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Kamal Agarwal

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urge Government to
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D. A. Chandekar
Editor

Dear Readers,

The steel demand in the country seems to be increasing steadily thanks to the user sectors like infra, construction and auto. The first sign of recovery was visible in September when auto sales showed sizable improvement. Many thought it was accumulated demand as there was almost nil sale during the first few months of lockdown. When the positive trend continued in subsequent months, still it was stamped as festive spike. Now that this upward trend is still continuing, experts are believing it to be a sustainable growth. Lets hope this continues and 2021 be a better year for iron & steel sector in the country.

As mentioned in my last month's column, after the pandemic, there is a greater need for the industry to be competitive in the global marketplace and for that it must adopt smart manufacturing processes and techniques. Many companies in the

Editorial Desk



manufacturing sector have started looking at Industry 4.0 solutions for increasing the productivity, efficiency and competitiveness of the enterprise. The deadly pandemic has also taught us to care more for the mother earth and thus the iron & steel sector needs to develop environment friendly production and processing technologies creating minimum waste and controlling emission of harmful gases. One such process being developed uses hydrogen as reducing agent instead of coking coal. It is supposed to reduce the carbon footprint during steel production. The problem in developing such green processes is that they are costlier than the prevailing process. It is a big challenge to make them commercially viable so that the industry adopts them for regular use.

The covid period has not only changed the working and thinking of corporations but it has also changed the mindset and the priorities of the society. My gut feeling is that this will have a gradual but definite effect on steel demand profile. Let us remain alert and keep watching how the situation unfolds in coming months !

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Yuxing top fired stoves with a catenary dome for 2x2850m3 Bfs



Conventional 3-section top fired transformed into Yuxing top fired with a catenary dome by cutting the top portion of the existing stove shell

Reference of Yuxing Top Fired Stove for BF with volume 40-50% of China's steel capacity since 2017 to April

Sr. No	Client	BF no	Blast volume Nm3/min
1	Hebei Zongtie Steel	1	7800
2	Hebei Zongtie Steel	2	7800
3	Hebei Zongtie Steel	3	7800
4	Hebei Zongheng Steel	3	8400
5	Hebei Zongheng Steel	4	8400
6	HBIS LaoTing	1	9700
7	HBIS LaoTing	2	9700
8	HBIS LaoTing	3	9700
9	Tangshan RuiFeng Steel	4	8000
10	Tangshan JinXi Steel		6300
11	Tangshan JinXi Steel		6300

Notes: China accounts for 50% of the world's steel capacity, and Hebei Since 2017 to the present moment, Yuxing top fired stove adoption rate
Total reference nos of Yuxing top fired: 550.



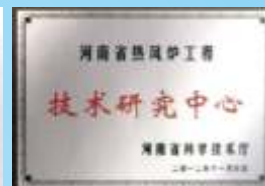
Yuxing top fired stove with a catenary dome achieved monthly mean HBT of 1314.7 oC

Low nox emission - temperature difference between dome than 83mg (international standard less than 150 mg)
from 83.5-88.9% (9-10% greater than that for other top
Long life span - Application practice has proven that the years (the lifetime of the catenary dome combustion
High HBT - Monthly mean HBT of 1314.7 oC delivered than that by other stove under same conditions)
combustion technology, the lower the better concept is



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Conventional 3-section top fired stoves for 3x2500m³ BF's converted into Yuxing 4-section top fired by cutting the top portion of the existing stove shell
over 2000m³ at Hebei Province which accounts for 2019, adoption rate of Yuxing top fired up to 84.6%.

Stove type	Blast time mins	HBT oC
Yuxing 4-section	45	1250
Yuxing 4-section	45	1250
Yuxing 4-section	45	1250
Yuxing Catenary	45	1250
Yuxing Catenary	45	1250
Yuxing 4-section	45	1250
Yuxing 4-section	45	1250
Yuxing 4-section	45	1250
Yuxing Catenary	45	1250
Yuxing 4-section	45	1250
Yuxing 4-section	45	1250

province accounts for 40-50% of China's steel capacity.
for BF's with volume over 2000m³ in Hebei reaches to 84.6%.

and HB at 30 oC approximately, nox emission less
Higher thermal efficiency - Thermal efficiency ranging
fired stove)
lifetimes of catenary dome have been in excess of 44
chamber of Yuxing stove over 30 years)
(HBT delivered by Yuxing stove is 15-20 oC higher
Lower air excess - 1.05-1.06 (Associated with
not always right)



3x3580m³ BF's configured with Yuxing 4-section top fired stoves



Internal combustion chamber stoves for 1497m³ BF at JianLong Steel converted into Yuxing top fired with a catenary dome

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Induction furnace units urge Government to announce relief package



“Due to Covid-19 pandemic situation, India’s induction furnace (IF) units were out of action, choking all production and supply activities which reeled under crisis. Hence, they urged the government to increase the relief package for IF units in the steel sector”

Kamal Agarwal, Hon. Secretary General, All India Induction Furnaces Association (AIIFA).

Kamal Agarwal is running his own family business of steel manufacturing of TMT bars (IS: 1786) as per Bureau of Indian Standard (BIS) specification since 1975. He is also into trading of TMT business. Besides, Kamalji is serving for more than 30 years as an Hon. Secretary General at All India Induction Furnaces Association (AIIFA).

The Association was established in 1987, carries with it a legacy of being one of the premier industry associations in the country, representing a significant section of the small and medium enterprises steel units who are involved in steel melting and processing through Electric Induction Furnace route.

The association works as a bridge between the secondary steel sector and various Ministries of Government of India and Professional Institutions including R&D Centres to take up legitimate issues for the sector.

On behalf of the association, Agarwal representing on various committees of Ministry of Steel and other bodies of Government of India dealing with statutory regulations, policy making, Excise and Customs, quality standardization, etc. related to the iron and steel industry.

Agarwal is a great visionary as a person with sense of responsibility and foresight vision who has the best of intentions for the coming generation. Being a prominent secretary general of the association, he knows the exact concerns and problems of secondary steel sector of India.

He holds Bachelor's degree in Economics from Delhi University, Delhi. Beside Agarwal regularly writes article on secondary steel and induction furnace industry and presenting industry overview at various industry seminar.



Face to Face

The Indian secondary steel industry is badly impacted on account of Covid-19 pandemic situation which has drastically reduced the domestic demand in the first two phases of lock-down period. India's Secondary Steel Sectors which are falling under MSME segment are contributing to India's 58% of the total steel production. Such pandemic situation has also impacted globally, and it is estimated about the contraction of steel demand by 2.4 percent to 1,725.1 million metric tons. It is expected that steel demand is likely to recover to 1,795.1 million metric tons in the year 2021, an increase of 4.1 percent as compared to 2020, expecting a huge loss due to Covid-19.

In India, the large integrated steel players are likely to enhance their market dominance this year in terms of prices and volumes started picking up since September 2020 and it is expected to remain stable till 4th quarter of 2020-21.

It is true that induction furnace steel making units with their own work force only have to mobilize all resources for improvement to take actions accordingly only by them in their respective processing stages. Many of the units lost their customers facing order cancellation largely due to, delay in pipeline

projects for modernization/development. As we are all aware of that our economy battles with significant demand and price volatility challenges, the secondary steel industry is expecting government's support to bolster the demand of steel not only in the short term but also in generating demand impetus for India's economy in the long run for securing a sustainable future for the Indian steel industry.

The pandemic crisis has had a devastated impact on the economy—in a matter of months, once-safe assumptions about the economy have evaporated. Government policymakers are racing to pump enough funds for financial support into secondary steel sectors to support their units and bringing the same at proper shape from shuttering or laying off workers which will likely reverberate for months to come. In time, perhaps this year or next, it is hoped, economic life will begin to return to normal after subsidizing the virus.

Raw Material Crisis & Furnace Loading Problem:

Steel demand in India is expected to decline 14-17 per cent this fiscal in opinion of global experts, as the construction activities are likely to get further impacted due to COVID-19 and subsequent measures as

lock down which will not just affect only construction activities, but also automobile, engineering, and manufacturing industries adversely. However, steel demand in the construction and production activities has been improved from the beginning of the 2nd quarter of 2020-21 to 22-25 per cent level.

On a quarterly basis, steel demand for secondary steel sectors has been washed out in the first quarter of this fiscal when all the automobile plants were shut, which has further weakened the demand. Building and construction would contract this fiscal on account of weak demand from real estate and private individual home builders.

While demand contracted in the second quarter as well, pent-up demand release, especially in construction and infrastructure, would aid growth in the second half, no capacity additions are expected during the year since steel players have postponed capex plans. Contracting demand growth will push the secondary steel sector's utilization level down further to 67-70 per cent (to be lower for electric arc furnace/induction furnace players), adding to the pain from the weakening to 76 per cent seen in fiscal 2020. While China's activity picked up in March 2020 from its



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Covid-induced slump in February, steel demand in the first quarter of calendar year 2020 was declined by 30-40 per cent leading to high inventory levels of 100 million tonne. While activities have begun to resume in China, it is believed that the demand would remain muted in the first half.

It has become a major issue in India as how small secondary steel sectors, the highest contributor of steel production will help in achieving target set up by Govt. in National Steel Policy as 300 million tonne by 2030, and deal with this situation for the short term, long term, or may be forever to save their small-scale steel industries in future.

