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In The Issue

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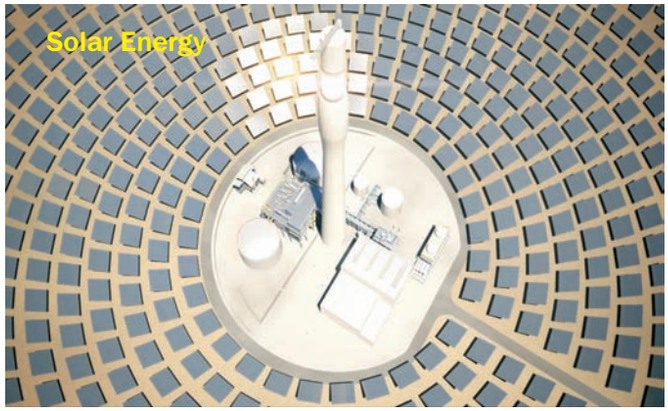

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Technology Profile of Indian Steel Industry
(In Continuation of previous edition)

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

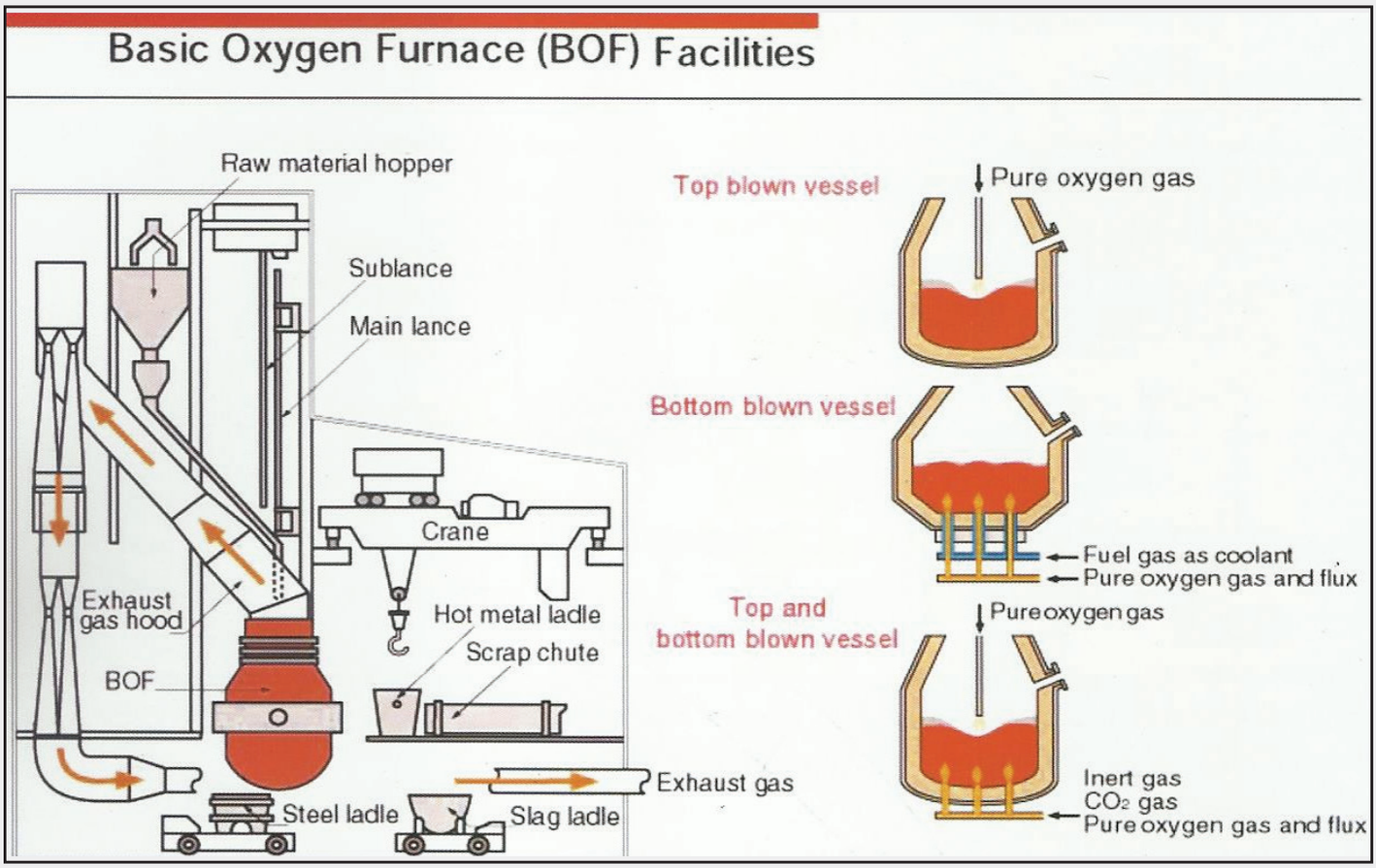
Steel Making

As stated in the previous edition of Newsletter, there are three main process routes for steel making in India namely, BOF, EAF and EIF which together contribute over 98% of total steel production. While BOF and EAF processes are well established processes to produce quality steel, for high end product, EIF units are handicapped to produce high quality steel and mostly cater to the need of construction steel. Salient features of different process routes adopted in India are highlighted hereunder:

Basic Oxygen Furnace (BOF) Steel making

In BOF steelmaking process which is commonly known as LD process, molten hot metal from blast furnace is poured into a BOF vessel where it is mixed with scrap steel. Pure oxygen is blown into the mixture through a lance. The carbon and silicon in the hot metal are oxidized generating huge quantities of heat which melt the scrap and produces molten steel. In view of its strong techno-economic merits, BOF process has practically phased out all other pneumatic steel making processes like Bessemer Process, Open Hearth Process all over the world (except in some of the CIS countries). In India also, the obsolete Open Hearth Process of steel making has been phased out in favour of BOFs. The left out OHFs have been converted into Twin Hearth Furnaces which are relatively more energy efficient and are operating at BSP and ISP. However, these are also being phased out soon.

Some of the BOFs are being equipped with the latest technological innovations like concurrent top and bottom blowing practices, slag splashing, gas recovery system, modern automation and control facilities including dynamic Level-II control and better shop floor practices. These have led to higher productivity and lesser consumptions of costly inputs like refractories. There are gadgets such as 'smart-lance' and 'sub-lance' for the prediction of end blow conditions, which



facilitate higher alloy recovery, reduction in corrective blows, higher metallic yield, improved productivity and better quality. Tata Steel has recently introduced smart-lance in one of their BOF converter and some of the other plants are also planning to adopt this system in the near future.

Use of carbon bonded magnesia bricks and slag splashing/slag engineering (MgO enrichment) have led to substantial increase in refractory lining life. Over 5000 heats are consistently achieved by BOF steel producers. However, there are units which have achieved vessel life beyond 10000 heats (SAIL Bhilai achieved average converter life of 9500 heats with a campaign record of 12325 heats). The industry is engaged in finding ways and means to consistently achieve higher campaign life over 10000 heats (Benchmark) through pre-treatment of hot metals, good bottom stirring and stable foam practice.

One major problem in BOF process is the reduction of slag entry into the steel ladle at the time of tapping. Generally steel producers use 'DART'/ IR camera for reducing the slag entry and their effectiveness is far from satisfactory. There is a need for the development/adoption of suitable technology to overcome this problem. MECON has successfully developed an IR based camera system in the country which has also been demonstrated at Rourkela Steel Plant of SAIL.

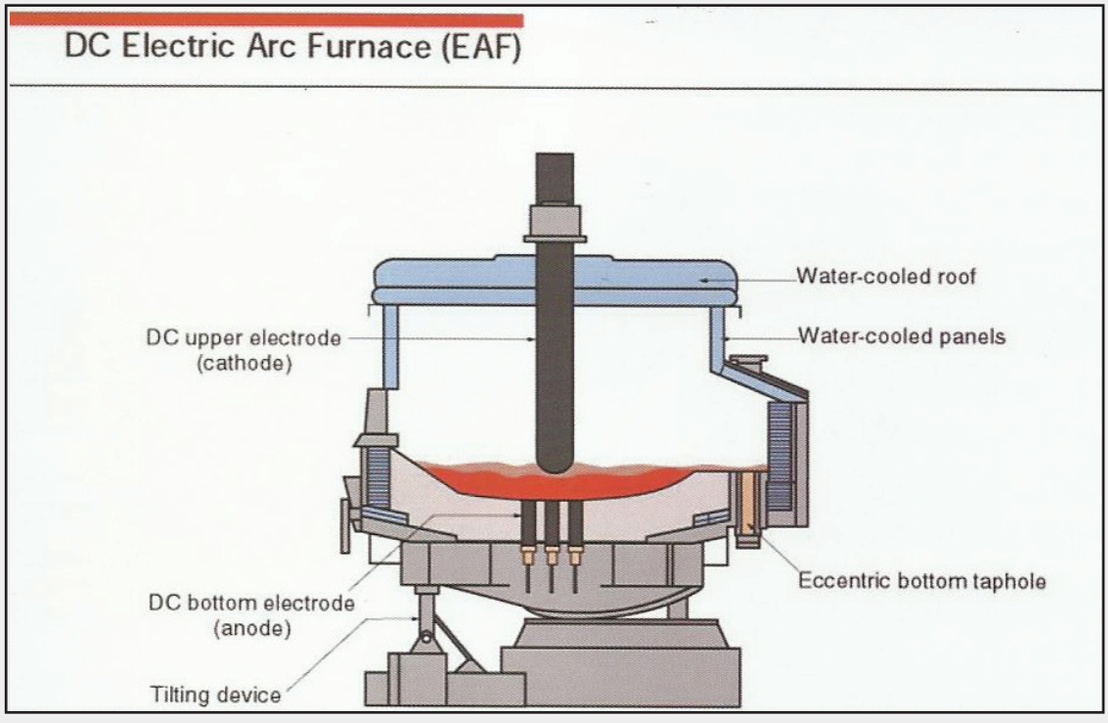
Larger BOF vessel (size: 300/315t) has few inherent advantages and needs to be considered for future installations. Bokaro Steel Plant has established such a large capacity BOF vessel. Tata Steel is in the process of establishing 300t BOF shop at Kalinganagar, Orissa.

Some of the steel melting shops/plants are still far behind in adopting modern practices and are operating at much lower level than the international benchmark. In the area of process development for handling and utilization of SMS slag and sludge in steel making process too, the Indian steel plants fail to keep pace with the international standard. Worldwide attention is being focused towards reducing the quantum of slag generation and utilizing them gainfully so that wastes become valuable materials. Besides, many processes are being mastered to use the generated solid/liquid wastes resulting in waste recycling and Zero Waste Disposal. There are still areas of concern in Indian Industry.

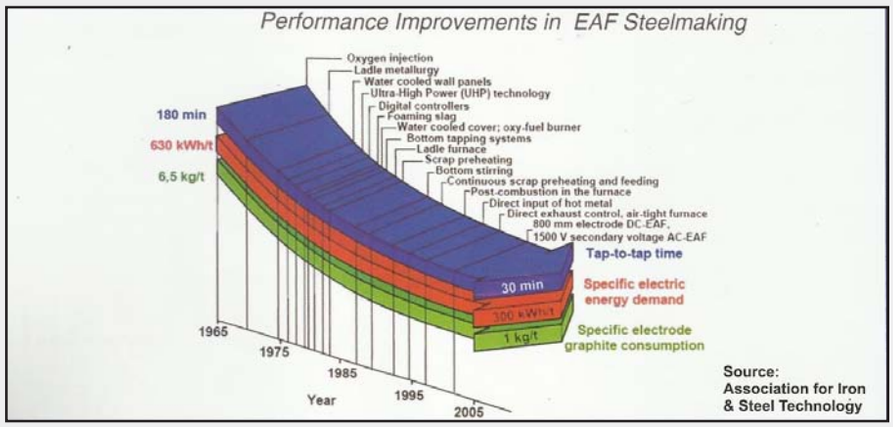
Electric Arc Furnace (EAF) Steel Making

EAF is the second most predominant process of steel making contributing about 30% of global steel production. In India, large number of EAFs have been phased out in favour of EIFs in the post-liberalization period and today, contribution of EAF is reduced to about 23%. Notable features of these units are geographical distribution in the country and also catering to the requirement of alloy/special/value added steel in the country.

Today, there are 36 units in the EAF sector having divergent size and technology profile. Units

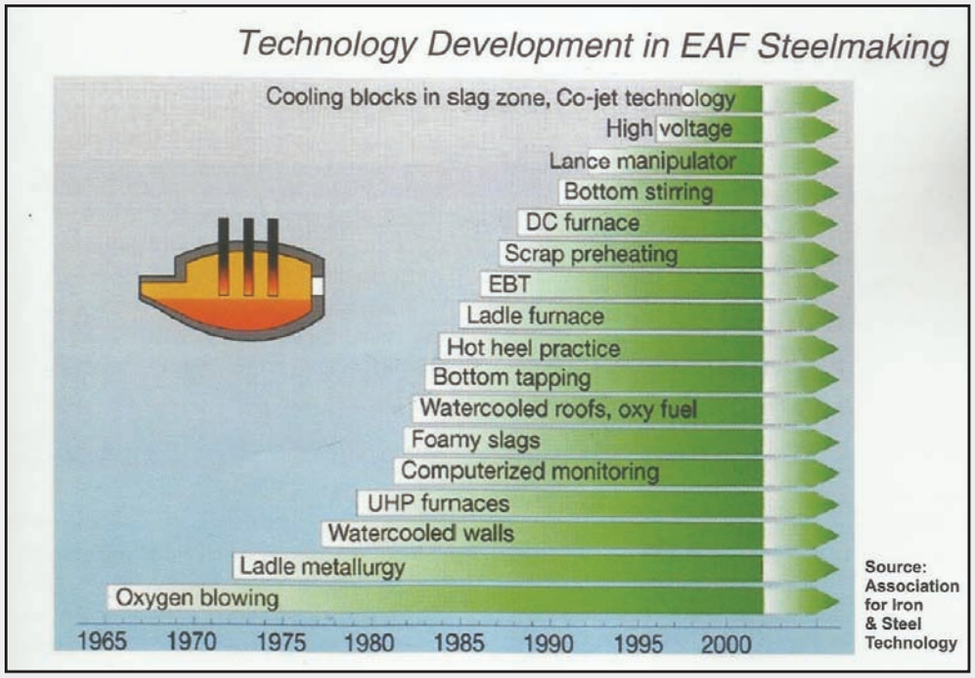


like Essar, the erstwhile Ispat, JSPL and Bhushan have adopted large, world class EAFs including DC EAFs and Con-arc Furnace flitted with most of the modern gadgets and innovations. Some of the EAF based mini steel plants too have adopted a number of latest technological features. A few units have set up mini blast furnaces for production of hot metal for use in EAF thereby utilizing the chemical/sensible heat of the hot metal resulting in low power/electrode consumption. However, others particularly those in smaller sizes suffer with technological obsolescence. State-of-art-technologies like Ultra High Power (UHP) furnaces with rating 0.9-1 MW/tonne, Oxy-fuel (side) burners, roof burners, water cooled electrode holders economizers, continuous feeding through delta region, enlarged shell for single charging, eccentric bottom tapping (for slag free tapping), electromagnetic stirrer (EMS), utilization of waste heat for scrap preheating (finger Shaft Furnace, Echo-Arc Furnace) are some of the promising/ emerging technologies which are recommended for adoption in the EAF sector in India to ensure increased productivity, reduced energy and electrode consumption and improved environment friendliness. These technologies may be considered on priority by the EAF based mini steel plants to change the technological face of the industry through technological upgradation of existing facilities or phasing out of obsolete facilities.



