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In The Issue

HRD HALL OF DELHI CHAPTER

VIEW OF AUDITORIUM OF DELHI CHAPTER

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Status of Indian Aluminium Industry in 2018-Future Challenges & Remedies

R N Parbat
Former President, IIM
Former Director & Chief Operation Officer
Indian Aluminium Co. Ltd

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INTRODUCTION

Aluminium is the youngest metal of the last century. It holds tremendous potential for extensive commercial applications in the 21st century. During the Second World War, Aluminium assumed greater importance through engineering applications. Aluminium through proper alloying with a combination of mechanical and thermal treatments, found it's place in Aircraft industry, Defence. Aerospace, Building & Architecture, Transport, Packaging, Heat transfer and Power industry. Good mechanical properties coupled with high formability, deep draw ability, wire draw ability, extrude ability, cast ability, weld ability, precipitation harden ability, good thermal & electrical conductivity, excellent sub-zero properties and 100% economic recyclability, yet highly resistant to industrial and marine corrosion make aluminium a preferred metal / material for designers and manufacturers.

Aluminium made it's industrial journey in the early part of the last century mainly as a replacement metal for many non-ferrous and ferrous metals. Now, by it's inherent strengths, Aluminium deserves a preferred position as a metal / material of choice by the product designers.

Coming to the challenges in the Current century, let me focus the attention on the Indian scenario. World status will get drawn into it automatically.

IS ALUMINIUM RELEVANT IN INDIA ?

Aluminium consumption in India at around 2 kg per capita is still one of the lowest amongst developing and developed countries. India, with it's current population at 1300 million of which nearly 350 million belong to the consumer class, having the purchasing power of an average European, cannot continue to be a very low consumer of Aluminium.

In India, nearly 40 % of aluminium is used in the electrical sector, mainly in power transmission lines. Limited availability of indigenous copper has made this avalanche use of aluminium in power transmission and railway electrification. World Aluminium usage is focused on packaging, transport, heat transfer and building & architectural applications and very little in electrical sector.

India is a mineral reach country. At the current rate of mineral exploration, the Developed countries will be left with practically very little mineral reserve by the middle of this 21st century. India will hold the key to some of the specific mineral reserves, particularly Bauxite. Of the current known reserve of 3000 million tonnes of high grade gibbsitic bauxite in India, nearly 70 % of the reserve is confined in the coastal areas of Odisha and Andhra Pradesh.

IS ALUMINIUM RELEVANT IN INDIA (CONTINUED...) ?

In the World-bauxite scenario, India is the fifth and the last known bauxite rich country. The future source of Aluminium is in India with mostly unexplored reserves. While most of the known reserves in the Mediterranean, South American, African and Australian regions will be exhausted, India will still continue to supply bauxite for Aluminium industry.

Odisha bauxite is particularly gibbsitic in nature with very low reactive silica. This makes Odisha bauxite highly amenable to relatively low pressure and low temperature caustic digestion process yielding high quality and low cost alumina. Utka Alumina International Ltd., a subsidiary of Hindalco Industries in Odisha has already established itself as the least cost and best quality producer of Alumina in the world. With improved alumina technology (Red and White Processes) available to-day, the refining cost of Odisha bauxite can be reduced further.

WHERE IS THE HOLD THEN ?

Aluminium smelting is a highly power intensive process. Depending on the level of technology employed by a smelter, energy consumption for production of 1 tonne liquid Aluminium varies from 14000 Kwh to 12500 Kwh. World over, Aluminium is smelted using hydro electric or waste gas power.
Energy cost from such power systems is highly economic. In India, we are highly dependent on Coal-based Thermal Power as our Hydro, Nuclear, Wind and Solar Power Sources are still very limited. India is a power hungry country.

Indian coal contains 30-40 % ash but fortunately no Sulphur. This makes Indian coal uneconomic at the point of use. Installation of Coal Washery, at Coal Pit-head will not only improve Coal Quality, it will also improve cost of transporting low ash Coal to Power Plants. The rejects of the Washeries can be dumped back into the abandoned Mines for mine refilling. Much publicized priority for Infrastructural sector in India has Power Generation at the core.

Major investments from domestic and foreign investors are expected in the next 20 years or so, for nearly 300% growth in Power Generation. Major emphasis is on Solar, Wind, Bio and Nuclear Power. Current High Cost of Energy is the MAJOR HOLD for large scale Greenfield Aluminium Smelter in India. Good news is that some Major Global Aluminium Companies are spending huge sums of money for developing Serrated Carbon Anode and Inert Anode to improve Cell productivity with reduced impact on Global Warming.

WHAT ARE THE MARKETING CHALLENGES?

Cable and utensils dominated the early market. Use of Aluminium in the aircraft and Auto piston boosted the consumption during the Second World War. Roofing, Siding, Extruded structures, Impact extruded collapsible tubes and Foil packaging enhanced the market demand till early 60s. Then came in Aluminium Beverage Can as a replacement for glass bottles and steel cans. From mid 70s till date, beverage can, multi-laminated foil packaging, refrigerated van, heat exchanger, auto radiator, auto castings and applications in Building & Architecture as well as in Transport sectors maintained the demand growth. A major breakthrough is now expected from the use of Aluminium Extrusions and Sheets for Car Bodies. All Aluminium Car Bodies are already on the roads in Europe, North America and Japan. Major Aluminium Companies have formed strategic alliance with the Major Auto Manufacturers for developing “All Aluminium” least polluting, Light Weight Cars with high impact resistance at substantial fuel economy.

SOME MORE....

MARKETING CHALLENGES FACED ?

In India, the market challenge is of different nature. With greater emphasis on infrastructural development, aluminium extruded profiles will find greater application in Building and Architectural sector. Transport sector is in the focus primarily due to the urgency in reducing the weight of road transport with a view to achieving higher fuel efficiency and lower emission. Through judicious use of aluminium sheets, extrusions and castings, weight of a road vehicle can be reduced by almost 40 %. It is established that every tonne of aluminium produced for automobile industry, reduces Green House Gas Emission by up to 20 tonnes. The current century will surely see higher GDP growth in India with creation of higher available surplus in Indian pockets. Consumerism has already set in. Packaging industry will accelerate the growth of aluminium-usage further. Aluminium Foil based packaging and beverage canning will be the next growth area. Air conditioning is no more a luxury item, it has become a necessity. Aluminium fins and tubes will be a major part of industrial, domestic and automotive air conditioning systems.

WHAT ARE THE NEW PRODUCTS AND NEW TECHNOLOGIES ?

Super plastic alloys, Intelligent alloys, Al-Li and similar Light Weight alloys, Al metal matrix composites and Al power metallurgy products are the new challenges and new Opportunities.

New products in India in the early part of this century will be Beverage Cans, Auto wheels, Auto engine blocks, Radiators, Road-Rail-Air-Marine containers, Metro Rail Coaches, Gas cylinders, Structural glazing for buildings and Auto bodies.

WHAT ARE THE TECHNOLOGICAL & RESEARCH CHALLENGES ?

The most important challenge is to find a less power intensive Alternate Technology for Aluminium smelting. Research needs to be focused to reduce power consumption substantially from the current level of 13000 Kwh/ t. 500KA Pots and bigger is the immediate objective.

Developing Inert Anode is the ultimate objective for reducing Carbon Foot Print in Aluminium Industry. Initially, Aluminium Smelting was based on Hydro Electric Power but shortage of such power in Bauxite rich Countries forced the Industry to use Captive Thermal Power with substantial rise in Carbon Foot Print and cost of Aluminium. Worldwide focus on Renewable Solar Energy will not only make Aluminium a Green Metal, the power-cost will also come down substantially. **Indian Prime Minister's Clarian Call for ONE GLOBE, ONE SUN AND ONE GRID for Solar Power will substantially reduce the Cost of Environment friendly Aluminium in near future**.

SOME MORE... TECHNOLOGICAL & RESEARCH CHALLENGES FACED ?

The next issue is Management of Environment and Ecology. Discrete mining of bauxite will not be permitted any more. Restoration of the mined face to it's original or even better shape is the need of the World to-day. Emission of fine alumina dust from Alumina Refinery and fluorine from Aluminium Smelter will not be tolerated in any part of the world. So also is the issue of Waste Management. Red mud from Alumina Refinery, Fly Ash from Co-generation Power Plants and Discarded Pot Lining from Aluminium Smelters are to be economically reused for material and energy conservation.

Metal recovery from Dross and Scrap Recycling will receive high priority. Import of Aluminium Scrap for recycling in India in an environment friendly manner will also reduce the cost of production of Aluminium substantially.

Substitution of Aluminium by Plastic, Paper, Reinforced fibres, Laminates and New Low Alloy High Strength Steels is to be challenged by focused Research and Techno-Commercial marketing.

WHAT ARE THE HUMAN RESOURSE & ENGINEERING CHALLENGES ?

There is a shortage of Plant Metallurgists, Design Engineers in Mechanical/ Electrical/ Electronic Engineering, Geologists, Mining Engineers, Mineral Dressing Engineers and Refractory/ Ceramic Engineers. These weaknesses are forcing us to buy or hire Foreign Machineries, Foreign Technologies and even Foreign Technologists. Our best students in Engineering are suited for Over Developed Economies. They are developing both Hard Wares and Soft Wares for us from overseas. Our Industry Captains along with our Academic Leaders and the concerned Govt. Ministries should give a serious thought and find a way out to develop India as a technologically developed country in line with the Countries like Japan, USA, Germany, Korea and China. We need to be strong in both Soft and Hardware manufacture.

Also, the Metal Industry in general, should assure regular employment of Specialist Engineers at acceptable remuneration. Irregular Employment Policy by the Metal industry has forced the Engineers to embrace jobs in IT industry.

WHAT ARE THE BUSINESS CHALLENGES ?

Indian Primary Aluminium scenario is dominated by 3 Companies, the youngest NALCO is also 34 years old. They have mostly grown within Indian market and thereby remained by and large domestic companies. It is true that they are showing greater focus on export market now than ever before. They have no option to-day, but to become global companies in size, technology, cost, quality, human resource and market spread.

Hindalco Industry has already become global through acquisition of INDAL and a part of ALCAN. Nalco and Vedanta should also become global companies, otherwise there can be major shake up with growing participation of Multi-National Companies. This symptom is already visible in North America, South America, Europe, Japan and Australia. Aluminium Industry in India is planning to reach 5 Mio.t production capacity by 2020 and may be, 10 Mio.t annual capacity by 2030. The Question is : Will India continue to be a Metal producing country or a Major Value Adding Country in the World market? The Entrepreneurs and the CEOs should answer. We need greater emphasis on Downstream industries now than ever before. Downstream Parks next to major Smelters is a welcome move.

CONCLUSION

India has a long history in Aluminium Industry. We need to become Internationally competitive in Cost, Quality and Market spread through continuous innovation. State and Central Governments' timely and prompt support in acquiring industrial Land, obtaining Mining Lease and Environment/Forest Clearances are not only strategic needs but competitive needs in an Open Economy to-day.