However, time has come to expect more production from their own individual plant involving employees / workers to come out of this situation at a faster rate finding the best abilities and improvisation scope within the plant where all must think of the plant as their own asset to preserve and function well for survival and benefits of all.

Steel Scrap –The Major Raw Materials Input - in IF:

Demolition Agencies and scrap suppliers supplying scrap to induction furnace units were also facing the unprecedented interruptions to global economic activity caused by COVID-19

unmistakably affected the construction and demolition sectors.

The scrap metal market also faced abrupt interruptions, and those changes consequently moved through the supply chain. Because of the crisis in construction, automobile and other engineering/ manufacturing sectors, demolition of end-of-life products and thereby scrap supply seriously created problems to induction furnace steel making units.

As the global economies chart paths to economic recovery in the wake of the virus, their ability to create enough discarded material to keep basic material supply chains intact will be one of the measures watched by economists.

It may not glitter, but "Scrap is a product of affluence", recycling presently to the impact of humming factories, demolition job sites and traded-in vehicles and appliances on regional and global flows of scrap metal. However, at many places in the second quarter, that affluence was largely absent in the country as both continents dealt with COVID-19 and subsequent workplace shutdowns. The ripple effects of the COVID-19-related decline created scrap generation. In the ferrous scrap market, even steel mills scaled back

output dramatically when scrap prices rose up in early May 2020 because scrap collection had dropped even faster.

It is also predicted a potential shortage of high-grade ferrous scrap for induction furnaces where the main activity is the scrap melting. For demolition contractors, the appreciation for scrap iron in high places could lead to medium-term healthy pricing as economies rebound and try to recover from the COVID-19-related damage. China Government at places, encourages and welcomes importation of ferrous scrap shipment when trade associations have taken measures to make imported ferrous scrap shipments of scrap reclassified from "waste" to a "resource."

Underlying weakness in several segments of the market combined with increased vehicle prices have provided upward pressure on the average age of vehicles, as some consumers hold on to their vehicles for a longer period of time, the study concluded.

Due to the COVID-19 shutdown, auto manufacturing and other types of steel-based manufacturing and construction have halted around the globe, erasing steel mills' primary customers. For similar

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Face to Face

reasons, steel scrap prices are crashing, the feedstock for induction furnace melting.

Sponge Iron – Partial Substitute of scrap-

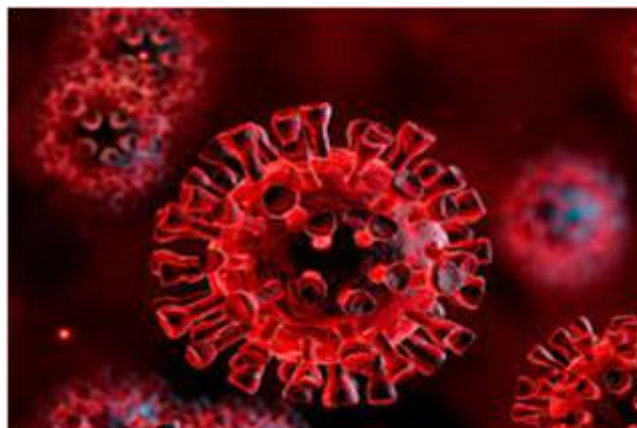
Acute labor shortage in sponge iron industries of India, the largest in the world, is almost threatened to bring it to a halt due to covid-19. Apart from the labor issue, a slump in demand for the product squeezed in the supply of a key raw material has added to the woes. Problems occurred both at plant and transportation of products affecting material movement. The crisis, because of the lockdown following the COVID-19 outbreak, already shaved off up 6-8 percent of the industry's production in FY20.

Despite such an adverse market condition, the steel sector has been kept under the essential services list. Govt. at the centre and the states, and district officials, had made it clear that the sponge iron sector is also an essential service.

Sponge Iron Manufacturers Association, where more than 70% units are in small scale capacities, expects to produce 33 million tons against the initial target of 36 million tons in FY20, but may like to fall by 6-8%.

COVID -19 Affected Induction Furnace Melting Unit

Disruption in Supply Chain



management, Transportation System, Order Cancellation from Customers, Non-Availability of Labour, Financial Problem Turn Around Actions Taken by IF Melting Units & Govt. Support

Actions taken by Induction Furnace Steel Making Units:

1. Management of each IF unit has monitored performance on consumption of raw material, ferro-alloys and other costly additives, power consumption of each heat, identifying any high consumption in any heat so as to keep cost as low as possible without affecting quality.
2. Tried to avail every opportunity for saving material, reducing buying as far as possible improvising the cash flow. Yield improvement effort is given at least to raise the same at level of 2-3%. Supervisors were

instructed to enforce strict supervision and monitoring activities at each processing stage.

3. Any failure is promptly investigated to take corrective action. Equipment Health is maintained properly so as to give expected output. If Steel making units deployed their people based on their strength to achieve higher levels of performance even better than expectation establishing a collaborative framework in the crisis period in post lock down period.
4. The supervisor, Melter, teemer and other workers together reviewed the corresponding strategic and operational priorities in discharging their duties and responsibilities to avail all opportunities for benefits by all possible ways to meet and accomplish the needs for the hour/ day/month.
5. Contractors supplying labourers at each working spot were requested to contribute for smooth running of units. Concerned team incharge - making area, furnace floor and pit-side were instructed to



Face to Face

actively participate in the Quality Management System and standard operating practices in operational processes like furnace charging, melting, ladle heating, tapping of heat and ingot teeming, maintenance activities in all the equipment, purchasing activities, planning, and scheduling production in an effective way.

6. This pandemic crisis period is the time to understand the gravity of the situation by all to turn the performance favorable for the steel making business such difficult times..
7. Small natured low-cost modification/ improvement activities for betterment carried in this crisis period.
8. Transparent communication made by IF units with customers, suppliers and contractors in way that entire involved team members are all in the crisis together, so that the ideal way is followed in the entire process chain overcoming crisis understanding the gravity of the situation and turning it favorable for the business.

Support from Govt.:

Since the beginning of this crisis, IF units have appealed to get relief from high energy charge. However, measures taken by Government which includes a three-month moratorium on Distribution companies making payment to generating companies, transmission, and no penalty on late payment. The Union power ministry had issued directions that, till May 31,

power would be reduced by 50%.

With a dip of 30% in demand for power due to the absence of commercial activity in the wake of the lockdown in the country, the Centre stepped in with a slew of relief measures to support the sector which included a three-month moratorium on the payment of already financially squeezed



the payment security mechanism to be maintained by the DISCOM's with the GENCO's for dispatch of

distribution companies (DISCOM's) to Generating Companies (GENCO's) and no penalty on late

payment. The ministry also worked to ensure adequate supply of coal to prevent a possible disruption in electricity generation and supply of the same with a commitment of uninterrupted 24x7 electricity supply during lockdown. "Despite the lockdown imposed to contain the spread of the COVID 19 pandemic, the whole workforce of the power sector – generation, transmission, distribution and system operations – worked round the clock to keep all establishments running.

The ministry issued directions that, till May 30, the payment security mechanism to be maintained by the DISCOM's with the GENCO's for dispatch of power be reduced by 50%. Directives are issued by the ministry to the Central Electricity Regulatory Commission (CERC) to provide a moratorium of three months to DISCOMs for making payments to generating companies and transmission licensees, and not to levy penal rates of late payment surcharge. State Governments were requested to issue similar directions to State Electricity Regulatory Commissions. The lockdown has affected consumer payment of their dues to the DISCOM's. This

has affected the liquidity position of the DISCOM's, thereby impairing their ability to pay to the generating and transmission companies. To address the liquidity problems of the DISCOM's, the Ministry directed Generation/ Transmission Companies to continue supply/transmission of electricity even to DISCOM's which had large outstanding dues. "During the present emergency there would be no curtailment of supply to any DISCOM," as per direction of power ministry. Even the GENCO's would need support through some fiscal stimulus as they were already struggling with low-capacity utilization and mounting debtors from DISCOM's. Government facilitated interest free working capital loans for GENCO's.

Around 70% of power generation is from coal-based power plants in our country. In order to maintain the continuity of supply of coal by domestic coal companies and transportation by railways, the ministry was in constant touch with the ministries of railways and coal when coal supplies were declared as an essential service provider and concerned officers were directed to ensure that critical coal supplies are maintained during the lockdown period due to

Face to Face



COVID 19.

Conclusion:

The Micro, Small and Medium Enterprises (MSMEs) in the steel producing sector are the backbone of all Indian sectors who are engaged in making, shaping, treating of steel to supply domestic and export markets, the two key drivers of the Indian economy. During the crisis, almost all induction furnace (IF) units in this category were out of action due to lockdown, choking all production and supply activities which reeled under crisis and had no money to pay even their employees. They appealed to the government to increase the relief package for IF units in the steel sector. It is worth mentioning that a majority of the IF units have to shut their units if they do not get a relief package soon. The government had announced a stimulus package of Rs 20,000 crore relief package, divided into two funds, for helping MSMEs and we have seen the improvement since August, 2020 by taking all sets of actions from Induction Furnace Steel making Units, Supply Chain management with Govt. support.