Electric Induction Furnace (EIF) Steel making

India is the largest producer/user of induction furnaces for production of steel. Today, there are 1074 operating Induction furnace units with total capacity of over 24.4 million tonnes producing approximately 20 million tonnes of steel which accounts for 32% of total steel production in the country. The salient features of IF technology is that the units are very flexible and may be set up at lower capacity costs. This sector has proved to be a good source in making available structural steel at all corners of the country without the use of coking coal and iron ore with minimum emission of carbon dioxide gas or other GHGs, However, most of units have installed captive coal based DRI units thereby increasing the environmental pollution and CO2 emission.



Induction Furnaces are primarily melting vessels in which electrical induction results in generating energy for melting scrap. These furnaces do not permit any slag to remain on the steel surface for long, and hence, no appreciable refining of the metal bath (e.g. to reduce phosphorus) is possible. Phosphorous makes the final product hard and brittle.

The pickup of nitrogen during induction melting also makes the steel brittle. Over the years, quality of steel from this sector has deteriorated and most of the products contain much higher phosphorous than the prescribed limit in the relevant standards. This is mainly because of limited availability of quality steel scrap and its higher cost vis-à-vis sponge iron/cast iron which have lured the induction furnace units in using large quantity of Sponge Iron and Cast Iron (as high as 80%) thereby reducing the use of quality shredded scrap to the barest minimum. Owing to the large amount of phosphorous from inputs and inability of the furnace to refine the melt to remove phosphorous like in other process routes, the products essentially end up with higher phosphorous, making the steel brittle and unsuitable for use in critical applications like infrastructure, housing, buildings, etc.

The quality of sponge iron mostly from coal based units is also poor in terms of metallization. Considering lower metallization and higher phosphorous, its higher use in IF results in low yield and also higher energy/power consumption in the IF besides higher phosphorous in the steel. This tends to increase the cost of production which is compensated by lower price of sponge iron. Solutions to these problems need to be found out, if the IF route is to sustain.

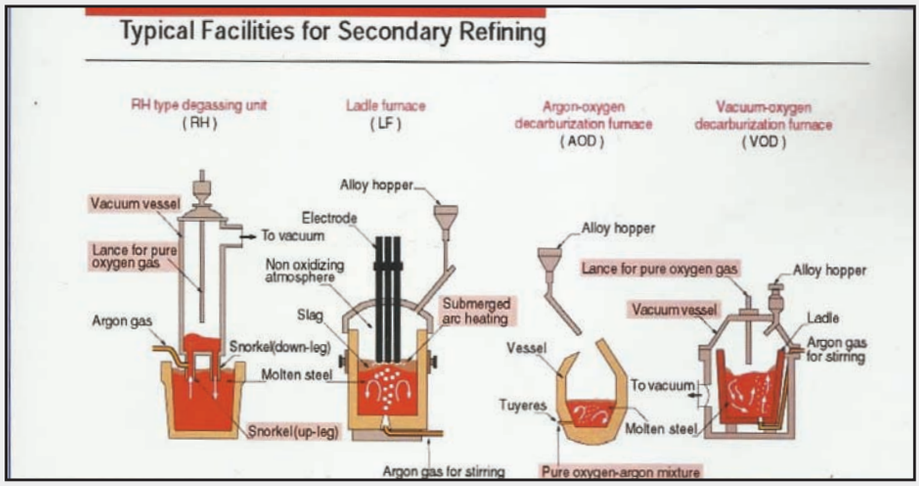
The IF industry is undergoing changes in terms of its size profile, adoption of continuous casting, adoption of secondary refining etc. However these improvements are not significant and these initiatives are needed to be adopted by others for survival of the industry. Efforts are also necessary on the part of the industry and Government to address the quality problems by suitable technological innovations. These may include finding out ways and means to refine the steel, if possible in the IF furnace proper or outside the IF (Laddle Refining Furnace/ Induction Refining Furnace) to reduce the harmful elements viz Sulphur, Phosphorus, inclusions, slag entrapment etc. and thereby make quality steel as per relevant standards.

Secondary Metallurgy

The steel making process is usually followed by post-treatment including a number of diverse metallurgical operations, referred to as 'secondary refining or secondary metallurgy' to improve the quality of steel and overall productivity. Secondary metallurgical practices have been adopted by some of the integrated plants and alloy/special steel producers for the production of high quality steel. However, there are still gaps in this area because of which some of the Indian plants are unable to produce stringent quality for high end applications.

In view of increasing demand of quality steel by the consumers, it is apparent that the steel industry needs to pay more attention towards secondary refining and also continuous casting to improve quality of steel and also to reduce energy consumption and increase yield and thereby produce steel at reduced cost. There are several well established technologies viz. RH / RH-OB process, CAS-OB process, LF/AOD/VOD/VAD/ VD for secondary refining processes which may be adopted depending on their sustainability for the specific steel production units. Some of the new technologies that are worth consideration are:

- Selective use of 'Wire Feeders' to reduce variation of steel alloying elements
- 'Slag Free' tapping to improve steel cleanliness and reduce aluminium consumption.
- Improve 'Ladle Insulation' to reduce heat loss and achieve better control on super heat.



In the context of Induction Furnace, secondary refining processes are limitedly used. Secondly, there is no established process to effectively address the problem of higher phosphorous and nitrogen in steel produced in EIFs. Some companies producing Induction Furnaces claim to have developed innovative refining facilities for de-phosphorisation. The techno-economic viability of these of these processes is however, not yet fully established. As a result, most of the units resort to selection of appropriate charge-mix (shredded scrap and coal based DRI) matching with the composition of steel produced so as to produce quality steel.

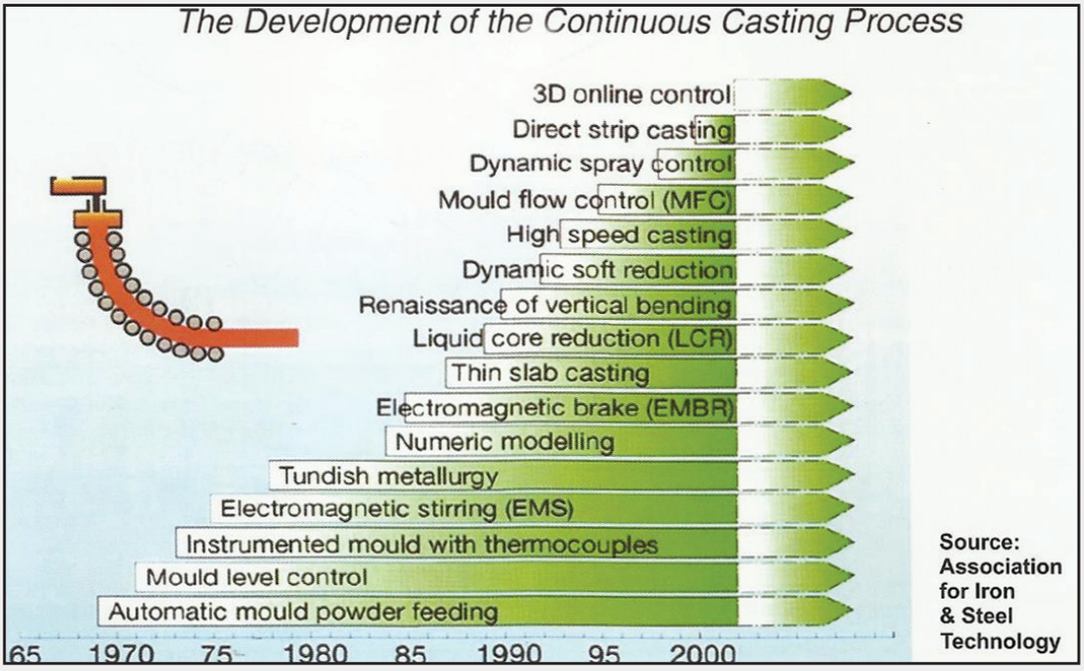
Continuous Casting (CC)

The liquid steel produced in steel melting shop is converted into solid intermediate products by casting into specific shapes-adopting the ingots-casting or continuous-casting process. Today, ingot-casting is becoming obsolete and the method of choice is continuous casting which offers several advantages viz. improved energy efficiency, reduced emissions and reduced water utilization due to the elimination of slabbing mills and billet mills, high yield in excess of 96% and hence high productivity, etc.

Today, almost all steel grades for rolled products can be handled by the continuous casting routes. Several innovative technologies/features like 'vertical bend mould', 'liquid core reduction', 'EMBR', 'mould and strand stirrers', 'shrouded casting', 'mould powders for high speed casting', 'water models for smooth casting' etc have been developed for improving productivity and quality of cast steel.

Most of the integrated steel plants and EAF units in India have adopted the continuous casting technology and proportion of continuously cast steel has reached 70%. Some of the plants have also adopted the modern features stated above. However, still 30% steel is cast through the obsolete ingot-casting route mainly by some of the integrated plants and most of the EIF units. In view of increasing demand for productivity, quality and consistency, the steel plants are expected to switch over to CC route and also improve the casting technology in line with the modern technological developments in the conventional CC technology for slabs and billets, viz.

- Ladle Car Technology (instead of 'Turret System') with 'H/L' type tundish to make ladle changeover time zero.
- 'Tundish Heating' for superior steel temperature control.
- 'Auto Mould Powder Feeding' to reduce slag entrapment/uniform mould lubrication.
- 'Dynamic Soft Reduction Technology' to improve internal soundness of cast products i.e. reduction in centreline segregation.
- 'Auto Scarfing and Grinding' to remove sub-surface defects and produce silver/lamination free coils.
- Higher billets casting speed (for 130 mm billets) beyond 7 m/min for high productivity, quality and efficiency.



Near Net Shape Casting

The present trend world over is to cast a profile, which is very near to the final product in size and shape (called Near Net Shapes). Casting of thin slab, beam blank, near net shape strip casting also known as Direct Strip Casting (DSC) and thin strip casting fall under this category. The thin strip casting shortens the process from liquid steel to hot rolled sheet, therefore reducing the overall energy demand and increasing material efficiency but required other secondary metallurgical steps. Typical dimensions for thin slab casting vary between sizes of 15 and 50 mm in thickness. Near net shape strip casting leads to a strand thickness of below 15mm and thin strip casting to less than 5mm. The casting process is combined with the direct hot rolling, cooling and coiling of the trips without an intermediate reheating furnace used for conventional casting techniques, e.g. continuous casting of slabs or thin slabs.

The main advantages are in terms of reduced capital cost, energy conservation, high yield and reduced land requirement. Technology for casting of thin slab, beam blank is well established today on a commercial scale. Thin slab caster coupled with on-line hot rolling stands has been available on full commercial scale producing most of steel grades and has been also implemented in India at JSW Ispat Steel formerly, Ispat Industries and Bhushan Steel. Tata Steel and Essar Steel are in the pipeline. JSPL has commissioned two beam-blank casters. ISP (SAIL) is setting up one 4-strand beam blank/ bloom caster for production of H Beams upto 700mm.

This strip casting is also taking shape and demonstration plants have been set up abroad. Near net shape continuous casting of billets in an endless manner to directly produce wire rod is also another challenging area. Neat net shape strip casting is the futuristic technology and India should develop/adopt this technology.

To be continued…..

India jumps 12 spots on World Bank's ease of doing biz list

The National Democratic Alliance (NDA) government's efforts towards making India a better place for business might have started showing results, with India jumping 12 spots in the World Bank's rankings in terms of ease of doing business. For 2016, India has been ranked 130th on a list of 189 countries, compared with a ranking of 142nd this year, the steepest rise seen by the country in recent years.

The rise was primarily on account of improvement in two areas – ease of starting a business and securing an electricity connection.

"In 2014, the government of India launched an ambitious programme of regulatory reform, aimed at making it easier to do business. Spanning a range of areas measured by 'Doing Business', the programme represents a great deal of effort to create a more business-friendly environment, particularly in Delhi and Mumbai," said the report, titled Doing Business 2016, Measuring Regulatory Quality and Efficiency.

Singapore retained the top spot in the rankings, followed by New Zealand, Denmark and South Korea. While China's ranking improved from 90th to 84th, Pakistan fell 10 positions to 138th from 128th last year.

The world Bank ranks countries on 10th parameters – starting a business dealing with construction permits, getting electricity, registering property, getting credit, protecting minority shareholders, paying taxes, enforcing contracts, trading across borders and resolving insolvency.

For India, the ranking covers data from Delhi and Mumbai, with weights of 53 percent and 47 percent, respectively.

In terms of starting a business, India's ranking improved to 155th from 158th last year, essentially on account of elimination of minimum capital requirement, which was 111.2 percent of income per capita till last year.

