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Sharad Mahindra

■ Domestic steel industry turns out to be saviours amid LMO short supply

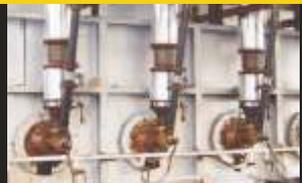
■ The Induction Furnace Sector Has No Experts in Metallurgy To Back It

■ Dephosphorization and desulphurization of steel through Induction Furnace - LRF route

■ Indian steel demand is likely to pick up 2021-22 despite ongoing second wave of pandemic

■ FIRST IN INDIA Stainless Steel Cooling Towers

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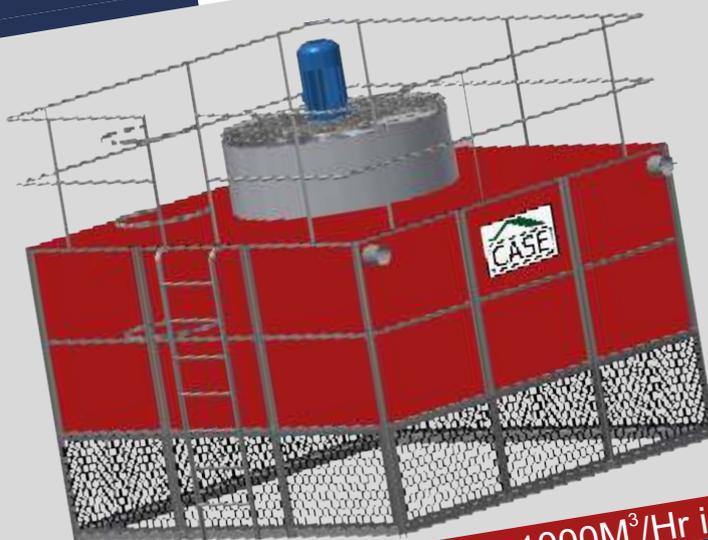
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NOZZLE	LOW PRESSURE SPLASH TYPE
HARDWARE	STAINLESS STEEL

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Editorial Desk



D. A. Chandekar
Editor

Dear Readers,

As an important input for infrastructure building, steel has always been very vital industry for the growth of the national economy. No industry can exist without the usage of steel and thus it is the main driver for not only the industry but also for the present structure of the society. The professionals like me who have spent multiple decades in this industry will always take pride in this association with the core industry like steel. A lot of sectors like infra, auto, construction, engineering and so many others use steel as a major input and their fortune is in a way linked with that of steel. Thus it is always a good feeling to be associated with such an important industry vertical of the economy. The reason to narrate all this is that today our industry has added one more feather in its cap. As we all know, in many cases the covid patient suffers from breathlessness and requires additional supply of oxygen. Out of the total oxygen production in the country, around 80 % of the oxygen is produced by the steel plants for their regular use in iron and steel making. Today these

steel plants are diverting this oxygen to the medical emergency to save the lives of our countrymen. It is the manifestation of their love for the country and the people and our industry has made all of us, the whole steel fraternity, feel proud about it. Today, the oxygen is being carried to different locations and the states with the help of special trains organised by the railways.

Thousands of patients across the country are being treated with this oxygen and are thanking our industry. It is a really great feeling !

We all remember that in the first wave of this deadly pandemic, there was an acute shortage of ventilators and related equipment. Many companies from auto sector like Tata Motors, Mahindra & Mahindra rose to the occasion, quickly developed cost effective and multi user model of ventilators indigenously and supplied in huge numbers for this medical emergency. Mind well, they had to forego their regular auto production during this period. What a great patriotic gesture ! Like this a lot of help was extended by other industries as well. At individual level too, we see countless examples of such humanely behaviour. The corona pandemic is no doubt disastrous and may have posed a big threat to human existence but at the same time, has taught us a few lessons of humanity as well.

Our country may be fragmented with many religions, castes, languages, cultures etc. but such incidences assure us that from within we are one and especially at the time of crisis, we will forget all our differences and fight the situation in a united manner. Jai Hind !

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Low nox emission, High
High Hot Blast Temperature,



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 Nm ³ /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.



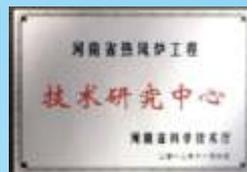
Yuxing top fired stove with a catenary dome achieved monthly mean HBT of 1314.7 oC

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



Top 10 Trademark High-end Equipment of Henan Equipment Manufacturing Industry in 2018
International Leading Technology Level Stove project reference nos up to 550, highest monthly mean HBT of 1314.7 deg C achieved in China
Henan Yuxing Engineering & Technology of Hot Blast Stove Co
Henan Hot Stove Engineering Technology Research Center

Efficiency, Long Lifetimes & International Leading Technology



Conventional 3-section top fired stoves for 3x2500m³ BFs 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%.**



3x3580m³ BFs 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

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 Catenary	45	1250
Yuxing 4-section	45	1250
Yuxing 4-section	45	1250

province accounts for 40-50% of China's steel capacity. for BFs 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)

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Content

Face to Face



8 Indian steel demand is likely to pick up 2021-22 despite ongoing second wave of pandemic

Sharad Mahindra
CEO,
JSW Steel Coated
Products Limited.

Feature

13 Domestic steel industry turns out to be saviours amid LMO short supply

Industry Update



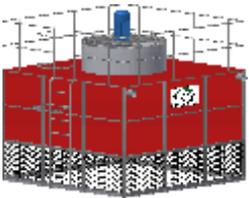
18 The Induction Furnace Sector Has No Experts in Metallurgy To Back It

View Point



22 Dephosphorization and desulphurization of steel through Induction Furnace - LRF route

Technology



28 FIRST IN INDIA Stainless Steel Cooling Towers

Analysis

30 Global steel demand to grow by 5.8% in 2021 to reach 1.874 billion mt : WSO

News Round Up

34 Indian steel prices to move upward amid China's supply curbs....

Indian steel tycoon cut the production due to Soaring Oxygen Demand

Indian Steel consumption to rise by 12-15 pc in FY22

35 Domestic steel plants hike Oxygen production capacity

36 Jindal Stainless begins dispatch of Liquid Medical Oxygen from Jajpur facility

SAIL focuses on enhancing Liquid Medical Oxygen (LMO) production from its plants

38 SMS group takes over Paul Wurth industrial activities

Danieli Corus to modernize Severstal Cherepovets Blast Furnace

40 Aceros Arequipa orders vacuum tank degasser from SMS group

China scraps tariffs on some steel products to curb iron ore prices

41 JSW Steel makes partial payment of Rs 225cr to Welspun Corp for steel plates and coil mills division

JSW Steel USA, ATI sign pact to convert steel slabs into hot rolled coils

New Covid wave hits Indian ship breakers

Tangshan Ganglu orders two wet electrostatic precipitators for gas cleaning plant from SMS group

Statistics

42 SIAM Annual Statistic

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Indian steel demand is likely to pick up 2021-22 despite ongoing second wave of pandemic

“Government thrust on improving the infrastructure of the country & investment in projects such as affordable housing, railway, metro, ship building & oil & gas distribution pipeline projects would boost steel consumption”

Sharad Mahindra

CEO,
JSW Steel Coated
Products Limited.



Sharad Mahindra is CEO of JSW STEEL Coated Products Limited. (JSWCPL), which is India's largest coated steel manufacturer.

Earlier, Mr. Mahendra was working as Director & COO and was on the board of JSW Energy Limited and its subsidiaries.

He has also been on the Board APL Apollo Tubes Limited and was responsible for the overall sales and marketing functions as well as for organization building. He has worked with Phillips Carbon Black Limited, JSW Steel Limited and Yamaha Motors Limited in various capacities.

In his previous stint at JSW Steel Limited, he was responsible for both domestic and international sales as well as for the marketing functions for all flat products.

Mr. Mahendra has been the recipient of “Hall of Fames Award” London for the Best Marketing & Communication personality of the global.

D A Chandekar, Editor & CEO had an exclusive interaction with Mr. Sharad Mahindra to analyze the present scenario of COVID-19 and its impacts on the Indian steel industry and particularly coated steel segment as well....

How has the industry been progressing after the COVID 19 pandemic? What effects would the second wave cause on its working?

The impact of the coronavirus (COVID-19) pandemic had not only brought the global economy



to a standstill but set the clock backwards on the developmental progress of several nations. While the rate of infection in India did not appear to be as high as in other countries in the first wave of pandemic, precautionary measures adopted dealt a severe blow to the country's major industries - with the service sector bearing the largest brunt of estimated loss. Manufacturing made a swift recovery in the following months.

India's Manufacturing sector which constitute 17% to Indian economy is likely to get impacted during the second wave of the pandemic with the following ways :

- About 10% of the migrant workforce from SMEs has left the western India hub and it may affect the major automakers if the government were to enforce a complete lockdown.
- Falling attendance in factories due to a surge in cases and mandatory Covid testing requirement, coupled with the fear of a hard lockdown has hit the production in the automotive and manufacturing sectors in Maharashtra by at least 10%.
- Manufacturing at some auto component facilities has dropped by as much as 50-60% of normal levels.

- Multiple Covid restrictions imposed by different state governments, autonomy given to district authorities to put additional curbs in place and rising infection rates have started to impact both e-commerce and manufacturing operations in several states during the second wave.
- Increased manufacturing activity coupled with a smaller migrant workforce has resulted in a hike in the daily wage rates of casual/contract workers. Industrial clusters are making do with only 80% of migrant workers coming back after the reverse migration seen during the lockdown. As a result, daily wages have gone up from nearly Rs.250 to Rs.350-400.
- Housing sales will be impacted across major cities during the April-June quarter because of the rapid spread of the coronavirus as reported by property consultant Anarock. Already, property registrations in Mumbai, a key market in Maharashtra and the country, have dropped due to the second wave of COVID-19 pandemic and restrictions to curb the disease.
- Though the disruption in economic activities due to the second wave of COVID-19 may impact

non-banking financial companies (NBFCs), the sector will attain normalcy soon, helped by the 'pent-up' demand.

How do you see the Indian economy fairing in coming period?

The second advance estimates for 2020-21 released by the National Statistical Office (NSO) on February 26, 2021 placed India's real gross domestic product (GDP) contraction at 8.0 per cent during the 2020-21.

High frequency indicators – vehicle sales; railway freight traffic; toll collections; goods and services tax (GST) revenues; e-way bills; and steel consumption – suggest that gains in manufacturing and services activity in Q3:2020-21 extended into Q4.

Purchasing managers' index (PMI) manufacturing at 55.4 in March 2021 remained in the expansion zone, but lower than its level in February.