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Smt. Soma Mondal takes charge as new SAIL Chairman

“Our immediate focus is to improve the top-line and the bottom-line of the company. We are charting out all strategies to improve value for all our stakeholders and make it structurally stronger” Mrs. Soma Mondal, Chairman, SAIL



Smt. Soma Mondal has taken over as Chairman of Steel Authority of India Limited (SAIL) w.e.f. 1st January 2021.

Mrs. Soma Mondal has the distinction of not only being the first woman Functional Director of SAIL, but she is also the first woman Chairman of the Company.

Smt. Mondal is an Electrical Engineering Graduate from National Institute of Technology, Rourkela, in 1984. Overall, she has over 35 years of experience in the metal industry.

Mrs. Mondal started her career as a Graduate Engineer Trainee at NALCO and elevated to Director (Commercial) at NALCO. Thereafter, she joined SAIL in 2017 as the Director (Commercial).

After assuming the charge on the first day of the year, she addressed the SAIL collective and said, “SAIL has a rich legacy with enormous contributions from its employees and leadership over the decades. It has been at the forefront of nation building.

“There's a little bit of SAIL in everybody's life” is an apt description of SAIL's importance as a trusted steel maker to the nation.” She added, “SAIL is a colossal organization, with multi-location production units & mines, wide ranging product basket and diverse workforce.

People are its greatest strength and with synergized efforts of the entire Team SAIL, we will strive to attain higher summit”.

“Our immediate focus is to improve the top-line and the

bottom-line of the company. We are charting out all strategies to improve value for all our stakeholders and make it structurally stronger”, she asserted.

Smt. Mondal was instrumental in introducing new marketing strategies and products at SAIL enriching the company's product basket. Under her able leadership, the company launched niche branded products like NEX (Structural) and SAIL SeQR (TMT bars). Both these products have emerged as best-in-class in their respective categories.

A graduate in Electrical Engineering from the National Institute of Technology, Rourkela in 1984, and subsequently has become the Chairman of SAIL. ■



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Top 3 drivers to adopt Crisis Management and Auditing (CMA) in Steel and Metal sector

Why Crisis Management in Steel and Metal sector ?

Indian steel sector contributes nearly 2% to the country's GDP and employs over 6 lakh people. But the indirect impact of this sector is phenomenal. It is an employment generator and influences the development of other core sectors. With such significance it is imperative that the steel and

metal sector succeeds in exceeding the goals envisaged in Steel Policy of 2017. Also, the age-old business processes are demanding a revival to refactor new realities. To achieve this objective, a detailed business process orientation approach, which not just addresses the challenge of sustaining the growth, but also builds the



Manjushree Shah
CEO - Rauch Education & Rauch EX-IM
(Rauch International Inc.),

reputation while enhancing operational efficiency intrinsically, is a game changer.

Driver #1

Enhancing operational efficiency which can often hit a plateau. Generally, the resources and plants work in silos. It would be necessary to blend them to achieve strategic goals. Additionally, without structured and sharp



View Point



insights offered through Crisis Management Auditing (CMA), the operational efficiencies can hit a plateau. How does CMA helps? #1 The perspective of CMA encourages industries to have detailed business process engineering. Firstly, it helps build operational efficiency by tightening up the loose ends in the business processes. Secondly, the examination of 'efficiencies' is done through the lens of vulnerability analysis. These aspects not only enhance the operational efficiency of the organization by analyzing all the business functions under one umbrella, but also builds business resilience. Additionally, this is not a one-time exercise. As the industry grows, the probability of occurrence of the crisis also grows. The study of crisis management brings in an expertise in this

area, which can continuously be used through the life cycle of the business. Moreover, cross sectorial inputs in this aspect are extremely helpful.

Driver #2

What should be the aim? To survive or to thrive?

Generally, the planning for growth is the planning for survival. All of us want to ensure survival. However, crisis situations are the reality of business, even if we do not like them much, the organizational resilience and survival in many cases to a great extent is determined by our ability to envisage and manage such scenarios.

How does CMA helps? #2

Crisis are not always external. Often, they have many internal triggers. These start with small lacunae (often ignored) in the businesses and within no time assume magnanimous



Micol Norsa

SME Rauch Education
(Rauch International Inc.)
Partner and Legal
Representative in
Luigi Norsa & Associates



S K Bhatnagar

Technical Advisor & Core
Committee Member
Rauch India - Group co.
Rauch International Inc. USA,
EX- Deputy Industrial
Advisor- Ministry of
Steel (India).

proportions. The management of such panic, stress, and a feeling of loss of control dis-lodge organizations from their reference environments in which they have been operating. The loss of reputation owing to the scrutiny and mistrust in some cases may take years to recover and sometimes it is not even possible to recover through such scenarios.

The study of CMA helps in identifying and aggregating such triggers which compound under the amplifying context and help organizations thrive in crisis situations by offering them the side of opportunity which every crisis brings in.

Driver #3

Is the Steel and Metal Sector poised to endure the storm of digital disruption?

How does CMA help? #3

While integration of digital technologies to achieve operational efficiency, targeting and identifying low hanging fruits can be interesting, it can be incredibly challenging to maximize ROI.

CMA is not only helps in maximizing benefits of digital investments, but also helps by analyzing the prime aspects of building in digital indicators and considering new crisis vulnerabilities keyed in by digitization. ■



Low-carbon footprint iron making process with Microwaves : A dream that will become reality

Abstract:

Is zero-emission steelmaking a utopia?

Iron & steel manufacturing process contributes about 8% of Green-house gas emissions, which is one of the highest. At present, international efforts have been initiated to modify the present process to achieve carbon neutrality by 2050 and eventually zero-emission steelmaking. Pradeep Metals Ltd., a leader in precision closed-die ferrous forging, took this challenge to invest in its in-house R&D centre IMRC for developing a novel pig iron manufacturing process using microwave energy. The first phase of this project was completed recently with a successful demonstration of the process. This article describes the new iron making process, its advantages, and future plans of scaling-up the process.

Preamble:

Blast furnace supplies more than 90% pig-iron to the steel industry. This process demands lumpy iron ore, coke and coal/natural gas, as fuel and reductant. Scarce and

expensive requirement of coke (350kg/tHM –Tons of Hot Metal) is the biggest disadvantage. Coke making is not an environment friendly process. The alternative is the Corex process which produces liquid iron through reduction-smelting using coal and Oxygen. The main disadvantage of this process is high fuel rate and complicated controls.

Background - PML &IMRC Pradeep Metals Limited (PML), a leader in precision closed-die ferrous forging company, established a R&D center "Industrial Microwave Research Center"(IMRC) in 2006 for developing environmentally friendly, energy efficient microwave assisted processes. IMRC is recognized as an in-house R&D Center by DSIR, Govt. of India. Few technologies developed and patented by IMRC are listed in Table1. PML-IMRC received the 'Best Patent Portfolio' award from Confederation of Indian Industry (CII) during its 6th International Conference on IPR held on 18th December 2020.

Table1: Technologies developed/patented by IMRC

Patent title	Filing date/Grants
Batch or Continuous Process for Pretreatment of Heavy Petro Bottom Stocks	Granted (NO. 277603)
Conversion of Iron Ore to Sponge Iron	Granted (NO. 309420)
Coal Pre-treatment	Filed 2012
Rapid Processing of Grinding Wheels	Granted in US, Japan, China & India
Continuous baking of friction materials	Filed 2013
Coal liquefaction yield enhancement	Filed 2013
Processing of Goethite Ore Using Microwave	Filed 2015
Microwave Composite Heating Furnace (jointly with Chubu University, Japan)	PCT filed March 2017 in India, South Africa, Canada, China, Brazil. Granted in Ukraine, Russia, Australia & Japan

Paradigm shift:

Shivanand Borkar,
Pradeep Goyal,
Onkar Gorakh,
Shradhesh Bagade,
Akash Borade
Industrial Microwave Research Centre, Pradeep Metals Ltd.

Blast furnace requires iron ore with > 60% Fe and lump size between 12.5-35 mm. Smaller size ores are either used for sponge iron making or rejected. Similarly, low grade ore (<60%Fe) requires different beneficiation processes depending on the gangue. Several techniques like washing, jigging, magnetic separation, advanced gravity separation and flotation are being employed to enhance the quality of the iron ore. This generates unwanted rejects around the plant and mines which creates environmental pollution and destroys fertile land. This is a serious problem faced by Goa iron ore miners. This was highlighted by the late Chief Minister of Goa, Mr. Manohar Parrikar during his discussions with IMRC and prompted our researchers to

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work towards value addition to this waste material.

IMRC initiated working with different Indian iron ores including Goa and Orissa to study their behaviour with microwaves. During initial stage of the research, it was noticed that iron ore (hematite) interacts rapidly with microwaves (Refer Fig.1).

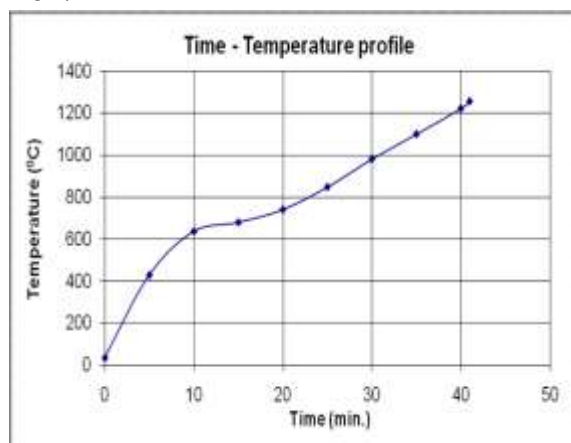


Fig. 1: Time temperature profile of hematite under microwaves

Direct reduction of iron ore with microwaves:

Iron ore reduction activity was then pursued, and a new microwave assisted process for sponge iron making without carbon was developed. A patent entitled "Microwave assisted reduction of iron ore fines to manufacture sponge iron" was granted in India on 19th March 2019 (No. 309420). In this process, iron ore was converted to sponge iron at around 1100°C using microwaves while maintaining reducing atmosphere with 8% H₂ +

92% N₂.