Source: Business Standard

Global economy today: India and more; all you need to know in 10 points

India is not yet a 'major driver' of global growth, the US Department of Treasury said in its semi-annual 'Report to Congress on International Economic and Exchange Rate Policies', but added that in the midst of weaker outlook across emerging market economies, Indian economy's recovery has strengthened 'under a new reform agenda'. Top 10 points of note:

1. India's recovery has strengthened under a new reform agenda; since it is not a large importer, however, it is not yet a major driver of global growth.
2. India is now the eighth country from the top in terms of foreign reserve.
   Buoyed by savings of $44 billion from drop in prices of oil imports, India's total foreign exchange reserve has reached an all-time monthly average high of $328 billion. India's foreign exchange reserves reached an all-time high in June 2015 as the central bank purchased foreign currency to moderate appreciation pressures from foreign investment inflows on the rupee, particularly in the first quarter of the year.
3. Weaker outlook is evident across emerging market economies, which exerts a growing influence over global economic prospects. The slowdown in domestic Chinese investment and Chinese demand for imported commodities and components is having wide-ranging implications for other economies.
4. While Brazil is entering its second year of recession and will not be a source of growth in Latin America, Russia is struggling due to economic mismanagement, lower oil prices, and the impact of economic sanctions.
5. Sharp drop in the price of oil is having a large impact on global current account imbalances. On an annualised basis, the roughly $50 per barrel decline in the price of oil is generating shifting income of over $600 billion annually from oil exporters to oil importers, holding all else constant, with Europe and Asia the key beneficiaries.
6. Asia benefits the most from a lower oil price. Asia's gain in the first half of the year was nearly $340 billion in savings from oil imports. China's savings amounted to nearly $120 billion – the largest single country to gain from lower oil prices. Japan saved $76 billion, India $44 billion, and Korea $36 billion.
7. In many cases, this shift is boosting already very large current account surpluses: Germany's surplus is projected to rise to 8.5 percent of GDP this year, or around $ 335 billion; Korea's surplus is on track to be around eight percent of GDP; and Taiwan's surplus is well over 10 percent of GDP. Though significantly lower than its 10 percent of GDP peak in 2007, China's current account surplus in the first half of 2015 topped three percent of GDP and the full year surplus is likely to reach USD 350 billion.
8. These growing surpluses have added to national incomes in parts of Asia and Europe, but demand growth in Europe remains too sluggish and has weakened in Asia.
9. What these economies with large current account surpluses should do is that rather than absorb demand from the rest of the world, they should take supplemental policy actions, including fiscal actions, to provide added support to domestic demand and give impetus to global rebalancing.
10. Because of drop in oil prices, the United States' oil import bill was nearly $110 billion lower in the first half of the year. Euro area economies saved nearly $142 billion.

Source: Financial Express

India's steel demand may grow 7.3% this year

Steel demand growth in India is seen to be the highest at 7.3% in the current year, while there will be slackening of demand in all other major steel-producing nations such as China, the US, Japan, Korea and Russia. The world demand for the alloy would decelerate 1.7% compared to 2014, according to World Steel Association

(WSA). India's steel demand grew by 3.1% in 2014 to 75.9 MT. In the current year, the demand is expected to grow to 81.5 MT. The demand is likely to accelerate further next year with 7.6% growth, the premier industry organisation said in its short-range outlook for the sector. "We expect the current headwinds to moderate in 2016, but this is based on a belief that the Chinese economy will stabilise. Of particular concern is the vulnerability of the emerging economies to external shocks though we are also expecting some, like India, to show resilience to the global slowdown. On a positive note, the recovery of steel demand in the developed economies, even though the momentum has weakened a little, remains on track," said Jurgen Kerkhoff, Chairman, Worldsteel Economics Committee.

The global steel industry has, for the time being, reached the end of a major growth cycle which was based on the rapid development of China. Combined with China's slowdown and low investment, financial market turbulence and geopolitical conflicts in many developing regions, the industry is now experiencing low growth which will last for the time it takes for other developing regions of sufficient size and strength to produce another major growth cycle, he added. The decelerated Chinese economy is unlikely to spring any surprise any more with its steel demand forecast to decrease by 3.5% in 2015 and 2% in 2016, thanks to the rebalancing measures on the investment and subdued real estate sector. The performance of some key emerging and developing economies also started to deteriorate in 2012 due to structural issues, lower commodity prices associated with China's economic slowdown, and in some cases, escalating political instability. WSA said after growing by just 0.7% in 2014 to 1540 MT, the average global steel demand is likely to fall by (-) 1.7% in the current year to 1,513 MT. But, it will grow by 0.7% in the next year to 1,523 MT.

Source: Metaljunction

India's iron ore import set to fall in FY16

India's iron ore imports are set to decline during the current financial year as domestic production has shown considerable improvement and price have seen a downward correction. The import of the key steel-making raw material is projected at 6-10 million tons in FY16, lower than the volume in the last financial year, according to the Federation of Indian Mineral Industries (FIMI).

In 2014-15, Indian steel-makers imported a record level of 15 mt after the global iron ore prices hit a historic low of $45 per ton for 62 percent Fe-grade iron ore.

"There is an abundant quantity of iron ore available in the country. The total stocks lying at various mines are estimated at 150 mt. in addition, there will be fresh production this year. Overall, there is no need to import iron ore in the country," R K Sharma, Secretary General, FIMI said.

Industry sources said for the period April to August, 2015, steel mills and traders were believed to have imported around 2.8 mt of iron ore. JSW Steel, which was the largest importer of iron ore last year at 10 mt, has imported barely 700,000 tons in the first five months of the current financial year. The company might import more depending on the prices in the domestic market and supply situation in Karnataka, sources said.

Apart from JSW Steel, other importers this year include Tata Steel, Essar Steel, KIOCL and private traders.

The steel mills are hardly producing around 45 mt of steel using iron ore as raw material, while the balance 42 mt of steel is produced by induction furnaces, which do not use iron ore. This means, the requirement of iron ore for integrated steel mills is not much and whatever they require is available in the country, Sharma said.

Currently, the domestic iron ore with 62 percent Fe grade is available at Rs 2,500 per ton, which is 50 percent lower than the landed cost of imported iron ore. Whereas the imported iron ore with similar grade costs Rs 4,500 per ton to Rs 5,000 per ton. So, there is not much scope for importing iron ore this year, sources said.

The 62 percent Fe-grade iron ore fines were sold at Rs 4,500 per ton about a year ago. Going by the current trend, the total imports for this year will not exceed 6-10 mt, industry sources said.

NMDC has reduced its prices by 33 percent

between March and September this year. The company currently sells iron ore fines at Rs 1,660 per ton compared to Rs 2,460 per ton in March this year. "The weak sentiment, coupled with higher production estimated for the current fiscal, has resulted in the lowering of prices in the domestic market. This situation has led to a decline in imports of iron ore this year," an analyst said.

Iron ore production for fiscal 2016 is estimated at 160 mt, if Goa opens up mining, otherwise it would be in the range of 145-150 mt compared to 129 mt in FY15, industry sources said.

Karnataka sitting on permits to reopen 93 iron ore mines

Two-and-a-half years after the Supreme Court allowed 117 iron ore mines in Karnataka to reopen, only two dozen have become operational. The state government is yet renew the leases and clearances for the remainder, leaving mining companies in a tizzy and forcing steel makers to import an unprecedented 15 million tons (mt) of iron ore from countries as far as South Africa in 2014-15.

The BJP-led central government, which imposed a 20 percent safeguard duty to protect the domestic steel industry, has urged Karnataka Chief Minister Siddaramaiah to expedite the mining permits to shore up domestic iron ore output, which shrank in five of the first seven months of 2015. Iron ore is a key ingredient in making steel.

Officials and industry players blame the lack of clearances on a combination of bureaucratic paralysis, political factors and onerous conditions that made the mines unviable.

"Last year, India imported 15 mt of iron ore, out of which we imported 10 mt," said Seshagiri Rao, Joint Managing Director and Group CFO of JSW Steel. He said many steel plants had come up in Karnataka due to its rich iron ore reserves and are finding it difficult to procure the raw material from outside the state or abroad.

"One of the biggest competitive strengths of the Indian steel industry is domestic iron ore reserves. If that's not available, we become less competitive," he said.

"Though the SC allowed re-opening of 117 mines in early 2013, just 24 are operational as the state government hasn't been pro-active in getting leases executed thanks to a bureaucratic paralysis and the lack of political will," said Basant Poddar, Vice President, FIMI.

Industry sources said Mines Minister Narendra Singh Tomar, during a recent visit to Karnataka, had told the CM to fast-track the renewal of leases for the remaining 93 mines.

"In states, the process is not as transparent as required. A few people have raised this point. Wherever documentation is involved, a state can argue that documents are not complete. All sorts of issues, including political, could be at play," the sources said.

In 2011, the apex court had banned all 168 iron ore mines in Karnataka for violations of the law and environmental damage. In April 2013, it allowed 117 mines involved in minor violations to re-start and cancelled licences for 51 mines that had committed serious violations, requiring their permits to be auctioned.

Poddar said 35-40 medium and large mining firms are eligible to restart operations, but are stuck in red tape. Another 45-odd smaller mines have become unviable due to the restrictions on the quantum of mining.

"These mines have been told they must operate for at least 20 years if they are in a forest area. With about 1 million tons in reserves each, that works out to just 50,000 tons of ore output a year and is unviable," the FIMI Vice-resident said.

India may turn out to be net importer of iron ore for second year

Imports may total 6-10 million tons in the year ending March 31, R K Sharma, Secretary General of the Federation of Indian Mineral Industries, said. At the same time, exports are slumping due to government taxes on shipments due to government taxes on shipments and the collapse in international prices for the steel-making material, he said.

It's a stark turnaround from three years ago, when India was the third-biggest exporter of iron ore, able to satisfy demand from a steel industry ranked fourth largest in the world and sell its

surplus of low-grade ore to China at a time when price were double or triple where they are now.

India's steel producers have faced raw material shortages since 2011, after courts found illegal iron ore mining and imposed successive bans in the top producing states of Karnataka, Odisha and Goa. While the bans have since been lifted, the states are subject to output caps. India produced 129 million tons of iron ore in 2014-15, down from 207 million tons in 2010-11, according to federation data.

"The restrictions on mining are hurting the steel industry, especially in Karnataka. We will have to import high grade iron ore to feed steel plant," Sharma said. The restart of some mines should cut imports from last year's 15 million tons, he added.

Sharma expects exports this year at 5 million tons, down from 7.3 million tons in 2014-15 and a fourth year of decline.

Iron ore prices slumped in July to their lowest steel in at least six years as major miners in Australia and Brazil ramped up production to win market share even as growth in China, the world's biggest steelmaker, slowed. India bears the additional burden of royalty taxes and export duties of 10 percent on lower grade ore, and 30 percent on higher grade material, Sharma said.

"For exports, there is not much scope, as prices are at rock bottom and there are hardly any buyers," he said. While the coastal state of Goa, traditionally an export hub, prepares to restart mining in October, progress could be slow as producers clear operational hurdles such as draining water from mines idled for three years, he said.

Benchmark ore with 62 percent content at Qingdao stood at $55 a dry ton. The raw material sank to $44 on July, a record low for the price dating back to May 2009. It peaked at $91 in 2011.

Source: Steel Insights

SAIL SEES GOOD GROWTH FOR STEEL IN COMING YEARS

SAIL has planned a capital expenditure of Rs 7,500 crore for FY15-16 and the company is confident that good growth would be witnessed in domestic steel consumption in the coming years, bringing an end to the stagnant demand scenario, Rakesh Singh, Secretary (Steel) with Additional Charge, Chairman SAIL, said at the company's 43rd annual general meeting held in New Delhi on September 24.

He said the Indian economy has been on the recovery path and the government's focus on infrastructure augurs well for the Indian steel industry.

Addressing the AGM, Singh said even while Vision-2025 for the company is being given final shape, action on some of the key projects in this roadmap have been initiated. "Work on installation of a state-of-the art 3 mtpa hot strip mill at Rourkela Steel Plant has started," he said.

He added that this mill will enable production of high quality HR coils, including high strength API grades (upto API X100), auto body grades and other special value- added steels.

Expressing optimism over SAIL's relentless drive to fast-track its modernisation and expansion plan (MEP) he said that, "projects worth Rs 10,200 crore were commissioned in 2014-15, which is the highest for any year since inception". He also mentioned that during FY14-15, capital expenditure of Rs 6,840 crore has been incurred and for FY15-16 capex of Rs 7,500 crore is planned.

Touching upon the steel industry's global scenario, he said the world's finished steel consumption rose marginally in 2014 to 1,537 mt, recording 0.6 percent growth over 2013. China registered a negative steel demand for the first time since 1995 and its exports registered an increase of 51 percent over 2013. The domestic sector was largely affected by these developments.

Outlining the stress experienced by the domestic steel industry due to various reasons, Singh said, Indian steel prices had to be adjusted in line with international markets resulting in a steep decline in realisation since August 2014. This has impacted performance of the domestic steel producers." Clarifying that SAIL was also no exception to this, he mentioned that the company's net profit was down largely due to the lower net sales realisation, resulting from a subdued market in the second half of the last fiscal.

Speaking about the company's production, he said, 15.4 million tons (mt) of hot metal was produced in FY 14-15, registered an increase of 7 percent over FY13-14 and saleable production was 13.5 mt which was 3 percent higher than the previous financial year. The company achieved the highest ever labour productivity (LP) of 302 TCS/man/year in 2014-15. Shareholders approved a further dividend of 2.5 percent for the current fiscal, taking the total to 20 percent of the paid-up share capital.

SAIL-ISP blast furnace produces 1 mt hot metal

Within a year of its start, the new blast furnace "Kalyani" at IISCO Steel Plant touched 1 million tons of hot metal production on September16, 2015.

The country's largest blast furnace, that was "blown in" on November 30 last year, has a useful volume of 4,160 cubic meters and can produce about 8,000 tons of hot metal per day. It has been built by POSCO (Engineering and Construction), South Korea and NCC Ltd, India, SAIL said in a statement.

With an enhanced campaign life of 20 years, the blast furnace is equipped with systems such as pulverised coal injection, cast house fume extraction, cast house slag granulation, high top pressure operation coupled with top pressure recovery turbine, twin material bin bell-less top, waste heat recovery and conveyor belt charging system.

Kalyani incorporates level II automation and has twin flat cast house with four tap holes. The environment-friendly furnace ensures minimum emissions and recovers waste energy to the fullest. It also has a closed-loop cooling system resulting in almost zero water discharge.

Source: Steel Insights

Energy Efficient Secondary Steel Production in India

India produced 42 mnt of steel in secondary steel sector in FY15, contributing to almost half of the country's total steel production. Secondary steel sector includes DRI plants, induction and the secondary steel re-rolling mills (SRRM). There are nearly 3,000 small and medium enterprises units in India who are engaged in processing steel through secondary route. Coal, furnace oil, electricity are the major energy sources used. Energy cost contributes to 25 to 35% of the total conversion cost (consists of all costs except raw material). United Nations Development Programme (UNDP) and Ministry of Steel (MoS) with funding assistance from Global Environment Facility (GEF), Australian Aid program leveraged large private investments to bring energy efficiency (EE) in secondary steel sector.

The total world steel production was 1636 million tons in year 2014. China stands first with 50% of total world production; Japan and USA are in second and third position. India was in eight position in 2003, fourth position in year 2014, is already in third position in first five months of 2015.

