Materials as an engineer and at McKinsey as a management consultant.

2. Pichai spearheaded the launch of Google Chrome in 2008 which has swiftly become one of the most popular web browsers in the world. A year later, Pichai also oversaw the launch of the Chrome operating system for netbooks and desktop computers. In 2012, he was given the additional responsibility of overseeing Google Apps.
3. Pichai was put in charge of Google Android when Andy Rubin stepped down in March 2013. He oversaw Google's ambitious Android One project through which the internet giant is looking to push low-cost Android smartphones

so as to reach out the next five billion users in emerging markets.

4. He took on the product and engineering responsibilities of all of Google's core product except YouTube in October, last years. These include search, maps, research, Google+, Android, Chrome, infrastructure, commerce and ads, and Google Apps.\
5. Over the past few years, internet companies like Twitter have unsuccessfully tried to poach Pichai from Google. Twitter had aggressively tried to hire Pichai to potentially lead its product in 2011. Google offered a counter offer that made Pichai stay at Google.

Source: Economic Times

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## New Additions to IIM DC's Library

We have added the following books in our Library. These have been donated by Shri V P Sardana, Ex. ED, SAIL.

Mech Engineering Books		Magazines/Publications	
1	Engineering Thermodynamics (Semester IV – Mech. Engg.)	11	Alloy & Special Steel through hot metal route
2	Applied Mechanics	12	Steel Making in submerged injection furnaces
3	Turbo Machines (Semester VI – Mech. Engg.)	13	Production & Application of quality steels with low impurities contents
4	Problems in General Physics	14	Hi-Tech & Special Steels
5	CAD/CAM & Automation (Semester VII – Mech. Engg.)	15	Improvements in technology & quality of finished products in I&S Industry
6	Theory of Machines-I Solved Papers 2009 Course – SE (Mech) Semester-II	16	Secondary Steel Sector-Problems & Prospects in the 90's
7	Electrical Technology-Solved paper – SE (Mech/Industries/Production) Semester II	17	National seminar on rolling of sectional products
8	Cambridge IELTS-Exam Papers from university of Cambridge, Local Exam Syndicate	18	Competitiveness in Iron Making
9	Competition Success Review Publication	19	StainlessSteel–Processing & Metallurgy
10	Refrigeration & Air Conditioning	20	T.E. feasibility report on Tech improvements in Maharashtra Electros melt Chandipur
		21	Technical information on Blast Furnace
		22	Corex Symposium 1990
		23	HBI – Product information



Metallurgy/Rolling of Metals	I T Books
24 Elements of Physical Metallurgy	36 Java Script Bible III Edition
25 Principles of Physical Metallurgy	37 Professional Active Server Pages 3.0
26 Modern developments of Rolling Mills	38 Visual Basic 6 – Super Bible
27 Rolling of Metals	39 VB Script – Interactive Course
28 Theory & Practice of Rolling Steel	40 An introduction to data structures with Applications
29 Rolling of Strip, sheet & Plate	41 Analysis & Design of information Systems (II Edition)
30 Technology of Tinplate	42 Introducing Net
31 Metals Handbook supplement 1954	43 Mastering Oracle 7 and client/Server Computing
32 Metals Handbook Supplement 1955	44 Oracle – A beginning guide
33 Industrial Furnaces (II Edition) 1942	45 Oracle Reports (V 2.5) Vol.2
34 Probability & Statistics for Engineers	46 SQL Menu user guide & Reference (Version 5.0)
35 Industrial Psychology	47 Oracle 8i
	48 SQL forms operator's guide (Version 3.0)
	49 Oracle terminal user's guide (Version 1.0)

## **SAIL has also donated some books to our Chapter.**

These are:

1. Men and Women who changed India.
2. Strategic consequences of India's economic performance
3. Steel Cities, Bokaro, Rourkela, Durgapur, Bhilai, Salem and Burnpur.
4. A Roadmap for Research & Development and Technology for Iron & Steel Industry.
5. Product Catalogue of SAIL.
6. HR Best Practices in Manufacturing Sector in India.
7. Processes, Technologies and Products of SAIL Plants.
8. Ispat Bhasha Bharti
9. Ispat Parichay
10. Corporate Social Responsibility in India
11. Strategic consequences of India's economic performance

The Chapter conveys its sincere thanks to Shri V P Sardana and SAIL for this gesture.

These publications have been retained in our Library. The members of the chapter and visitors to our Chapter may like to refer to these books.

## **Don't fly into a rage unless you are prepared for a rough landing**

A Filipino saying advises, "Postpone today's anger until tomorrow." (Then apply this rule the next day and the next.) When you are upset, take a lesson from modern science: always count down before blasting off. By the way, counting to ten may not be enough; I know sometimes it takes counting to twenty.

"The best cure for anger is delay." The book of Proverbs counsels, "He that is slow to anger is better than the mighty; and he that rules his spirit than he that takes a city."

Blowing your stack always adds to the air pollution. How many great ideas have you had while you were angry? How many "expansive words" have you said when you were upset? You'll never get to the top if you keep blowing yours.

Anger is one letter short of danger. People who are constantly blowing fuses are generally left in the dark. If you lose your head, how can you expect to use it?

One of the worst fruits of anger is revenge. No passion of the human heart promises so much and pays so little as that of revenge. The longest odds in the world are those against getting even with someone. Francis Bacon adds, "In taking a revenge a man is but even with his enemies; but in passing it over, he is superior."

Time spent in getting even is better used in trying to get ahead. When trying to get even, you will always do odd things. "Vengeance is a dish that should be eaten cold" (an Old English proverb).

"Consider how much more you often suffer from your angry and grief, than from those very things for which you are angry and grieved." "He is happy whose circumstances suit his temper; but he is more excellent who can suit his temper to any circumstances." Anger is a boomerang that will surely hit you harder than anyone or anything at which you throw it. Keep your temper. No one else wants it.

**This is the fifteenth of series of "Nuggets of truth" which are our sound food for soul. Get ready to blow the lid off our limited Thinking & create your recipe for happiness & success.**

Compiled by Shri K L Mehrotra  
Chairman – IIM-DC & Former, CMD – MOIL



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