This research was extended, and a project entitled 'Microwave Assisted Iron Making Process' was undertaken by IMRC to develop a new environment friendly microwave assisted technology for making pig iron by utilizing powdery iron ore and coal, which is generally not used in blast

furnaces. The USP is zero use of coke and only stoichiometric quantity of carbon for reduction, based on our calculations. For appropriate

stoichiometric requirement, our calculation shows that a high degree of direct reduction, >80% below 300kg/ht (Hot Ton of Metal) would be possible which is a unique feature of this process. This reduces the Green-house gas emission by almost 50%, making the new process eco-friendly.

IMRC conducted several experiments using different iron ores. Two representative results are summarized below (Fig.2):

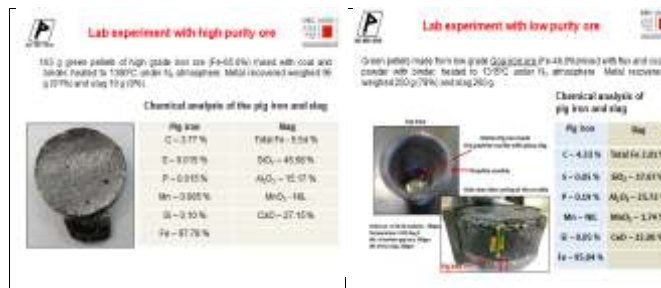


Fig. 2: Results from laboratory scale using high and low purity iron ore

IMRC collaborated with Dr. Motoyasu Sato of Chubu University, Japan for designing a prototype high powered microwave assisted plant and conducting scale-up trials. PML received a partial grant from the Ministry of Steel through their Steel Development Fund (SDF) for establishing a prototype plant. The prototype plant in knockdown condition was received at IMRC which was installed within a short duration of 15 days (Fig.3).



Fig. 3: Microwave assisted prototype plant installed at PML



Technology

Initially no-load testing of all microwave systems was completed. The first integrated experiment could attain only 1200°C. Prominent problems noted were: a) Rapid increase in the temperature of exhaust fan body, b) Oxidizing atmosphere in the furnace (O₂ 14-18%), and c) Insufficient microwave energy reaching the reduction zone (only 10-20%).

IMRC team addressed the issues by incorporating different design modifications and confirming the same after conducting requisite trials. Several minor concurrent problems were also addressed meticulously with hard work. The initial plant design was eventually altered to a large extent to achieve the desired results. To increase the microwave efficiency and power reaching to the reduction zone, the microwave antennas (waveguides) were redesigned and verified using sophisticated simulation models available at SAMEER (Society for Applied Microwave Electronics Engineering & Research, IIT, Mumbai). The kiln furniture was the next challenge. Blast furnaces refractories were found unsuitable under microwaves due to their unwanted interactions. The

requirement was a ceramic material which could withstand high heating rates & high temperatures, transparent to micro waves and would not interact with molten iron & slag. IMRC researchers could overcome these hurdles and a suitable coating was developed. The final process parameters were evolved through several systematic experiments and a standardized operating procedure (SOP) for conducting microwave assisted trial was evolved. The largest continuous trial was conducted at 1420-1450°C where about 15 kg raw-mix was fed and 8.15 kg product was obtained. The reaction was monitored through the top observation window. (Fig.4). Few trials were conducted with continuous tapping of hot metal & slag through tap hole (Fig.5).



The progress of smelting-reduction reaction

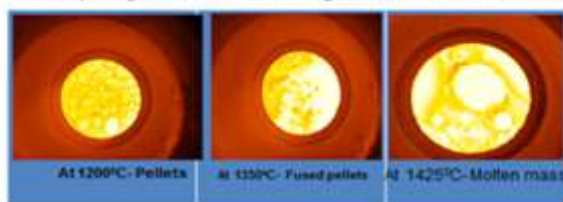


Fig.4: The progress of smelting-reduction at 1200, 1350 & 1425°C

Metal and slag obtained in each trial was analysed for its chemical composition. The ranges of the constituents in number of experiments are summarized



Figure5: Tapping of hot molten material (metal + slag)

below in table 2 below:

Table 2: Chemical composition of (1) metal and (2) slag

1) Metal analysis

Metal	C	S	P	Mn	Si
Constituents	1.63-2.16 %	0.016-0.12%	0.012-0.08%	0.025-0.088 %	0.08-0.18%

2) Slag analysis

Slag	SiO ₂	CaO	Al ₂ O ₃	MgO	Fe ₂ O ₃	MnO	TiO ₂	S	P
Constituents	40.5-44.1 %	24.6 - 30.2%	11.5 - 18.9%	4.8 - 8.02%	2.5 - 3.01%	-	0.5 - 1.3%	0.15 - 0.17%	0.06 - 0.08%

Conclusions:

Microwave assisted process for pig iron making is a totally new process with no parallel references. PML has successfully demonstrated a process for making purer pig iron (bordering on steel) using microwaves.

The process is green and uses only fine coal (no coke) and fine ore (without agglomeration). It will lead to not only significant reduction in Green-house



Technology

gas emissions, but will also eliminate the harmful emissions generated during the processes of sintering and coke making. Thus the process is environmentally very favorable.

The reaction kinetics of the process is very fast, which is conducive for attainment of high production rates. The process consumes a low coal rate below 300 kg/tHM as against about 550-600 kg (coke + coal)/tHM in a conventional Blast furnace. Present limiting factor of this process is high power consumption, which is about 15-20 KWh/kgHM. This requires a redesigning of the total system and optimization to attain low power at higher scale of operations.

Concluding thoughts:

Iron & Steel sector is responsible for one-third of all industrial Green-house gas emissions. It consumes almost 30% of all coal produced. As per World Steel Association, every ton of steel produced in 2018 emitted 1.85 tons of carbon dioxide, equating to about 8 percent of global carbon dioxide emissions. To reduce its carbon footprint from both environmental and economic perspectives, it is essential to decarbonise the steel industry and adopt low-carbon, primary steel production processes. The

high developmental cost and capital needed may increase the steel price by almost 50%. Hence, the Industry and the government focus should shift to promoting novel, low carbon technologies, by subsidizing the capital investment and on consumption of renewable electric energy and other alternate non-conventional fuels. New policies can be pursued to bring about reduction of green-house gas emissions either by offering incentives to low-carbon technologies or to penalize carbon intensive technologies. To reduce carbon footprint, international steel industry is making efforts to use new low carbon required processes and has decided

to adopt it by 2050. We believe that Indian Scientists should not miss the bus but should come out as a prominent technology supplier of green processes.

Acknowledgements:

Authors acknowledge efforts put by Pradeep Metal's maintenance team for quick installation of the plant. We acknowledge the exemplary cooperation given by Mr. Rajesh Harsh, Head Medical Electronics Division, SAMEER, Mumbai. The authors appreciate guidance provided by Mr. Navin Chandra during the development of this process. PML-IMRC acknowledges partial funding from Ministry of Steel through their Steel Development Fund (SDF). ■





Vehicle Scrappage Policy – Potential Benefits for the Country

“The policy would facilitate scrappage of old vehicles who have reached their end-of-life. SIAM suggested the Government to implement an incentive-based scrappage policy plan with monetary incentives in the form of 50 per cent rebate in GST, Road tax and Registration Charges. Such a plan would encourage consumers to switch their old vehicles for new ones.”

The Covid-19 pandemic and the prolonged nation-wide lockdown imposed to contain the proliferation of

the virus, though was the need of the hour at that time, has come down directly on the overall economy. Multiple sectors across industry verticals and categories were adversely impacted and the automobile industry was no exception.

Subdued consumer sentiments and drop in demand gradient over the past one year or so, further added to the aftermath of the Covid-19 outbreak. The automobile sector faced sizeable de-growth and recovery in some segments could happen once the



Rajesh Menon,
Director General, SIAM

overall economy revives. However, with lockdowns being lifted gradually there after and with favorable Government intercessions, manufacturing activity commenced, increase in sales was witnessed.

With the festive season kicking in, the month of October saw a decent growth in sales numbers. Much of this can be attributed to pent-up demand and festive offers and discounts. The sale of Passenger Vehicles grew by 14.19% and that of Two-Wheelers by 16.88%,

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Technology

compared to October last year. Three-Wheelers also saw improvement in sales, if compared to the last month. However, it has still suffered a de-growth of (-) 60.91 %, if likened to the corresponding month last year. The Commercial Vehicle sales was 165,160 units in April-September 2020 compared to 375,483 units in April-September 2019, continued to show a de-growth of (-) 56.01%.