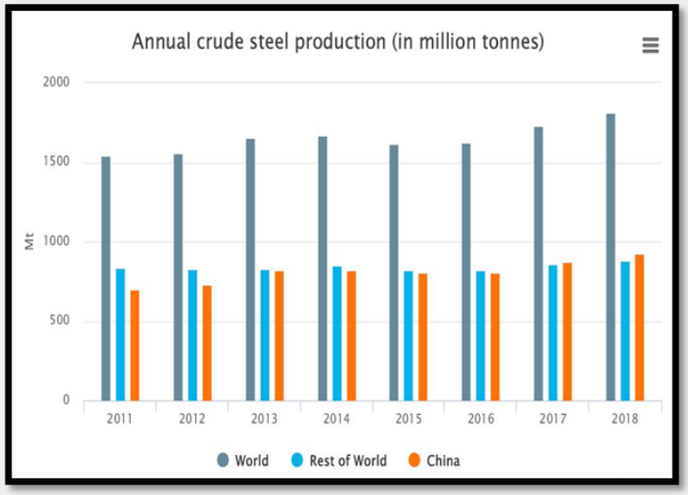
Indian Aluminium Industry should take all the correct steps as promptly as possible to become internationally competitive. Frontline Research in Aluminium Reduction Process is a must.

Downstream investment should be in the focus for value addition. Government of India should provide all the necessary support to make Aluminium Industry in India internationally competitive.

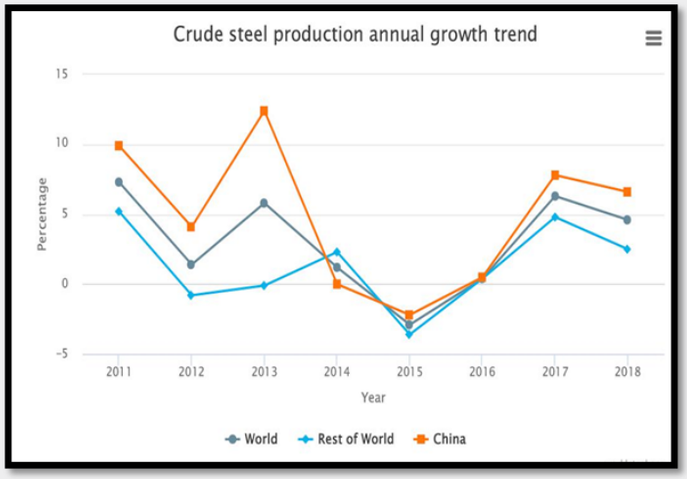
XXXXXXX

Global crude steel output increases by 4.6% in 2018

Global crude steel production reached 1,808.6 million tonnes (Mt) for the year 2018, up by 4.6% compared to 2017. Crude steel production increased in all regions in 2018 except in the EU, which saw a 0.3% contraction.



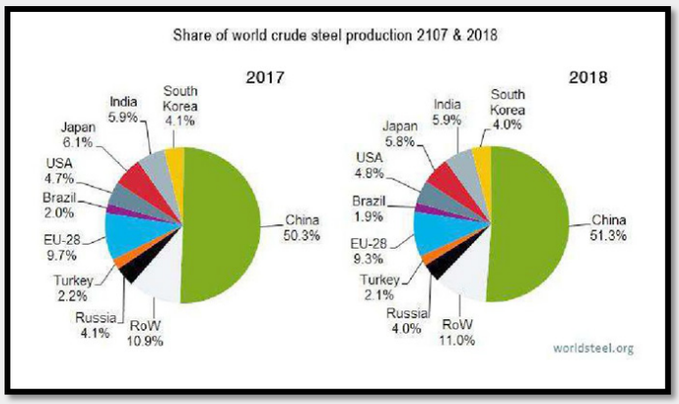
Asia produced 1,271.1 Mt of crude steel in 2018, an increase of 5.6% compared to 2017. China's crude steel production in 2018 reached 928.3 Mt, up by 6.6% on 2017. China's share of global crude steel production increased from 50.3% in 2017 to 51.3% in 2018. India's crude steel production for 2018 was 106.5 Mt, up by 4.9% on 2017, meaning India has replaced Japan as the world's second largest steel producing country. Japan produced 104.3 Mt in 2018, down 0.3% compared to 2017. South Korea produced 72.5 Mt of crude steel in 2018, an increase of 2.0% compared to 2017.



The EU produced 168.1 Mt of crude steel in 2018, a decrease of 0.3% compared to 2017. Germany produced 42.4 Mt of crude steel

in 2018, a decrease of 2.0% on 2017. Italy produced 24.5 Mt in 2018, up by 1.7% on 2017.

France produced 15.4 Mt of crude steel, a decrease of 0.7% on 2017. Spain produced 14.3 Mt of crude steel in 2018, a decrease of 0.1% on 2017. Crude steel production in North America was 120.5 Mt in 2018, 4.1% higher than in 2017. The US produced 86.7 Mt of crude steel, up by 6.2% on 2017.



Top 10 steel-producing countries

Rank	Country	2018 (Mt)	2017 (Mt)	%2018/2017
1	China	928.3	870.9	6.6
2	India	106.5	101.5	4.9
3	Japan	104.3	104.7	-0.3
4	United States	86.7	81.6	6.2
5	South Korea	72.5	71.0	2.0
6	Russia (e)	71.7	71.5	0.3
7	Germany (e)	42.4	43.3	-2.0
8	Turkey	37.3	37.5	-0.6
9	Brazil	34.7	34.4	1.1
10	Iran (e)	25.0	21.2	17.7

The CIS produced 101.3 Mt, an increase of 0.3%. Russia produced 71.7 Mt of crude steel in 2018, up by 0.3% on 2017. Ukraine produced 21.1 Mt of crude steel in 2018, a decrease of -1.1% compared to 2017. Annual crude steel production for South America was 44.3 Mt in 2018, an increase of 1.3% on 2017. Brazil produced 34.7 Mt in 2018, up by 1.1% compared to 2017. The Middle East produced 38.5 Mt of crude steel in 2018, an increase of 11.7% on 2017. Iran* produced 25.0 Mt in 2018, up 17.7% on 2017. Turkey's crude steel production for 2018 was 37.3 Mt, down by 0.6% on 2017.

Source: www.world.steel.org

We have to seriously work on manufacturing high-end steel: Aruna Sharma

Domestic consumption is increasing at the rate of 7.3% or 7.5%. In a way, the market is growing and the price has stabilised, Aruna Sharma, Former Steel Secretary, tells ET Now.

Edited excerpts:

- What had the biggest impact on the Indian steel industry in 2018? Was it the trade wars, the China slowdown or the compression in overall steel prices?

  I will not say we have compressed the steel prices. It has stabilised after peaking out. The stabilised level is good enough and it is not a drop in the income, though there may be a little cut in the profit margin.

  It had to stabilise at some level and it has stabilised at the right level. It is not a loss-making proposition even at present day prices. It is going quite well and consumption is going up. That is the very bright side. Domestic consumption is increasing at the rate of 7.3% or 7.5%. In a way, the market is growing and the price has stabilised.

- China has had a tough year too with manufacturing contracting for the first time since May 2017. While steel has stabilised, would you be worried about the China impact on Indian steel prices?

  As far as the Indian market is concerned, we are producing enough and consuming enough. We are not so much dependent on what is happening in China or how it is going to impact us because we are literally consuming 100% of what we are manufacturing. What we are exporting and importing negate each other out. So there is not going to be any adverse impact. We need to continue making steel and growing the infrastructure.

- India's steel consumption is expected to stay strong with analysts pegging it at 7% growth. Do you believe this will largely be influenced by government spending on infrastructure?

Major infrastructure spending always comes from the government in terms of roads, bridges and construction. The technology is slowly changing to steel-intensive building constructions. The private builders are also resorting to it because it is short-term consumption, less debris, quick time and under control. All that shift which is quickly happening in the Indian real estate construction also is going to add to it.

The government will always be the major spender in building bridges, roads, rails, ships and ports, so that consumption is also going to go up because as India is a developing economy, our infrastructure has to be top class.

I do not see anything into it and there is big scope of steel getting consumed into the new areas as well where you have distribution of irrigation water, the question of having underground sewage, drainage which is traditional and along with that need for cable laying. If you put drinking water and above ground all construction, that is going to make a lot of difference in consumption and we are on the right path. We are going in the right direction.

- While consumption growth estimates are strong, the worry is with regards to output. How has been the capacity addition over the last few years?

Yes, we had already reached 134 million tons capacity. Now with NCLT resolutiouns, which has culminated in a couple of issues and a couple of plants, there have been expansion plans as well. They have their own existing plants also. The new revival is also coming up. So capacity expansion is bound to happen, it is not falling. There are some missing numbers and if you look at in the secondary sector also, their capacity is expanding.

They are improving, they are modernising, they are moving ahead and investments are being put into it. If you really do a hair comb calculation, I see no danger in capacity expansion at all because everybody is committed. If you go through their annual reports and their proposals for expansion, everybody has an expansion plan in a time-bound manner. So, they have started their investments into it and definitely in a couple of years, we will start seeing production.

- Analysts are worried about dwindling exports and cheaper imports and that is why they are pegging output growth forecast at only about 2.5 to 3%. Would you agree with that estimate?

If you look at the export and import numbers, they are in single digit and the difference you see is in decimals. Coming to imports, what we have to seriously work upon is the high-end steel. It is very, very important because high- end steel is something we are not able to make in India to meet the demand. We have to constantly endeavour as a country. We have to expand in this segment. The capital good market is also increasing. Steel consumption is bound to increase.

Steel is a big contributor to the manufacturing sector. Policy support is also very strong as far as the steel sector is concerned. We are never going to be a zero import country and the impact it is having is just in decimals. If you look at it, the auto steel import has gone up. It is going up unless and until we make enough quantity of auto steel within the country.

Similarly, in the minor sector, because of strong BIS standards and anti-dumping measures being very strong, there is no dumping. I do not think any country can say that we will be a zero import country. There will be imports, always. It is only a question of how we are able to manage the whole thing.

- But steel imports are making a comeback. How would you suggest the return of imports being tackled amidst the trade war scenario?

Look at it this way. Our steel manufacturers have to start having technology for manufacturing high-end steel to curb our dependency on imports. In consumption, India is a bright spot. No other country is

growing at the rate of 7% plus in the GDP and therefore consumption is also going up.

We are a bright spot. We will be a spot where the world will like to export their steel but we are self sufficient and we have the best of technology. The high-end steel is something we have to handle as soon as we can do. As a citizen, definitely we will like to see a more and more Make in India and now the capital goods also are growing. So it will consume the steel and make the machinery for Indian manufacturing sector. In a way, we are in the right cycle and the path is right.

- How would you look at the current raw material supply scenario especially iron ore, with the big mines in Karnataka being on a standstill. NMDC has cut its own iron ore prices twice recently despite the expected shortfall?

We have enough iron ore and NMDC cutting it is also because many of the steel makers are buying the mines and so regular customers of NMDC are becoming extractors of iron ore. Moving ahead, that is going to have a little bit of an impact on the production.

But having said that, we are also shifting to scrap as an input. NMDC will produce as much as required and if market is there, there is no reason why they should not produce. They will be producing more and more as it moves ahead.

Source: The Economic Times

Moody's revises outlook for Tata Steel, Sajjan Jindal-led JSW Steel

Noting improvement in companies' credit profiles, Moody's Investors Service has revised the outlook for both Tata Steel and Sajjan Jindal-led JSW Steel to stable and positive, respectively. "The positive outlook reflects the improving trajectory of JSW's credit metrics principally due to its competitive and efficient production costs, solid domestic demand conditions and our expectation for a supportive ongoing price environment," KaustubhChaubal, vice president and senior credit officer was quoted as saying.

JSW Steel's corporate family rating (CFR) continues to reflect the company's large scale and strong position in its key operating markets, as well as its strong product offering with a rising share of high-margin value-added products catering to key diverse end-markets, such as the automotive and domestic construction and infrastructure sectors, said Moody's.