The index of industrial production contracted by 3.6% in Feb-21 dragged down by manufacturing and mining. Core industries also contracted in February by 4.6%.

The resilience of agriculture is evident from food grains and horticulture production for 2020-21, which are expected to be 2.0 per cent and 1.8 per cent higher respectively than the final estimates of 2019-20. Headline inflation increased to 5.5 per cent in Mar 2021



Face to Face

after having eased to 4.1 per cent in January 2021.

Within an overall food inflation print of 5.2 per cent in February Turning to the growth outlook, rural demand remains buoyant and record agriculture production for 2020-21 bodes well for its resilience. Urban demand has been gaining strength on the back of normalization of economic activity and should get a fillip with the ongoing vaccination drive. The fiscal stimulus from increased allocation for capital expenditure under the Union Budget 2021-22, expanded production-linked incentives (PLI) scheme and rising capacity utilization (from 63.3 per cent in Q2 to 66.6 per cent in Q3:2020- 21) should provide strong support to investment demand and exports.

Firms engaged in manufacturing, services and infrastructure polled by the Reserve Bank in March 2021 were optimistic about a pick-up in demand and expansion in business activity into 2021-22. Consumer confidence, on the other hand, has dipped with the recent surge in COVID infections in some states imparting uncertainty to the outlook.

Taking these factors into consideration, the projection of real GDP growth for 2021-22 is retained at 10.5 per cent consisting of 26.2 per cent in Q1, 8.3 per cent in Q2, 5.4 per cent in Q3 and 6.2 per cent in Q4.

How bullish are you on the performance of the steel sector in the fiscal 2021-22?

India suffered severely from an extended period of severe lockdown, which brought the most of industrial and construction activities to a standstill. However, the economy has been recovering strongly since August, much sharper than expected, with the resumption of government projects and pent-up consumption demand. The growth-oriented government agenda will drive India's steel

24.3 million tones in Q-2'21 to 28.7 million tones in Q-4'21 & overall finishing the contraction of 6.0% in 2020-21 to 94.1 million tones.

Indian steel demand is likely to pick up 2021-22 despite the country is facing a second wave of pandemic, state wise lockdown is not severe & manufacturing activities are not halted in totality.

Government thrust on improving the infrastructure of the country & investment in projects such as affordable housing, railway,



demand up, while private investment will take longer to recover.

Indian steel demand dropped by 50.6% from a year earlier to 12.2 million tones in April-Jun'21 but started recovering from Q-2'21 onwards from a level of

metro, ship building & oil & gas distribution pipeline projects would boost steel consumption. The demand is likely to remain buoyant thus it is projected to grow by 10% -12% to 103-105 million tones in 2021-22.

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Face to Face

prices and iron ore prices on the back of strong demand from China as well as recovery in domestic demand has kept the steel prices firm in Q-4'21.

How do you see the demand of coated steels in the country, present & future?

Presently India has 28 steel mills in the country producing coated steel products with a combined capacity of 13.1 million tones, the coated family constitutes HDG (GI/GL), colour coated, Electrogalvanized & Galvannealed.

India coated steel demand during the last one decade grew by 6% to 7.9 million tonnes while the production grew by 3.1% to 7.6 million tones, India remains net exporter of coated steel products from 2000-01 to 2016-17 but became net importer from 2017-18 to 2019-20 implies growing domestic demand & lack of domestic capacity turns country into net importer.

India coated steel products is likely to grow by 7.8% to 11.5 million tones in 2024-25 & further to 13.3% to 21.5 million tones.

Construction & infrastructure constitute the main sector for coated steel demand, around 60% of the coated steel demand comes from these sectors other sectors include appliance, sandwich panels, AC ducting, auto & bus body. India witnessed a firm growth in construction sector specially PEB sector

which is likely to grow 15% CAGR from 2020-21 to 2025-26 as government infrastructure & construction plan to invest Rs 111 Lakh crore under NIP projects.

India Automotive growth is already on the growth trajectory & rising income level & disposable income will attract both automotive & appliances sector growth, like washing machine, refrigerator & air conditioner will likely grow not less than 10% in short term as well as in medium term.

What can be the positive takeaways from COVID 19 especially for the steel sector?

India is on the path of achieving 300 million tones capacity & more than 250 million tones demand by 2030. Being a demand center having a large consumer base & low per capita consumption, India always remains a major attraction for domestic & foreign investors to capitalize its steel demand potential.

Excluding the consumption figures for the Q-1'21 which was literally washed away by the devastating impact of the catastrophe it is observed that from Jul'20 to Mar'21 in nine months' period the total steel consumption in the country was 81.2 million tonnes as compared to 75.4 million tones in nine months of F.Y 2021 witnessing a growth of 8.6%.

A sustained private & government expenditure supported rising demand for consumer appliances, sales of passenger cars & two

wheelers.

Increasing rural demand led to higher tractor sales for both agro use & transportation. Public investment came to play its positive role in lifting up the economy from Q-3'21 onwards & it is in sync with similar trends observed in other large economies also. Total production of the crude steel at 103 million tones lowered by 5.6% in F.Y 2020-21 however during the last 9-months (Jul-Mar) of 2021 steel production grew by 6% to 85.8 million tones in comparison to corresponding period last year.

Indian steel exports created an ever-highest volume of 17 million tones in 2020-21 after registering 11 million tones in 2019-20, China remains the major destination for Indian steel exports constituting almost 30% of the Indian steel exports. India has set up a new guideline for upcoming steel producers how to integrate with the steel value chain in the global market. Rising trend in steel prices in which domestic prices are at a discount with global prices, shows that market demand is adequate, both in the domestic and global market thereby giving ample opportunities to Indian steel players to reap benefits in terms of realization, bringing down debts and plan for capacity addition specifically for value added items to make India Atma Nirbhar. ■



Domestic steel industry turns out to be saviours amid LMO short supply

In the second wave of the corona virus pandemic death toll and number of infections in India have increased rapidly which have passed new world records as the government battled to get oxygen supplies to hospitals for thousands of daily cases. Keeping that in mind, more than a year ago, the central government, for the first time, had decided to allow manufacturers of industrial oxygen to produce and sell the gas for medical use.

Steel plants need gaseous oxygen primarily for steel making and for oxygen enrichment in blast furnaces, apart from some general purposes like lancing and gas cutting. Hence captive oxygen plants in integrated steel plants are designed to produce mainly gaseous products of Oxygen, Nitrogen and Argon, which are then routed through Pressure Reduction & Management System (PRMS) to meet the process need at the desired pressure.

Liquified Medical Oxygen (LMO) is high purity oxygen. On the other hand, industrial oxygen is used for combustion, oxidation, cutting and chemical reactions in industrial plants. Before diverting industrial oxygen for medical purposes, companies need to complete the purification

process at the oxygen plants within their premises.

Looking at rising death cases and infected patients need LMO which has been available by the integrated steel plants by diverting industrial-use oxygen to LMO for the urgent need of hospitals to save lives as a priority. The country's steel plants are supporting this mission which will have minimal impact on the domestic steel production capacity.

Total steel fraternity across the country supplied 1.43 lakh metric tons of medical oxygen so far to different states since the beginning of the need for the gas from Covid19 patients in August last year. Twenty-eight units located in major public and private sector steel plants are supplying around 1,500 metric tonnes of medical oxygen per day across the country, as per data reported from the Ministry of Steel

It is like domestic integrated steel plants are throwing a lifeline to severely impacted Covid patients. From PSUs Steel Authority of India (SAIL) and Rashtriya Ispat Nigam Limited to private producers Tata Steel and JSW Steel to Vedanta and more, all are pitching in with liquid medical oxygen (LMO) even as new infections breach the 3.33 lakh per day level.

Steelworld
Research Team

Besides, the Government has allowed the setting up of 551 plants for producing liquid medical oxygen (LMO) across the country, the Ministry of Steel has informed that there are 33 oxygen plants in India including those in the private sector and against the 2,834 metric tonnes of daily LMO production capacity in the steel sector, the production as on April 24 was 3,474 metric tonnes.

As per a technical expert, liquid oxygen storage at steel plants varies from 2,000-5,000 tonnes, where half of that is kept as a buffer and this goes up during shutdowns. Generally, a 4-5 million tonne plant would have a 5,000 tonnes oxygen-making capacity but would normally operate at around 2,500-3,000 tonnes.

It was noted that the availability of LMO increased by about 3,300 tonnes/day with contributions from private and public steel plants, industries, oxygen manufacturers and through the prohibition of supply of oxygen for non-essential industries. GoI has allocated the distribution of LMO from each of the integrated steel plants to various states. Even, as industrial-use oxygen gets diverted to hospitals for saving lives as a priority, steel production will not be dented.

In addition to the above



Feature

steel plants have been able to enhance the supply of medical oxygen by taking various initiatives, which include reduction in the production of Nitrogen and Argon and only producing medical oxygen in most plants.

The average delivery of LMO by Steel Authority of India Limited (SAIL) has been raised to more than 800 tonnes per day. Around 1,150 tonnes of LMO was delivered on April 23, and the quantity delivered on Saturday (April 24) was 960 tonnes. Total LMO supplied from SAIL integrated steel plants at Bhilai, Bokaro, Rourkela, Durgapur and Burnpur from August 2020 till April 24 has been 39,647 tonnes.

Bhilai Steel Plant has temporarily shut down its unit to enhance liquid oxygen production by 15 MT. "Similar directions have been given to other central public sector enterprises-owned steel plants to explore the possibility of enhancing their capacity," the industry department added. Responding to the national urgency for LMO, Tata Steel has been supplying over 300 tons of liquid medical oxygen (LMO) daily to various states (Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Telangana, Jharkhand, Odisha, Bihar and West Bengal) and

hospitals, a Tata Steel spokesperson said.

JSPL is willing to divert up to 100 tonnes per day of LMO from its Angul plant and is maintaining a stock of 600 tonnes from its captive oxygen production.

"We have to save lives first. Steel production can come later, it can be increased later. Even if we lose 5-15% of production, we can save 1,000s of lives," Sharma insisted.

JSPL, the Angul plant has a capacity to produce 2,500 tonnes per day of oxygen but a part of it is kept in liquid form. The oxygen is produced and reaches the blast furnace in a gaseous form through a pipeline.

According to Shri V. R. Verma, MD, JSPL said that "When we go into shutdown we keep the oxygen in liquid form as a safety stock. We can supply 100% of this liquid stock towards fighting Covid and saving lives."