The steel sector in India forms an important link to country's overall economic development. Steel production in India has grown at a yearly average of 8.4% in the last 20 years, higher than the global growth rate which was about 6% on a yearly basis. The level of per capita consumption of steel is one of the important indicators of the socio-economic development of a country. The per capita consumption of steel in India was only 57.8 kg against the world average of 225 kg and 515 kg for China (in 2013). The per capita consumption is expected to increase in India due to rapid economic growth, thus offers a huge scope for sectorial improvements. The steel sector contributes nearly 2% of the country's GDP and employs over 6 lakh people. Further, the Government of India is targeting at 300 million tons production by 2030 or even earlier, thereby offering a great challenge and opportunity to the steel sector in India.

Steel Sub-sectors in India				
Type of Industry	No. of Units	Capacity (million t/y)	Production (million t/y)	Capacity Utilization %
Mini BOF – Hot	50	34.89	24.34	70%
Metal – Pig Iron			7.8	
Sponge Iron	378	45.34	22.87	
EAF	48	28.87	18.46	64%
IF	1269	36.49	27.85	75%
Corex/MBF	3	11.36	9.71	85%
Re-rolling	1773	48.6	35.31	73%
Wire Mills	48	1.09	1.06	97%
HR	23	22.13	19.45	88%
CR	153	12.08	10.11	84%
GP/GC Sheets	21	5.43	5.35	98%
CCP	7	0.61	0.88	143%
Pipes	11	2.72	1.97	73%

Steel production in India

India is unique in steel production as it includes production from large integrated steel plants (ISP) and secondary steel sector. It is said that 45% of the steel is produced through BOF while rest 55% through EAF & IF. Both EAF and EIF come under secondary steel sector.

Primary Steel Route

Solid metallic iron/sponge iron is produced from iron ore through direct reduction of iron. Then the metallic iron is processed in Electric arc furnace (EAF), refined and billets are produced through continuous casting machine (CCM). Alternatively, iron ore is processed in a blast furnace to produce pig iron. Pig iron is then processed in basic oxygen furnace to produce molten steel, then refined and billets produced in the continuous casting machine. Pig iron is also used for casting directly from blast furnace.

Secondary Steel Route

The scrap steel or combination of scrap/sponge iron is processed in Electric Induction Furnace to produce billets. These units which produce billets from scrap are called EIF units. These billets are then reheated in a reheating furnace so that the billets reach red hot condition and then they are rolled to required size and shape. These units are known as Steel Rerolling Mills.

Energy Efficiency Interventions in Secondary Steel Sector in India

The secondary steel sector has four main inputs costs namely, raw material, labor/ skill, O & M costs of machinery and energy. Leaving apart raw material, rest is called conversion cost. Energy forms 30-35% of the total conversion cost. UNDP and MoS identified the need for introducing energy efficiency in secondary steel sector as it did not seem to have ability to make improvements on their won. The sector was using conventional machinery, did not have sufficient knowledge on energy efficiency and productivity improvement methods. Thus UNDP and MoS designed a project with funding from the GEF to pilot energy efficiency in SRRM.

Piloting Energy Efficiency interventions in SRRM in phase 1

The Phase 1 was implemented during 2004 till 2013. 34 units adopted comprehensive energy efficiency measures, perhaps, for the first time and were called 'model units'. The project helped units adopt a basket of solutions as desired by them from a menu of options of reheating furnace and the rolling mill.

A Typical Unit

The average steel production works out to be about 30,000 ton of steel annually. These units chose few set of options from the basket of 34 interventions.

- Energy consumption during baseline was 2,550 MJ per ton of steel. This includes 2,150 MJ/mt in reheating furnace (equivalent to 56 liters of furnace oil) and 400 MJ/mt in rolling (110 kWh of electricity)
- Investments made in energy efficiency were Rs 167 lakhs (280,000 USD @ Rs 60 per USD). This include 14.2 million from SRRM units themselves and 2.4 million from GEF & MoS in the from of technical assistance and financial incentives.
- Energy consumption post interventions were 1,628 MJ/mt of Steel. This includes 1,307 MJ/mt in reheating furnace and 321 MJ/mt in rolling mill.
- Annual reduction of energy saving was estimated at 550 kiloliters furnace oil

equivalent and 620 thousand kilowatt hours of electricity.

- Annual monetary saving was 148 lakhs. This includes INR 117 due to reduction in fuel used in reheating furnace and INR 31 lakhs in rolling mill. The payback on investment is 14 months.
- Further the GHG emission reductions are 2,600 mt of carbon dioxide annually.

Performance of all 34 units

- Invested INR 570 million in energy efficiency measures.
- Saving 18.71 million liters of furnace oil equivalent and 21.08 MU electricity annually (788.8 TJ/y).
- Reduction in energy cost to the units was INR 505 million annually.
- Reduction of GHG emissions was 8,8400 tCO2 annually.

Direct Rolling

Direct rolling is a new concept to small scale steel industrial units in India. This was implemented for the first time in Shri Bajrang power & Ispat followed by Real Ispat & Power and Indus Smelters in Raipur supported by the project. The concept looks simple; however, for the first time it was implemented only in 2010 by Shri Bajrang Power & Ispat, UNDP-GEF-MoS PMC helped resolve teething problems in implementing this concept.

Replication without Direct Project Assistance

A replication study was conducted to identify if the project has proliferated to other SRRM units, not supported by project directly. R&D Centre of SAIL carried out the assessment. 300 SRRM units were surveyed. It was observed that 166 of them actually invested in EE measures. The information was based on feedback to the survey and not backed up with measurements. This study also concluded a need for continuation of knowledge support to provide technical assistance for benefiting the industry. The study provided an assessment of energy saved, GHG emission reduced.

Phase 2: Scale Up Energy Efficiency in Small Scale Steel Industries

UNDP and Ministry of Steel continued with the initiative to reach out to more small scale steel mills through a follow up project. In this phase, cost of the grants reduced by a factor of one-fifth and the targets increased by ten times when compared to Phase 1. The phase 2 is scheduled to end in December 2015. The total target was to make 300 small scale units initiate energy efficiency. Nearly 20 consulting firms are now involved in providing technical assistance. Following are the key steps and highlights of progress made. The SRRM units that adopted energy efficiency in Phase 2 were called E2 (Energy Efficiency) units for administrative convenience.

The Outcome of the Project

The contribution of secondary steel industry is over 50% in India and majority of long steel produced is attributed to this sector. Their energy costs contribute to nearly 35% of the total conversion costs. The initiatives presented in the paper amply demonstrated the significant reduction in energy costs with very attractive payback, benefits to environment by reducing local and global pollution. Hence, any energy efficiency measures must be a welcome step.

UNDP and Ministry of Steel with funding support from GEF and AusAidhas provided catalytic support to small scale steel units to adopt energy efficiency. The sector has also reciprocated with interest in adopting energy efficiency measures. The pilot phase 1 led to phase 2 to scale up the energy efficiency to other 3000 plus small scale steel units in the country with little catalytic support such as knowledge inputs, consolidating and benchmarking innovation and strengthening service provider's network.

The initiatives in Phase 1 and 2 consolidated energy efficient technology packages. Phase 1 intervention proved average reduction of 30% energy consumption. The average investments were INR 16.7 million per unit and the payback on investment was just 14 months, thereby the investments were fairly attractive. The unique contribution of the project was introduction of direct rolling for the first time. Three direct rolling

demonstrations in phase 1 lead to replicating in 30 units in phase 2. Though this is applicable to composite mills, some units which had just SRRM unit or EIF, are seriously complementing their business with other and include direct rolling to reap overall benefits. To adopt direct rolling, the investment was INR 40 million, but the payback was in just about six months. The initiatives have resulted into a total investment [including firm commitments] of nearly INR 1.56 billion in energy efficiency from 260 small scale steel units; 34 units from Phase 1 and 226 units from Phase 2.

The average baseline energy consumption was about 2,550 MJ per ton of steel in phase 1 with 34 data points and 2,537 MJ per ton of steel in phase 2 with 349 data points. The data from both phase 1 and phase 2 units were very close. The average energy consumed post implementation was 1,628 MJ/t of steel in phase 1 and 1,701 MJ/t per ton of steel in phase 2 for 14 steel units that have completed PI measurements till 15 July 2015. Further, the energy saving translate to 2,600 tCO2 annually in a unit (phase 1). Benefits due to reduction in scale loss etc. are additional and have not been presented in this paper.

Continuing the considerable efforts made by UNDP and Ministry of Steel towards the secondary steel re-rolling mill and induction furnace sector, UNDP is now proposing for phase 3 of the project. The same is in line with the growing demand of the secondary steel producing industries and the rising concern of energy efficiency across sectors. The proposal is being formulated aiming to support around 1,000 secondary steel units across the country.

Source: Steel 360

REPORT ON TECHNICAL TALK ON COAL BENEFICIATION

A Technical Talk on Coal Beneficiation was organised at our Chapter on 17th October 2015. The Talk was delivered by Shri VK Sehgal, Former CMD, South Eastern Coalfields.

At the outset, Shri S C Suri, immediate Past Chairman, spoke about the activities being performed by The Indian Institute of Metals (IIM) and Delhi Chapter.

Thereafter, K L Mehrotra, Chairman, welcomed all the participants and gave a brief introductory remarks about Shri Sehgal. He briefly touched upon the Coal issues and requested Shri VK Sehgal to proceed with his presentation.

Shri VK Sehgal presented a detailed overview of the Coal Beneficiation. His presentation touched upon the following issues:

a) Advantages of coal beneficiation

b) Float and sink analysis in the coal washeries

c) Coal preparation

d) Washing Technology of Coal, like jigging, dense medium separation and froth floatation etc.

e) Different kinds of coal washeries

f) Statutory provisions for setting up coal washery

There were about 50 participants from various organisations.

After the presentation there was a lively interaction between the guest speaker and the audience. After conclusion of the presentation, Shri GIS Chauhan, Hony Joint Secretary, proposed vote of thanks.

A memento was presented by Shri K L Mehrotra, Chairman, to the speaker as a token of appreciation.

The Talk ended with lunch.

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R P VARSHNEY MEMORIAL QUIZ

Shri RP Varshney was one of the most important life members of Delhi Chapter of The Indian Institute of Metals (IIM). He served the Delhi Chapter as Honorary Secretary from 1964-65 to 1981-1982 and again as Chairman from 2004-05 to 2006-07. During his tenure as Hony Secretary and as Chairman he contributed immensely to the cause of technical activities in metallurgical field at Delhi Chapter. When the Chapter was without any premises, he used to operate the Chapter's office from his residence. He was also responsible to nourish the idea of creation of the building of our Chapter. He was also responsible for evolution of our Chapter as it exists today. His efforts to mobilise the resources for construction of our building are laudable and acknowledged by all members of the Executive Committee of the Chapter. Today the building of our Chapter stands out among all Chapters of the IIM in terms of size and infrastructure facilities.

Considering the dedication and stellar contribution of Shri Varshney to the cause of metallurgy - the Executive Committee of the Chapter decided to institute the R P Varshney Memorial Quiz for engineering students from colleges located in Delhi and nearby areas. The first R P Varshney Memorial Quiz was held on 31st October 2015.

At the outset, Shri GIS Chauhan, Hony Joint Secretary, welcomed all the participants to the Quiz Contest. He informed the house about the activities of The IIM and its Delhi Chapter. Thereafter Shri R K Gupta, Chairman of the Chapter Relations Committee, spoke about the contribution of Shri R P Varshney in the evolution of Delhi Chapter of IIM. Shri A C R Das, Member of the Executive Committee of Delhi chapter and Consultant, Ministry of Steel was the Quiz Master. Shri M P Sharma, Hony Treasurer of the Chapter, was the Convenor of the quiz event.

The following colleges participated in the Quiz held at our Chapter on 31st October 2015. Mrs R P Varshney was the Chief Guest and other family members were guest of honour at the event:

1 ABES Engineering College, Ghaziabad

2 Aryan Institute of Technology

3 Govind Ballabh Pant Engineering College

4 Inderprastha Engineering College, Ghaziabad

5 Jamia Millia Islamia Engineering College, Delhi

6 JECRC, Jaipur

7 Krishna Engineering College, Ghaziabad

8 Northern India Engineering College, Delhi

9 Shree Ganapati Institute of Technology

10 Sri Guru Grantha Sahib World University, Punjab

11 VITS, Ghaziabad

Twenty two teams (each team of two students) of the above colleges participated in the Quiz Contest.

The quiz consisted of four components. The first three components of the quiz were in the form of written tests of half an hour each.

Topics to be covered in Oral or written test were:

Format of Written Test:

- Only objective questions
- Multi choice answers
- Written test was divided in Three categories. All the participants were allowed to attempt all categories of written test. Total questions were 75 in numbers and time given will be 150 minutes.
- The Category-A consisted of:
  - BASIC G. K (5 questions of 2 marks each)
  - Sports (5 questions of 2 marks each)
  - Indian Culture (5 questions of 2 marks each)
  - Indian History (5 questions of 2 marks each)
  - Aptitude questions (5 questions of 2 marks each)
- The Category-B consisted of:
  - MATHS / mathematical problems (5 questions of 2 marks each)
  - Famous personalities (5 questions of 2 marks each)
  - Inventions (5 questions of 2 marks each)
  - Indian Economy (5 questions of 2 marks each)
  - Physics / Chemistry (5 questions of 2 marks each)
- The Category-C consisted of:
  - Mech. / Met. Engineering (5 questions of 2 marks each)
  - Logical problems in engineering (5 questions of 2 marks each)
  - Indian politics (5 questions of 2 marks each)
  - Current affairs (5 questions of 2 marks each)
  - Statement and conclusions of engineering (5 questions of 2 marks each)

Evaluation of Answer Sheets:

- The Category-A portion of answer sheet was checked first and 75% participants ranking from the top gainers were filtered through.

- The Category-B portion was checked and 50% participants who are ranking from top gainers were filtered through.
- The Category-C portion of answer sheet was checked and FIRST FOUR TOP GAINERS were selected for ORAL presentation.

After conclusion of the three tests and evaluation of the performance of the 22 teams, the four teams, two from Jamia Miillia Islamia, one from G B Pant Engineering college and one from Shree Ganpati Institute of Technology qualified for Oral Quiz Round.

The final round consisted of oral test by the Quiz Master. All the four teams were administered oral test in ten rounds by the Quiz Master. There were two marks for correct answer with no negative marking. The Quiz Master also asked one question from students sitting in the audience and whoever gave the correct answer was given a cash prize of Rs. 100/-.