Meanwhile, Tata Steel's CFR is supported by its significant, diversified and growing operating base and its globally cost competitive steel operations in India, with the latter being a function of its ownership of key raw materials, explained Moody's. "The upgrade of Tata Steel's CFR reflects the sustained improvement in the company's credit profile, stemming principally

Congratulations!

Delhi Chapter of The Indian Institute of Metals (IIM) extends heartiest congratulations to Mr. Navneet Singh Gill and Mr. Samir Bansal, MD and Director respectively of M/s Yogiji Diji on their being awarded "The Economic Times Most Promising Leader of Asia". The Award was presented to Mr. Navneet Singh Gill by Mr. Y B Datuk Ignatius Darrel Leiking, Minister of International Trade & Industries, Government of Malaysia in the presence of Mr. Puneet Agrawal, Consul General of India to Hong Kong and Ms. Sunita Quadros, Senior Vice President, Times Strategic Solutions Ltd.

The Award was received by Mr. Gill at the Economic Times Most Promising Business Leaders of Asia 2019 event held in Hong Kong recently

from strong operating efficiencies and vertical integration, as well as stable demand and price conditions in its major market," said Chaubal.

Tata Steel's key market is still India, which accounts for 57 per cent of its global steel volumes sold, 54 per cent of consolidated revenues, and 85 per cent of consolidated EBITDA; a result of the strong operating environment and the company's backward integration into producing its key raw materials of iron ore and coking coal. Consequently, strong growth prospects in India augur well for Tata Steel. The successful integration of Bhushan Steel's assets in 2018 and the proposed acquisition of the steel business of Usha Martin have further cemented Tata Steel's business profile.

The stable outlook reflects Moody's expectation that Tata Steel's strong operating performance will translate into a sustained improvement in credit metrics. The stable outlook also incorporates Moody's expectation that Tata Steel will remain selective in its acquisitions, funding them with a prudent mix of debt and equity and allowing only a temporary spike in adjusted debt/EBITDA leverage, Moody's said.

In case of JSW Steel, Moody's said, the company's CFR also reflects the inherent cyclicality of the steel industry and JSW's limited raw material integration. This risk, however, will be somewhat mitigated following the commissioning of its five iron ore mines, which once operational will meet up to 15 percent of its total iron ore requirements. "JSW's use of advanced technology towards maximizing raw material efficiencies -- such as blending varied grades of coking coal in manufacturing coke and its beneficiation plant to convert lower grade iron ore into higher grade variants -- underpins its competitive conversion costs and high profitability," said Chaubal.

Moody's expects India's steel consumption to grow at around 5.5-6.0 percent annually over the next one to two years, supported by the country's strong domestic demand, in turn propelled by the government of India's spending on infrastructure projects and good prospects in the automotive industry. At the same time, consolidation in India's steel sector and limited new capacity commissioning over the 18-24 months will keep industry utilization levels in check and help pricing discipline, said Moody's.

Source: Business Standard

ISSDA ADVOCATES ADOPTION OF GLOBAL INFRASTRUCTURAL STANDARDS BY USING STAINLESS STEEL IN CONSTRUCTION

Indian Stainless Steel Development Association (ISSDA), an apex industry body, has advocated adoption of global infrastructural standards by using stainless steel for buildings and infrastructure construction. In a seminar organized on 'Stainless Steel for Sustainable Buildings And Infrastructure' in the city, ISSDA brought together different stakeholders who discussed various aspects of stainless steel applications for long-lasting and maintenance-free public infrastructure. Commenting on the occasion, ISSDA's executive director, Rohit Kumar, said: "Kolkata, widely regarded as the 'City of Joy' and the 'Cultural Capital' of India, is home to a large number of heritage buildings and grand colonial architecture. However, incidents like collapse of old bridges and flyovers disrupt life in the city, along with imposing heavy financial losses."

"Most materials used in the construction of such bridges and flyovers are prone to corrosion and require frequent maintenance, and Kolkata's proximity to the sea only adds to this problem. Stainless steel comes in as the saviour for building maintenance-free bridges and flyovers," he added. Coastal areas face higher chances of corrosion, which is one of the major problems plaguing public infrastructure. The likes of Jindal Stainless Group and Salem are expected to play a crucial role in mobilizing stainless steel usage not just in such coastal areas, but also around the country.

With a CAGR of 8-9% over the last decade, India is the second largest and the fastest growing market for stainless steel. The per capita consumption of stainless steel in India is about 2 kg, compared to the world average of around 6 kg. At present, India's total stainless steel melt production stands at around 3.6 million tonnes for both long and flat products. Present on the occasion were, Joint Secretary, Urban Development & Municipal Affairs, Govt. of West Bengal, Sourav Chaki; Housing Commissioner & Chief Engineer PWD, Govt. of West Bengal, Shyamal Kumar Biswas, and Director General, Institute of Steel Development & Growth, Sushim Banerjee.

Source: The Economic Times

IIT Roorkee to include elective course on stainless steel, advanced carbon special steel

IIT Roorkee and Jindal Stainless have entered into a long-term association that would lead the institute to include an elective course on stainless steel and advanced carbon special steel. The course is expected to commence from July 2019. It will include the study of these metals in detail, including the uniqueness of various grades, behavioural and forming characteristics, determination of life cycle cost benefit analysis, and an understanding of the entire gamut of their applications across the globe.

Commenting on the initiative, Director, IIT Roorkee, Prof Ajit Kumar Chaturvedi, said: "IIT Roorkee is pleased to enter into a long-term association with Jindal Stainless Ltd on institutionalising a course on stainless steel, whereby, various aspects of the material would be covered in depth in architecture, metallurgy, and materials engineering course curricula."

On the occasion, Managing Director, Jindal Stainless, Abhyuday Jindal said: "This initiative hits two targets at once. One, it prepares students to deal with the metal of tomorrow. Two, it ensures that future decision makers choose the best suited material while building infrastructure. As a result, this course will positively affect public safety, environment sustainability, and economic costs in the long run."

Director, Jindal Stainless, S Bhattacharya added, "Stainless steel is a young and green metal with ample potential for growth. In India, it is still at a nascent stage, with a per capita consumption of 2 kg, as compared to the global average of 6 kg. Here, it is synonymous with cookware and kitchenware, while in more developed economies, the metal is widely used in segments such as architecture-building-construction, automobile-railway-transport, and process industries, among others. By collaborating with the academia, our intent is to drive awareness among the future engineers and architects of the country."

As a part of this association, IIT Roorkee has decided to institutionalise a 3 credit elective course on stainless steel and advanced carbon special steel for the 4th year B. Tech and PG students of the Department of Metallurgical & Materials Engineering. The primary objective of the programme is to create awareness about stainless steel and advanced carbon special steel among the graduating students.

Source: The Economic Times

Global Steel Prices Expected to Rebound

The downward trend in global steel prices continued, in February. North American and European flat productsteelmakers failed in their attempts to secure any of their tabled increases. The consensus view, from MEPS' February research, is that the bottom may soon be reached, in both regions. Sentiment is, generally, turning positive – with the market showing potential to stabilise, or rise slightly, in the coming months. World steel manufacturers are likely to be supported in their efforts to lift values, by the improving market fundamentals. Rising raw material expenditure and the expectation of improved activity, during the traditionally stronger second trimester, will assist the mills' cause for higher prices.

With the exception of material in North America, scrap expenditure has started to increase, worldwide. At the same time, iron ore costs rose, due to supply-side fears – resulting from the recent dam collapse in Brazil. Market participants are hopeful that demand from the European and North American automotive sector will pick up, in the coming months. Moreover, construction activity will be boosted, by seasonal factors. In addition, the continued impact of the Section 232 trade legislation and the recently introduced EU safeguard measures will offer US and European steel manufacturers a degree of protection from increased import volumes.

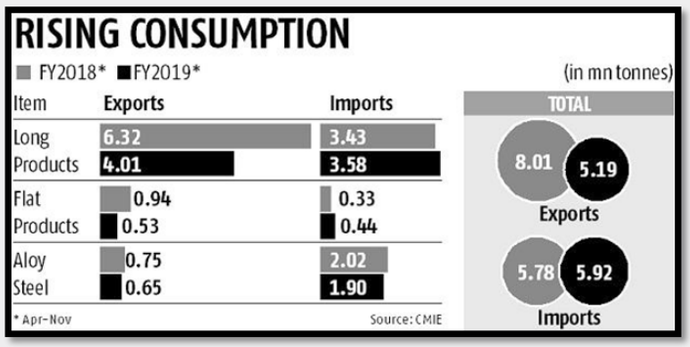
Improved demand, in Asia, due to restocking activity following the Lunar New Year, is expected to lead to a modest pricing uptick across the region, in the coming months. However, the medium-term demand prospects are, generally, less clear – with Asian economies,

in particular, China, expected to slow down, in 2019. Heightened trade tensions, notably, between the US and China, plus the UK's exit from the European Union, are causing a great deal of uncertainty among global steel buyers. MEPS forecasts that any reversal of pricing fortunes, in Europe and North America, is likely to be modest and short-lived.

Source: Worldsteel Association

Demand for higher steel grades to fuel imports in 2019: CARE Ratings

The country's import of steel is expected to rise by 2.5 to 3-5 per cent in 2019-20, fuelled by demand for special and higher grades, says CARE Ratings.Its report says domestic consumption of steel is projected to rise between 5.5 and 7.5 per cent. "We believe consumption of long steel products will grow at a faster pace, compared to flat steel products, mainly on account of the government's focus on infrastructure. For FY19, the government's revised capital expenditure was higher by 20.3 per cent to Rs 3.2 trillion on a year-on-year basis and funds of Rs 3.4 trillion have been allocated for FY20," it adds.



Finished steel production is tipped to grow by 6-8 per cent during FY20, backed by demand from user industries such as construction and infrastructure, automobiles and consumer durables. In FY17 and FY18, India was a net exporter of steel. This had altered in the April-November period of FY19 (first eight months of the financial year), with finished steel import toppling export by 0.7 million tonnes.

According to data from the Centre for Monitoring Indian Economy, the former rose 2.2 per cent to 5.9 mt, while the latter fell 35 per cent to 5.2 mt.Higher import from South Korea was one reason. In March 2018, the American government imposed protectionist levies of 25 per cent and 10 per cent on steel import; this led to diversion here of Korean shipments.

Hot Rolled coil, galvanised sheets and some grades of alloy steel are the bulk of our export. On an average, nine per cent of the country's production is exported, while 11 per cent of the demand was met from import in the past five years. The CARE report says domestic prices of steel products have been firm. Between April and December 2018, these rose by 18-33 per cent over a year before, on the back of a robust demand.

Consumption in the comparable period grew 7.9 per cent to 71.6 mt. Prices are expected to weaken by five per cent in FY20, taking cues from those in China. A rise in domestic consumption will arrest any sharper fall, the report believes.

Source: Business Standard

Our prices are more calibrated towards Indian steel market: Amitava Mukherjee, NMDC

Despite the 70 million tonne shortfall in global coal supply due the Vale disaster, there will not be a huge scarcity since earlier there was a surplus supply scenario, said Amitava Mukherjee, Director (Finance), NMDC, in an interview with ET Now.

Edited excerpts:

- How would you really view the overall global demand-supply situation post the Brazil disaster? Are we staring at a possibility of a significant scarcity of iron ore?