Vedanta Group companies Hindustan Zinc (HZL) and Electrosteel Steels (ESL) have stepped in to augment oxygen supplies as part of its Vedanta Cares initiative. Sterlite Copper, which has one of the largest oxygen facilities in the country at Tuticorin, has reached out to the Tamil Nadu government and Union Health Minister Harsh Vardhan with an offer to help, seeking approval to operate its 1,000 tonnes per day oxygen plant to meet the rising demand. The company has also filed a petition outlining its offer to help in the Supreme Court in view of the legal proceedings.

HZL has supplied 1,500 liters of industrial oxygen to the Udaipur health administration. The company transported a 1,000-liter liquid oxygen tanker from its industrial oxygen plant at Rajpura





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Feature

Dariba Complex, which has dedicated 100% of its monthly production of oxygen to hospitals. HZL is supplying industrial oxygen, which will undergo a clinical procedure to be used for medical treatment. ESL has registered its plant near Bokaro for LMO and has committed to supplying up to 10 tonnes of oxygen daily, based on the steel ministry's requirement.

While Rashtriya Ispat Nigam Limited (RINL) supplied 8,842 tonnes of LMO in 2020-21. During the current fiscal, from April 13 till the morning of April 25, more than 1,300 tonnes of medical oxygen has been dispatched, official sources informed. Also, there is an increase from 100 tonnes to 140 tonnes during the last three days.

The first Oxygen Express had chugged off the RINL Vizag Steel Plant site on April 22, carrying 100 tonnes of LMO to Maharashtra to meet medical emergencies of Covid patients.

To facilitate faster transportation of medical oxygen, the industry department has also directed the units to convert the tankers ferrying nitrogen and argon to supply oxygen. But the diversion of LMO is not forcing the steel plants to stop production. And the reason is that more than 30% of the oxygen produced is kept in the liquid form, which can be transported.

Therefore, the impact on steel production will be minimal and temporary till the medical oxygen producers are able to adequately ramp up production. The present crisis may continue till next month but start tapering off from mid-May.

While expressing the steel plants situation, Arnab Hazra, Deputy Secretary General, the Indian Steel Association, said the impact on steel production, on account of the diversion of industrial oxygen towards fighting Covid will be minimal because the capacity utilisation is high at present among the integrated players.

Even if production is dented slightly for one month, it will not affect the overall annual

steel production for 2021. Production will even out over the mid-term. We may see a temporary, short-term dip in production. About 50-55% of the market comprises the integrated players. These plants can take a 10-15% hit individually but overall, the industry will take a 5-7% hit in terms of production which will even out on an annualised basis.

Dr. Anil Dhawan, Executive Director, Alloy Steel Producers Association of India (ASPA), opined that "There is likely to be little or no impact on steel production and, if any at all, there will be no impact to domestic customers. The shortfall, if any, could be adjusted in export offers in future."



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The Induction Furnace Sector Has No Experts in Metallurgy To Back It

A Japanese steel maker once told me, utterly exasperated with the state of the Indian steel industry that why was metallurgy not taught in the Indian colleges. I was surprised because metallurgy was very much a part of the syllabus of the Indian engineering colleges though in recent times, I do not remember having met any. Yet in the 1960's metallurgy departments in the IITs especially, Kanpur and Kharagpur attracted the top-ranking students. Unfortunately, today, the steel industry seems to be fonder of engineering

graduates, relegating the qualified metallurgists to their R&D centers, and are usually not consulted for solving problems of the plants. And this is the core problem why the Indian steel still gasps for breath where innovations are concerned and where growth means only the addition of capacity and neither the development of new products, nor the innovation of processes but in the words of the Japanese metallurgist, "to buy a lot of machines and somehow make steel." The transition of the steel industry from metallurgy to machines is



Dr Susmita Dasgupta

Former Jt. Chief Economist, ERU, Ministry of Steel

also a transition from a knowledge intensive metal industry into one that only operates machines.

The transition from metallurgy in the R&D centre towards the operation of machines took place when the integrated mills started their expansions in the mid-1980's. The world steel industry underwent some transformations too; metallurgists started to occupy laboratories and not shop floors and technology providers were packing their machines ready to operate through systems of controls



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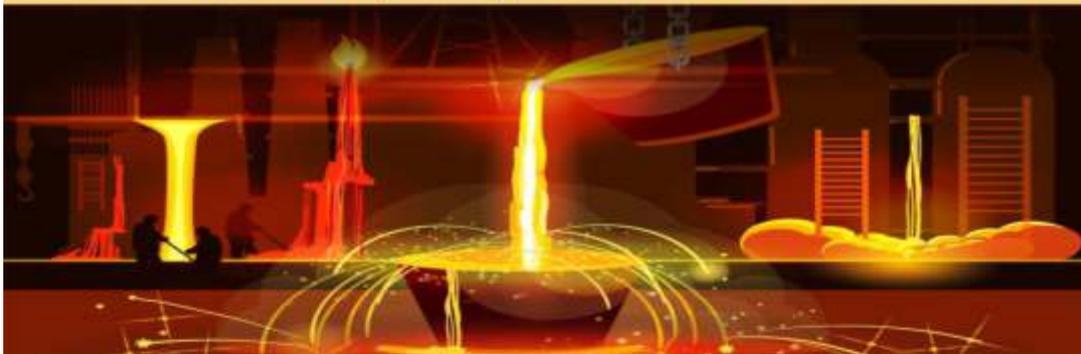
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Industry Update

and panels. The protocols in steel making were so stabilized and standardized that one just needed machines to replicate the inputs while the output was guaranteed. Steel production became a matter of controls. Soon everybody across the world was producing the same stuff very much, getting similar prices and producing more. What earned money was not knowledge, nor proficiency but only money invested in large machines could fetch more money.

In the middle of the 1990's the metallurgists who came out from the integrated mills with an appetite for metallurgical innovations were key to the setting up of the induction furnaces and later the sponge iron industry in small scale but with standard products. The induction furnace had been around for ages as the producer of stainless steel but now it was tweaked to be able to produce mild steel, attain quality as well as scale! Unfortunately for us, while the process of the induction furnace was well documented for the monitoring of refractory lining, furnace shells and covers, and charging, cooling, and tapping, what goes on with the metallics inside the furnace with the application of the eddy current, basically a one of metallurgical thermodynamics was not well documented. As a result, we know how to set up an induction furnace and

to operate it but terribly unsure of its processes. This is not withstanding the fact that much of steel scrap, the basic ingredient in electric steel making was replaced with sponge iron by the early 2000's.

Today, the induction furnace sector faces a major challenge of changing over its product quality; there is no point in pushing for space in the overcrowded mild steel sector where the integrated mills seem to be taking over in a big way. As we move towards high rise apartment buildings, heavy sections for infrastructure, frames of cold



formed steel and so on, the market for mild steel for the residential buildings do not seem to hold the promise of as rapid a growth that once set the induction furnaces rollicking. Hence, this sector is gearing up towards a change in products, from mild steel to alloys and here the challenge comes because we are bereft of adequate knowledge about metal processes inside the furnace.

A well-established induction

furnace with back-end production of ferro alloys was keen to know if its raw materials were adequate for the company to make certain grades of alloys. We could analyze the chemical composition of the raw materials and of the finished product, and even emerged with surprising results that carbon deletion and not phosphorous reduction was a greater issue, but we could not suggest the exact process, because the company had no system of plotting the behaviour of the ingredients inside the furnace. Hence, concluding,

we do not have a metallurgy for the induction furnace and what goes in the name of metallurgical consultancy is only a process consultancy but not real metallurgical thermodynamics that is the real need for induction furnace metallurgy. We conclude, there is no metallurgy for the induction furnaces. ■

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Dephosphorization and desulphurization of steel through Induction Furnace - LRF route

1. Introduction

Induction furnace steelmaking is one of the important routes of steelmaking in India. One third of India's annual steel production is done by induction furnace route. About three decades back, induction furnaces were used only in the foundry industry. During mid-80's induction furnaces were introduced for steel making. Gradually, induction furnaces of larger capacities were introduced successfully from 3T to 50T over a period of three decades. Many efforts have been put into effect to make

the steel making efficient through induction furnace route.

The main raw materials for induction furnaces are steel scrap, sponge iron and cast iron. India is one of the countries where use of sponge iron contributes a large share in annual crude steel production. The amount of sponge iron in the charge mix varies from 0-90% depending on its availability and economics of production. Majority of the steel produced through induction furnace route is plain carbon steel and construction quality steel. The main limitation in



Dr. Swarn Bedarkar
Projects Metallurgy,
Electrotherm (India)
Limited

maintaining quality of construction steel is controlling the quantum of phosphorus in steel especially if sponge iron is used. The main source of phosphorous in induction furnace steelmaking is sponge iron and cast iron, the quality of which is directly related to quality of iron ore.

Ladle metallurgy is very important technology when it comes to refining of steel and trimming of final chemistry. Some of the operations performed in ladles include de-oxidation or "killing", vacuum degassing, alloy addition,



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View Point

inclusion removal, inclusion chemistry modification, desulphurization and homogenization of the bath. When these operations are carried out in the ladle, they consume energy. Hence, extra energy needs to be supplied in the ladle. Electrical arcing is one of the ways to provide energy for the ladle operations. In the present paper attempt has been made to focus on the operation of ladle arc furnace, popularly known as ladle refining furnace (LRF) and its utility in the steel melting shop. Modern trends and new technologies have taken the LRF to the upper step during the course of development. Removing both, phosphorous and sulphur, from steel using conventional LRF is one of the important technologies which has been developed over the years. Electrotherm has successfully installed this technology in various plants, called ELdFOS® process. Various such developments have also been explained in the present paper.

2. Use of scrap and sponge iron / DRI in induction furnace steelmaking

Steelmaking through induction furnaces is one of the most prominent routes in India. Main driving force to the use of sponge iron in induction furnace is scarcity of scrap in the international market and better economics of production of sponge iron. Sponge iron or

DRI is the product of direct reduction of iron ore in solid state.

3. Ladle Refining Furnace 3.1 General

In steelmaking, ladles are employed to transfer molten steel from steel melting furnaces such as BOF, arc furnace or induction furnace to ladle refining prior to continuous casting. It has been realized that ladles can be used very effectively as a reactor for following operations,

- To desulphurize molten steel tapped from BOF/EAF/ IMF
- To homogenize molten steel to minimize gradients in concentration and temperature and to attain desired teeming temperature.
- To deoxidize molten steel
- To act as buffer between melting and casting unit
- To improve cleanliness of steel by removing inclusions
- To modify the inclusions to eliminate their harmful effects on mechanical properties of steel
- To add alloying elements
- To remove dissolved gases

The effectiveness of each of the function requires churning in the steel bath and heating facility.

In ladle furnace the churning is obtained by inert gas purging from the bottom of the ladle. Heating of liquid metal is popularly practised by (AC) electrode arcing.