Also, rising health and safety concerns have pushed the preference for personal mobility to the fore. It is, however, important to note that, consumer sentiments continue to be dismal with unemployment and pay cuts on the rise. To foster an all-inclusive economic recovery, aspects such as retail sales, GST, income tax and corporate tax collections and employment, needs substantial growth from the present state. Many feel that another fiscal stimulus by the Government will be of great assistance, considering the current economic scenario.

Several uncertainties continue to exist even now, for instance, delays in procurement of components / raw material, supply-side disruptions, increased inspection of imported parts/raw material, shutting down of dealerships and reverse migration of

manpower at the vendors end. These factors are acting as major deterrents in the way of economic revival of the Auto sector. The cumulative impact of these challenges, alongwith the impact of the pandemic and the economic slowdown, has been unprecedented. While personal vehicle sales experienced a surge due to the aforementioned factors, sale of commercial vehicles did not experience growth as it is usually linked to the overall revival of the economy, which has not happened yet.

The announcement of the much-awaited incentive based Vehicle Scrappage Policy could act as one of the measures for reviving demand of automobiles in the country, apart from bringing-in several economic benefits. The policy would facilitate scrappage of old vehicles who have reached their end-of-life. SIAM had suggested the Government to implement an incentive-based scrappage policy plan with monetary incentives in the form of 50 per cent rebate in GST, Road tax and Registration Charges. Such a plan would encourage consumers to switch their old vehicles for new ones.

The policy, once implemented, will pave the way for more technologically advanced, safer and greener vehicles. It will help in

removing old and polluting vehicles from the roads, also assist in the sale of more technologically advanced, better emission vehicles there by reducing the number of road accidents, causing lesser vehicle breakdowns on the road and reducing the overall emissions. The industry and the overall economy will thus receive a plethora of benefits.

Furthermore, the vehicle scrappage market is largely unorganised and unstructured with the easy availability of counterfeit vehicle parts. The policy will provide standardised ways to collect, dismantle and shred scrap in a safe and environmentally sustainable and organised manner, leading to resource conservation and sizeable energy savings. The scientific processing of scrap will convert the highly unorganised market into an organised one. Dependency on the import of metals like steel, copper and aluminium will also reduce. At the same time, Government would be able to save on forex by reducing imports, while generating more tax revenue from the sale of new vehicles. ■



China's steelmaking raw material prices recover sharply in 2020

COVID-19 had shaken the global steel industry especially in the first half of 2020, and China had not been exempted either with the impact tangible over the first quarter, but China's severe and swift action in completely isolating a dozen of cities including Wuhan – the epicentre – had enabled the world's No.2 economic body to resume its economic and industrial activities starting March, and Beijing' efforts in rescuing the national economy led to dramatic recovery in steel consumption from all end-users since around May-June.

Mysteel's SEADDEX 62% Fe Australian Fines for 2020
(\$/dmt CFR Qingdao)



As a result, China's steelmaking raw materials prices including iron ore, coke and steel scrap have been performing strongly, soaring their respective multi-year highs in the month of December 2020. China's steel producers have been overall operating nonstop throughout 2020 even in the pandemic-struck months, and they ramped up their output fast starting March on the resumption of the economic and industrial activities. Starting late May, the blast furnace capacity utilization rate among China's 247 steel mills under Mysteel's weekly survey had persisted above 90% all the way until the end of last year on the spur of the steel demand firstly from the home and later from the overseas markets.

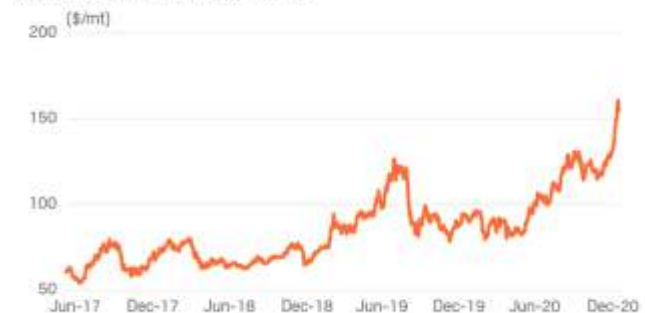
Throughout the year, the BF capacity use among the 247 mills shot up to 95.16% as of August 13, or a high in record since Mysteel enlarged the samples in January 2019, or up 7.03 percentage points on year, according to Mysteel's assessment, and accordingly, China's pig iron output for August alone hit the record high of around 78.55 million tonnes, according to the data from China's National Bureau of Statistics.

Iron ore price rise may be unsustainable: steel mills

Iron ore prices have risen to unsustainable levels supported by stronger futures pricing, according to steel mills who are enjoying high spot steel prices as they recover output from earlier this year.

Even with higher steel prices, the potential for margins to support iron ore prices and higher pellet premiums could be limited, a steel group executive said Dec. 14.

IRON ORE 62% FE CFR CHINA



Source: S&P Global Platts

Even as S&P Global Platts IODEX 62% Fe fines benchmark fell Dec. 14 to \$154.50/dmt, total pellet prices indicated well above earlier levels, potentially in the \$170s/mt FOB range, may be displaced by more lump or lower grade alternatives as buyers question the longevity of higher steel and iron ore spot prices.

As steel output recovers from weaker rates in the second quarter, and China reduces steel and metalics imports and reassumes net export steel trade, spot steel prices may start to fall back, a steel mill source said.

Some analysts feel iron ore prices have been spurred on by recent speculative demand, and stronger trade in derivatives around changes in forward iron ore supply and economic policies that may support steel demand.

Vale, the biggest iron ore miner, this month cut production guidance for 2020, while industry sources see strong iron ore demand in China, and tight pellet availability keeping near-term prices up.

Iron ore futures have seen higher relative pricing to physical indexes in recent days. The iron ore forward market has always been in backwardation, below spot physical prices.

The IODEX 62% Fe physical price on Dec. 11 rose to \$160.70/dmt, a new multi-year high, while the forward curve midpoint delivery window value on the day was \$158.09/dmt, according to Platts calculations.

The 1.63% spread on Dec. 11 with the forward midpoint



News Round Up

was the narrowest to the physical spot price since January. On Dec. 14, the forward midpoint backwardation had widened to 1.99%. The midpoint value is typically 2%-5% lower than the underlying spot physical price.

The iron ore price on Singapore's SGX and on the Dalian Commodity Exchange hit a record high, based on demand due to high Chinese steel production, and concerns about supply, Commerzbank analyst Daniel Briesemann said in a Dec. 11 report.

"However, we believe that the price rise has long been exaggerated," Briesemann said. "What is more, it is likely to have been driven to a large extent by speculation."

Commerzbank pointed to noticeably higher open interest on both the SGX and the DCE in recent week, with the Chinese exchange raising margin requirements for all contracts with maturity dates up to May 2021 to 15%, from 11%.

"We wonder how long Chinese iron ore consumers will simply sit back and accept the high prices," Commerzbank said. "In response to prolonged and pronounced price rises in the past, they have tended to resort to the ample but lower-quality domestic iron ore, using their market power to force prices down."

Steel mills could reduce iron ore pellet demand in the first quarter in response to higher prices and premiums, especially where they can use more lump, or opt to use more sinter, market sources said.

The China market is typically unable to absorb higher iron ore pellet prices in the long term due to shifting value in use with steel margins, and alternatives, an international iron ore marketer said.

ICRA upgrades outlook for Indian steel sector to stable

ICRA, the rating agency has upgraded its outlook for the Indian steel sector to stable on the back of improving demand and prices during the month of December 2020. ICRA had earlier this year revised its outlook for the sector to negative from stable.

In a statement issued on 15th December 2020, Icra said "steel sector outlook upgraded to stable from negative on the back of improving demand and prices."

The domestic steel sector has witnessed a strong revival in second quarter of 2020-21, it said. This, Icra said, is result of a combination of factors like a strong retail demand emanating from a thriving rural economy, and green shoots of recovery in white goods and the automobile sector, especially from tractors, passenger vehicles and two-wheelers.

Steelmakers write to PMO defending price hike, demand iron ore export ban

The Indian Steel Association informed the PMO about the price increase of the metal after Union Road Transport and Highways Minister Nitin Gadkari wrote a letter to the prime minister on the impact of rising steel prices on

infrastructure project. A steel producers' body has written to Prime Minister Narendra Modi, explaining that the metal price hike was due to surging raw material costs, and demanded a ban on iron ore export for six months, an official said on Tuesday.

The Indian Steel Association informed the PMO about the price increase of the metal after Union Road Transport and Highways Minister Nitin Gadkari wrote a letter to the prime minister on the impact of rising steel prices on infrastructure projects.

"We would like to highlight some of the very serious and compelling reasons which have left the steel industry with no recourse, but to raise prices of steel from time to time," the ISA said in its letter to the PMO.



India's crude steel output grows 3.5% to over 9 mn tonne in November



"Crude steel production for the 64 countries reporting to the World Steel Association (worldsteel) was 158.261 MT in November 2020, a 6.6 per cent increase compared to 148.417 MT in November 2019."

India registered a growth of 3.5 per cent in crude steel production at 9.245 million tonne (MT) in November, according to World Steel Association. The country had produced 8.933 MT crude steel during the same month last year, the global industry body said in its latest report.

"Crude steel production for the 64 countries reporting to the World Steel Association (worldsteel) was 158.261 MT in November 2020, a 6.6 per cent increase compared to 148.417 MT in November 2019."