  The Vale disaster implications are still not very clear. The latest estimates are around 70 million tonnes of coal. Considering that Brazil exports around 400 million tonnes, it is almost a little less than a quarter -- around 20% shortfall. The effect will be felt in the global market. But now China is also scaling down their production because of blue sky policy. In the overall global market, there

was a surplus supply scenario and so there will not be a huge scarcity. Availability will be there.

- But what about Chinese iron ore prices? They have continued to remain above $90. Where do you think the prices are headed?

After the initial shock, when it reached around $95, it has stabilised at around $90. Our own estimations are that this is going to be there for about a month or so. At least in the near future, it is going to be hovering above $85-90. $85 plus would be a reasonable level considering that Vale can take a production cut up to 70 million tonne which is the latest news that is coming out of Brazil. Earlier, it was expected to take a 35 million tonne cut.

- Is NMDC in a position to try and capture some of the market?

Unfortunately, in India, our exports are pegged by long-term contracts that we have with Japan and South Korea. Our export quota is around 3 million tons. We do not operate in the spot market unfortunately as of now. India exports around 12 to 20 million tons a year and NMDC exports around 3 million tons a year. We do not have the capacity to take advantage of this directly.

The export duty in India for iron ore is around 30% while the import duty is around 2.5%. So, there is a conscious policy decision at the government level that exports are not exactly encouraged because we have a lot of steel-making capacity here. The idea is to add value to the ore domestically rather than export the ore and realise value from there.

Since we are the only country in the world which both produces ore and produces steel of more than 100 million ton, the priority for domestic suppliers is to supply to the domestic steel industry. Australia exports around 800 million tons, but they do not make that amount of steel.

China on the other hand makes 900 million tons but does not have that kind of ore. Japan makes more than 100 million tons but they do not have any ore for that matter. India is a unique case in the global steel scenario where we have the manufacturing capacity of more than a 100 million ton and ore production which is currently around 210 million tons which is speculated to go up to 225 million tons this financial year.

- You have also undertaken a price hike after nearly three months of a sharp price cut consecutively. Is it the global shortage of iron ore post Vale that has prompted you to do so and what is your outlook now on prices?

We took four price cuts after September -- two in December, one in January and one in early February and then after Vale happened and steel prices actually started looking up. Our domestic prices are more tuned or calibrated to the steel prices rather than the international iron ore prices. As I have explained, we do not go to the spot markets for sale.

Our domestic prices are more calibrated towards the Indian steel market. From February onwards, there has been a 3-5% hike in different type of products in the domestic steel prices, HR coils have gone up by around 3% up to 44000, TMT bar in Raipur has gone up by around 3% to around 36000, even sponge iron has gone up so it has been calibrated to that. SAIL has hiked up price of around 1000 two or three days back. Since there has been an upswing on the steel prices in the month of February and now it is looking up so we have also followed the steel prices. Our prices generally follow steel prices -- either up or down.

- **What is the price differential now between NMDC and foreign iron ore pricing?**

In the Western Coast, we have a logistical problem. If I evacuate my ore from our Chhattisgarh vicinity, it takes me around $19 to reach the port at Vizag and you add $2 for the port handling charges and another $7 for taking it by ship to the Western Coast.

The price neutral point at Western Coast for international prices would be around $70, provided we are selling at around Rs 300 and that is around $40. So, unless the prices

fall below $70 in the international market or rather $65 around $65 at our current NMDC prices, we will be cheaper still at the Western Coast. At the Eastern Coast of course, we will be cheaper. The international prices will have to fall below $60 for us to make ore at the current price more expensive than the foreign imports. We have our substantial what you call is the cost of logistics, logistics cost in India is fairly high as compared to the international market.

Source: The Economic Times

The City of Steel

Jamshedpur, one of the country's earliest industrial townships, turned 100 this year.

A hundred years ago, on January 2, 1919, in a speech delivered from the Director's bungalow in Sakchi, the Governor-General and Viceroy of India, Lord Chelmsford, remarked upon the conclusion of World War I: "I can hardly imagine what we should have done during these four years if the Tata Company had not been able to gift us steel rails which have been provided for us, not only for Mesopotamia but for Egypt, Palestine and East Africa, and I have come to express my thanks."

When Sir Dorabji Tata founded the Tata Iron and Steel Company (TISCO) in 1907, Sakshi was just brushwood and jungle. In 10 years, the township had 50,000 residents.

In order to run an industry that required a little over 1,500 acres, the Tatas went on to manage a city of 15,000 acres. In memory of Jamsetji Nusserwanji Tata, the founder of the Tata Group, Chelmsford renamed the town Jamshedpur.

The Great War paved the way for the meteoric rise of TISCO, and for an enduring relationship between the company and the government. The government promised to purchase 20,000 tonnes of steel rails annually, and ended up taking nearly three times that quantity, besides 1,500 miles of railway tracks.

On the right track

It's no surprise that during World War II, Jamshedpur ran the risk of being the chief target of an Axis air raid in eastern India, next in importance to Calcutta. Jamshedpur was to Calcutta what Uxbridge was to London — a conurbation of bunkers and air-bases. Instead of the Germans, the Tatas were fighting the Japanese Air Force. In the early 1940s, the Japanese had gathered great strength in the China-India-Burma corridor. Wartime Calcutta would frequently telegraph yellow signals to Jamshedpur, which had turned into a fortress of bomb shelters. Anti-aircraft artillery was installed on the outskirts of the steel city, besides tar boilers within the township to produce smokescreens during Japanese air raids. Tata factory hooters doubled up as air raid sirens. Meanwhile, an air base came up at Kalaikunda, about 90 miles from Tata Nagar, the main railway station, for overland bombers targeting Japan.

Then, when the Allies fell short of supplies of Armoured Fighting Vehicles, the Tatas were once again called to the service of the empire. To Ford truck chassis imported from Canada, Tata Steel attached armour-plate hulls. These armoured cars sent to the warfront from India came to be known as 'Tatanagars'. The company supplied nearly 5,000 units to the Allies, making them in the workshops of Jamshedpur.

The Tatanagars could approach speeds of 80 km/hr, and were used to transport troops, to mount anti-aircraft artillery, and for reconnaissance. As John Keenan, Tata Steel's post-war general manager, said: "The Japanese would not have been stopped without Jamshedpur's steel."

In 1925, Jehangir Ratanji Dadabhoy Tata, the great-grandson of Jamset ji, first conceived the idea of advertising Tata Steel's swadeshi and socialist background. He wanted to use Gandhi ji's visit to Jamshedpur for 'free propaganda and advertising.'

Gandhi, who had come to the factory to resolve labour discontent, was surprised to find pre-existing labour-oriented policies and practices in the company. Already, since 1912, there had existed 8-hour workdays, medical leave, bonus and provident fund, and skill development programmes.

Impressing Gandhi

Gandhi was impressed, as much by this as by the town-planning and enormity of the plant. The promotional campaign, however, had to

wait for another 44 years, until Gandhi's birth centenary in 1969, when Tata Steel declared in an advertisement that when the Mahatma 'visited Jamshedpur in 1925 and 1934, he was happy to see the cordial relations there and felt their further extension would help to achieve a *Miniature Swaraj*.'

In 1902, much before the city-planning activities began, Jamsetji Tata wrote to his son to "be sure to lay wide streets planted with shady trees, every other of a quick-growing variety. Be sure that there is plenty of space for lawns and gardens. Reserve large areas for football, hockey and parks. Earmark areas for Hindu temples, Mohammedan mosques and Christian churches." Architectural thinkers Amita Sinha and Jatinder Singh, who have studied the development of the city, believe that 'Jamshedpur has received surprising little attention from urban planners and historians and its omission from planning literature is a gap in urban history of South Asia.'

The original town was planned by Julian Kennedy of Pittsburgh, who came to India with Jamsetji Tata and Perin. After World War II, Colonel Frederick Charles Temple, an English sanitary engineer, was chosen as architect. Temple brought in concepts of the garden city and industrial township from the then newly-designed British city of Letchworth.

In the 1930s, Major P.G.W. Stokes, who had restored Quetta after the 1934 earthquake, came to refurbish it, followed by Otto Koenigsberger, the German chief architect of Mysore.

In 1977, the company — and the township of Jamshedpur — narrowly escaped nationalisation. George Fernandes, Industry Minister of the Janata Government, had intended to do just that, but the company ran a campaign against the proposal, outlining its charitable activities and ending with the tagline: 'We also make steel.' It could well have also said, 'We also make cities.'

Source: The Hindu

JSPL TO GAIN FROM EXPANSION IN CAPACITY, BETTER PRICING FOR STEEL

Blast furnace in Angul from March seen boosting production and improving cash flow

Jindal Steel and Power Limited (JSPL) is set to accrue gains on account of various factors, following an improvement in outlook for steel prices. While the higher steel prices will translate to better margins and earnings, capacity expansions in the firm's steel business will further boost its financials. JSPL's DRI (direct-reduced iron) plant at Angul, with a capacity of 1.8 million tonnes per annum (mtpa), is expected to start production by mid-March.

The company will also see its 3.2 mtpa blast furnace achieve 11,000 tonnes per day (tpda) of rated capacity by the end of FY19. While the blast furnace had already stabilised with a production rate of 8,500 tpda, the DRI plant has now resumed operations of its coal gasification unit.

All these factors indicate good progress on its Angul plant achieving 5 mtpa production, say analysts who expect JSPL to achieve 5.8-6.5 mt of steel production during FY20, compared to an exit rate of 6 mt at the end of January 2019. The ramp-up in downstream capacity will also boost margins. Coupled with cost efficiencies, all this will likely result in savings of up to Rs 2,000 per tonne in FY20, say analysts at Edelweiss.

In fact, cost efficiencies and the volume ramp-up are already reflecting on financials. JSPL's domestic steel operations had seen per-tonne profitability improve 9 percent year-on-year to Rs 12,344 during the December quarter (Q3), helped by better product mix, despite softness in steel prices. Notably, the profitability has inched closer to levels reported by larger peers. JSW Steel, for instance, had seen per-tonne profitability of Rs 12,060 for its stand-alone operations during the December quarter, while Tata Steel's fully integrated India business continued to lead, with per-tonne profitability of Rs 16,400.

JSPL's power business, though, continues to be the weak link. It had, however, seen better demand in Q3 with Plant Load Factor (PLF)

rising two percentage points to 35 percent and realisations improve 3 percent over the September quarter. Nevertheless, it is the steel business (contributing over 85 percent to the consolidated top line) that continues to drive the overall prospects of JSPL.

Analysts at MotilalOswal Securities say the ramping up of its new blast furnace at Angul is expected to drive 29 percent compounded annual growth in steel production over FY18-20. Even if steel prices soften, and assuming compression in per-tonne profitability by 20-25 percent from current levels to Rs 9,500, analysts expect JSPL to generate significant free cash flow.

Source: Business Standard

Economy & Steel Market Scenario

Indian Economy & Steel Scenario

India is becoming world's fastest growing economy. India's GDP growth has been one of the highest as seen in the last two quarters of FY 2019. Recently in the second-quarter (July-September) of the financial year 2018-19, Indian economy grew at a rate of 7.1 percent. On a broader perspective, Indian economy's share in the world, measured as a ratio of India's GDP to world's GDP at the current value of the US dollar, has increased from 3.2 percent in 2017 from 2.6 percent in 2014, Interestingly, Indian economy recorded an average growth rate of 7.3 percent between financial year 2014-2015 and 2017-18, the fastest growth rate amid major economies in the world. According to International Monetary Fund October 2018 database, the Indian economy is estimated to be the fastest-growing among the major economies in the world in the present financial year 2018-2019 and the upcoming FY 2020.