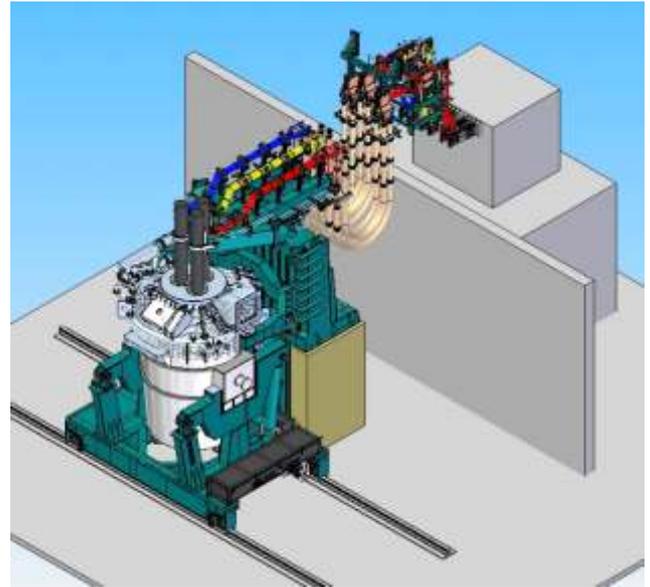


Figure 1 Schematic of ladle refining furnace

Figure 1 depicts the schematic of ladle refining furnace. Important operations of refining furnace are arcing and inert gas purging. Transformer rating may be decided in the range of 250 to 180 kVA / ton of steel. As capacity of the ladle increases, transformer rating decreases. The heat from the top is transferred to the bottom portion of the ladle through bath agitation. The bath is agitated by inert gas purging. Nitrogen or argon gas may be used for purging. The convective currents generated by the gas purging help homogenize the bath. Gas purging also helps to maintain the uniform composition of the liquid bath.

3.2 Refining of steel in ladle and chemistry adjustment

The main function of LRF has been discussed in previous section. In addition



to these features, Electrotherm (India) limited has developed the technology, ELdFOS® process, which is capable in removing phosphorous from the steel in ladle furnace.

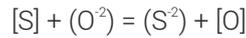
Desulphurization is the inherent characteristic of any LRF. The favourable conditions for desulphurization are high temperature, high basicity and low oxygen potential. These conditions are easily met by any LRF. But, as discussed earlier, when high phosphorous sponge iron is used in induction melting furnace for steel making; it increases the phosphorous level of the bath. In such case it become necessary to remove phosphorous from steel prior to desulphurization. The favourable conditions for dephosphorization are low temperature, high basicity and high oxygen potential.

Traditionally, BF-BOF-LRF and EAF-LRF routes carry out dephosphorization in BOF and EAF respectively. Removal of phosphorous takes place by oxidation. The product is being held by basic constituent CaO in slag. The bond is further strengthened by FeO present in the slag. In steel making processes basicity of the slag is maintained by addition of calcined lime. The reaction may be written by phosphate ion formation, $[P] + 5/2 [O_2] + 3/2 (O^{2-}) = (PO_4^{3-})$

Once the highly oxidizing and highly basic slag is formed in these furnaces

and dephos is finished; the metal is transferred to ladle for desulphurization.

Transition of sulphur from steel to slag may be presented by the chemical equation,



The sulphur is held effectively in the form of CaS. High CaO and low FeO slag works effectively for desulphurization of steel.

Considering these principles, LRF with additional Dephosphorization feature has been developed. The process is known as ELdFOS® which stands for Electrotherm Ladle Dephosphorization and Desumphurization.

3.2.1 Dephosphorization and desulphurization in conventional LRF

Dephosphorization and desulphurization in LRF is carried out by multiple slag practice. Initially by forming highly basic highly oxidizing slag and later, by forming highly basic highly reducing slag.

The heat is processed in induction furnace and tapped in the ladle. Tapping temperature of steel is maintained around 1620°C. During tapping, simultaneous addition of *dephos flux* is carried out in the ladle. The ladle is then taken to the LRF station and placed on ladle car. Initial slag is removed and arcing is started. If required second dephosphorization slag is prepared while arcing is on. Once dephosphorization is

over, the slag is removed and fresh desulphurization slag is made. The ladle trolley has an arrangement for slag removal whenever required. The temperature of the bath is raised to beyond 1600°C (depending on required temperature at CCM). Once required temperature is achieved by arcing, the bath is trimmed and the ladle is sent to the caster. The total process time in dephos and desulph is around 40 minutes including superheating. However, the exact time will largely depend on the extent to which dephosphorization and desulphurization are needed and the required final temperature of the metal. With good practice, the present process is capable of reducing P and S by 110 points and 40 points respectively in 45-50 minutes operation time of ladle furnace. High levels of P and S may consume more time. Dephos and desulph in LRF guarantees final finish of P and S to 0.03% each. Process flowchart of the dephosphorization and desulphurization is depicted in Figure 2.

Once steel is refined in terms of P and S, it is killed and ferro alloys are added to meet the final chemistry as per the grade. The technology is capable of producing all the grades of IS 1786 and many alloy steel grades.

3.3 OPEX

The major elements of the operating cost are electricity



View Point

consumption, electrode consumption and refractory consumption. LRF is operated by forming basic slags. Ladle lining is basic in nature. Magnesita carbon lining is very popular in LRF operation. During arcing, graphite electrodes are consumed due to heat. Other parameters that contribute to the operational cost are fluxes. Lime, dolomite, fluorspar are the commonly used fluxes which are used to operate LRF. Considering current prices of various raw materials, the OPEX for dephosphorization and desulphurization with complete LRF operation is about Rs 1500.00 per ton of steel. The opex is subjected to change as per the price fluctuation of raw materials used and discontinuous operation.

4. Modern developments

In old LRF design, the electrodes were operated with the winch type system and the operation was manual. In modern designs accumulator based hydraulic systems have been used to operate electrode movements. Figure 3 (a) depicts the ladle car with hydraulic tilting arrangement. The sophisticated flow control valves are coupled with PLC – SCADA systems to get smooth control of operation. Figure 3 (b) and (c) depict the human machine interface (HMI) and SCADA screen respectively. The development has opened

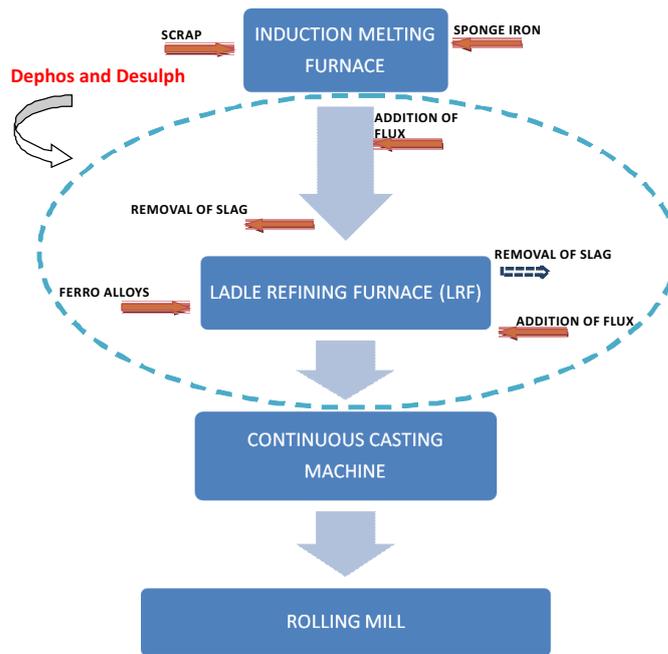


Figure 2 Process Flow Chart of ELdFOS® process

the new horizons to produce various grades of construction steel, low alloy steel, medium alloy steel, a few grades of forging steel, etc. using

LRF. As the trimming and refining takes place in LRF, the quality of the grade produced is less dependent on primary melting furnaces. Now a days, IF - LRF route is becoming very popular to produce quality steel. The quality of steel is as par with BF-BOF – LRF and EAF – LRF route.

Conclusion

Ladle refining furnace is very important tool in steel melting shop. Installation of modern LRF in the steel melt shop helps increase productivity. IF–LRF route is absolutely capable of producing steel meeting quality standards required for infrastructure and construction. The route is also capable to produce medium alloy steel, low alloy steel, construction steel, etc. where sulphur and phosphorous are required in

the range of 0.02% each. With the effective use of ladle metallurgy, quality of steel produced is less dependent on the primary melting



(a)



(b)



(c)

Figure 3 Various developments in modern LRF (a) ladle car with tilting arrangement (b) HMI screen (c) SCADA screen



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The major cooling tower components include Cooling Tower Structure, Fills, Drift Eliminators, Cooling Tower Fans, Water Distribution,

Mechanical Equipment supports and Electrical Motors.

The prevailing trend in the market is to have Cross Flow Wooden Cooling Towers with wooden structure along with wooden fills. These towers are susceptible to rotting and disintegration with the passage of time. The grain size of the cross section of the wood is not properly seasoned to attain stability



Imran Khan
General Manager
CT Division
CASE GROUP

on a long run. The structure is also attacked by fungi and algae, which cause decay of the wood resulting in intensive maintenance and replacement of wooden sections.

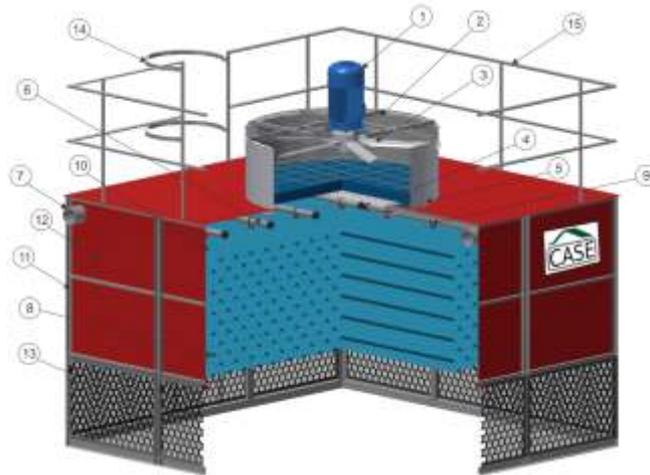
To overcome the above drawbacks of the wooden towers, Counter flow FRP cooling Tower were introduced in the market. However, these have limitation in the capacity,



due to restriction of design sizes therefore the design parameters have to be changed on the demand for larger capacity. The PVC Fills used in FRP cooling towers, also, on passage of time, get clogged with impurities in the water in the form of dust and scales carried by water and hazardous atmosphere. Thus, need to be replaced periodically.