"Due to the ongoing difficulties presented by the COVID-19 pandemic, many of this month's figures are estimates that may be revised with next month's production update," worldsteel said. According to the worldsteel data, China registered 8 per cent year-on-year growth in steel output at 87.660 MT during November 2020, compared to 81.191 MT in the same period last year.



Ban export of iron ore to bring down prices of steel: BAI to government

With the prices of steel skyrocketing, the Tamil Nadu chapter of Builders Association of India sought a blanket ban on iron ore exports to bring down the rates of steel. During the briefing at a press conference held on 8th Jan 2021, Builders Association of India state chairman R Prakash said that steel prices have jumped by 80% in three months.

With the prices of steel skyrocketing, the Tamil Nadu chapter of Builders Association of India sought a blanket ban on iron ore exports to bring down the rates of steel. Briefing newsmen at a press conference here on Friday, Builders Association of India state chairman R Prakash said that steel prices have jumped by 80% in three months.

"When the prices of iron increase, the government immediately freezes the export of the commodity to reduce its rates. Similar action was required in the case of iron ore as the prices of steel has hit a new high, escalating the construction cost," he said.

The construction cost has increased by 20% due to the spike in steel rod rates.

SAIL to play an important role in Mission Purvodaya : Dharmendra Pradhan

Minister for Petroleum & Natural Gas and Steel Dharmendra Pradhan today visited SAIL's IISCO Steel Plant (ISP) and Durgapur Steel Plant (DSP) situated in Burnpur and Durgapur at West Bengal. During his visit, Shri Pradhan reviewed the performance of both the Plants and took keen interest in the performance and various products produced from the modernized mills of these steel plants.

Outlining the role of SAIL Plants based in the eastern region of the Country in Mission Purvodaya, Shri Pradhan said, "Both IISCO and Durgapur steel plants of SAIL have an important role to play in the development of the eastern region as well as the nation. They are important players not only for the region but for the nation as a whole. Under the guidance of Hon'ble Prime Minister Shri Narendra Modi, the Mission Purvodaya will facilitate unleashing the true potential of the eastern region in the development of the nation. These integrated and modernized steel plants must work towards creating a sustainable production

model which also facilitates the growth of downstream industries in and around the region".

Shri Pradhan had launched the 'Mission Purvodaya' in steel sector wherein he had stressed driving the growth of eastern India through creation of integrated steel hub and adding significantly to the country's steel making capacity.

The Minister today visited the Blast Furnace, Bar Mill and the Universal Structural Mill at ISP and while visiting DSP he went to the Bloom-cum-Round-Caster, the Wheel & Axle Plant and the Medium Structural Mill. The Minister interacted with the employees during his visit and exhorted them to put in concerted efforts in enhancing the performance of the plants further. Shri Pradhan said, "Many of the products of these two steel plants are already contributing towards imports substitution and strengthening the 'Atmanirbhar Bharat'. The way forward should continue to emphasize the vocal for local".



Hon'ble Minister for Petroleum & Natural Gas and Steel Shri Dharmendra Pradhan visited SAIL's IISCO Steel Plant (ISP) and Durgapur Steel Plant (DSP) situated in Burnpur and Durgapur at West Bengal, on 18 December, 2020.

During his visit, Shri Pradhan reviewed the performance of both the Plants and took keen interest in the performance and various products produced from the modernized mills of these steel plants.

Outlining the role of SAIL Plants based in the eastern region of the Country in Mission Purvodaya, he said, "Both IISCO and Durgapur steel plants of SAIL have an important role to play in the development of the eastern region as well as the nation. They are important players not only for the region but for the nation as a whole. Under the guidance of Hon'ble Prime Minister Shri Narendra Modi, the Mission Purvodaya will facilitate unleashing the true potential of the eastern region in the development of the nation. These integrated and



News Round Up

modernized steel plants must work towards creating a sustainable production model which also facilitates the growth of downstream industries in and around the region". Shri Pradhan had launched the 'Mission Purvodaya' in steel sector wherein he had stressed driving the growth of eastern India through creation of integrated steel hub and adding significantly to the country's steel-making capacity. He visited the Blast Furnace, Bar Mill and the Universal Structural Mill at ISP and while visiting DSP he went to the Bloom-cum-Round-Caster and the Wheel & Axle Plant. The Minister interacted with the employees during his visit and exhorted the collective to put in concerted efforts in enhancing the performance of the plants further. Shri Pradhan said, "Many of the products of these two steel plants are already contributing towards imports substitution and strengthening the 'Atmanirbhar Bharat'. The way forward should continue to emphasize the vocal for local". The Minister was accompanied by Shri Anil Kumar Chaudhary, Chairman, SAIL, Smt. Soma Mondal, Director (Commercial), SAIL, Shri Puneet Kansal, Joint Secretary, Ministry of Steel, Shri Harinand Rai, Director (Technical, Projects & Raw Materials), SAIL and Shri AV Kamlakar, CEO, ISP & DSP and other officials during his visit.

Jindal Stainless Hisar to be merged with JSL via share swap



The Board of Directors of Jindal Stainless Limited (JSL) and Jindal Stainless (Hisar) Limited (JSHL) accepted the recommendations of the respective Board Committees and approved the merger of JSHL into JSL. As per the approved share swap ratio, 195 equity shares of JSL will be issued for every 100 equity

shares of JSHL.

Managing Director, JSL & JSHL, Mr Abhyuday Jindal said, "I am confident that the proposed merger of JSHL into JSL will enhance value to shareholders of both the Companies. The consolidation will enable harnessing of the complementing strengths of the individual Companies. Seamless integration of infrastructure, processes and operational synergies, along with a strengthened balance sheet, would improve financial flexibility. The merger of JSL and JSHL will also induce a simplified capital structure,

expanding the turnover of the merged business to ~Rs 20,000 crore. With 1.9 MTPA melt capacity, the merged entity will be the only Indian Company in the league of top 10 stainless steel companies in the world. This transition will also bolster the government 'Atmanirbhar Bharat' mission."

Rationale: Consolidation of complementing strengths

Merger of JSHL into JSL will create a mega stainless steel entity that will be among the top 10 stainless steel companies in the world and the largest stainless steel company in India. The merger will not only enhance the Company's product portfolio, along with a 360-degree reach to better serve its customers, but will also offer a seamless, single-window, pan-India, as well as global network access to customers and further boost the 'Just-in-Time' approach. The consolidation of businesses will recast the merged entity as an integrated, modern and 'state-of-the-art' manufacturing facility, bringing the diversified technology, talent and R&D under one roof. The merger will lead to the realisation of enhanced operational synergy, with JSL's proximity to port and raw materials, along with world-class finishing lines, and JSHL's strategic location around key domestic consumption centres. Furthermore, the merged entity will present reinvestment opportunities for growth by leveraging ready infrastructure at Jajpur for cost-efficient Brownfield expansions.

Structure and timelines:

Post the merger, JSL will be the single listed entity on the stock exchanges and the promoter holding will be ~57%, while the remaining 43% will be held by the public. As per the proposed structure, the mobility business of JSL Lifestyle Limited, a domestic subsidiary of JSHL, would be merged into JSL. Non-mobility businesses would be carved out as a separate new entity, named Jindal Lifestyle Limited. Post restructuring, Jindal Stainless Steelway Limited (JSSL) and Jindal Lifestyle Limited will operate as Indian subsidiaries, while overseas operational subsidiaries of JSL in Spain and Indonesia will continue to operate as business units of merged JSL. With the appointed date of April 1, 2020, the merger process is expected to be completed in H2 FY22. The merger is subject to approvals from statutory authorities, shareholders, creditors, and NCLT.



Iron ore integration to help drive Tata Steel's prospects



Tata Steel that was among the largest gainers in the equity market which has also touched fresh 52-week high on Thursday. With rising steel demand and realizations in the

country, street sentiments remain upbeat on the company that is an integrated steel manufacturer. Having captive supplies of iron ore and coal, the key raw material for steel manufacturing, the company remains insulated from the impact of rising raw material prices. The prices of iron ore in the international arena are near all-time highs. In India, National Mineral Development Corp. Ltd (NMDC), the country's largest iron ore producer, has raised prices by more than 50% since the beginning of November 2020. With not much pressure on costs, the company's operating performance is to continue improving and is expected to see regular improvement in per tonne profits. Analysts at Kotak Institutional Equities expect the company to report Ebitda per tonne of ₹18,988 during the December quarter. This is not only much better than ₹12,822 seen in the September quarter but is almost double from ₹9,646 seen during the year-ago-quarter. Notably, Tata Steel leads other peers in per tonne profits for domestic operations.

'India's structural steel consumption poised for big growth'

APL Apollo Tube is the largest producer of structural steel tubes in the country having 10 plants producing around 2.5 million tonnes per annum. It is the pioneers in the large diameter hollow section tubes and pipes in India and are well-placed to leverage the potential for the increased demand created due to government's thrust on infrastructure development, increased urbanisation and the enhanced appetite of Indian consumers for world class commercial structures.

The growing commercial building sector combined with the government's initiatives towards green buildings, smart cities, make in India scheme, etc., are expected to boost the structural steel fabrication market in India and our company being the market leader and forerunner in bringing niche



products to the market, is well poised.