The year 2018 proved to be quite a robust one for mergers and acquisitions for Indian corporates. Buoyed by the recently-implemented Insolvency and Bankruptcy Code (IBC) and an extremely competitive atmosphere in the mobile and e-commerce space, deal making reached new highs in 2018.

As the government continued to push for resolutions, there was a wave of consolidation in sectors most affected by the build-up in non-performing loans such as financial services, energy and steel. There was also a feeding frenzy in the consumer goods and e-commerce space as foreign companies swooped in to take aim at India's massive customer base.

Breaking all records, India Inc. has announced deals worth over US $100 billion in 2018 and the new year is expected to keep the corporate boardrooms abuzz with a lot more mergers and acquisitions as well as private equity transactions helped by continuing reform measures, including on the GST, RERA, IBC and efforts to improve the ease of doing business in the country. In addition to traditional M&A drivers such as consolidation and market penetration, deal activity will be also get increasingly triggered by pressures such as technological innovation and digitalisation as companies will be compelled to proactively acquire capabilities that provide a competitive edge. While this could be tempered by an outflow of capital and election uncertainty, the relative weakness of the Indian currency could see a lot more acquisitions by foreign companies. Corporates have honed their inorganic growth strategy as they resorted to divestment of non-core assets, expanded into new business areas and hunted for bargain purchases following the introduction of Insolvency and Bankruptcy Code (IBC) during 2018.

During April-November 2018, steel consumption in the country has grown by 8.4%, led by the government's thrust on infrastructure, affordable housing, power transmission and the Railways. However, despite robust demand, domestic steel production growth is likely to remain low at about 2.5-3% in FY 2019 due to increased threat from cheaper imports, combined with a considerable de-growth in steel exports due to rising global trade tensions.

The relative improvement in the investment scenario compared to the previous year resulted in a respectable growth of 9.3% in the consumption of Bars and Rods and 5.5% in the case of Structural and 4.8% more consumption of Plates. The crude steel production at 96.9 Mt by India during the first 11 months of the calendar year 2018 has enabled India to occupy the second position in global steel

production.

ICRA expected domestic steelmakers to increase the capacity further by about 16 Mt over FY 2019 - FY 2021. Additionally, with investments towards a ramp-up and debottlenecking of stressed assets taken over recently, this would lead to an industry capex estimate of Rs 750-800 billion between FY 2019 and FY 2021. The industry's capacity utilisation level is expected to remain at a healthy 82-83% between FY 2019 and FY 2021, supported by a favourable domestic demand and low Greenfield capacities coming up in the medium-term.

Source: Steel Tech

Technology, Product Development and Application

SRTMI in talks for Australian Technology to cut Coal use in Steelmaking

The Indian Government is in talks with India-born Australian scientist VeenaSahajwalla of the University of New South Wales to bring in green technology to make steel, which could reduce coal use. On behalf of the University, she is in talks with the Steel Research & Technology Mission of India (SRTMI), a Government outfit floated to merge all research activities on steel. She said that it is ideal for application in India as it is incorporated into conventional electric arc furnace steelmaking, so it does not require expensive new industrial infrastructure or any large scale new equipment.

SRTMI has already held talks with V. Sahajwalla and feels the technology could help reduce carbon footprint by using rubber and plastic wastes without creating pollutants as well as reduce coal imports. Mukesh Kumar, Director of the SRTMI, said that this technology could be used in a direct reduction process and in electric arc furnaces used by most of the secondary steel industry. At a later stage, this might also be used in larger blast furnaces. Even if this technology used in 20 percent of the secondary steelmaking, it will represent huge savings in coal imports and carbon emissions.

V. Sahajwalla has patented a technology, which breaks down used car tyres into hydrogen and oxygen in electric arc furnaces. This, when combined with coking coal, can be used as a fuel to make steel. VeenaSahajwalla's green steel technique uses what is called a Polymer Injection Technology, which can use these tyres as well as certain plastics to produce the heat needed to make steel, without releasing pollutants. This technology is already being used commercially by Australian steelmakers, managing to reduce coke and coking coal consumption by up to 15 percent.

Vale buys Iron Ore Processing Technology firm New Steel

Vale has entered into an agreement with Hankoe FIP to buy innovative iron ore beneficiation technology provider, New Steel, for $500 million. Vale said that the transaction was expected to close in 2019, subject to certain conditions precedent, including approval by antitrust authorities in Brazil. New Steel developed iron ore beneficiation technologies to process iron ore and owns patents for its fines dry magnetic separation processing method in 56 countries. Vale said that the technology will support the development of its high-grade pellet feed initiatives, including the South eastern System 20 Mt/year pellet feed project.

Sunfire GmbH develops and produces High-Temperature Electrolysers and High-Temperature Fuel Cells

Sunfire GmbH, developer and manufacturer of high efficient electrolysers and fuel cells, secured 25 million euros venture capital. The Luxembourg-based technology company Paul Wurth S.A. joined as the new lead investor. The company is part of SMS group, the worldwide leading provider of equipment and plants for the metals industry. Thanks to the injection of fresh capital and with the support of a renowned partner, Sunfire will implement from 2019 commercial multi-megawatt proejcts applying high-temperature electrolysis and Power-to-Liquid technology. For Paul Wurth, this partnership means a significant step in view of new technological developments, leading to green steelmaking as well as an opportunity to enter the growing e-Fuels market.

The technologies developed by Sunfire allow producing climate-neutral fuels and gases for sectors, which today can hardly do

without fossil energy sources, such as heavy load transportation, aviation, steel industry or chemical industry. Green hydrogen is produced based on green electricity in an efficient high-temperature electrolyser, using waste heat generated, for example by industrial processes.

In the latest product version, high-temperature electrolysis cannot only reactivate water, but also CO2 and thus transform, in the most direct way, combustion off-gasses into clean feedstock, replacing fossil oil or natural gas. The produced hydrogen can be used directly or can be transformed in further process steps into the CO2 –neutral oil substitute e-Crude. In refineries, it can be further processed into e-gasoline, e-diesel and especially e-kerosene for aviation. Presently, Sunfire is building the first high-temperature electrolyser at megawatt scale.

Carl Berninghausen, CEO of Sunfire said, thanks to the so far largest financing round we pave the way for the industrialisation of our technology validated in pilot plants. We experience daily how the interest for our solutions for energy transition is growing. For example, Salzgitter Flachstahl GmbH is counting on green hydrogen in a successful pilot project. Therewith we have already set a signal in the steel sector. With Paul Wurth joining the venture, we become a valuable partner for energy intensive industries. This milestone means for us an important step towards an industrial company, and we will now be able to expand our pure product business to service activities also in the field of projects.

For Georges Rassel, CEO of Paul Wurth, the collaboration with Sunfire clearly expresses their strategy to play a leading role in the upcoming transformation of the steel industry towards CO2 –free steel production. They would like to accompany their customers also in their journey to hydrogen-based hot metal production and support them to achieve climate protection targets.

Smart steel winners announced

Sandvik and SSAB arranged an innovation challenge to find a solution for traceable steel. Mikael Sjodahl, Professor at Lulea University of Technology in Sweden and Dr. Tobias Schmid-Schirling at the Fraunhoger Institute for Phyical Measurement Techniques in Germany presented the wining solutions. Finding a way to trace steel throughout its value chain has kept researchers busy for many years. Extreme heat, mechanical processing, deformation and corrosion are some of the harsh environment that has to be taken into consideration. Sandvik and SSAB invited researchers, companies and institutes across the globe to an innovation challenge.

A total of 26 teams submitted proposals and on December 12, seven finalists from Sweden, Finland, Germany and South Africa pitched their ideas to a jury at Jernkontoret in Stockholm. The ideas included a broad spectrum of solutions, ranging from laser and direct part-marking, digital twins, block chain, algorthms, image-based microstructure identification to noise analysis and a global platform.

MattiasKlockars, Manager at Sandvik Materials Technology's Strategic Research Lab and a member of the jury said that the innovative level of the submitted proposals was impressive. Several solutions have been received that he had not even thought about. The jury selected Mikael Sjodahl and Dr. Tobias Schmid-Schirling as winners of the challenge. Both presented market-free tracking solutions.

Tata Steel demonstrates Steel Tube Technology for Hyperloop

Tata Steel will present its latest contribution to the European Hyperloop Program project at this year's EuroBLECH trade show. The steel supplier has developed different design concepts for the vacuum tube technology and will now enter the prototyping stage, having already delivered electrical steel for the rail of the first European test facility in Delft, Netherlands and made financial investments in the project. At this stage, Tata Steel would like to invite other metal technology companies to join the EHP for the development of the innovative transportation system.

Hyperloop is a high-capacity, high speed transportation system that has the potential to connect cities at any distance faster and in a highly sustainable manner. The current system uses magnetically levitated pods that travel through a vacuum steel tube at potential speeds up to 1,000 km/h. As 80% of the Hyperloop infrastructure planned by EHP

will be made of steel, Tata Steel will focus on the efficient construction of the infrastructure, including strong lightweight tubes and rails made from electrical steel.

Paul de Vries, General Manager Process Development Strip at Tata Steel said that they were very happy when Hardt Hyperloop, the first European start-up for the technology, approached us in 2017 to be their industry partner in the European Hyperloop Program. Sustainability is one of their most important goals as a company and therefore the innovative mobility concept fits perfectly into their corporate vision. With Hyperloop being such a unique and new system in so many ways, the development process is quite challenging.

For the vacuum tubes, Tata Steel has developed 25 different concepts to reduce the weight and costs by 50 percent compared the tube from the first European test facility. The product is a 30-meter-long and 4.5-meter-wide (internal diameter) spiral welded tube. From these, 25 tube concepts have been selected for a 1:10 scale prototype production and pressure tests in cooperation with the Technical University of Delft.

A tube-within-a-tube method is one of the two selected designs. In case, the final layout of the Hyperloop system will require larger tubes, pre-assembled tubes will be difficult to transport, requiring a tube to be constructed on-site. Therefore, this tube concept consists of single segments that could be assembled at the potential construction site. Another option is a polyhedral tube that gains its structural stiffness from a triangle-folded steel structure. It is made up of flat triangular sections created by folding the sheet and then wound into a tube with the possibility of on-site continuous welding.

TSAMRC hosting competition 'Tata Steel MaterialNEXT'

Tata Steel Advanced Materials Research Centre (TSAMRC), in collaboration with the Entrepreneurship Cell, IIT Madras is hosting a competition 'Tata Steel MaterialNEXT' that offers a chance to budding researchers, technology developers and enthusiasts in the field of advanced material, to propose solutions to existing industrial challenges.

'Tata Steel MaterialNEXT' will be conducted in three phases with interactive mentoring sessions by industry specialists and professors who are working in this field, at each stage. Finally, the top three solutions and teams will get recognised and rewarded.

Tata Steel said it has established two Advanced Material Research Centers, one at Chennai in collaboration with the Indian Institute of Technology, Madras (IITM), and the other at Bengaluru, in collaboration with the Indian Institute of Technology, Madras (IITM), and the other at Bengaluru, in collaboration with the Center for Nano and Soft Matter Sciences (CeNS). The objective of these centers is to work closely with academia and other centres of expertise to strengthen the portfolio of advanced materials research and its applications, including Graphene. With the growing popularity of graphene and other advanced nano material around the world, it is important to come up with solutions to the industrial problems that occur during manufacturing and commercialisation.