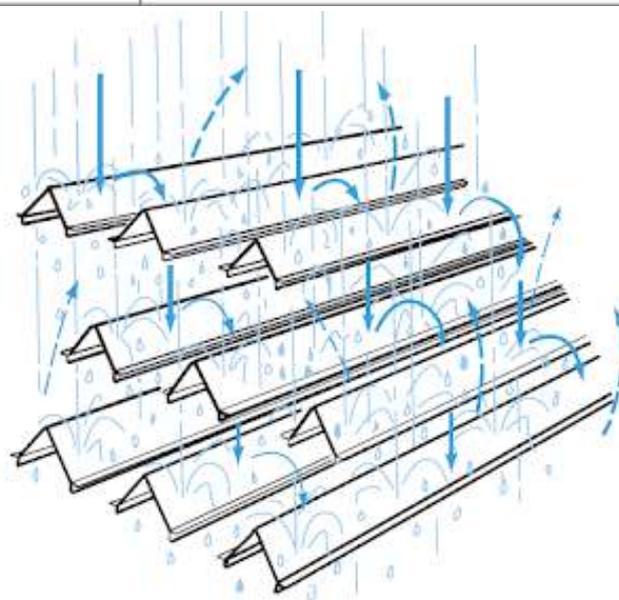
Taking into account all the drawbacks of the above types of Cooling Towers. CASE Group has launched Stainless Steel Structured Cooling Towers. These Cooling Towers have eliminated almost all drawbacks by introducing V Splash Bars instead of Pinewood fills, in case of wooden Cooling Towers and PVC Fills in the FRP Cooling Towers. The water in case of Stainless-Steel Cooling Tower passes from low pressure nozzles on to the grid of the splash V bar causing the water to form droplets which increases area between air and water thus replacing other fills media.

CASE Stainless-steel Cooling Towers are equipped to withstand hazardous and murky water from the system and avoid any damage to the elements used in the design. There is no limitation in Cooling Capacity and can cater to water flow rate of 1000M³/Hr in single cell.



These cooling towers are designed for lifelong performance with minimum maintenance. These are apt to be used for dirty water applications. These towers are aesthetically designed and yet they are very sturdy. We feel these cooling towers are tomorrow for this technology.

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9	LOW PRESSURE SPLASH TYPE
10	SS GRID
11	SS STRUCTURES
12	FRP CASING
13	AIR INTAKE
14	LADDER
15	RAILING





Global steel demand to grow by 5.8% in 2021 to reach 1.874 billion mt : WSO

As per the World Steel Association (WSO) global crude steel production data for the month of March 2021, 64 countries which was reported at 169.2 million tonnes (Mt) in March 2021, a 15.2% increase as compared to March 2020. While global crude steel production was 486.9 Mt in the first three months of 2021, up by 10.0% compared to the same period in 2020. Asia and Oceania produced 356.9 Mt of crude steel in the first quarter of 2021, an increase of 13.2% over the first quarter of 2020. The EU (27) produced 37.8 Mt of crude steel in the first quarter of 2021, up by 3.1% compared to the same quarter of 2020.

North America's crude steel production in the first three months of 2021 was 28.1 Mt, a decrease of 5.2% compared to the first quarter of 2020. The CIS produced 26.2 Mt of crude steel in the first quarter of 2021, an increase of 3.1% over the first quarter of 2020.

As per the latest forecast from WSO, global steel demand will grow by 5.8% in 2021 to reach 1.874 billion mt, after declining by just 0.2% in 2020, as the overall impact of the coronavirus pandemic on the sector turned out to be less than previously foreseen.

	million tonnes		million tonnes	
	March 2021	% change Mar-21/20	Jan - Mar 2021	% change Jan - Mar 21/20
Africa	1.5	25.9	3.9	3.4
Asia and Oceania	123.8	17.6	356.9	13.2
CIS	9.1	7.0	26.2	3.1
EU (27)	13.6	17.5	37.8	3.1
Europe, Other	4.4	10.5	12.6	8.3
Middle East	3.6	6.8	10.5	3.2
North America	9.7	0.1	28.1	-5.2
South America	3.6	8.1	10.9	7.1
Total 64 countries	169.2	15.2	486.9	10.0

The 64 countries included in this table accounted for approximately 98% of total world crude steel production in 2020. Regions and countries covered by the table:

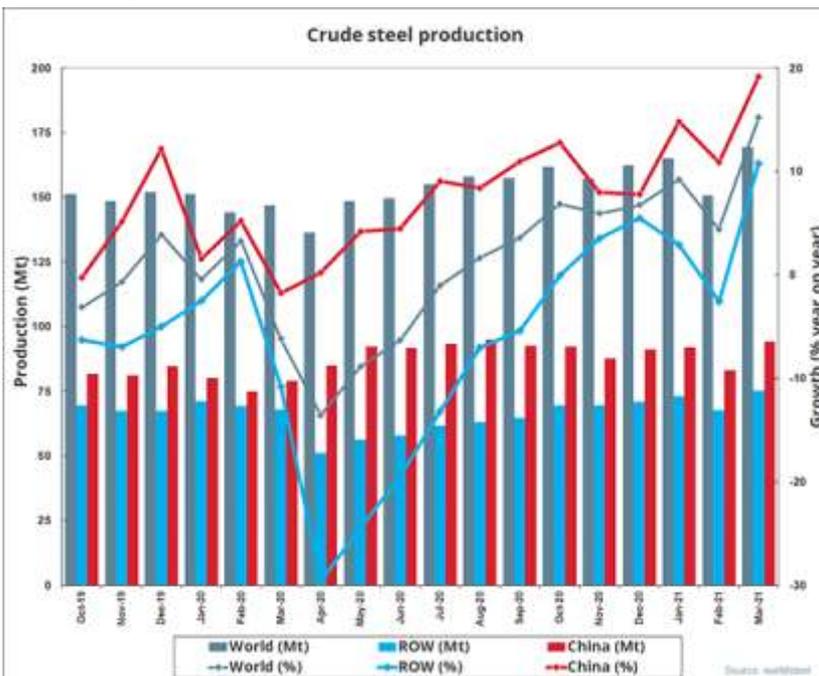
- **Africa:** Egypt, Libya, South Africa
- **Asia and Oceania:** Australia, China, India, Japan, New Zealand, Pakistan, South Korea, Taiwan (China), Vietnam
- **CIS:** Belarus, Kazakhstan, Moldova, Russia, Ukraine, Uzbekistan
- **European Union (27)**
- **Europe, Other:** Bosnia-Herzegovina, Macedonia, Norway, Serbia, Turkey, United Kingdom
- **Middle East:** Iran, Qatar, Saudi Arabia, United Arab Emirates
- **North America:** Canada, Cuba, El Salvador, Guatemala, Mexico, United States
- **South America:** Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela

In 2022, steel demand will see further growth of 2.7% to reach 1.925 billion mt, said worldsteel, which represents around 85% of global steel production.

The recovery has been largely led by China, which produces more than half the world's crude steel. China's steel demand grew 9.1% on year in 2020, but is expected to slow to a 3% growth rate this year and 1% in 2022, as the effect of the 2020 stimulus subsides.

In the rest of the world demand plunged 10% last year and continues to lag in advanced economies, said Al Remeithi, chairman of the worldsteel economics committee, in a short-range outlook statement. The pandemic continues to cause considerable uncertainty for the rest of 2021, he said.

"In these advanced economies, steel demand in 2022 will still fall short of 2019 levels," Remeithi said. "In the coming years, steel demand will recover firmly, both in the developed and developing economies, supported by pent-up demand and governments' recovery programmes. However, for most developed economies a return to the pre-pandemic



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Analysis

levels of steel demand will take a few years."

Quicker than expected rebound

Overall, however, the sector's rebound from the impact of production stoppages and lockdowns during COVID-19 "has been greater and sooner than initially expected," worldsteel Director General Edwin Basson said.

The new short-range outlook revises up the worldsteel's forecast in October 2020, which foresaw a 2.4% demand decline in 2020 and a 4.1% recovery this year to 1.795 billion mt.

The new forecast assumes that the ongoing second or third waves of COVID-19 infections will stabilize in Q2 and that steady progress on vaccinations will be made, allowing a gradual return to normality in major steel-using countries, worldsteel noted.

China expectations

China's economy quickly rebounded from the lockdown in late February 2020, and its overall economic activity has been largely unaffected by the pandemic, unlike the rest of the world, according to worldsteel. China's GDP growth of 2.3% in 2020 may accelerate to 7.5% this year, before moderating to 5.5% in 2022, the association said.

Work on new Chinese infrastructure projects continues apace following

post-COVID stimulus, supporting steel, although for 2021 and onwards, real estate investment growth may decrease due to the government's guidance to slow growth in the sector down, and to focus on more sustainable growth worldsteel said. China's automotive sector – typically the second biggest steel consuming area after construction - reduced production by only 1.4% in 2020, it said.

"China is beginning to stabilize," Basson said, referring to China's intention that its economy should in future be driven more by consumer rather than investment demand. "There are strong signals from the Chinese government the market is at the level it should be. But even if China grows 2%-3% this still has a huge impact on steel demand."

No overall change is currently foreseen in China's role in the global steel industry, nor in typical global steel trade levels of around 400 million mt annually, he said.

Developed world

The developed world's steel demand recorded a double-digit decline of 12.7% in 2020, worldsteel said.

"We will see substantial recovery in 2021 and 2022, with growth of 8.2% and 4.2% respectively. However, steel demand in 2022 will still fall short of 2019 levels,"

the association said.

In the US, where a major infrastructure budget will be considered by Congress, steel demand recovery will be constrained in the short term by a weak rebound in the non-residential construction and energy sectors. The automotive sector is expected to recover strongly.

In the EU, recovery in 2021 and 2022 is expected to be healthy, driven by recovery in all steel-using sectors, especially automotive, and public construction initiatives. "So far, the EU's recovery momentum has not been derailed by the ongoing third waves, but it remains fragile," worldsteel said.

Japan, where the pandemic dealt a severe blow to the economy, will see only a moderate recovery in steel demand this year

Developing nations

Steel demand in the developing economies excluding China declined by 7.8% in 2020. Worldsteel expects these economies, including in India, MENA, Latin America, ASEAN, Turkey and Russia to show a relatively quick rebound in 2021 and 2022, with growth of 10.2% and 5.2% respectively. Accumulation of debts, no recovery in international tourism, and slow vaccination will prevent a faster recovery, it said. ■



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News Round Up

Indian steel prices to move upward amid China's supply curbs....

India's domestic steel manufacturers are going good since the demand remains favourable and steel prices have also been north bound providing a supportive environment.