After conclusion of the oral test of the above four teams, the Evaluation Committee declared the result as under:

Winner Team	**Name of Students**
Jamia Millia Islamia	Asif Iqbal Mohd. Suhail Alam
Runner-up Team	
Jamia Millia Islamia	Avichit Madaan Rashid Khan
Second Runner up Team	
G B Pant Engg. College	Jasdeep Singh Gulati Harsh Sharma

The Winner Team was given a cash prize of Rs 5,000/-. The Runner-up Team and Second Runner up Team were given a cash prize of Rs 3,000/- and Rs 2,000/- respectively. The cash prizes were given away by Mrs R P Varshney.

All the participants were given participation certificates and New Year Diary of 2016 by the son of Shri R P Varshney. The mementoes were also given to all the colleges participating in the Quiz Contest.

Lunch and refreshment were also served during the event.

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Safeguard duty unlikely to have a significant impact on domestic steel prices: ICRA

The 20 percent safeguard duty levied on hot-rolled coils (HRC) of steel imports is not likely to have a significant impact on domestic steel prices, rating agency ICRA said recently in its release. However, the extent of cheaper imports is likely to come down in the near term, since the share of the items covered under the safeguard duty in India's overall steel imports was close to 50 percent in June quarter, it said. Following the imposition of the duty, the differential between domestic and international hot rolled coil (HRC) prices has reduced significantly, and the domestic prices now are largely aligned with imported steel prices, said ICRA. However, international HRC prices have declined further by around 5 percent after the duty was imposed which, along with weak domestic demand conditions and prospects of further capacity additions in India in the near term, is likely to keep domestic prices under check, ICRA said. India's steel consumption growth improved to 5.4 percent during the period April-July from 3.1 percent in the corresponding period last year.

"While the growth remained steady at upwards of 6 percent during the first three months, it declined to 0.5 percent only in July 2015, indicating that the sustainability of demand improvement is still uncertain," the report quoted Jayanta Roy, senior vice-president and co-head, corporate sector ratings at ICRA as saying. Domestic steel production growth, on the other hand, declined to 1.3 percent during the period April-July 2015 from 3.3 percent last year.

On the raw material front, NMDC has continued to cut its iron ore prices in Q2FY16, revising prices of fines by 15 percent and lumps by 3 percent in July 2015, and again in September 2015, when lump prices were reduced by 3 percent. Moreover, in October 2015, prices of both lump and fines were again dropped by a steep 12 percent. "With the re-opening of closed iron ore mines in Odisha and Jharkhand, and with the proposed auction of iron ore mining leases in the current quarter, iron ore production in India is expected to increase going forward, which will keep domestic prices under pressure", said Roy. On the other hand, international coking coal prices too continued with their downward journey, with the benchmark premium hard coking coal contract price declining by 5 percent in the current quarter.

As per the latest ICRA report, operating profitability of the domestic steel industry declined in Q1FY16 to 11.4 percent from 12.2 percent in the preceeding quarter due to a continued fall in steel prices. For the first six months of FY16, ICRA estimates that while domestic HRC prices corrected by around 15 percent, major raw material costs of blast furnace players declined by around 9 percent. Consequently, gross contributions declined by around 20 percent during this period. However, the safeguard duty has reduced the possibility of further significant price declines. This, coupled with the softening of iron ore and coking coal prices is expected to support the profitability of blast furnace operators to an extent in the second half of the year.

As per ICRA's estimates, gross contribution level has improved by around 5 percent in October 2015 over the previous month's level, after the latest fall in domestic iron ore prices. The recent interest rate reduction would also provide a relief to players going forward, given their leveraged balance sheets. Nevertheless, the impact of the same on their credit profile is unlikely to be significant.

Source: Business Standard

Steel consumption declines 5.2% in September, output down 1.3%

India's steel consumption declined by more than 5 per cent in September to 6.2 million tonnes (MT) compared with the earlier month, a development that indicates a weakness in the business sentiment. Moreover, the production of the metal too went south by 1.3 per cent last month to 7.34 MT compared with August 2015, latest data by the Steel Ministry's Joint Plant Committee (JPC) showed. "Domestic steel consumption in September 2015 (6.2 MT) declined by 5.2 per cent compared to August 2015 and increased by

5 per cent compared to September 2014," JPC said. However, in the first half of the fiscal, the consumption of total finished steel grew by 4.1 per cent to 39.14 MT compared with April-September 2014-15, it added. According to experts, although the demand in the first half shows optimism, there is a huge dip in demand when the consumption in August is analysed in comparison to July 2015. Also there is a fall in demand in April-September as against April-August.

As per the JPC, finished steel consumption grew by 4.6 per cent in April-August 2015 at 33.025 MT compared with the year-ago period. In August, the demand grew by 4.8 per cent to 6.63 MT compared with July and increased by 0.8 per cent compared to August 2014. Another factor worth analysing is that global as well as domestic economic activity, particularly in infrastructure and housing, has not shown very "optimistic signs", they said.

"In India, the government has come out with tenders and clear indications of spending on several infra and housing projects, but there is still time for them to start keeping in mind that they will go through tendering process, etc. Real estate is a still long way from revival," a top official from a major steel producer said. According to the JPC, crude steel production compared to August 2015 declined by 1.3 per cent in September to 7.33 MT. against September 2014 it fell by 0.5 per cent. However in April-September 2015-16 crude steel production was 45.135 MT, a growth of 1 per cent compared to same period of last year. Integrated steel producers (SAIL, RINL, TSL, Essar, JSWL and JSPL) together produced 23.67 MT in April-September 2015, a growth of 3.3 per cent over the year-ago period. Others produced 21.47 MT, which was a decline of 1.5 per cent during the same period.

Source: www.india.com

Global Steel Demand to Fall 1.7% This Year, Recover in 2016

Global demand for finished steel products is forecast to fall 1.7% this year, largely due to an economic slump in China, but should recover in 2016 as demand in both developed and emerging economies grows, the World Steel Association said in its short-range outlook recently.

Global steel demand is forecast to shrink to 1.51 billion metric tons this year and then grow 0.7% to 1.52 billion tons in 2016. This compares with 0.7% growth to 1.54 billion tons last year, according to the association--whose members contribute some 85% of global steel supply. The World Steel Association forecast in April that global steel demand would grow 0.5% this year and then 1.4% the following year but the slowdown in China's infrastructure investment and real estate sectors has been more severe than expected, prompting the association to ratchet down its steel demand forecast for the world's largest steel consumer.

Chinese steel demand is now forecast to shrink 3.5% to 686 million tons this year and then fall another 2% to 672 million tons in 2016, having reached peak steel demand in 2013, according to the association. This compares with its April forecast for Chinese steel demand to shrink 0.5% both this year and next. "It is clear that the steel industry has, for the time being, reached the end of a major growth cycle which was based on the rapid economic development of China," said Hans Jurgen Kerkhoff, chairman of the worldsteel Economics Committee. "The steel industry is now experiencing low growth which will last for the time it takes for other developing regions of sufficient size and strength to produce another major growth cycle," Mr. Kerkhoff said.

Global steel demand, excluding China, will shrink by 0.2% this year before growing 2.9% in 2016. In emerging economies excluding China, demand will grow 1.7% in 2015 and 3.8% in 2016. Meanwhile steel demand in developed economies is expected to contract by 2.1% this year but grow 1.8% in 2016.

In the U.S., steel demand is forecast to shrink 3% this year due in part to slower investment in the nation's energy sector. U.S. steel demand is forecast to then rise 1.3% the following year. In the European Union bloc of 28 member states, steel demand is forecast to rise 1.3% this year and 2.2% next year, buoyed in part by low oil prices and low interest rates.

Source: Metaljunction

10 Motivating Quotes by Dr. A P J Abdul Kalam

1. All birds find shelter during a rain. But Eagle avoids rain by flying above the clouds. Problems are common, but attitude makes the difference.
2. Unless India stands up to the world, no one will respect us. In this world, fear has no place. Only strength respects strength.
3. Dream is not that which you see while sleeping it is something that does not let you sleep.
4. The Best Brains of the nation may be found on the last benches of the classroom.
5. Don't read success stories, you will get only message…. Read failure stories, you will get some ideas to get success!!
6. Look at the sky. We are not alone. The whole universe is friendly to us and conspires only to give the best to those who dream and work.
7. Difficulties in your life don't come to destroy you… but to help you realise your hidden potential and power, let difficulties know that you too are difficult.
8. As a child of god, I am greater than anything that can happen to me.
9. Don't take rest after your first victory. Because if you fail in second, more lips are waiting to say, that your first victory was just luck.
10. You cannot change your future, but you can change your habits, and surely your habits will change your future.

Promote steel consumption while building infrastructure

The average share of the construction sector in global steel consumption at around 50-55% implies that irrespective of the stage of growth of the economy, revival of steel demand critically hinges on development and expansion of this sector. World Steel Dynamics, an information service provider, estimates put the steel intensity of investment in construction nearly 7 times higher than that in other important sectors like machinery and equipment, automobile, household appliances and packaging.

Last year the construction sector grew at a negative growth of 2.5 % in China which drove down steel consumption -3.3 %. In India, the sector rose by only 4.1% in 2014, impacting a slow growth of 2.2% in total steel consumption. To push up the economic growth, all the advanced steel-producing countries have called for a big boost in investment in infrastructure building and up gradation of existing facilities in urban infrastructure, rail and road network and also constructing a few residential complexes. This would not only enhance steel consumption but also contribute to higher utilisation in indigenous capacity.

It is also well known that steel intensity in project and non-residential construction is significantly higher than that in real estates. Steel-cement ratio in project construction exceeds the same in individual houses particularly in mass housing projects up to 3 to 4 floors. For higher floors, of course, more use of steel adds to a number of advantages like faster construction, availability of extra floor space by replacing concrete slabs with light gauge high-performance steel, castellated beams etc. For high-rise buildings, the requirement of steel is more to construct additional roofing space in each floor, the basement, the covered parking and multi-level parking and other subsidiary constructions in the additional spaces. In advanced countries the paucity of space requires houses and compendiums in the cities to be multi storied and more steel-intensive. In India, the mass housing projects and affordable housing

projects funded primarily from the government sources may not provide much space for higher steel application except for reinforcement steel used for concrete. In the smart city concept, the emphasis is more on digital advancement, improvement in public services, eco-friendly environment, safety and security for the citizens, good roads, adequate electricity and water supply.

Each smart city can be planned with an elegant looking entry gate made out of high grade pre-painted steel or stainless steel to project a shining image. At busy road connections the small span steel-concrete composite Road over Bridges (ROB) may be planned for safe movement of the senior citizens, women and children. A good number of kiosks (for multiple uses), dustbin, public conveniences, meeting places and community halls in the locality made with innovative steel design would provide elegant and environment-friendly construction. As steel structures are of permanent nature and require little maintenance and there is an inherent tendency to use locally available cheap materials and then indulge in annual maintenance activities at the cost of the exchequer, the consideration of Life Cycle Cost advantages of steel-based construction must be inculcated at the planning stage itself for the smart cities. This aspect should be addressed on priority if steel is to play a stellar role in the housing and city planning activities of the Government.

It is, therefore, necessary to distinguish between investment earmarked for residential construction and investment made in infrastructure building and make suitable changes in the methodology of demand estimation while correlating construction sector growth with growth in steel demand. It is reiterated that steel use for construction sector as a whole in the country has gone up appreciably in the past one-and-half decade thanks to wider awareness about steel, acceptability and spread of steel- based designs, new user-friendly Codes and Standards (IS 1786, IS 15962, IS 11384), development of light-weight, high-performance steel. Despite all these developments, a good deal of challenges needs to be addressed for higher use of steel in construction sector in India.

The author is DG, Institute of Steel Growth and Development. The views expressed are personal.

Source: The Financial Express

Gentlemen, We're Surrounded By Insurmountable Opportunities

Sometimes as I drive down different parts of the city I live in, I can't help but notice the vast variety of businesses. Many times I pause and think, "That's someone's dream, that's someone's unique idea, that's someone's million-dollar opportunity." I believe there are significant opportunities and ideas around us every day. In fact, "God hides things by putting them near us". The best opportunities and ideas are hidden near you. But, you must be on the lookout for them. You can see a thousand opportunities around you every day… or nothing. Your big opportunity may be right where you are now.

Too many people spend their whole lives devoted to only solving problems and not recognizing opportunities. Significant growth always comes from building on talents, gifts and strengths and not by solving problems. Where do you hear opportunity knocking? How can you answer that knock? "There are always opportunities everywhere, just as there always have been".

You can find opportunities close at hand by paying more attention to the things that are working positively in your life than to those that are giving you trouble. Too many times people devote the majority of their effort, time and attention to things that are never going to be productive in their lives. Clear your mind of the things that are out of your control so you can focus and act upon what you can control. One of life's greatest tragedies is to lose an opportunity and not realize it.

"You are, at this moment, standing right in the middle of your own 'acres of diamonds'. At any moment, you have more possibility than you can act upon. There are million dollar opportunities around you every day.

"The successful person always has a number of projects planned, to which he looks forward. Any one of them could change the course of his life overnight". Opportunities? They are all around us. There are opportunities lying dormant everywhere waiting for the observant eye to discover them.

"Wherever there is danger, there lurks opportunity; wherever there is opportunity, there lurks danger. The two are inseparable. They go together". The stars are constantly shining, but we often do not see them until dark hours. The same is true with opportunities. Problems are opportunities, and there are a lot of them around.

This is the seventeenth 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

Dumping of cheaper finished products cuts into scrap imports

Metallic scrap recyclers in India are in a fix over the sudden change in the nomenclature of some types of metallic scrap by the global industry body Institute of Scrap Recycling Industries (ISRI). This, at a time when finished products are available at cheap rates due to dumping, resulting in a fall in scrap demand for recycling.

Washington-based ISRI, which represents 1,600 scrap recycling companies worldwide, amended its specifications and incorporated radio-mixed hard/soft scrap lead, which consists of clean lead solid and lead shots free of other materials. Also, relay – lead covered copper cable – has been added to the existing categories of metallic scrap for trading on bilateral basis – negotiations between buyers and sellers. Earlier, these scrap varieties of non-ferrous metal scrap were allowed to trade freely.

The change in scrap trading specifications has come at a time when the scrap recycling industry in India is facing reduced demand from consumer industries and cheap import of finished products from countries with which India has signed free trade agreements (FTAs).

"Any change in quality specification has a temporary impact on import. The prevailing sentiment is weak in overall scrap recycling industry, resulting in overall import falling by around 15 percent in the past few months. We expect the trend to continue throughout this year as well," said a senior industry official.