Tata Steel said in the statement that pursuing research in advanced material is an active process in the company and added that it started work in the area of Nanotechnology almost a decade ago. The company said it had started the Graphene Initiative in 2016 with the opening of the Graphene Centre in Jamshedpur. The objective was to identify applications and establish successful upscaling models and discover potential markets.

Source: Steel Tech

Indian Steel Plants

Steel Research and Technology Mission of India (SRTMI)

The Government has facilitated setting up of an innovative institutional mechanism, namely SRTMI to promote joint collaborative research projects of national importance in iron & steel sector in India. This is an industry driven platform and the initial corpus is being funded by the major steel companies. SRTMI has been registered under the Societies Registration Act on 14th October, 2015. SRTMI is actively interacting with steel companies, research labs & academia to spearhead research for the iron

& steel sector.

Budget for R&D

The Ministry of Steel is financing the promotion in Research and Development is Steel Sector, an R&D scheme. During the year 2018, 10 R&D projects have been approved with a total cost of Rs 43.87 crore with financial assistance of Rs 40.79 crore from the Government budget. 25 R&D projects are in progress. The Ministry of Steel is also funding 50% (Rs 5.52 crore) in 3 R&D projects being pursued under the IMPRINT Scheme of MHRD with total cost of Rs 11.04 crore.

During the year 2018, 9 on-going R&D projects were pursed with under the SDF assisted R&D scheme.

Centre of Excellence in Steel Technology

The Ministry of Steel is providing financial assistance for setting up of Centre of Excellence for creation of world-class facility for metallurgical engineering and also for the development of human resource for the steel sector. Such facilities are promoting R&D for the iron & steel sector and also generate skilled manpower for the sector. Four such centers have been set up/ approved at IIT Kharagpur, IIT Bombay, IIT, BHU and IIT, Madras.

Steel Authority of India Ltd (SAIL)

Steel Minister inaugurates SAIL program, celebrating Company's Sixty Years

Hon'ble Steel Minister Chaudhary Birender Singh inaugurated the commemoration of sixty years of production of Steel Authority of India Limited (SAIL) at the Curtain Raiser event held on 28th December, 2018 at India Habitat Centre.

Hon'ble Steel Minister while congratulating the entire SAIL Collective highly praised the Company's contribution towards building of the modern India. He said that for the past sixty years, SAIL steel has significantly contributed in the Country's all key projects, including railways, defence, hydro-electric, space programs, infrastructure projects, and has partnered with the Government in its initiatives like 'Make in India', 'Digital India' and 'Skill India' etc. SAIL is celebrating the milestone Diamond Jubilee Year with a number of events planned across all its Plants and Units, including sports events, cultural programs and seminars.

The Minister said that SAIL has completed its modernisation and expansion to reach an installed crude steel capacity of 21.4 Mtpa and the Company will soon start operating at its rated capacity. The Minister is happy that SAIL steel has reached India's remote corners to build a strong infrastructure there. SAIL is increasing its capacity in line with the 300 Million Tonne target envisaged in National Steel Policy 2017. He mentioned that SAIL has meaningfully been contributing towards developing remote corners of India. The Company has a rich legacy and it will surely contribute significantly in future as well.

Steel Minister evaluates Performance of ASP and Durgapur Steel Plant

Steel Minister Chaudhary Birender Singh recently visited the Alloy Steel Plant (ASP) in Durgapur. After a review of the performance of ASP, the Minister said that ASP is now showing improved performance, both in physical and financial terms. He also said that the plant is geared up to make net profit from next year.

ASP has a diverse product portfolio of over 400 grades critical in end-use by strategic sectors like, defence, railways, automobiles, power plants, heavy engineering and manufacturing industries, including steel plants. ASP was set up in 1965 under Hindustan Steel Limited, now SAIL, to ensure India's self-reliance in alloy and special steel production. The Steel Minister also visited the Durgapur Steel Plant (DSP). He said that DSP's commensurate growth plan has been duly considered in tune with the National Steel Policy of making 300 Mt steel by 2030-31, and SAIL's plan to enhance steel production to 50 Mt. He added that SAIL needs to be more profitable and retain its leadership position in the market. Apart from the plant issues, he also spoke about the development in the township and the necessity for providing better medical facilities at the DSP Main hospital.

DSP is currently implementing its Modernisation & Expansion Plan (Phase-I) with the main objectives of conversion of available semis into value-added rolled products. The capacity of DSP will increase in hot metal to 2.40 Mtpa, crude steel to 2.20 Mtpa and Saleable steel to 2.12 Mtpa after completion of Phase-I. The

Steel Minister also visited the Salem Steel Plant and reviewed its performance. He discussed with officials the ways and means of making the plant profitable as it has been a loss making plant for the last 10 years with around Rs. 200 crore loss per year. Losses have been reduced this year and may come down by more than 20%.

SAIL BSP Plate Mill rolls Maraging Steel MDN 250 for Satellite Launch Vehicles of VSSC

Bhilai Steel Plant's Plate Mill has managed to roll maraging steel MDN 250, to be used in outer motor casing of satellite launch vehicles. BSP, which achieved this feat for the second time in succession this year, rolled around 10 slabs weighing 42 tonnes supplied by MisraDhatu Nigam Ltd., Hyderabad. These slabs were reheated and rolled into plates of 9.3 mm thickness. The successful rolling of maraging steel was achieved through meticulous planning in association with MIDHANI &Vikram Sarabhai Space Centre (VSSC). SAIL-BSP has bagged a fresh order of around 420 tonnes for conversion of MDN 250 slabs into plates at Bhilai's Plate Mill and it is planned to take up such rolling on a regular basis. This is expected to fulfil India's space programme to launch one satellite every month.

The forged slabs are made of special steel of very high strength and high temperature resistance consisting of a high percentage of expensive alloying elements were rolled at BSP's Plate Mill in presence of senior officials from MIDHANI. The 9.3-mm gauge plates will be heat treated at MIDHANI later for use in outer motor casing of PSLV and GSLV satellite launch vehicles.

Source: Steel Tech

SAIL Chairman stresses on producing two-third Ferro Alloy requirement In-house

Anil Chaudhary, the Chairman of Steel Authority of India Limited (SAIL), during his visit to SAIL Chandrapur Ferro-Alloy Plant in Maharashtra, said that it is time for to not just concentrate on increasing production capacity, but also to become self-reliant in terms of input material as well. Chandrapur Ferro Alloy Plant (CFP), which meets about 40% of SAIL's Manganese ore based Ferroalloy requirement, must raise the production to the rated capacity, so as to enable SAIL to meet two-third of its total Ferroalloy requirement. This will not just be a strategic advantage for SAIL, but will also lead to better cost efficiency.

The Chairman said that each unit is important in reaching the set targets of production and productivity. Elaborating further on this he said that SAIL is committed to the Ministry of Steel's target of increasing steel production to 300 Mt by FY 2030-31 and in the process, it will augment production capacity to 50 Mt. CFP must tighten its belt start preparing now because this will warrant an increased requirement of ferroalloys and the unit must be able to undertake such an increased requirement in the future.

CFP is India's largest and the only public sector company producing ferroalloys in the country with an installed High Carbon Ferro Manganese installed capacity of 1,90,000 tpy or Silico Manganese installed capacity of 1,30,000 tpy. CFP manufactures three kinds of ferroalloy products comprising High Carbon Ferro Manganese, Silico Manganese and Medium Carbon Ferro Manganese. CFP, erstwhile Maharashtra Elektrosmelt Ltd. (MEL), amalgamated into SAIL in July, 2011. Since then, it has been playing a pivotal role in meeting the internal requirements of ferroalloys in the company.

SAIL Chairman described CFPs afforestation drive efforts for devising alternate ways for recycling and saving water, as well as use of technology for reusing waste products as initiatives, which will lead to environmental conservation and sustainable development. He stressed that such efforts must be redoubled in the future.

Source: Steel Tech

Iron ore production in India Crosses 205 MNT after 8 years

Iron ore production in India in Calendar Year (CY) 2018 surpassed 205 million tonnes after a huge gap of eight years. The output reached 205.68 million tonnes, mostly on increased production in Odisha. This is1.55 percent higher

than the 202.54 million tonnes recorded in CY 2017. The country had produced 209.00 million tonnes of iron ore in CY 2010 at the height of a mineral boom before the clampdown on illegal mining in the country by the Supreme Court. After that year, the countries production started declining year after year. In CY 2011 fell down to 190.8 mnt. Next year in CY 2012 it reduced to 152.6 mnt and in CY2013 it fell down as low as 136.1 mnt.

Subsequently, in CY2014 iron ore production started increasing gradually and moved an inch up at 137.32 mnt. Next year in CY2015, production didn't lose its pace and again moved up reaching at 142.5 mnt. In CY 2016, production improved and reached 182.33 mnt and in CY2017 production reached 202.54 mnt but couldn't cross the mark of 205 mnt.

Table 1

Mineral	Unit	Jan	Feb	Mar	April(F)	May(F)	Jun(F)	Jul(F)	Aug(F)	Sept(R)	Oct(P)	Nov (Approx)	Dec (Approx)
Chromite	t	3,60,962	4,66,358	6,64,406	2,77,537	4,32,613	3,98,708	2,92,840	1,68,270	1,89,839	2,42,666	Yet to be responded	Yet to be responded
Iron Ore	mnt	17,624	17,684	19,888	17,368	17,889	17,477	14,287	13,218	14,315	17,916	19,990	19,000
Manganese Ore	t	2,31,719	2,63,619	2,78,796	2,26,898	2,56,079	2,47,516	1,80,190	1,72,698	1,90,967	2,23,618	Yet to be responded	Yet to be responded

(P): Provisional, (R) Revised, (F) Final

Interestingly, despite some mining operations ban reported in the first few months of CY 2018, Odisha which usually accounts for half of the country's total output saw marginal growth in iron ore production. Odisha's production was reported at 99.18 mnt in CY 2017, but in CY 2018 it increased to 101.35 mnt amid several mining operations halt. State-owned National Mineral Development Corporation (NMDC) recorded 33.13 mnt iron ore output in CY 2018 which is slightly lower as compared to previous year's 34.78 million tonnes. NMDC alone accounted for around 16-17% of total India's iron ore production. Other big miners also saw some fall in iron ore output.

CY 2018 production

In CY'18 iron ore production could have been even better if India's largest iron ore mining company National Mineral Development Corporation (NMDC) as iron ore production at Donimalai mine Karnataka is at stand still due to issues with premiums with the State Government of Karnataka in the last few months of 2018.

Besides this incident, in the beginning of 2018, the apex court of India's order to decline deadline extension for depositing the penalty that it had imposed on mining lease holders for operating without the necessary clearances in Odisha was a huge blow to several miners. Immediately, after that Odisha's government suspended operations in seven mines (extracting iron and manganese ores) that failed to pay penalties by deadline decided by the top court. Miners took many days to restart productions again. Major miners of including Idcol, Serajuddin and Essel Mining restarted mining in mid-February after receiving nod from the top court as their delayed payments were accepted.

Also, mining operations in Goa banned completely after the Supreme Court's order cancelling 88 iron ore mining leases in the state.

Source: Steel Tech

Process & Product Development Activity at Alloys Steel Plant, Durgapur

Alloy Steel Plant was the first integrated steel works in the country to produce more than 400 varieties of special and alloy steels under the broad classification of:

- Carbon constructional steels (Low, medium and high carbon steels)
- Alloy constructional steels (Low, medium and high carbon steels)
- Spring steels
- Shock resisting steels
- Valve steels
- Die block steels (Hot work die blocks and cold work die blocks)
- Carbon tool steels
- High speed steels
- Stainless steels
- Heat resistant steels

Technology was developed for melting, casting, rolling / forging of such a large variety of steels with highest quality and optimum yield of finished product.