Chief financial officer Deepak Goyal shares company's potential for further growth with the Financial Express media newspaper. Mr. Goyal highlighted that the demand for structural steel in India is likely to pick up in the coming years and the market is likely to grow at a CAGR of about 5.5% in the next five years. There is a paradigm shift in the approach to steel consumption and increased recognition and acceptability for structural steel tubes and pre-engineered building material in India now.

While globally the proportion of structural steel tubes is around 10% of the total steel consumption, in India it is still slogging at 4-5%. So, there is further scope for increase in the consumption level

Possible govt intervention to curb high domestic steel prices: Report

India's domestic consumption in November 2020 was at 8.93 MT, 7.8 percent higher on MoM level but 2 percent lower in terms of YoY comparison as reported by steel monitor published by India Rating Report. The increase in India's domestic steel consumption from 2QFY21 has led to higher cost which might invite a government intervention to curb prices said on 8th December 2020. In its steel monitor report, the agency cited that India's domestic consumption in November 2020 was at 8.93 MT, 7.8 per cent higher on MoM level but 2 per cent lower in terms of YoY comparison.

"The improved domestic demand is reflected in steel prices which further increased in November 2020."



Q3 and 9M Production and Sales performance of SAIL in FY21

New Delhi, 8th January, 2021: Steel Authority of India Limited (SAIL), achieved the best ever quarterly production of Hot Metal, Crude Steel and Saleable Steel during the quarter ended 31st Dec-20, and witnessed a handsome growth over CPLY.

Production Performance in FY-21

	Q3:FY21	Q3:FY20	% GROWTH	9M: FY21	Q2:FY21	Q1:FY21
HOT METAL (MT)	4.80	4.30	12%	11.60	4.13	2.70
CRUDE STEEL (MT)	4.37	4.00	9%	10.60	3.82	2.50
SALEABLE STEEL (MT)	4.15	3.90	6%	10.20	3.75	2.30

*MT is Million Tonnes

The sales volume of the company has also registered a growth. The total sales (including domestic and exports) grew by 5.6% during the Q3 FY'21 over CPLY. And the total sales in the 9M period of April – December 2020 also increased marginally.

Sales Performance in FY21

	Q3: FY21	Q3: FY20	9M: FY21	Q2: FY21	Q1: FY21
Total Sales (MT)	4.32	4.09	10.76	4.21	2.24
Home Sales (MT)	4.05	3.73	9.28	3.54	1.7
Exports (MT)	0.27	0.36	1.48	0.67	0.54

Smt. Soma Mondal, Chairman, SAIL commented, "During this financial year, the company has continuously enhanced its production volumes. The first quarter was impacted due to the onset of the pandemic but gradually we have scaled up our performance by enhancing the volumes. It is heartening that the pre-covid levels have already been reached and the production has grown over CPLY in the last quarter". She added, "The consistent growth reflects that SAIL is poised to grow steadily in future. The domestic steel consumption has a positive outlook as the economy is reviving and all sectors have started to pick-up. We are confident of seizing the unfolding opportunities in the steel market".

Sale of Iron Ore Fines: The Ministry of Mines, GoI has allowed SAIL to sell 25% of its total Iron ore production

calculated on the basis of cumulative production of all captive mines in a state, as well as sub-grade minerals lying at the mine pit heads. In compliance of this notification, SAIL has already sold approximately 2.16 Million Tonnes (MT) of Fresh Fines through auction during the current financial year from its various mines. Around 0.3 MT of Dump Fines and Tailings have also been successfully auctioned during this period. This has helped to alleviate, to some extent, the shortage of Iron Ore in the market.

Deleveraging: SAIL has significantly reduced the net debt from a peak of Rs 52290 crores on 30th Apr-20 to Rs 44308 crores on 31st Dec-20 – a reduction of Rs 7982 crores. The company continues its efforts to deleverage further.



Rajesh Menon, Director General, SIAM
rajesh.menon@siam.in

Society of Indian Automobile Manufacturers

Auto Industry Sales Performance of November & April-November 2020

Monthly Performance: November 2020

Production: The total production of Passenger Vehicles*, Three Wheelers, Two Wheelers and Quadri cycle in the month of November 2020 was 2,319,845 units, as against 2,258,290 units in November 2019 marking a growth of 2.73%.

Domestic Sales:

- Passenger Vehicles* sales was 285,367 units in November 2020, compared to 253,139 units in November 2019, marking a growth of 12.73%.
- Three-wheeler sales was 23,626 units in November 2020 compared to 55,778 units in November 2019 marking a decrease by (-) 57.64%.
- Two-wheeler sales was 1,600,379 units in November 2020, compared to 1,410,939 units in November 2019, with a growth of 13.43%.

Performance: April - November 2020

Production: Total production of Passenger Vehicles**, Three Wheelers, Two Wheelers and Quadri cycle in April-November 2020 was 13,160,377 units as against 18,356,431 units in April-November 2019 with a decline of (-) 28.31 %.

Domestic Sales:

- Passenger Vehicles** sales was 1,476,027 units in April-November 2020, compared to 1,858,180 units in April-November 2019, down by (-) 20.57%.
- Three-wheeler sales was 108,475 units in April-November 2020 compared to 453,459 units in April-November 2019, down by (-) 76.08 %.
- Two-wheeler sales was 9,637,871 units in April-November 2020, compared to 12,863,757 units in April-November 2019, down by (-) 25.08 %

* BMW, Mercedes, Tata Motors & Volvo Auto data is not available

** BMW, Mercedes & Volvo Auto data is not available, Tata Motors data is only available for Apr-Sep

Commenting on the November 2020 data, Mr Rajesh Menon, Director General, SIAM said "We have witnessed an increase in wholesale numbers in the month of November, where Passenger Vehicles grew by 12.73% and Two-Wheelers by 13.43% over the corresponding month of last year, primarily on account of the festive season. The retail sales of two-wheelers lags behind the wholesale sales numbers but would even out over a period, as OEMs engage with their dealers. While the festive season brought

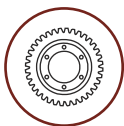
back some fervor in specific segments, the overall economic scenario would determine the industry's performance going forward."

Category	Domestic Sales (In Numbers)		
Segment/Subsegment	November		
	2019	2020	% Change
Passenger Vehicles (Pvs)**			
Passenger Cars	1,54,223	1,70,418	10.50
Utility Vehicles(UVs)	88,361	1,03,525	17.16
Vans	10,555	11,424	8.23
Total Passenger Vehicles (PVs)	2,53,139	2,85,367	12.73
III Three Wheelers			
Passenger Carrier	46,240	13,962	-69.81
Goods Carrier	9,538	9,664	1.32
Total Three Wheelers	55,778	23,626	-57.64
IV Two Wheelers			
Scooter/ Scooterette	4,59,851	5,02,561	9.29
Motorcycle/Step-Throughs	8,93,538	10,26,705	14.90
Mopeds	57,550	70,750	22.94
Electric Two Wheelers	0	363	-
Total Two Wheelers	14,10,939	16,00,379	13.43
Quadricycle			
Quadricycle 18	0	-	-
Grand Total	17,19,874	19,09,372	11.02

** BMW, Mercedes, Tata Motors & Volvo Auto data is not available

Category	Domestic Sales (In Numbers)		
Segment/Subsegment	April-November		
	2019-2020	2020-2021	% Change
Passenger Vehicles (Pvs)*			
Passenger Cars	11,36,005	8,59,477	-24.34
Utility Vehicles (UVs)	6,29,841	5,55,746	-11.76
Vans	92,334	60,804	-34.15
Total Passenger Vehicles (PVs)	18,58,180	14,76,027	-20.57
Three Wheelers			
Passenger Carrier	3,75,696	63,506	-83.10
Goods Carrier	77,763	44,969	-42.17
Total Three Wheelers	4,53,459	1,08,475	-76.08
Two Wheelers			
Scooter/ Scooterette	41,57,329	27,79,416	-33.14
Motorcycle/Step-Throughs	82,56,420	64,54,915	-21.82
Mopeds	4,50,008	4,02,184	-10.63
Electric Two Wheelers	0	1,356	-
Total Two Wheelers	1,28,63,757	96,37,871	-25.08
Quadricycle			
Quadricycle	921	-27	-102.93
Grand Total	1,51,76,317	1,12,22,346	-26.05

** BMW, Mercedes & Volvo Auto data is not available, Tata Motors data is only available for Apr-Sep



Is the auto industry driving EU steel sheet demand towards cliff?

The European car industry is currently experiencing challenges from around the world that may lower European automotive production, a key element of steel demand in the region. In addition to Section 232 tariffs on cars imported into the US, Japanese car manufacturers may shift production back to Japan, resulting in lower sheet demand in Europe. In this Insight, we explore how these risks could affect European steel sheet demand.

The European car industry is facing challenges on multiple fronts. In the UK, Honda announced the closure of their production in Swindon. Whilst this could easily be seen as a 'Brexit' effect, there are concerns this may be the start of a broader shift for Japanese car manufacturers re-shoring production back home. In addition, the US administration is expected to declare car imports a national security threat allowing them to impose tariffs under Section 232 (S232), similar to the measures already introduced for steel and aluminium. Meanwhile, sales of European premium segment cars have been affected by a

slowdown of demand in China. All of this is set against a backdrop of trade tensions between US and China, fears about a coming recession and a global economic slow-down which are all weighing on the car industry. In this CRU Insight, we outline the impact of decreasing European car production on European sheet demand, driven by the risks highlighted above.