At the same time, China, the largest consumer of the steel is facing supply curbs which bodes well for demand and prices, globally. Limited exports out of China, as Beijing targets zero emissions over time, will lower the risks of cheap steel imports into India and will likely to boost capacity utilisations across domestic steel manufacturers.

Chinese supply restrictions and ex-China capital starvations have finally set the stage for capacity shortfalls in steel," say analysts at Ambit Capital Private Limited. "The Chinese steel costs curve is likely to increase on supply restrictions, a higher share of EAF output (20% by CY25 from 12% in CY20) and higher power tariff."

Analysts feel that there is still headroom for companies to raise prices, despite a sharp rise in domestic steel rates over the past six months. Realisations for Indian firms will, therefore, continue to improve.

While markets appear to be expecting a correction, steel prices continue to move higher, point out analysts at JP Morgan Asia Pacific Research. They said landed prices are in the range of Rs72,000-75,000 per tonne, higher than the domestic price of Rs59,000 a tonne.

As better realisations accrue higher benefits, capacity utilisations should also improve in India. Fresh capacities, however, are sometime away.

Indian steel tycoon cut the production due to Soaring Oxygen Demand



Due to sharp increase in covid-19 cases across India, domestic steelmaker are cutting its steel production to divert its oxygen plant to step up supplies of medical-grade oxygen. The whole country is grapples with a

devastating shortage of the life-saving gas amid surging coronavirus infections.

Such strategic decision come as India becomes the second-worst place affected by the virus globally, with

hospitals overflowing with the sick and dying, and oxygen supplies running out. The government has also restricted the industrial use of liquid oxygen to boost supplies for medical purposes. Steel mills are not on the list of industries excluded from the order.

JSW Steel Ltd. reportedly cut the production to augment liquid medical oxygen supply to more than 900 tons a day by April-end, and more than 20,000 tons for the entire month.

While responding to the situation, "Saving lives is more important than producing steel and production can suffer for as long as the country is in need of any resource available with the company," JSW Chairman Sajjan Jindal said in a statement.

Among other steel mills, including Tata Steel Ltd. and Jindal Steel & Power Ltd., have also been supplying oxygen for medical purposes in the past few weeks. Factories have also undertaken to reduce liquid oxygen safety stocks to 0.5 days instead of the normal requirement of 3.5 days in their storage tanks.

It joins Steel Authority of India Ltd., Bhilai plant is taking a temporary shutdown to boost oxygen supplies.

JSPL Managing Director V.R. Sharma said that "maybe some 5% to 7% production loss can be there but it is nothing, and can be made up in times to come."

Rashtriya Ispat Nigam Limited (RINL) Visakhapatnam Steel Plant, has supplied around 400 tonnes of liquid oxygen to various destinations in Andhra Pradesh and other States.

Indian Steel consumption to rise by 12-15 pc in Fy22 : Dr. Sushim Banerjee



After a gap of more than a decade, a fiscal year has just ended with near-firm anticipation of a glorious journey ahead for an industry frequently interspersed with cyclicity every four to five years. The uniqueness of today's scenario relates to the universal applicability of the high growth indicators for the steel industry across all countries. The Global demand for steel had been projected



by WSA in October'20 to be growing at 4.1 percent in 2021.

Over the last 6 months, the demand for steel by all the end-user segments has grown more than what was anticipated and this was primarily bolstered by the massive stimulus measures undertaken or announced by the US, EU, UK, Japan, China and now India. The ability of the advanced countries to enhance market borrowing as a percentage of GDP exceeds that of the emerging economies due to the prevailing low interest rate which still needs a long time to be achieved by India.

The country is ending FY21 with a total steel consumption of around 95-97 million tonnes of steel which is nearly 5 percent lower than the previous year. Apart from construction and infra sectors (68 percent share), engineering goods and fabrication comprises around 20 percent share of steel use, while automobile and packaging have shares of 9 and 3 percent respectively of total steel demand. The demand from the C&I sector is slated to go up substantially with more investment in Infra, stability in the real estate sector. A 12-15 percent rise in steel consumption in FY22 is the minimum that can be projected for India by Dr Sushim Banerjee, DG, INSDAG.

Thus it was gratifying to note that in FY22 the budget has announced a capital investment target of Rs 5.4 lakh crores that is more than a 34 percent increase compared to BE FY21 (maybe marginally lower when the final expenditure estimates are made available for Fy21). This fund for investment is primarily meant for the Infra sector (Roads, Railways for new lines, doubling of lines, gauge conversion, High-speed rails, Metros in 27 locations, ports, airports, transportation of Oil, Gas and Water, irrigation etc), affordable housing, food storage facilities, the energy sector as part of National Infrastructure Pipeline (NIP) Programme for 7,400 projects (ongoing, incoming and conceptualised).

Lack of investment in Infra has been the major constraint resulting in a sluggish growth in steel consumption in the last few years. The secular decline in gross fixed capital formation (a proxy for investment) as a percentage of GDP (current market prices) from 34.3 percent in FY12 to 28.2 percent in FY18 and subsequently to 26.7 per cent in FY21 (second advance estimates) has been the testimony of poor growth in investment in developing quality infra assets in the country.

As the infra sector has large externalities, the public investment must precede private corporate sector investment in the sector. Private investment as a share of GDP has also been continuously falling down in the last few years (27.0 percent in FY12 and 21.9 percent in FY19). Attracting private investment through PPP mode (HAM or TOT) has paid a good dividend in building

National Highways by NHAI.

The incoming public investment along with enhancement of FDI limits (from 49 percent to 74 percent in Defence, 100 percent in retail and real estate) has generated a good feeling in the commodity sector, steel being the significant beneficiary, and an enabling environment for infrastructure growth. As nearly 68 percent of steel goes for building, construction and infra sectors, it is imperative that the amount earmarked must be spent during the year.

Coming to price realisation, it should be remunerative and leave some balance for the producers to invest for capacity augmentation which is becoming an essential component for the growth of the steel industry in the country. Riding on the increasing prices for the raw materials, Iron Ore and Coal, the finished steel prices in both the Global and indigenous markets have witnessed a rise.

The Chinese export prices for HRC (SS 440) fob Tianjin port is currently ruling at \$770/t and the export price of Rebar fob Turkey stands at \$625/t. The decongestion of the Suez Canal, anticipated export rebate withdrawal in Chinese export prices and anticipated capacity cut for environmental reasons in China creating supply shortage would lead to further strengthening of market prices.

Last week we discussed that quantum wise around Rs.22000/t and Rs.9500/t were added in domestic prices of HRC and Rebar during the whole year Fy21.

This quantum is likely to be lower in Fy22 (high base effect). The spread between HRC and Slab, Rebar and Billets, Ingots and Scrap are likely to experience fluctuations depending on the end using market on the spot. Growing Chinese demand is likely to support Iron Ore prices. Unhindered supply prospects for Australian premium low vol HCC Coal would primarily determine coking coal prices in FY22.

Domestic steel plants hike Oxygen production capacity

As the Government has allowed setting up of 551 plants for producing liquid medical oxygen (LMO) across the country, the Ministry of Steel has informed that there are 33 oxygen plants in India including those in the private sector and against the 2,834 metric tonnes of daily LMO production capacity in the steel sector, the production as on April 24 was 3,474 metric tonnes.

As per the government report, the average delivery of LMO by Steel Authority of India Limited (SAIL) has been raised to more than 800 tonnes per day. Around 1,150 tonnes of LMO was delivered on April 23, and the quantity delivered on Saturday (April 24) was 960 tonnes.



News Round Up



Total LMO supplied from SAIL integrated steel plants at Bhilai, Bokaro, Rourkela, Durgapur and Burnpur from August, 2020 till April 24 has been 39,647 tonnes.

State-owned Rashtriya Ispat Nigam Limited (RINL) supplied 8,842 tonnes of LMO in 2020-21. During the current fiscal, from April 13 till the morning of April 25, more than 1,300 tonnes of medical oxygen has been dispatched, official sources informed. Also there is an increase from 100 tonnes to 140 tonnes during the last three days.

Jindal Stainless begins dispatch of Liquid Medical Oxygen from Jajpur facility

Continuing its efforts to help the nation combat COVID-19, Jindal Stainless has begun the supply of Liquid Medical Oxygen (LMO) from its Jajpur facility in Odisha. Over 40 MT of LMO is being dispatched on a daily basis to meet the increasing demand LMO in Odisha, Andhra Pradesh, and other states as required. To date, ~128 MT of LMO has already been dispatched for various medical facilities.

Commenting on this development, Managing Director, Jindal Stainless, Mr Abhyuday Jindal said, "We are now on a mission mode. Both in Hisar and Jajpur, we're extending all possible support to respective governments by ensuring an uninterrupted supply of oxygen from our facilities, irrespective of the impact on operations. Saving lives of fellow Indians is the biggest priority today."

Since the onset of the pandemic in 2020, Jindal Stainless, Hisar, has been consistently supplying LMO of ~8 MT per day to all medical facilities in and around the plant. Nearly 2170 MT of LMO has been supplied in a year till date to various hospitals, including Jindal Institute of Medical Sciences at Hisar, Maharaja Agrasen Medical Education & Scientific College at Hisar, Government Hospital at Sirsa,

Maharishi Markandeshwar Trust at Ambala, and Medanta, Fortis, and Singhania hospitals at Gurugram, Delhi. Over and above this, oxygen is also being directed to oxygen gas cylinder fillers as per government directives.

Through its 580-bedded multi super-specialty hospital in Hisar, Jindal Institute of Medical Sciences, Jindal Stainless has been actively fighting the pandemic since last year. Isolations wards, screening units, telephonic consultations, 150 ICU beds, 60 ventilators, and several other facilities have been activated to their maximum capacity to help patients. Yesterday, in the presence of Chief Minister, Haryana, Sh Manohar Lal Khattar, the company committed its OP Jindal Modern School in Hisar to be converted into a 500-bed emergency COVID hospital equipped with 150 ICU beds.

SAIL focuses on enhancing Liquid Medical Oxygen (LMO) production from its plants

Steel Authority of India Limited (SAIL) has been in the forefront in meeting the challenge of making Liquid Medical Oxygen (LMO) available in the country. It has already supplied 36,747 Metric Tonnes (MT) of Liquid Medical Oxygen since Aug'20 as per the requirement.

With increase in demand of LMO in the country, SAIL has enhanced its focus on increasing the production since beginning of this month. In the last six days, the company has supplied, on an average, 660 MT of LMO per day from its plants. On 21st April, 2021 alone, the company has supplied 891 MT of LMO.