The first 5 types of steels and stainless steels were first rolled in Blooming and Billet mill followed by further rolling in Bar & Rod Mill to produce bars of 32 mm dia to 125 mm dia or shapes like square / hexagon in the bar mil. Smaller sizes (7-28 mm dia) were produced in the form of wire rods.

Bigger sizes of these grades were produced in the Forge shop. Sheet rolling of plain carbon steels, alloy steels and stainless steels was done in the Sheet Mill.

Each category of steel was to have a specific process technology. With technology background and specific training received by the technical staff of the Alloy Steel Plant in India and in Atlas Steel Company of Canada, Process Flow Sheets in the form of flow copies were developed by Research & Control Laboratory of the Plant. The main aim was to have minimum process steps to achieve desired level of mechanical properties with optimum yield at each stage.

Before Alloy Steel Plant was commissioned, almost all the alloy steel requirement of the country was met by imports. A specific department with the name of Technical Services was created to interact with customers with a view to understand end use of their product requirement. Based on the end use as well as based on prior experience of the imported material by the customers, a specific process flow sheet was required to be prepared. Process flow sheet was customized and used to vary for same type of steel depending upon end use of the product.

Specific Requirements in Steel Melting Department

High speed steels and other high alloy steels are very prone to cracking during casting and rolling / forging in the plant and during final heat treatment at customers' end. High level of hydrogen content in the steel is one of the main causes for this kind of defects. To avoid this problem, scrap needs to be free from moisture and rust so that low level of hydrogen can be achieved during melting and casting. Special steel melting practice along with addition of preheated ferro alloys was developed to avoid any hydrogen pick up during melting and casting. Further to optimize use of alloying elements, alloy steel scrap is required to be segregated in different areas. All alloy steels are required to be produced with minimum level of inclusions. For this purpose, special deoxidation technique was developed and casting was done in big end up moulds with shrouding of metal stream for high grade steels.

In order to reduce ingot cracking and improve the ingot to bloom yield, corrugated mould design was adopted for most of the steels.

Avoidance of Mix Up of Different Grades

In tonnage steel plants, only 3-4 grades of steel are generally rolled with only a limited number of sizes. The process variations are very few. On the other hand, in case of alloy steels, order quantity for each grade and size by each customer is quite small. However for rolling mills like Blooming & Billet Mill and Bar & Rod Mill, some minimum order quantity should be there to be rolled to optimize setting up of mill train for a particular section. Further there is an additional stage of conditioning (inspection for surface cracks on ingots, blooms or forged product at semi-finished stage and defect removal by scarfing or grinding depending upon the grade). Even before shipping of products, a large number of bundles of different grades of same size are stacked before final dispatch. During all these stages of processing, there is a possibility of some mix up of material. To avoid this, writing of heat number of each piece of bloom, slab and metal tagging of bundles of billets / bars was introduced. Further colour coding and spark testing of each piece is done to ensure zero mix up before dispatch to the customers.

Heat Treatment

All die blocks are required to be dispatched with hardness within a specified narrow range. A special water / oil hardening facility was created for the heat treatment of a wide range of die blocks. Each die block was tested for internal defects using ultrasonic testing machine and for hardness using Brinnel Hardness testing machine.

Carbon tool steels and high speed steels are required by customers in fully annealed condition with a limited maximum permissible hardness. Further no decarburization should be there on the surface. Thus special annealing

technique was developed using protective atmosphere in the furnace.

Stainless steels of austenitic grades are annealed by water quenching.

Die Penetrant Testing and Manaflux Testing for Surface Defects

Even though visual inspection of the surface of forgings and rolled product was commonly done and pieces having surface defects were rejected and removed from the bundles before dispatch, there was still possibility of some minor defects getting overlooked due to human error. Some customers were very particular about surface quality due to the manufacturing process followed at their end. In such cases, each rolled piece used to be magnaflux tested using iron powder and magnetic field for surface defects and each forged piece used to be tested with die penetrant so that defective pieces are sorted out before dispatch.

Roll Pass Design

In view of the large number sections, sizes, shapes and grades to be rolled in the bar and rod mill, roll pass design is very complex in alloy steel plant. Further, for hot and cold rolling of flat products as in case of sheet mill, roll camber is different. A special roll pass design and roll grinding department was created to take care of such special needs.

Production Planning and Customer Satisfaction

Due to large variety of grades of steel to be processed, total process technology for each grade involving melting, casting, forging, rolling, heat treatment and finishing is very complex. Production planning for such a wide spectrum of products is equally tedious. Special procedures were developed to ensure material processing and dispatch. Technical service department was required to keep continuous interaction and follow up with the customers to ensure customer satisfaction.

Conclusion

Though in 1960s, India had very good expertise in steel making and rolling of structural and a very few number of special steels in TISCO, IISCO, BSP, RSP and DSP, such experience was very limited in case of production and processing of a wide variety of alloy steels. Further, users of alloy steels in the country had tie-ups with different countries for their own manufacturing lines, which expanded the number of grades to be developed. In addition of this, there are a large number of specifications for alloy steels in different countries. This made the technology development at alloy steel plant very complex.

There was another problem, which created unforeseen difficulties. This was in respect of mismatch between major equipment, which was imported from Japan and Process technology, which was acquired from Canada. Integration and compatibility of equipment and process along with inadequate initial expertise of manpower created many handicaps. The then management of Alloy Steel Plant boldly overcame these problems and carved a good image by meeting the stringent and diversified requirements of a vast range of alloy steels in the country.

It is very gratifying to note that Alloy Steel Plant, Durgapur became a regular source of trained manpower required by a number f other alloy steel plants, which came up later in private sector in the country.

Courtesy: Dr. G Mukherjee

Former Vice Chairman, SAIL

Raw Material Hikes Prompt Stainless Steel Recovery

The recent upturn in raw material values has spurred stainless steel producers to introduce price increases – in some cases, over and above the amount necessary to cover the rise in mill input costs. LME nickel values have been on an upward trend, since early January. Nevertheless, the increase was insufficient to bring about an uptick in European alloy surcharges for austenitic stainless steels, in February. This, because costs for chromium, molybdenum and steel scrap fell, during the calculation reference period. This means that the surcharges for nickel-bearing grades, in Europe, had decreased for seven consecutive months. During this time, nominal basis values – the difference between the effective price and the alloy surcharge – having plummeted in the first half of 2018, as surcharges soared, failed to recover in the manner that market participants

expected.

However, while alloy extras dropped again in February, effective prices for austenitic flat products, in Europe, remained stable or, in a few cases, increased. This represents an upturn in nominal basis figures. Alloy surcharges will rise again, in March, and European producers are predicted to push for further price hikes, in excess of the changes to alloy extras. This turnaround has been anticipated for some time, as mills have been selling at values which were, clearly, not covering their production costs.

In the United States, the leading stainless steelmaker, North American Stainless, recently announced basis price increases, for bars and hot rolled plates, effective March 1. However, no such proposal has been made, at the time of writing, with regards to coil products. US producers have less requirement for price increases than their European counterparts, because trade measures, such as antidumping duties and Section 232 quotas and tariffs, have kept US domestic values at a relatively high level.

Chinese market prices, which tend to respond quickly to changes in raw material costs, took a positive turn, in February, following the Lunar New Year celebrations. Stainless steel producers in South Korea and Taiwan, achieved moderate hikes, for February contracts. Their intentions to seek further increases, in March negotiations, have already been indicated. Japanese market values have been stable, for many months. Local suppliers' efforts to apply increases met with very limited success, in February. However, MEPS expects them to continue to press for price increments, in the coming months.

Source: Worldsteel Association

Domestic steel firms set to hike prices by Rs 1,000 a tonne from March 1

Prompted by strong demand growth in the domestic market, steel producers are set to hike product prices by Rs 1,000 a tonne from March 1. This will be the third rise in prices since February 1.

"There is a growing demand for steel across sectors, and so all large producers are going ahead with a yet another price hike," said an industry source in the knowledge of the development. Tata Steel, Sajjan Jindal-led JSW Steel, state-owned Steel Authority of India (SAIL), Naveen Jindal-led Jindal Steel & Power, and Rashtriyalspat Nigam Limited are among top steel producers in the country. They had earlier raised product prices by Rs 750 a tonne on February 1 after a gap of four months, and followed it up with another Rs 1,000 hike in the third week of February. Besides a spurt in demand, industry players attribute the increase in steel prices to a 17 per cent increase in iron ore prices by NMDC.

Among the large steel producers, JSW Steel is the only player that buys ore from state-owned NMDC, while most other producers have captive source of ore. Besides, a majority of NMDC's iron ore is lifted by the domestic sponge iron industry. The consumption of finished steel in India grew 7.9 per cent during April-December 2018 as against 7.5 per cent in the corresponding period a year ago, a CARE Ratings report said. "There is no appetite to absorb so many price hikes but there is no option. With imports curtailed, consumers have no choice but to rely on domestic steel," said a Mumbai-based dealer.

On the other hand, domestic steel prices are likely to remain 5 per cent lower (on an average) on a year-on-year basis during FY20, considering that the input cost remains stable, said CARE ratings. However, an increase in domestic consumption during FY20 is expected to restrict any sharp fall in domestic steel prices, it said.

"Domestic consumption of steel is expected to rise in the range of 5.5-7.5 per cent during FY20. We believe the consumption of long steel products to grow at a faster pace compared to flat steel products during the year mainly on account of the government's focus on India's infrastructure," said CARE Ratings. For FY19, the revised capital expenditure by the Union government was higher by 20.3 per cent to Rs 3.2 trillion y-o-y; Rs 3.4 trillion has been allocated by it towards capital expenditure for FY20. Long steel products are used in infrastructure and construction, while

flat steel finds wide application in the auto industry.

Source: Business Standard

India's iron ore imports rise 157% during April-December 2018, says report

Despite being the fourth largest producer of iron ore, India's imports of mineral rose a whopping 157 per cent during April-December 2018 mainly due to higher logistics costs for sourcing it domestically and lower import duties, says a report. Out of the total imports of 11.75 million tonne in 9M FY19, which was a 157 per cent rise as compared to a year-ago, Australia's share was highest at 57 per cent, which has more than tripled compared with corresponding period last year, domestic rating agency CARE Ratings said. The other countries from which India imports iron ore and its shares are South Africa (19 per cent), Brazil (15 per cent) and Bahrain (5 per cent). In July 2018 alone, imports peaked at 1.93 million tonne, the highest in any month in past five years, the agency said in its report.

"Surge in imports can be attributed to varying ore grades in multiple iron ore producing states, which leads to price differences. While the logistics cost for steel plants located on coastal areas rose, steel players shifted to imports for sourcing their key raw material, instead of buying at inflated domestic prices," it said. In addition to this, a significantly low import duty of 2.5 per cent encouraged iron ore imports in the country, it said. The country, however, witnessed a decline in imports from August 2018, mainly due to the strengthening of US dollar, which reduced spreads between landed cost and domestic prices of iron ore, making imports less preferred by Indian steel makers during the period.

India's exports, on the other hand, declined 32 per cent to 12.7 million tonne between April 2018-January 2019, compared with a fall of 17 per cent in the same period last fiscal.