Metals recovered through recycling of scrap meet half of India's base metals demand. A substantial portion of India's steel production is met through recycling of ferrous scrap. In 2013-14, for example, total scrap import in India was reported at 5.77 million tonnes against 9.25 million tonnes in the previous year and 7.87 million tonnes in 2011-12. According to estimates, India's import of metallic scrap fell by 15 per cent in 2014-15 and the current financial year so far.

"More than change in scrap specification, a scrap decline in its demand from consumer industries hit import of metallic scrap in the past few months," said Dhawal Shah, vice-president, Metal & Recycling Association of India.

ISRI specification bans loose or extra iron attachments to 'vador-sealed unit', a type of metallic scrap.

Trade sources believe the government is concerned about the quality of scrap imported into the country.

"There has been shrinkage in metallic output from recyclers resulting in proportionate decline in scrap import," said Shah.

Meanwhile, metal recycler have urged the government to allow local processing unit to flourish rather than pushing them into peril through inverse import of finished products from countries such as Vietnam, with which India has signed FTA. So, the demand of finished products from local sources has declined steeply in the past few years. The situation has worsened in the past few months with demand of foundry products from auto sector having shrunk.

"The government should allow import of finished products only with 35 percent of value addition as specified in FTA norms. There is hardly any room for 35 per cent value addition in metals. Hence, the government should exempt categories like metals from FTA ambit as the same disowns the 'Make in India' vision," said Rohit Shah, managing director of Perfect Valves, a city-based meal recycler.

Source: Business Standard

Chinese Steel Industry Faces Unprecedented Demand Slump'

If anyone doubted the magnitude of the crisis facing the world's largest steel industry, listening to Zhu Jimin would put them right, fast.

Demand is collapsing along with prices, banks are tightening lending and losses are stacking up, the deputy head of the China Iron & Steel Association said few days back.

"Production cuts are slower than the contraction in demand, therefore oversupply is worsening," said Zhu at a quarterly briefing in Beijing by the main producers' group. "Although China has cut interest rates many times recently, steel mills said their funding costs have actually gone up."

China's mills – which produce about half of worldwide output – are battling against oversupply and sinking prices as local consumption shrinks for the first time in a generation amid a property-led slowdown. The fallout from the steelmakers' struggles is hurting iron ore prices and boosting trade tensions as mills seek to sell their surplus overseas. Shanghai Baosteel Group Corp forecast recently that China's steel product may eventually shrink 20%, matching the experience seen in the US and elsewhere.

"China's steel demand evaporated at unprecedented speed as the nation's economic growth slowed," Zhu said. "As demand quickly contracted, steel mills are lowering prices in competition to get contracts."

Medium- and large-sized mills incurred losses of 28.1 billion yuan ($4.4 billion) in the first nine months of this year, according to a statement from CISA. Steel demand in China shrank 8.7% in September on-year it said.

Source: Economic Times

Ruias to close Essar Steel's asset sale by FY16-end

Promoters to infuse Rs 1,500 crore more in company to repay lenders.

The Essar group has drawn a plan to revive the financial metrics of Essar Steel, its struggling steel business, through sale of assets worth Rs 11,200 crore by March next year. Besides, the promoters will infuse another Rs 1,500 crore into the company which will be used for repaying lenders.

The group's asset-sale plan is exclusive of the London-based holding company's plans to sell a 49 percent stake in Essar Oil to Russian oil giant, Rosneft, in an all-cash deal worth $2.8 billion, for bringing down its debt.

The group's aggression in bringing down the debt of Essar Steel stems from the fact that rating agencies have down-graded its Rs 30,500-crore debt into default category, causing some worry among its bankers, which have asked Ruias, the promoters of the group, to expedite their asset-sale plan.

Top company official said Essar Steel was facing the brunt of falling steel prices, lack of gas supply from the Krishna-Vizag slurry pipeline by Naxals in October 2011. The lack of gas supply brought down the capacity of the company's Hazira plant to 40 percent and caused a Rs 4,500-crore hit on Essar Steel's finances. Besides, delays in getting environmental clearance for the company's second slurry pipeline in Odisha resulted in non-availability of pellets for the ramp-up of the Hazira steel plant and had an impact of another Rs 2,500 crore on the company.

Essar Steel is not alone. All Indian steel companies, including the big ones like Steel Authority of India, Tata Steel, JSPL and JSW Steel, have been going through a difficult phase due to cancellation of coal mines, falling steel prices and dumping of cheap Chinese steel until recently.

As part of its planned assets sales, the company had identified two slurry pipelines and coke-oven plant, apart from a second pipeline that was sold for Rs 4,000 crore, Essar officials said.

The company had also frozen all new appointments till the steel sector turned around, they added. All these steps, according to company officials, will help bring down debt from banks and fund last-mile capital expenditure. "During the past three years, the promoters contributed Rs 8,000 crore as equity into the company. They plan to infuse an additional equity of Rs 1,500 crore in 2015-16.

ECONOMY, P4

Korea and Japan seek safeguard duty rollback on steel

South Korea and Japan have strongly pitched for a rollback of the safeguard duty imposed on steel by India, arguing it has affected the large investment in the country made by its companies like Posco, Honda, Toyota and Suzuki. Under free trade pacts that India has with both South Korea and Japan, the countries enjoy substantial duty benefits on steel imports. The provisional 20 per cent safeguard duty has hit production at Posco's plant in Maharashtra, report DILASHA SETH and DEEPAK PATEL.

Most of the legacy issues are now resolved and the projects are now complete. We will see an impact on our operations and financials in the next two-three quarters," said Firdose Vandrevala, executive vice-chairman, Essar Steel. An anti-dumping duty had helped steel companies reclaim the domestic market from cheap Chinese imports; demand for their products had remained robust within India, he said.

During the past three years, Vandrevala said, banks had been repaid to the tune of around Rs 20,000 crore out of the promoters' equity support of Rs 8,300 crore, besides the company's own earnings before Interest, tax and amortisation (Ebitda) of Rs 8,500 crore.

He added that the company would ramp up its capacity utilisation with infusion of additional working capital from bankers, given that the challenges had now been resolved. Higher top and bottom line going forward are expected to meet the debt-servicing obligations in full. Banks continue to lend to and support the company in the form of additional working capital, refinancing under the Reserve Bank of India's 5/25 scheme, and approval for monetisation.

At present, Essar Steel was the only company in the group that was facing headwinds due to global economic conditions. The other group companies – Essar Oil, Essar Port and Essar Services – had healthy financial metrics and had been repaying debt on time, said a group official.

Source: Business Standard

R&D on Steel Min's radar

The Ministry of Steel & Mines is according high importance to research and development (R&D) initiatives to counter the onslaught of high imports and subdued demand being faced by the sector in Indian, S Barthwal, Joint Secretary, Ministry of Steel, Government of India, said recently.

Speaking at a steel conference on technology, Barthwal said India lacks in production of high grade automotive steel and CRGO, which are in high demand as the country focuses on the "Make in India" programme initiated by Prime Minister Narendra Modi wherein importance is being given to auto and power transmission sectors.

"Till now SAIL is the highest spender on R&D initiatives and the private sector lags behind. We are harping on spending at least 1 percent of profits on R&D as newer technologies can only reduce costs in these trying times," he said.

"We are the lowest cost producers of steel after CIS and efforts are on to make the steel sector focus on high grade competitive steel-making as the country aims at 300 million tons of production in the next 10 years," he said.

The steel ministry has created a Steel Research Technology Mission with a corpus of Rs 100 crore from the ministry and Rs 100 crore from the industry, involving industry and technological institutions for more focus on R&D activities.

"We have to look at alternatives for growth like slurry pipelines for transfer of raw materials and goods, at a time railway rakes are a constraint, to give the sector an edge over its competitors," he said.

The ministry is busy on a new campaign on how the industry is taking initiatives to reduce pollution levels as India gets ready to participate in a climate change conference to be held in Paris.

Acknowledging that prices and profits have declined 20-25 percent and steel NPAs are among the highest, he said steel consumption will definitely increase over time and problems would stabilise as the country undertakes infrastructure development initiatives to increase GDP to 8-9 percent levels.

Source: Steel Insights

RINL completes 6.3 mtpa expansion process

Rashtriya Ispat Nigam Limited (RINL), which runs the Vizag Steel Plant, has completed its 6.3-mtpa expansion project, P Madhusudan, Chairman and Managing Director, said at the company's 33rd annual general meeting recently.

The company has also completed modernisation of one of the blast furnaces (BF-1), installation of its 20.6-MW waste heat recovery power generation unit of the sinter machine, the first-of-its-kind in the country, and introduction of the ERP system, he said at a meet held in Visakhapatnam.

The top official said imports of steel from China increased considerably during the second half of

last fiscal, impacting product price realisations. The increase in imports from China during the fiscal was 202 percent in the non-flat category (longs) and RINL being an exclusive long steel producer, was severely affected, with the margins and profits declining sharply in the second half (H2).

Nevertheless, the company registered a turnover of Rs 11,665 crore with a PAT of Rs 62 crore during 2014-15. The company achieved export sales of Rs 865 crore, the highest since inception, with a growth of 16 percent.

In 2014-15, the company registered a growth of 3 percent in crude steel production despite the operations of the plant being severely impacted by Cyclone Hudhud in October 2014.

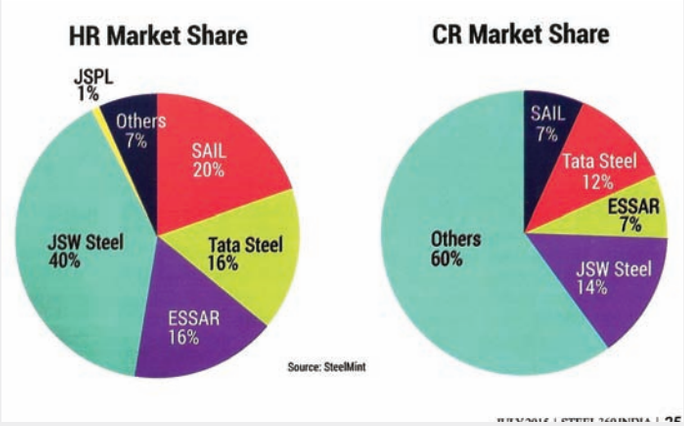
Source: Steel Insights

The Wheel of Kaizen

Satisfying an Indian consumer is not so easy. Perhaps, it is one of those tasks that may take years to master. India has always been a price sensitive market and as awareness is rising, consumer is becoming more & more quality conscious, but still trying to strike a balance between quality & price. Gone are the days when the Indian industry was product centric. There weren't too many players in manufacturing, not so much demand and limited requirement of customized products unlike today.

As an example, for a consumer who needs a better car, the car manufacturer will need better steel, for which, HR & CR manufacturer will need better technology and better raw material and so on… So, in this way a tonne of crude steel that costs about INR 28,000 turns into a car that weights about a tonne but priced anywhere between INR 0.1-1 million, perhaps even more. This height of value additions is accomplished by a cascade of chain' and a far end of this chain ends with a well-known phrase 'Customer is the King'.

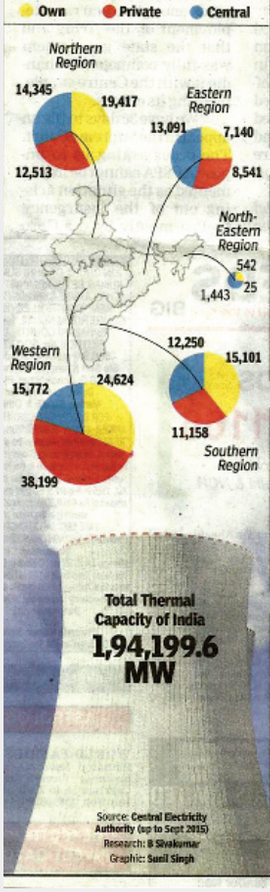
Steel meets with end consumers prominently via two sectors. Firstly, through construction & infrastructure that owes mainly to long steel industry and consumer goods or white goods sector, which consumes flat steel. In India, there are more than 1,500 rolling mills, manufactured about 40.24 mnt of steel in FY15. But, there are just a handful of flat manufacturers, who made about 20.8 mnt of HR coil/sheet in the same fiscal. The top 5 HR



STATOISTICS

GENERATING CARBON

Some 68% of India's power comes from thermal plants – largely coal but some gas and oil. Thermal power plants are a significant source of carbon emission besides vehicles and, in the case of India, firewood and burning of other fuels. These plants are owned by states, Centre and private companies. Some are joint ventures. Maharashtra leads in thermal capacity, followed by Gujarat



Figs in MW

	State	Own	Private	Central
NORTHERN REGION	Delhi	2,185	553	4,629
	Haryana	3,185	2,166	1,737
	Himachal Pradesh	–	–	214
	Jammu and Kashmir	175	–	458
	Punjab	2,655	3,154	925
	Rajasthan	5,794	3,196	1,236
	Uttar Pradesh	5,423	3,345	3,460
	Uttarakhand	–	99	370
	Chandigarh	–	–	48
	Unallocated capacity			1,268
WESTERN REGION	Goa	–	48	331
	Daman and Diu	–	–	45
	Gujarat	7,292	12,702	3,166
	Madhya Pradesh	4,320	4,550	2,641
	Chhattisgarh	2,780	8,923	1,531
	Maharashtra	10,232	11,976	6,086
	Dadra and Nagar Haveli	–	–	77
	Unallocated capacity			1,894
SOUTHERN REGION	Andhra Pradesh	3,086	4,766	1,473
	Telangana	3,607	1,988	1,722
	Karnataka	2,848	2,167	1,628
	Kerala	235	174	1398
	Tamil Nadu	5,293	2,065	4,155
	NLC	–	–	100
	Puducherry	33	–	249
	Unallocated capacity	–	–	1,523
EASTERN REGION	Bihar	210	–	2306
	Jharkhand	1,190	900	315
	West Bengal	5,320	1,941	922
	DVC	–	1,050	6,201
	Odisha	420	4,650	1,683
	Sikkim	–	–	92
	Unallocated capacity	–	–	1,572
NORTH-EASTERN REGION	Assam	336	25	545
	Arunachal Pradesh	–	–	55
	Meghalaya	–	–	123
	Tripura	170	–	388
	Manipur	36	–	84
	Nagaland	–	–	57
	Mizoram	–	–	49
	Unallocated	–	–	142
	Islands	–	–	40

manufacturers made about 93.7% of the product in India. Close to about 7 mnt was rolled into CR in FY15. The top 3 HR manufacturers ie JSW Steel, SAIL and Tata Steel have an outstanding 25mnt Hot Rolling capacity and their production centres are around the various corners of India. They sell their product in the market through a large network of dealers and distributors spread across the country. This is a humongous task and they're just one step away from the end consumers, what comes out is a litmus test of whether the company's output is at par with customers' satisfaction.