Improvement interventions have already been made to augment the LMO supply with respect to process and equipment. SAIL has reduced the production of gaseous Oxygen, Nitrogen and Argon besides optimizing process parameters in its plants to boost production of LMO.

"During this hour of the emergency need, SAIL firmly stands committed with the nation and will do everything to augment the production of Liquid Medical Oxygen from its plants. All its plants have been advised to maximise production of LMO and optimize dispatch logistics so as to reduce turnaround time of oxygen tankers.", Company has reaffirmed.

With the help of Indian Railways and Ministry of Steel, SAIL has planned to load a rake from its Bokaro Steel Plant. This will help greatly in bulk evacuation of LMO and faster arrival of the same at the destination.

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M. K. Sanghi Group



News Round Up

SMS group takes over Paul Wurth industrial activities

SMS group, a leading international plant engineering company for the state and state-owned banking organizations. As such, SMS has become the sole owner of Paul Wurth's plant engineering business, strengthening its competence in metallurgy and hydrogen technology. With this step, the Luxembourg site will be expanded to become the research and development center (R&D Center) for decarbonization and recycling within SMS group. To this end, SMS and Paul Wurth are pooling their research and development activities with the common aim of continuing to set technological standards in these forward-looking fields. The future range of services includes all technologies for reducing CO₂-emissions in existing steel mills; hydrogen-based, CO₂-free direct reduction of iron ore; and Power-To-X technologies for producing synthetic fuels and down-stream products. In addition, the international teams of experts from SMS group is a group of companies internationally active in plant construction and mechanical engineering for the steel and nonferrous metals industry. It has some 14,000 employees who generate worldwide sales of more than EUR 2.9 billion. The sole owner of the holding company SMS GmbH is the Familie Weiss Foundation. SMS and Paul Wurth will continue to work on expanding the product and service offering across the entire metals industry process chain.

As part of the transaction, a strategic partnership was also agreed with the University of Luxembourg to strengthen

scientific research and development of hydrogen technologies at the Luxembourg site. With financial support from Paul Wurth, the university has already established a chair for energy process technology.

Paul Wurth's real estate activities in Luxembourg will be transferred to a new company in which the Luxembourg public shareholders and SMS will each hold stakes.

Georges Rassel, CEO of Paul Wurth S.A., said: "Green Steel means an enormous transformation for our customers. SMS and Paul Wurth have been setting technological standards in the steel industry for 150 years and have already worked together very successfully in recent years. By combining our competences, we are ensuring that SMS and Paul Wurth will remain synonymous with innovative and sustainable solutions."

Edwin Eichler, Chairman of SMS group GmbH, said: "In the coming decades, decarbonizing technologies will replace the traditional blast furnaces and coking plants in integrated steel plants. Therefore, the energy balance at the steel plant will have to be reconsidered and reorganized. Our customers will require fully integrated solutions to bring about this change. Alongside the decarbonization roadmap, efforts will continue in developing digital solutions to establish self-learning processes. This disruption in the global steelmaking market means the time is right for Paul Wurth and SMS Metallurgy to form a single solution provider."

Danieli Corus to modernize Severstal Cherepovets Blast Furnace



The third installation of an advanced BF cooling and lining system for the leading Russian steelmaker

Danieli Corus has signed a contract with Severstal to modernize Blast Furnace No. 5 in Cherepovets, Russia, on a design and supply basis. Blast Furnace No. 5 "Severyanka" is the largest furnace at the Cherepovets Works and the flagship ironmaking operation for Severstal.

In 2005 Danieli Corus participated in the reconstruction project for Cherepovets' Blast Furnace No. 4 with the installation of a "Hoogovens" design cooling and lining system. Following the outstanding performances achieved by that unit, Severstal decided to apply the same technology to the other blast furnaces, such as the 3290 m³ Blast Furnace No. 3 - which was successfully commissioned in December 2020 after a rebuild project executed by Severstal and Danieli Corus.

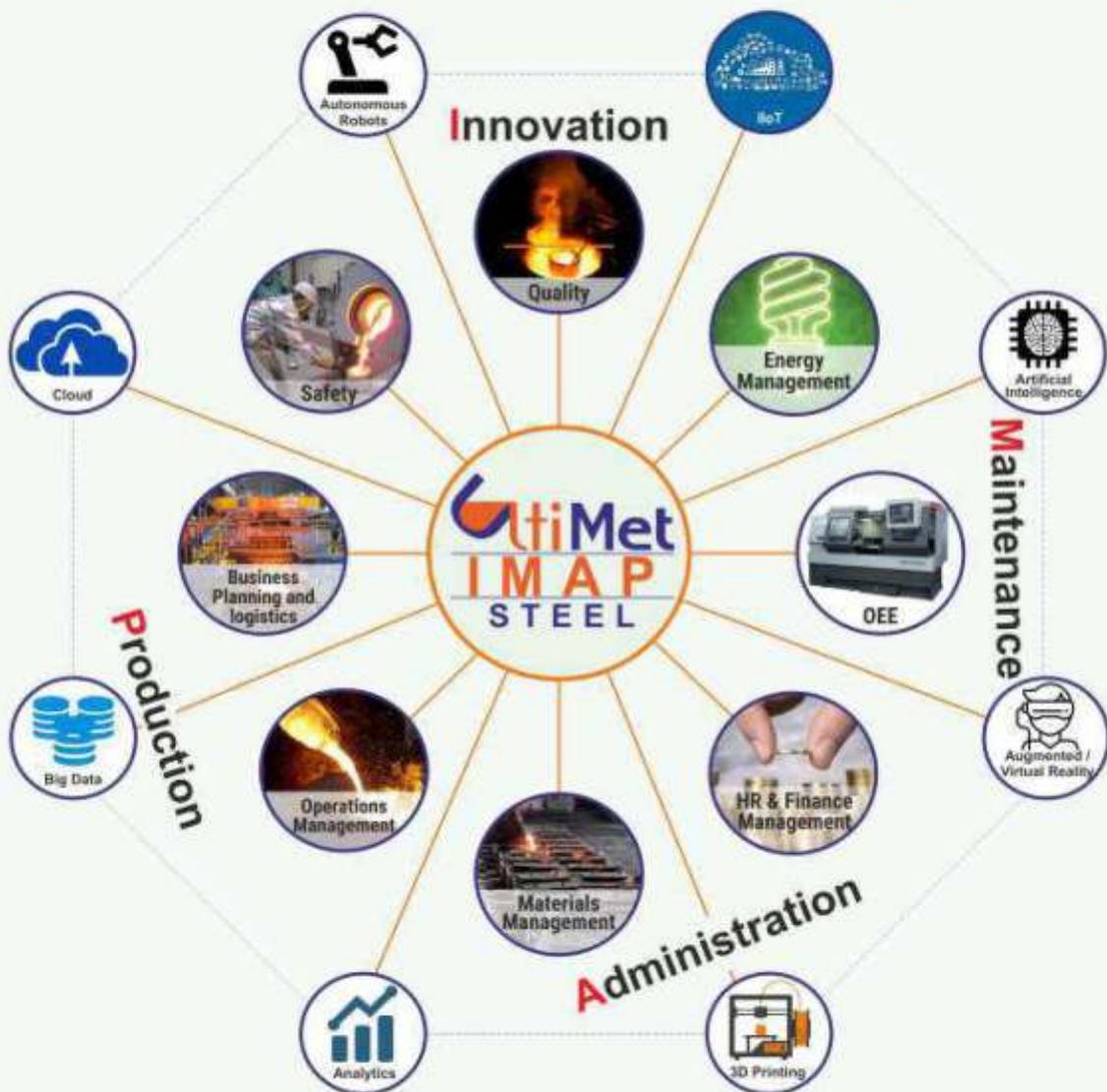
During the coming project, Blast Furnace No. 5 also will be equipped with the "Hoogovens" design cooling and lining system in the bosh, belly and lower stack areas. This design is based on machined copper-plate coolers in combination with high-conductivity graphite, and is the only design with proven capability to achieve campaigns in excess of 20 years regardless of ironmaking process circumstances. The revamped furnace will have a 5055 m³ working volume and 15.1 m hearth diameter.

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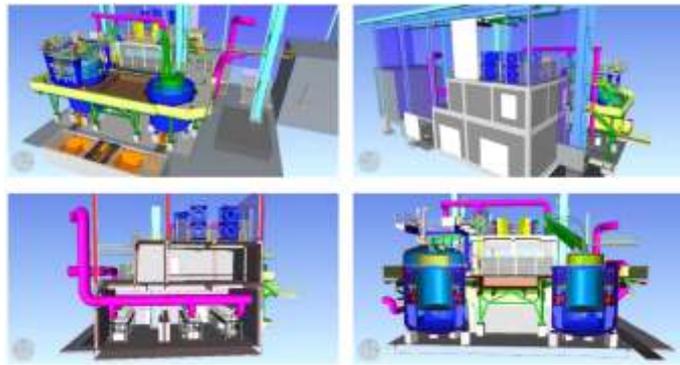
News Round Up

Aceros Arequipa orders vacuum tank degasser from SMS group

Corporación Aceros Arequipa SA (CAASA), based in Lima, Peru, has awarded SMS group (www.sms-group.com), a systems supply contract encompassing the delivery of a new vacuum tank degasser for its Pisco site. The degasser will be integrated into the already delivered SMS group meltshop and enable CAASA to widen their production in terms of quantity and quality.

The degassing process aims at reaching the lowest possible level of hydrogen content in the steel, which is a necessary precondition for CAASA to produce top-quality high-carbon grades for grinding balls. Nitrogen removal and oxygen control are other very important factors for the production of further SBQ grades.

The full integration of the new vacuum degasser into the electric steelmaking route will set a new benchmark in South American steelmaking: for the very first time, both high productivity and high quality come together in a compact and optimized layout. Commissioning of the degasser is scheduled for early 2022.



In terms of technology, SMS will supply a 120-ton twin tank vacuum degasser with movable cover and mechanical vacuum pumps. – 2 – Innovative robotics

(TS-Pro Sampler) will be installed on the cover for quick and repeatable sampling. Refining by wire feeding ensures that at the end of the treatment the heat has reached exactly the desired chemistry before the delivery of the steel to the continuous casting plant.

As timing is essential the vacuum generation system has been selected with a view to rapid and consistent pump-down time, stable process behavior below 1 mbar and powerful control in case of unexpected overpressure. To protect the mechanical pumps (precisely machined roots blowers and screw compressors), a dedicated inert-type baghouse filter will be installed on the suction line between the main valve and the pump inlets.

The consolidated and modular design approach enables SMS to engineer the plant within a very short time and was a key factor for CAASA to select SMS as supplier. During engineering, extensive use will be made of 3D modeling, addressing different related equipment in order to prevent any interference with existing plants.