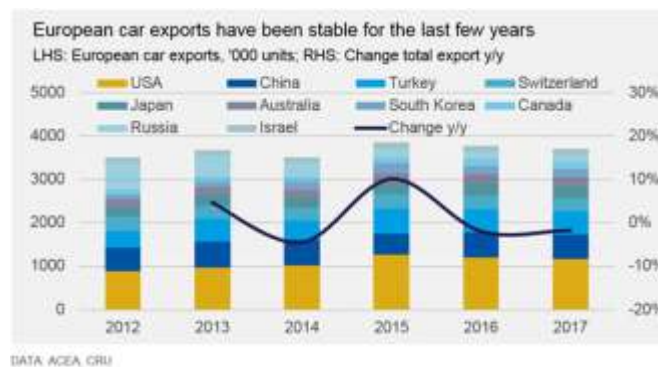
CO-AUTHOR
James Campbell
Principal Analyst, CRU

for cars produced in the EU. In this scenario, CRU estimates that Western European steel sheet demand may reduce by 250-350 kt/yr. In addition, it is not only finished vehicle sales that are expected to be affected by possible trade measures. Car parts account for 34% of sheet demand and are also expected to be impacted by the Section 232 tariffs.

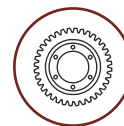


US car imports maybe hit by Section 232

The US is the most important export market for European produced cars, accounting for 1.2 million units—31% of non-EU sales. However, the potential introduction of S232 tariffs on cars imported into the US from around the world is likely to lead to demand destruction in the US, and, in turn, lead to lower demand



To support the case for Section 232 tariffs on car imports, the US



administration conducted an investigation to determine if the high import numbers of non-US produced cars pose a risk to national security. Car imports into the US were worth nearly \$300bn in 2017, accounting for 70% of all cars sold (excluding pick-up trucks). If evidence is found, Section 232 tariffs (or potentially quotas) may be introduced, similar to those in place now for aluminium and steel. That said, US tariffs on imported vehicles are not new as there is already a duty of 25% in place for the important pick-up truck segment.

economic damage. The estimated demand sums up to 1.5 million cars and an increase of the average price of imported vehicles around \$1,300. This scenario translates to a reduction of sheet demand in Europe of 260 kt/yr. Our high case scenario includes 25% tariffs for all imported vehicles that would deal a blow to the US consumers. It is estimated that the number of sold vehicles would drop about 2 million leading to a price increase imported cars of nearly \$7,000. The impact on US GDP is estimated to be

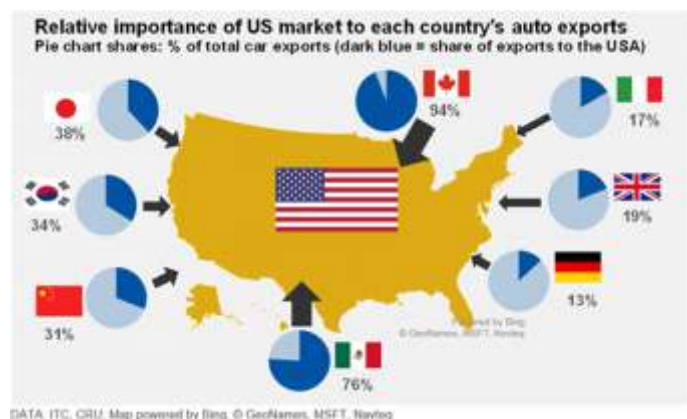
Table 1: Model assumptions and summary of sheet demand destruction

Scenario	Tariffs	Exceptions	Demand destruction (units)	Change in sales W. European producers	Sheet demand reduction (kt)	Contribution from car parts (kt)
Base case	10%	Canada, Mexico	1,500,000	410,000	170	90
High case	25%	-	2,000,000	550,000	230	110

DATA: Demand destruction figures for cars from Schultz (see chart above for full details).

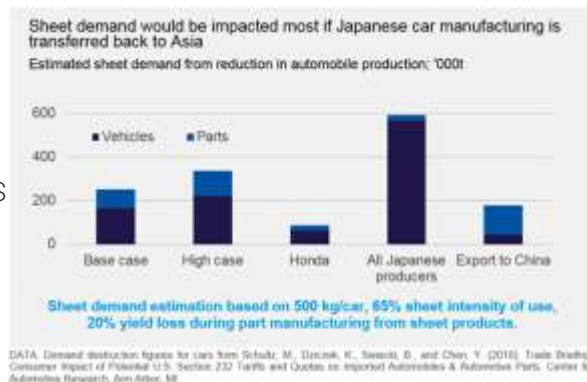
Japanese producers move production back home
The recent announcement of Honda to shut down the plant in Swindon in 2022 has sparked concern this is the start of trend of Japanese producers to shift car production back to Japan. By moving capacity, car production and research and development capabilities will be closer to where demand is greatest, namely in Asia. Car sales in Asia are around 45 million vehicles, compared to EU demand of 16 million vehicles. Japanese car manufactures produce 1.4 million vehicles in the EU28 in 2018 with Nissan being the largest producer with nearly 600,000 cars built. This total production translates to an estimated sheet demand of about 600,000 tonnes /yr. This means 0.5-1.0% of total EU28 sheet demand is at risk if car manufacturers decide to leave the EU. That said, if Honda remains the only Japanese producer to leave Europe, the reduction in demand is limited to c.90,000 t/yr.

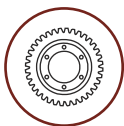
Although our current view is that it is unlikely for all Japanese car manufacturers will leave the EU and as such this is not our currently base



The Center for Automotive Research has published scenario-based estimates for demand destruction of imported cars if S232 tariffs are introduced. CRU's base case is for a 10% tariff. At the same time, we assume exceptions for Canada and Mexico because all major US car producer have assembly lines in those countries and tariffs would cause an unacceptable level of

profound with up to -\$60 bn and reduction of European sheet demand would be up to 340 kt/yr.





Industry Update

case. However, this is currently being revaluated because the European Commission recently concluded a new trade deal with Japan. This new deal eliminates duties on Japanese car exports into the EU and as such may support the structural shift of car production back to Japan: the removal of import tariffs, improves the competitiveness of Japanese produced cars sold into Europe.

The situation is different in the UK due to their expected departure from the EU in 2019. Car companies have expressed concern over their ability to export cars made in the UK to the EU, especially if a no trade deal is agreed. The UK exports about 50% of their car production to the EU with individual producers like Toyota shipping 87% to Europe.

decreased 20% y/y; while exports from UK to China fell by 72% y/y. If continued, this would mean potential reduction of EU car sales in China of 114,000 units in 2019, with the equivalent steel sheet demand being 100 kt/yr. In addition, exports of car parts have fallen by -18% y/y in 2018 Q4, adding 180 kt/yr of sheet demand reduction to the problem.

Industry faces multiple challenges. There are other challenges ahead for the EU car industry. It is possible the US-China trade war intensifies, resulting in Section 301 tariffs being activated on the other half of Chinese exports to the US. As well as leading to lower growth, this would likely increase strain on the global supply chains. The car industry is dependent on barrier-free access to

different markets due to the 'just-in-time' nature of car assembly logistics, meaning they are vulnerable to trade barriers and duties. Moreover,

as concerns around a global recession grip Europe, consumer appetite for durable goods like vehicles may fall while recent emission scandals and tighter environmental regulations restrain sales of

traditional combustion engine cars.

European sheet demand faces substantial reduction. The car industry in Europe is an important driver of sheet demand but faces a turbulent path ahead. The US threatens to impose Section 232 tariffs on imported cars that would hit the US as well as the EU market. Reduction of sheet demand depends strongly on the implementation of the tariffs and whether certain countries gain exemptions. The reduction of European sheet demand is estimated to be between 260-340 kt/yr. We estimate, that the potential closure of Japanese transplant car production capacity would reduce European sheet demand by about 600 kt/yr. However, at present we believe it is unlikely all Japanese manufacturers will leave the single market, that said, more closures are possible. An economic slowdown in China is expected to have the least influence on European sheet demand, reducing it in the range of 180 kt/ yr. That said, the recent stimulus package may help to reverse the impact. In the months ahead, we will continue to update our insight on sheet demand and in particular if the EU safeguard measures could counterbalance reduced domestic demand. ■



Chinese slowdown drowns exports from Europe. At the same time, a recent slowdown of consumption in China has led to reduced car sales there for western European carmakers. Car exports from Europe

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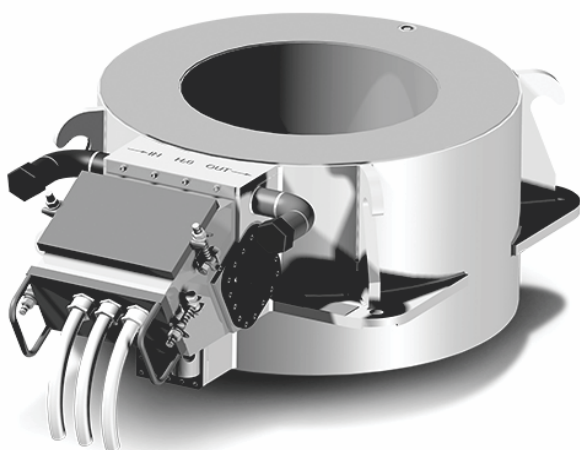
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