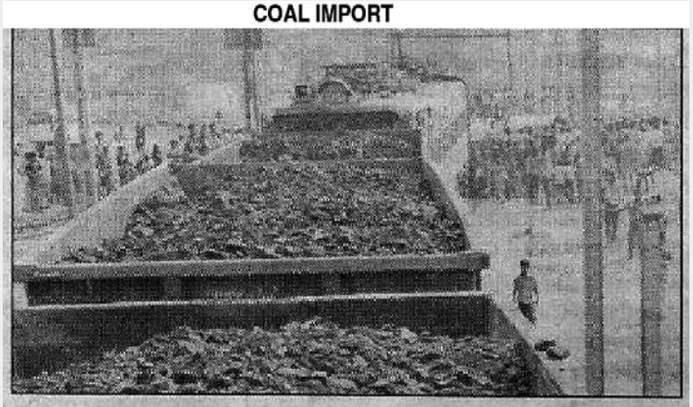
Source: Steel Insights

Coal Imports

The country's thermal power producers and steel manufacturers had to shell out over Rs. 1 lakh crore in 2014-15 to cope with the shortage of coal to run their operations.

According to provisional statistics released by the coal ministry some days back raw coal imports during the last fiscal touched 212.1 million tonne (MT) from various nations for which the fuel's user in India had to spend Rs. 1,04,524.1 crore. This includes 43.71 MT of coking coal and 168.29 MT of non-coking coal. In 2013-14 the country imported 166.86 MT coal worth Rs. 92,329.2 crore. On a fiscal-on-fiscal basis, imports have risen by 27.12 per cent in 2014-15. As per the country's import policy 1993-94, coal has been put under open general licence and consumers are free to import the fossil fuel based on their need.

COAL IMPORT



COUNTRY	QUANTITY [MT]	% OF SHARE
Indonesia	118.215	55.73
Australia	47.459	22.38
South Africa	30.731	14.49
USA	4.27	2.01
Mozambique	1.97	0.93
Canada	1.96	0.92
Others	9.47	4.47
TOTAL	212.10	100

In 2005-06, 38.58 MT of coal was imported into the country which was valued at Rs. 14,909.5 crore, which jumped to 73.25 MT coal in 2009-10 at Rs. 39,180 crore and to 145.78 MT in 2012-13 at an expenditure of Rs 86,845.5 crore, according to the statistics compiled by the directorate general of commercial intelligence and statistics (DGCI&S).

The Indian utilities have also been importing the fuel from nations like South Africa (30.57 MT), Indonesia (118.2 MT) and in lesser quantities from Russia, Malaysia, Vietnam and Colombia.

According to figures available with the Central Electricity Authority, 454.6 MT, 489.4 MT and 531.5 MT of fuel has been consumed by the coal-fired power plants during the past three fiscal respectively. In the year 2014-15, coal production in India reached 612.43 MT registering a growth of 8.25 per cent over the last year. During this period production of lignite reached 48.25 MT marking a growth of 9 per cent over 2013-14.

Coal was mainly imported through Mundra (24.22 MT), Paradip (16.22 MT), Dahej (14.24 MT), Dhamra (3.64 MT), Gangavaram (13.90 MT) and Krishnapatnam (13.36 MT). But evacuation in the coalfields continue to pose anxiety to the government.

The increasing imports has made the government set an output target of 1 billion tonne for state-run Coal India, but the PSU says it may have to revise its capital expenditure plans of investing Rs. 60,000 crore within the next five years if land acquisition hurdles are not sorted out.

India's renewable energy targets may be overambitious

India has committed that 40 percent of its total power capacity by 2030 will be based on renewable sources. As things stand today, that will be a tall order.

At 37,000 Mw, renewable energy accounts for close to 15 percent of the total power capacity in the country. It sounds impressive till it is compared to the humongous target India has committed for the Paris climate change agreement – 40 percent

of the installed capacity by 2030.

Experts within the government calculate that 300,000 to 350,000 Mw of renewable energy would have to be set up to meet this target. To put it in perspective, India is aiming to add 175,000 Mw of capacity from clean energy sources by 2022: 60 percent from solar energy, 30 percent from wind and the balance from biomass and small hydro.

Considering where India started from in 2010 (when the Jawaharlal Nehru National solar Mission became active), the growth of solar power in India has been phenomenal – from 2 Mw in 2010 to 4,200 Mw at present. In wind energy, India is the world's fifth largest producer at 24,000 Mw. The fairy tale ends here.

Losing appeal

In wind power, growth has decelerated in the past three years. Seen as a tax haven, the investment in wind dropped once the government pulled the plug on the accelerated depreciation tax benefit for the sector in 2011. It was later brought back and then another 'generation-based incentive' was also introduced.

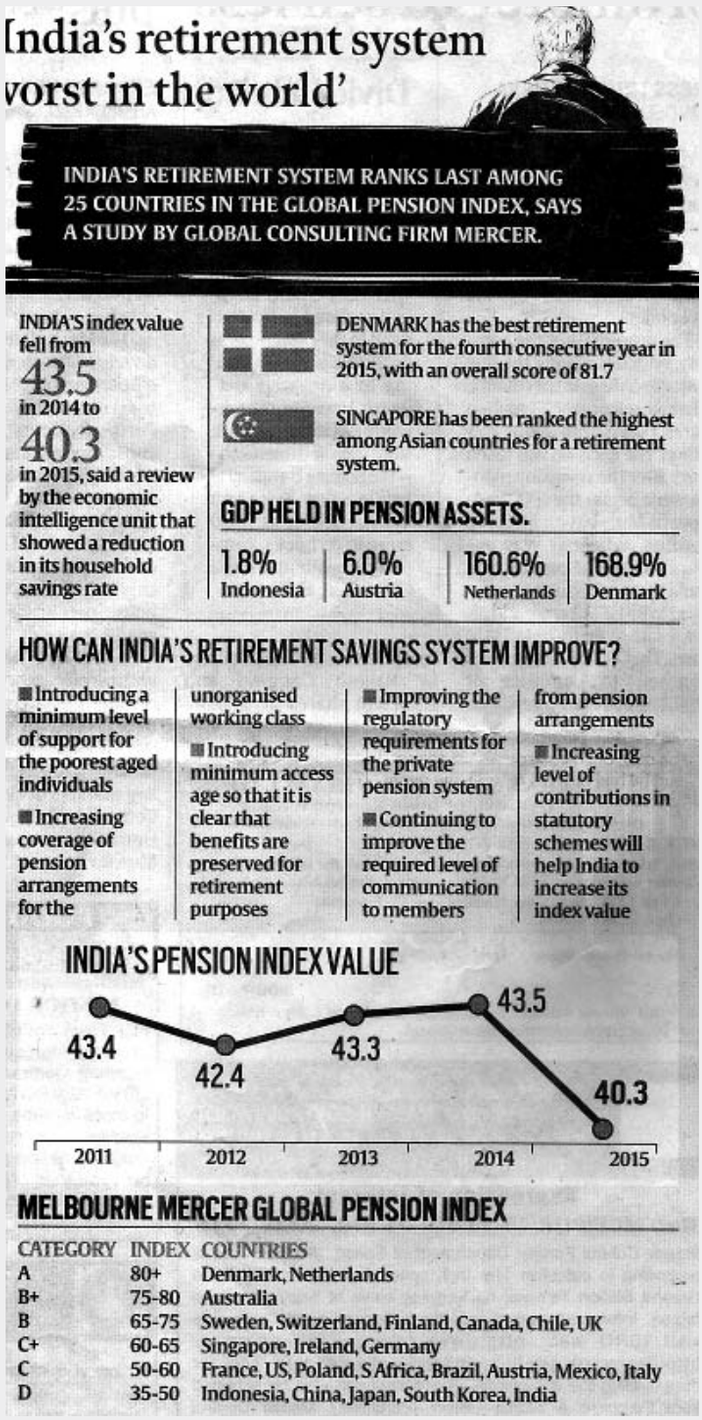
This, however, has not excited the power producers so far. From annual addition of 3,000 Mw till 2011, it has dropped to 1,500-2,000 Mw every year. In the current fiscal, against a target of 2,400 Mw, only 644 Mw has come up so far.

Solar power may have got greater policy impetus after the National Democratic Alliance came to power but ratcheting up capacity at rates no country has done before is a tough task when seen from where India sits at present.

Currently, on an average, the country is adding 1,000 Mw of solar power annually. At this rate, 100,000 Mw in six years looks farfetched even if one was to assume that India can match China which has added solar capacity at an ever increasing rate. The Union ministry of new & renewable energy pegs the annual growth of solar power at 15,000 Mw. Privately, senior officers say the country would touch 6,000 Mw by the end of this fiscal and close to 10,000 Mw by next.

Upendra Tripathy, secretary, ministry of new & renewable energy, is a confident man though. "We are on track to achieve 175,000 Mw. We are inviting investment in both generation and grid capacity addition. I can't comment on the climate change targets but as for renewable energy, we will achieve the targets we have set for the country."

"The target trajectory for renewables is stunning and could lead to a complete transformation of the energy sector in the country. Clearly, in the



near term, we need to focus on the financials of the distribution companies, transmission constraints, the ability to pass on the true cost, and consumer affordability," says Rupesh Agrawal, advisory partner and leader (energy), BDO India LLP.

Infrastructure hurdles

The target would have looked more plausible if only the evacuation infrastructure was in place. The southern region which is surplus in wind power has a transmission deficit. So is the case with Rajasthan, Jammu & Kashmir, Telangana, Madhya Pradesh and others. The ambitious 'Green Energy Corridors' project envisaged in 2011 as an alternative transmission network has been a non-starter with no major lines being built or tendered out. It's only now that the government has decided to 'nominate' state-owned Power Grid Corporation to build it with assistance from the states.

Power Grid, which designed the plan five years ago, calculated the total expenditure at Rs 40,000 crore. The cost is five-fold now with targets being revised in the same quantum.

Tripathy says his ministry is trying to avoid any mismatch between generation and transmission capacities. "We have said that the investment in generation and grid should be 1:1. Currently it is 1:0.4. We want that by the times this renewable energy capacity comes up, there is enough grid capacity."

Amid all this, the point being ignored is that renewable energy is an intermittent power source and grid-connected renewable energy would need the same amount of conventional energy as balancing power. Thus, there is equivalent coal-or gas-based capacity that needs to be built or fired along with renewable energy.

NTPC, for instance, can bundle thermal power and renewable energy and sell at an average rate. The bundling and the sale would also face tariff challenges. Solar power is priced at Rs 6-8 a unit and wind power at Rs 4 a unit. Bundled power would be Rs 3.5-4 a unit.

There are no buyers for expensive power. The financially stressed state utilities are not willing to buy even conventional power even at Rs 3 a unit. The historic drop of price for solar power to around Rs 5 is actually scaring away investors. Solar energy at that price is not viable in the country currently. Moreover, there is the absence of financing options.

"The biggest financial challenge faced by developers has been access to low-cost finance. While developers using imported components and cheaper EXIM Bank loans (10 percent interest for 18 years) have thrived, those using indigenously manufactured equipment have had to avail costlier loans (13 percent for 10 years). This has diminished the confidence among the investor community," says Amit Kumar, partner (energy & utilities), PwC India.

As another officer involved in setting the climate targets puts it, "If we can do the 175,000 Mw target by 2022, reaching the 2030 target is not going to be tough. But the 2022 target was not really a bottom's up assessment – it was an ambitious round number."

Experts and investment trackers are still maintaining their stand that there are big investors betting on India's renewable energy sector but are sitting on the fence awaiting clarity on policy.

Source: Business Standard

India tops China, becomes biggest gold consumer

India's jewellery consumption in Sept. quarter increases 5%, the highest quarterly consumption since the March quarter of 2011

India regained its top position from China as the biggest overall consumer of gold in the first nine months of this year with a total consumption of 642 tonnes, a survey said.

China is trailing by just 63 tonnes at total consumption of 579 tonnes in the first nine months, according to GFMS Gold Survey Q3 2015 Review and Outlook.

In India, jewellery consumption increased by five per cent year-on-year to an estimated 193 tonnes for the quarter ended September in 2015, the highest quarterly consumption since the March quarter of 2011 and the highest third quarter demand since 2008, the report published by Thomson Reuters stated.

The survey said, "Retail investment rose 30 percent year-on-year to 55 tonnes, the highest since the

fourth quarter of 2013." Gains during the quarter were primarily attributed to a fall in domestic prices, which declined to the lowest since August 2011. Prices fell to Rs 25,000 for 10g in India.

GFMS said another factor that supported higher volumes during the quarter was a significant drop in the exchange of old jewellery for new. Inward remittances from expatriates also influenced demand, as the rupee depreciated towards 67 to a dollar from 63.35 at the beginning of the year. "Charting these sales trends show family-run retailers turned out to be the first choice over national chains, in a falling-rupee price environment," the survey said.

The survey said globally, the demand for physical gold rose seven percent year-on-year in the September quarter, owing to an increase in net official sector buying and stellar retail purchases of bars and coins. Jewellery fabrication, the largest consuming sector, was marginally lower year-on-year, as higher demand in India was offset by a slow recovery in Chinese off-take.

Overall, investors remained cautious, as uncertainty around the timing of an interest rate increase in the US continued to weigh on the sentiment. The persistent lack of inflation and emerging market concern pushed back rate expectations, providing a temporary boost to gold prices.

Source: Business Standard

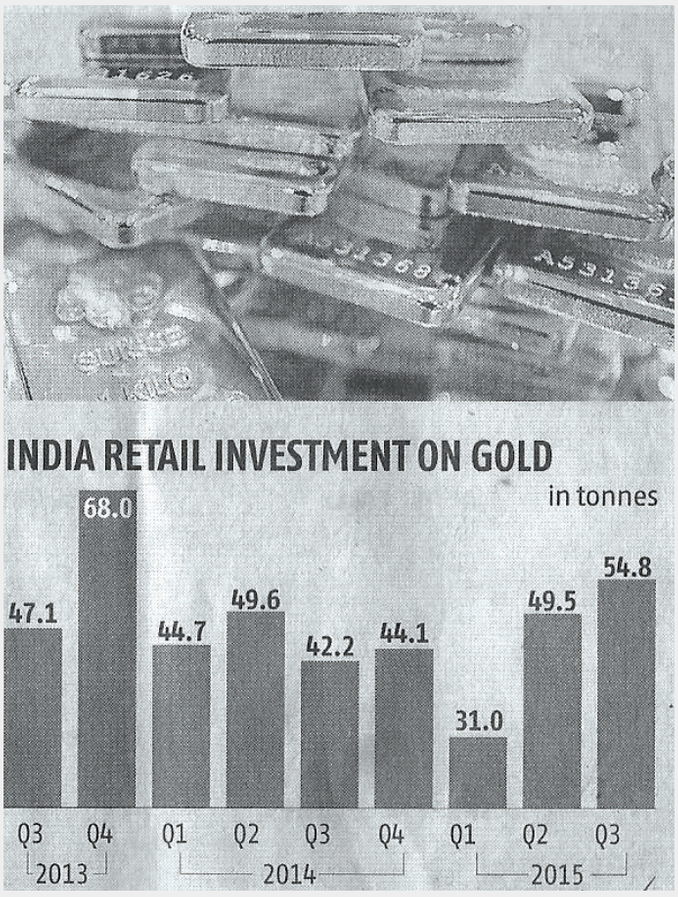
Renewable Energy

Green push needs a balancing act

While steady ramping up of green power goes a long way in ensuring some leverage for India at climate talks, the integration of large amount of fluctuating renewable energy in the grid remains a serious technical challenge and requires closer monitoring.