NINL Posts best ever Sinter Output

With 1125770 ton Sinter output till 16th March in the present financial year, Odisha's Kalinga Nagar based Neelachal Ispat Nigam Limited (NINL) has registered its best ever production figure in a fiscal since inception. The integrated steel plant has surpassed its previous best output of 1124300 ton in 2013-14. On 11th March, with 720803 ton output in the present financial year, NINL had posted its best ever Hot Metal production in a fiscal. The company planned to adopt Coal Dust Injection (CDI) technology at its Blast Furnace which will result in improvement of techno economic parameters and enhance Hot Metal productivity. The adoption of the technology will also save the company's around 200 crore rupees per annum. Earlier, buoyed by the capital repair, the company's Blast Furnace added feather to its cap by becoming a 3000 ton plus hot metal producing furnace for the first time on 13th May 2018 by posting 3001 ton while the all time best single-day production stands at 3412 ton recorded on 15th December last year.

Source: Business Standard

China was the principal iron ore importer from India with 74 per cent share or 9.4 million tonne, followed by Japan, South Korea, Oman and Malaysia. Export duty in India for iron ore is high at 30 per cent currently. The agency noted that iron ore pellets exports to China have also declined 18 per cent in 9 month period of FY19, compared with corresponding period last year. "Uncertainty of winter output cuts in China and slow enquiries from non-Chinese market resulted in a drop in pellet exports from India," it said. The agency further noted that domestic iron ore demand will be dependent on domestic steel demand, which has seen strong growth during the year.

Source: Metal Junction

Electric vehicle goals being realised on two wheels, not four

Hurt by high fuel prices, Vinod Gore, a farmer in Gove village in Maharashtra, ditched his petrol scooter for an electric model, underlining how two-wheelers are driving the country's goal of electrification of its vehicles. Gore's electric scooter, built by Indian start-up Okinawa, runs for about 100-120 km (60-75 miles) on a single charge which costs the sugarcane farmer less than 10 percent of the 150 rupees ($2.15) he would otherwise have spent on fuel for the same distance. "I bought it to save money," said Gore, who paid 75,000 rupees ($1,077) for the scooter and expects to recover the cost in

two to three years in terms of savings on petrol and maintenance.

Prime Minister Narendra Modi's government has set a target of electric vehicles making up 30 percent of new sales of cars and two-wheelers by 2030 from less than 1 percent today. But its efforts to convince carmakers to produce electric vehicles have flopped mainly because of no clear policy to incentivise local manufacturing and sales, lack of public charging infrastructure and a high cost of batteries. Cost-conscious two-wheeler buyers like Gore might be a better bet. It would also open up a new market for global companies like Japan's Yamaha Motor and Suzuki Motor that are drawing up initial plans to launch electric scooters and motorcycles in the country.

The potential is huge. India is the world's biggest market for scooters and motorcycles with annual domestic sales exceeding 19 million in the fiscal year ended March 31, 2018 - six times that of car sales over the same period. The next biggest market is China, with annual motorcycle sales of about 17 million in 2017.

Electric scooters make up a fraction of the total but are growing fast. In fiscal 2017-18, sales more than doubled to 54,800 from a year ago while electric car sales fell to 1,200 from 2,000 over the same period, according to data from the Society of Manufacturers of Electric Vehicles (SMEV). By 2030, sales of electric scooters are expected to cross 2 million a year, even as most carmakers resist bringing electric cars to India.

The roadblocks for scooters are fewer. Compared with cars, scooters are lighter, which means they can use less powerful batteries that are cheaper. The scooters can also be charged quickly and more easily, often using existing plug points in homes, and their price is similar to petrol-powered models.

The challenge is that most electric scooters sold today are utilitarian and not as powerful as models that run on petrol that can go faster and climb gradients easily. The supply chain is not robust which means manufacturers need to rely on importing components. Importantly, electricity supply in smaller towns and cities, where demand is picking up, is irregular although frequent power shortages in India are a thing of the past.

"India's electric revolution will be led by two-wheelers. It is a value for money equation," said Sohinder Gill, global chief executive officer at Hero Electric, the country's top-selling e-scooter manufacturer.

EV Policy

In May 2017, India's economic policy think tank began discussions to form a new policy that suggested electrification of all new vehicles by 2030 by mainly offering subsidies to buyers. The proposal faced resistance from carmakers and auto parts companies that considered the shift too sudden and ambitious, and the target was dialled back to 30 percent. India is now working on a new policy which aims to incentivise investments in electric vehicle manufacturing, batteries and smart charging, instead of only giving benefits on sales.

The government also wants to push the use of electric vehicles for public use, a revolution already led by three-wheeled autorickshaws. Sales of these vehicles, ubiquitous on Indian city roads, are expected to double to 935,000 units a year by 2023, according to consulting firm P&S Market Research. "A policy or incentive to help manufacturers of cars or two-wheelers will go a longer way in making electric mobility more affordable than subsidising individual buyers," said Kaushik Madhavan, vice president, mobility at consultant Frost & Sullivan.

A handful of carmakers including Maruti Suzuki India Ltd, Toyota Motor Corp and Nissan Motor Co are testing the ground to launch electric vehicles in the country, some as early as 2020. Two-wheeler companies are further down the road with Hero Electric and several start-ups including Okinawa, Ather Energy and Twenty Two Motors already selling electric scooters.

Hero, which sold 31,000 electric scooters in 2017-18, expects to double sales every year for the next few years and break even on costs within one year, said Gill. Japan's Suzuki Motor is working on plans to launch an electric scooter in India by 2020, while Indian motorcycle makers Bajaj Motor and TVS Motor are also eyeing electric models. Yamaha, which is developing a global electric two-wheeler platform, plans to bring an electric scooter or motorcycle to India in the next 3 to 5 years, Yasuo Ishihara, managing director of the manufacturer's India

unit, told Reuters.

While Ishihara did not say how much Yamaha plans to invest in its electrification push, he said any investment shall mainly be for power units and batteries and to develop infrastructure with partners. "Right now the need of the hour is a proper roadmap and a clear policy by the government of India to actually turn this ambition into reality," Ishihara said.

Rural Goes Electric

Gore is pleased with his Okinawa scooter, which he purchased few months ago, because it is easy and cheap to maintain and he can charge it at home. The scooter is fitted with a battery that can generate maximum power of 2,500 watts, giving a top speed of 75 km per hour (47 mph), which he says is sufficient for his needs. His only gripe is that the scooter struggles when going uphill.

"You can't increase speed on mountains the way you can accelerate with traditional petrol-powered scooters or motorcycles. There is turbo mode that delivers more power but that is still less than petrol scooters," he said. Frost's Madhavan said most electric scooters currently on sale are basic in terms of design, range and performance so that the price can be kept affordable, especially in smaller towns where distances are shorter and buyers more frugal.

But he says there is also a market for more premium models like those made by Bengaluru-based start-up Ather Energy which are designed to appeal to tech-savvy city commuters. Ather's scooters are connected to the internet, come with a touchscreen and have a top speed of 80 kph. They cost about 131,000 rupees - nearly twice the amount Gore paid.

Okinawa and Ather are both expanding their production facilities. While Okinawa is already building a new plant in northern India to more than treble its capacity to a million electric scooters a year, Ather is scouting for a site to set up its second plant. "There is a line of sight now," said RavneetPhokela, chief business officer at Ather which is backed by venture capital firm Tiger Global, adding that there is greater acceptance by buyers and the government is also coming on board.

Ather, whose business model includes setting up charging stations in every city it launches, is working on new products ahead of plans to expand to 30 cities in the next three years. "There has never been a better time to be in this business than now," he said.

Source: Reuters/daily hunt

IIM Foundation Day Celebrations

IIM Foundation Day falls on 24th February. The foundation day is celebrated by our Chapter every year. As in the previous years the Delhi Chapter of IIM celebrated Foundation Day of The Indian Institute of Metals on 24th February 2019.

All the IIM Delhi Chapter members were invited along with their family members to the celebration function.

At the outset, Shri B D Jethra, Chairman, Delhi Chapter, gave an overview of the IIM. He also spoke about the technical activities of the Delhi Chapter. Chairman shared with the members about the MMMM 2018 event which was successfully held at Pragati Maidan, New Delhi, from 29-31, August 2018.

Shri S C Suri narrated some of the long experiences of his working in steel sector and also about the Indian Institute of Metals.

Thereafter Shri P K Bajaj, Vice Chairman, IIM DC, also spoke on the occasion. He shared his thoughts with the audience about technical activities of the Chapter.

After that Shri K L Mehrotra, immediate Past Chairman of Delhi Chapter, took over the stage and administered the entertainment activities in terms

of Quiz relating to old songs. A number of audio visuals of old songs were played on the screen and questions were asked from the audience about names of some of the singers, actors, actresses, music directors, names of the movies etc.

Suitable monetary prizes were given to the persons giving correct answers.

The celebration proceedings were suitably photographed.

The members and their family members appreciated Delhi Chapter for holding this event. The members of Delhi Chapter enjoyed their participation in the function. As a matter of fact some of the members informed that they look forward to participate in the function every year.

About 50 members including their family members participated in the Foundation Day.

The celebration concluded with lunch.

Fighting fuel dependence

India's dependence on fuel imports continues to grow. India imports over 80 percent of its crude oil and the latest sources are Iraq, Saudi Arabia and sanctions-hit Iran. Overall, India's import dependency in its energy mix has risen sharply from 21 percent in 2000 to 36 percent in 2015 – and could be as much as 50 percent in 2040 even if energy production domestically grows faster than it has in the past. This is clearly a major, continuing problem and there are no easy solutions. As India modernises its economy, it will clearly move away from older, less dense forms of energy – such as biomass – to more dense ones. India largely lacks proven resources of oil, gas and metallurgical coal on the scale required. However, the consequence of this continued dependence for the external balance and for overall macro-economic stability is unwelcome. A spike in the price of oil, for example, drives up domestic inflation, stresses the fiscal deficit and can – as it did in 1991 and nearly did in 2013 – drive India close to a crisis in terms of its balance of payments.

What are the alternatives? It is true India does have extensive resources of coal. However, not all of the proven reserves are of the quality needed. In order to ensure that Indian coal burns relatively cleanly, it would have to be processed or washed – which can greatly add to water stress in the area around a coal plant. Areas already short of water, such as for example Vidarbha in Maharashtra, can hardly afford a cluster of new coal-fired plants. Besides the effect of coal-fired plants' emissions on greenhouse gas concentrations and their more direct health effect on those living near them also need to be taken into account. Coal is, in many ways, on the way out – Glencore, for example, has promised to cap its coal production. So where does that leave India? It may well be dependent on coal for many years into the future, but it clear that alternatives will have to be found. Gasification of coal is one possibility.

Renewable energy sources are, of course, a major source of hope, especially as they are currently competitive in terms of variable costs. However, solar and wind power are not perfect substitutes for current energy sources, given that they are variable in terms of output – wind farms produce power when the wind is blowing, and solar farms when the sun is shining. Thus India will have to think strategically about the effect of a continuing import dependence. There are two dimensions it must consider: First in terms of survival during a crisis, and second in preventing macro instability. For the first, it needs to ensure that there are sufficient reserves on its own soil – the strategic reserves being set up in cooperation with the UAE and Saudi Arabia are a good step in that direction. And, for the second, there is no alternative to ensuring that the balance of trade becomes healthier. If India wants to be confident, it can always pay for imported fuel, but it needs to ensure that exports grow sustainably. That is the only way macro stability can be paid for.

Source: Business Standard