At over 36,000 MW, renewable energy contributes nearly 15 percent of the country's total installed electricity generation capacity. If the capacity addition of renewable projects such as solar and wind were to happen as per plans, this number is expected to go up to 1,75,000 MW by 2022.

The steady ramping up of green power – solar, for instance, was just 2 MW in 2010 but is now over



4,000 MW does go a long way in ensuring some degree of leverage for India at climate talks, but simultaneously poses a serious challenge for grid managers. The availability of solar and wind energy is largely determined by the weather conditions, and therefore characterised by strong variability. As a result, power generation from these sources cannot easily be matched to the electricity demand, like power generated from conventional plants such as coal-fired units and gas stations. Integration of large amount of fluctuating RE in the grid is a serious technical challenge for managers to ensure smooth operations of the Indian grid – the fifth largest in the world. To compound matters, RE generation forecasting in the country is in its early days.

Globally, the Germans are the closest to mastering the tenuous task of integrating and balancing high shares of renewable energy with very modest changes to their power system. Renewables provide close to 30 percent of Germany's power on an average basis and on some days in 2014, solar and wind supplied close to 80 percent of peak power demand at specific times of the day.

Because of the German feed-in tariff law (EEG), renewables have dispatch priority, which implies that they are always used first sometimes leaving very little power demand left to be supplied by coal, nuclear, and natural gas plants.

That Germany has managed to integrate nearly 30 percent renewable power capacity into their electricity grid has been made possible because of two important factors – the engineering robustness of the German power grids and the flexible operation of its coal and nuclear plants. A slew of ancillary factors too have played a part, including better system control software, day-ahead weather forecasting and the ability to export power to neighbouring countries.

In the Indian context, there are a number of takeaways from the German experience. In India, at the moment, balancing of renewable is left completely to the capability of states producing the energy from RE. This is ineffective as the complete available balancing capacity of a region can never be activated, if necessary. For example, in case of high feed-in from RE a single state has less power capacity available to back-down. In Tamil Nadu it regularly happens that the system operator is not able to back-down sufficient conventional generation eventually leading to curtailment of RE.

A report on Forecasting, Concept of Renewable Energy Management Centres and Grid Balancing prepared by GIZ, Germany in partnership with University of Oldenburg and Ernst & Young LLP, India, which was funded by German grant for promoting RE development in India, provides at least half a dozen stumbling blocks in India that need to be ironed out if grid integration of renewable energy is to happen smoothly.

- The biggest constraint is the limited ability of operator to back down coal generation due to a variety of technical and economic reasons.
- Hydro power capacity available for balancing is not significant enough. Hydel capacity is suited to be run in tandem with renewable power as these projects can be delinked from the grid or plugged back in at a short notice.
- Severe fuel shortage is a big constraint for gas-based power plants, which otherwise have the capability to respond to sudden variations in the output of wind and solar plants.
- The entire onus of demand-supply balancing is on the states and the absence of fine balancing mechanism at the regional level to support the states is a big question mark.
- Poor load forecasting ability of states. Added to all this is that fact that hydro balancing potential was found to be further restricted by the control and use of plants by the irrigation department of states. Also, most hydro power plants in the country are not reservoir-based hence cannot be used for balancing. The major observations in the rebalancing. The major observations in the report centres on the need for developing hydro power plants with shortage reservoirs for intraday balancing. Alongside, there is a need to develop large scale pumped storage type hydro-electric plants, which has traditionally been neglected in India.

Most important, though, is the need for a new regulatory framework that effectively makes Regional Load Dispatch Centres (RLDC) more responsive towards the electricity demand and supply situation at the regional level, rather than putting the entire onus on individual states – at present, the entire responsibility of balancing the power supply and demand is of the State Load Dispatch Centre, and the RLDC only monitor the power flows like a traffic policeman.

The report suggests that power storage options need to be explored and a significant push towards the R & D of these technologies is required. This again a neglected subject in India, and virtually no R & D projects are taken up by the Central Electricity Authority, grid manager POSOCO, transmission utility Power Grid Corporation or power research body CPRI. There are practically no initiative by the private sector or institutions such as the IITs in this area. Contrast this with the focus in the whole developed world, as well as countries such as China, on inventing

economical mass energy storage device so that solar energy is stored in the day for use in the evening and night.

The operational weather forecasting structure of the IMD has a good potential for contributing to RE forecasting system in India. Financial resources need to be provided – primarily for training – to enable IMD to fulfil to the role of a key partner in future solar and wind power forecasting in India. The fact remains that site-specific forecasting does not contribute to improvements of overall forecast quality on the more important regional level. This is because site-specific forecasting uses post-processing techniques that are adapted or tuned to the specific single site case. Therefore, much effort is spent on the optimization of site-specific forecasts without any benefit for the regional level, leading to a misallocation of personnel and financial resources.

Balancing capability enhancement

The biggest factor, though, is clearly the manner in which balancing of RE is done, which currently is entrusted to individual states. The balancing potential – or an increase or decrease of thermal power plant generation – available in other states is often not taken into account for rescheduling or improved dispatch in the first place. Analysts are of the view that regional balancing can be incentivised given efficient market mechanism to export power. The lack of regional balancing is a problem, which is seen as very critical according to all stakeholders at SLDC and NLDC level.

There are commercial issues that need to be sorted out. For instance, in some states central power plants are not used for balancing. This is due to the fact that capacity is not used. Also, power from central or older thermal stations are usually cheaper than the feed-in tariff paid for RE by the respective state utility. Plus, if water cannot be stored due to full reservoirs, hydro power becomes must-run since spilling of reservoirs would imply a large economical loss. The price of electricity from hydro power too is cheaper in comparison to the feed-in tariff from wind energy. Even if gas power plants would have sufficient amount of fuel available, the dispatch of conventional power plants has to follow the economic merit-order. Gas-fired power-stations are usually the most expensive to run.

Conflicting Views of Renewable Rich States and Central Agencies

States' View: The threshold of allowed deviation limit within the Deviation Settlement Mechanism should be raised. Today 150 MW or 12 percent of schedule (whichever is lower) is allowed as unscheduled interchange. It was suggested that the system size (i.e. peak load) or the RE-share should serve as an indicator to define new thresholds.

Central View: Raising the 150 MW limit within the DSM is not considered as a viable option by the central agencies to relieve the pressure on the states [of integrating RE efficiently]. The central agencies blame the states for poor demand forecasting, poor RE forecasting and not keeping five percent reserve capacity mandated by CERC-regulated NTPC, DVC and other inter-state generating plants also do not keep 5 percent reserve capacity.

Hanging in the Balance: central agencies such as national grid manager POSOCO do not appear inclined to immediately take up the responsibility of RE forecasting, as emphatically recommended in the report. There is a good chance that, in future, if there is a grid disturbance due RE fluctuation, the central agencies will single out states as the culprit.

Key Recommendations

ALL OVER INDIA the balancing potential is sufficient to handle the share of RE generation. The crucial question is how to utilise the regional or national potential of balancing and how to distribute the effort within all states.

INCREASING the balancing capabilities of the states from a technical perspective is high priority.

ORGANISING A BURDEN sharing for the balancing task will become more and more urgent in order to support a cost effective way of RE integration.

THE IMPLEMENTATION of high quality forecasting of RE as well as load is vital.

RETROFITTING OF PLANTS for flexibility in operation is important.

FLEXIBLE HYDRO CAPACITY with storage capability

has to be further developed.

Solar Power Tariff Drops Below Rs 5/Unit

Solar Power tariff in India touched record low as US-based SunEdison won a contract to sell electricity from a 500 Mw project at Rs 4.63 per unit, accelerating India's $160 billion clean energy drive an casting a shadow on fossil-fuel plants that pollute the air and sometimes charge a higher rate.

The winning tariff, for a project of NTPC, came in the Narendra Modi government's first round of auction under the solar mission. India has already attracted big-ticket solar energy investments. These include $3 billion plans of China's Sany group and $20 billion planned by Japan's SoftBank Corp along with Bharti Enterprises and Taiwan's Foxconn Technology.

SunEdison's bid is about 15% cheaper than the industry average and about 8% less than the previous lows achieved a few months ago in India's solar energy space. It betters the previous latest solar tariff in India – Rs 5.05 per unit – quoted by Canadian SkyPower for a tender in Madhya Pradesh while current average solar tariff in the country is Rs 5.5-6 per kWh.

Experts said the tariff offered under the Centre's National Solar Mission reflects the bidders' confidence on NTPC that called the bids and the solar parks where the plants would come up.

Sources said SunEdison won the entire contract for 500 Mw solar power supply after an aggressive bidding among 28 companies, including Japan's SoftBank Corp, China's Trina Solar, ReNew Power, Reliance Power and First Solar, which were in fray for the NTPC tender for solar capacity to be developed in Ghani Solar Park at Kurnool in Andhra Pradesh.

The 28 companies had qualified for the reverse e-auction that started a few days back. At least nine firms bid lower than Rs 5 per unit during the reverse auction, sources said.

"Delighted that an all time low solar tariff has been achieved during reverse e-auction conducted by NTPC," renewable energy minister Piyush had earlier told ET in an interview that the country's energy investment thrust would clearly be skewed to-wards the renewable sector.

PricewaterhouseCoopers energy leader Kameswara Rao said the latest solar auction reflects continued decline in solar module prices. "But it owes as much to higher creditworthiness of the buyer, and to the concept of solar parks, which are relatively costlier but take out development risks," he said.

The government has increased its thrust on renewable energy projects with an ambitious target of raising renewable energy generation to 175 GW by 2020.

Source: Economic Times

Good time to buy platinum

Prices are on a par with gold. But it's unclear how the price is calculated

If you planning to buy jewellery, try platinum. Traditionally, platinum has always commanded about 40 percent more premium than gold. In 2007, platinum was sold at double the price of gold. But in the wake of worries about Chinese growth and more recently, the emissions scandal at Volkswagen, the prices of the metal internationally touched its seven-year low in September.

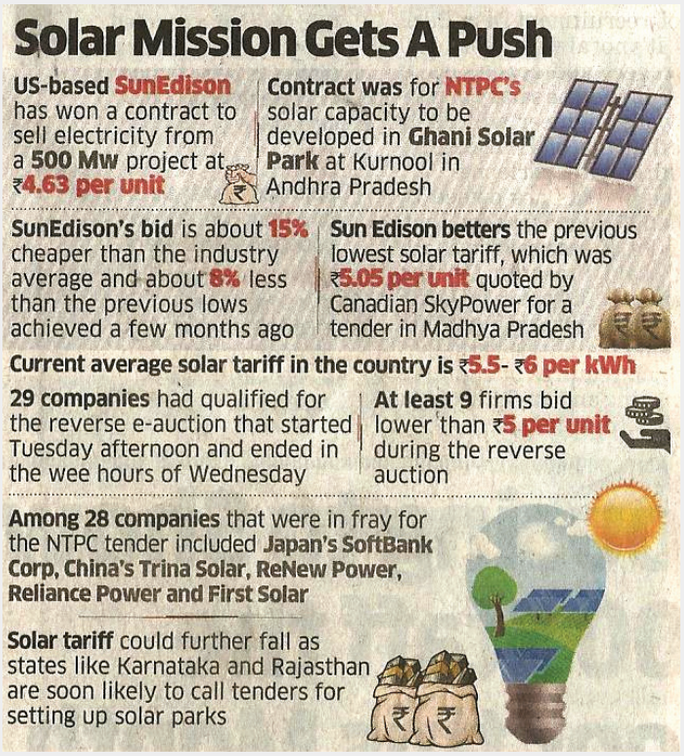
At present, it is trading at around $1,004 an ounce in the international market, about $150 cheaper than gold. In India, however, it's about Rs 1,000 more expensive than they yellow metal per 10 grams. The prices are also lower because of the increase in supply after discovery of new mines. "The price of platinum is currently soft and this is a bit unreal, given the demand and supply. Global economy and sentiments seem to have affected the prices," says Vaishali Banerjee, manager – India, Platinum Guild International, a body funded by leading platinum producers and refiners.

In India, consumers can only buy platinum in the form of jewellery. Rajiv Popley, director of Mumbai-based jewellery firm Popley & sons, says within jewellery too, the wedding ring or band accounts for about 70 percent of the market. That's because typically, a wedding ring has diamonds studded in it. As platinum is harder than gold; it holds diamonds better. "When the yellow metal is used as a set or a base, diamonds tend to get a yellow tinge. With platinum, diamonds' brilliance, fire and scintillation are augmented," says Popley.

But the prices and distribution of the metal are tightly regulated by the producers says Popley. It is sold more like a brand than a metal. It is also not traded on any commodity exchange.

Due to those factors, it's not a product that's price-sensitive like gold. Whenever a buyer goes to a retailer for gold jewellery, they get the break-up of the gold price, which fluctuates every day, and making charges. In case of platinum prices, the jewellery is always sold as a complete set. Jewellers change price only if there's any significant fluctuation of four-five percent. However, the consumer gets a buyback certificate from the manufacture and the jeweller. "They can get 80 percent of the purchase value any time they want to return the jewellery," says Popley.

Due to the lack of break-up of the price, some feel buying platinum is not as transparent as gold. "Platinum prices are dependent on the demand from the auto sector. If India's economy picks up, and car sales zoom, the price can go back to being 30-40 percent higher than gold," says Keyur Shah, CEO, Muthoot Precious Metals Division and former director at World Gold Council. He feels the metal has a lot of potential for investors but here are no investment products, such as coins or bars, available in the market. There's also no resale market, he adds.



Platinum is best-suited for those looking for precious metals, other than gold, for jewellery.

Source: Business Standard





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