SMS group's scope of supply includes basic and detailed engineering, delivery of the mechanical and electrical components, the entire electrical and automation systems, including the integrated process control system (Level 2), which monitors the quality of the steel from the scrap yard to the billet storage area, as well as supervision of erection, installation and commissioning. Aceros Arequipa manufactures long and flat steel products, including corrugated sheet, wire, steel sections, bars and pipes, as well as steel tools and hardware for the construction, civil engineering and mining industries. In addition to supplying the local market, the company exports its products to Colombia, Ecuador, Bolivia and the U.S.A.

China scraps tariffs on some steel products to curb iron ore prices

Recently China has announced that it would scrap tariffs on certain steel products and raw materials starting on May 1, in a bid to curb iron ore consumption amid skyrocketing prices that have hurt domestic businesses, while benefiting foreign suppliers such as Australia. The Tariff Commission of the State Council also made a series of adjustments to tariffs on other raw materials and products related to the steel industry. Meanwhile, exports tariffs are hiked for certain iron products.

The adjustments are conducive to reducing import costs, expanding the imports of steel resources, and supporting the reduction of domestic crude steel output, according to the Xinhua News Agency.

Such new measures will prompt the steel industry to reduce energy consumption, promote the sector's transformation and upgrading, and support its high-quality

development, Xinhua reported, citing the commission. Industry insiders said that these moves are intended to level costly iron ore imports and thus reduce steel prices. "China is strengthening the development of domestic iron ore mines. Meanwhile, it's temporarily eliminated import tariffs on pig iron, crude steel, recycled steel raw materials, ferrochrome and other products, which can effectively

reduce the amount of imported iron ore," Ge Xin, a senior analyst with Beijing Lange Steel Information Research Center, told the Global Times on Wednesday.





JSW Steel makes partial payment of Rs 225cr to Welspun Corp for steel plates and coil mills division



JSW Steel had acquired from Welspun Corp on a slump sale basis, the business of manufacturing high-grade steel plates and coils. JSW Steel has informed exchanges that the

company has paid Rs225cr to Welspun Corp as part of the business acquisition deal.

Last month, JSW Steel had acquired from Welspun Corp on a slump sale basis, the business of manufacturing high-grade steel plates and coils, and that the consideration shall be paid on a deferred basis.

The total transaction involves Rs848.5cr.

JSW Steel on Saturday said that the balance consideration, which is subject to closing adjustments towards net working capital, shall be paid on a deferred basis, subject to Welspun fulfilling certain regulatory approvals and payment milestones as provided under the Business Transfer Agreement dated March 31, 2019, as amended from time to time.

JSW Steel USA, ATI sign pact to convert steel slabs into hot rolled coils

JSW Steel's US-based subsidiary has signed an agreement with Allegheny Technologies Inc (ATI) to convert carbon steel slabs into hot rolled coils.

The move will help JSW Steel USA Ohio Inc to deliver high quality hot rolled coils (HRC) products to its customers in the US, the company said in a statement on Tuesday.

'JSW Steel USA Ohio Inc has signed a long-term agreement with Allegheny Technologies Inc. for the conversion of carbon steel slabs manufactured at JSW Steel USA's facility in Mingo Junction, OH into hot rolled coils at ATI's hot rolling and processing facility in Brackenridge, PA,' it said.

The agreement expands JSW Steel USA's ability to supply high quality hot rolled products required by its customers in the US thus enhancing its product portfolio.

Parth Jindal, Director of JSW USA said, the company has been on a path of modernization for the last 24 months, from the company's plate mill in Baytown.

The agreement with ATI is further testimony to our vision of being a premium supplier of steel products in the market, he said.

'Leveraging ATI's superior capabilities we feel our carbon steel slabs have a great home. The geographical proximity and strategic nature of this long term partnership is truly a win - win for both organisations as well as a win for the broader market,' Jindal said.

Mark Bush, CEO of JSW USA said, 'The partnership with ATI allows the company to supply the high-quality products required by customers in the US.

New Covid wave hits Indian ship breakers



Ship recycling activities at Alang in India are suffering from a shortage of oxygen supplies as the surge in Covid-19 cases in the country is forcing the government to divert gas used for industrial purposes to hospitals. 'Yards are using their

reserves which are expected to run out,' a cash buyer of ships for demolition, told local media.

Oxygen supplies are very important in ship dismantling, if not the most important ingredient for cutting. Ship breakers use handheld torches fuelled by oxygen and LPG to dismantle vessels.

The shortage of oxygen supply is said to have reduced output, which in turn has increased prices of re-rolling steel plates, according to market experts.

The lack of oxygen is adding to sluggish business at Alang – home to the world's largest group of ship breaking facilities – as the second wave of the pandemic and fewer ships for dismantling hurt recyclers.

Tangshan Ganglu orders two wet electrostatic precipitators for gas cleaning plant from SMS group

Tangshan Ganglu Iron & Steel Co., Ltd., Hebei, China, has commissioned SMS group (www.sms-group.com) to supply two wet electrostatic precipitators for two BOF converters. The wet electrostatic precipitators (WESP) supplement the gas cleaning plants of the 180-ton BOF converters. Each of the BOF converters has a gas volume of approximately 216,000 m³/h.

The scope of supply of SMS group as engineering, procurement, and construction contractor (EPC) comprises two wet electrostatic precipitators, the adaptation of the water supply and treatment system, erection/installation, and technical support during the commissioning process.

Wet electrostatic precipitators separate solid particles from the process gas. For this purpose, spray electrodes fed with rectified negative high voltage emit electrons. These electrons move to the collecting electrodes and, on their way, collide with gas molecules and dust particles. Due to the resulting attachment of the electrons to the dust particles, the particles are negatively charged and – 2 – SMS group is a group of companies internationally active in plant construction and mechanical engineering for the steel and nonferrous metals industry.

It has some 14,000 employees who generate worldwide sales of more than EUR 2.9 billion. The sole owner of the holding company SMS GmbH is the Familie Weiss Foundation. transported by the existing electric field to the grounded collecting electrodes to which they adhere. The collecting electrodes are cleaned with water.

The wet electrostatic precipitators enable compliance with the most stringent environmental protection requirements. Commissioning is scheduled for summer 2021. At the integrated steel plant of Tangshan Ganglu Iron & Steel Co. Ltd in Tangshan (Hebei Province) in the north of the People's Republic of China, long products are produced for a wide range of applications.



SIAM Annual Statistic

"In the financial year FY20-21, there was a de-growth in sales of all segments compared to the previous years. (-) 2.24% for Passenger Vehicles with sales of 27.11 Lakhs units; (-) 13.19% for Two-Wheelers with sales of 151.19 Lakhs units; (-) 20.77% for Commercial Vehicles with sales 5.69 Lakhs units and (-) 66.06% for Three-

Wheelers with sales of 2.16 Lakhs units.

If we look at the fourth Quarter Jan-March 2021 sales which might include some deferred sales from previous quarters, only passenger vehicle segment at 9.34 lac sales was marginally above the previous high of Jan-March 2018 at 8.62 lacs.

Commercial vehicles sales at



Rajesh Menon,
Director General, SIAM

2.10 lacs in Jan-March 2021 were below 2.82 lacs in Jan-March 2018. Similarly, Two-wheeler sales in Jan-March 2021 stood at 43.54 lacs against Jan-March 2018 figures of 51.13 lacs. Three-wheeler segment was the worst-hit with a sales of 0.86 lacs in this quarter compared to 1.97 lacs in Jan-March 2018."

"Indian Automobile Industry continues to work hard, amidst the challenges of COVID second wave, to maximise production and sales, while ensuring safety of its people, partners and customers. We would like to thank and compliment the Government for a massive nation-wide vaccination

drive and also for allowing vaccination of our employees in the factory premises.

On the sales front, a deep structural slowdown in the industry even before the pandemic, combined with the impact of COVID-19 in 2020-21, has pushed all vehicle segments back by many years. Recovery from



Kenichi Ayukawa,
President, SIAM

here will require time and efforts, by all stakeholders. There is uncertainty in the value chain owing to semiconductors, lockdowns and raw material. In an environment of uncertainty, instead of trying to predict the future, we will all work hard to create it."

DOMESTIC SALES PERFORMANCE

(Sales Figures in 000')

MONTHLY					
	Mar-18	Mar-19	Mar-20	Mar-21	CAGR %
PVs*	278	272	135	291	1.5
3Ws	72	66	28	32	-23.7
2Ws	1,742	1,441	867	1,497	-4.9

QUARTERLY					
	Jan-Mar				
	FY 18	FY 19	FY 20	FY 21	CAGR %
PVs	862	844	656	934	2.7
CVs	282	284	147	210	-9.4
3Ws	197	180	130	86	-24.1
2Ws	5,113	4,653	3,503	4,354	-5.2

ANNUAL					
	Apr-Mar				
	FY 18	FY 19	FY 20	FY 21	CAGR %
PVs	3,289	3,377	2,774	2,711	-6.2
CVs	857	1,007	718	569	-12.8
3Ws	636	701	637	216	-30.2
2Ws	20,200	21,180	17,416	15,119	-9.2

*Tata Motors Data Not Included

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Tel : 91-22-26171575 / 26192376 / 26171866

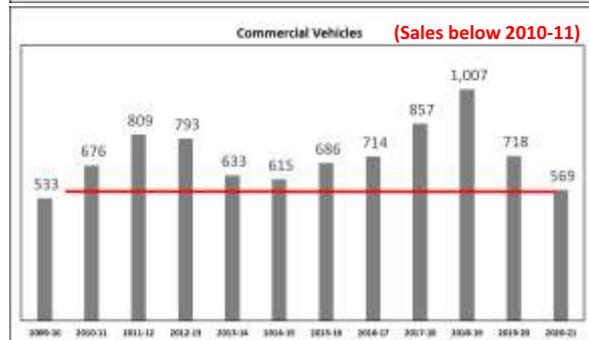
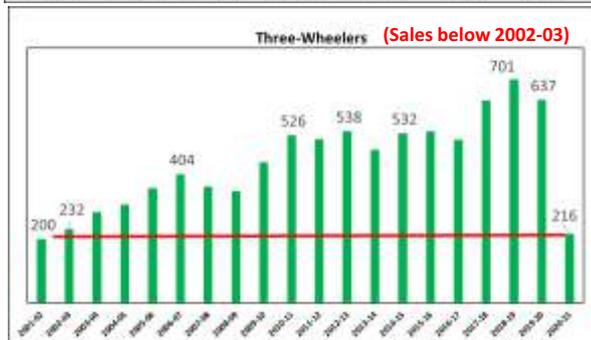
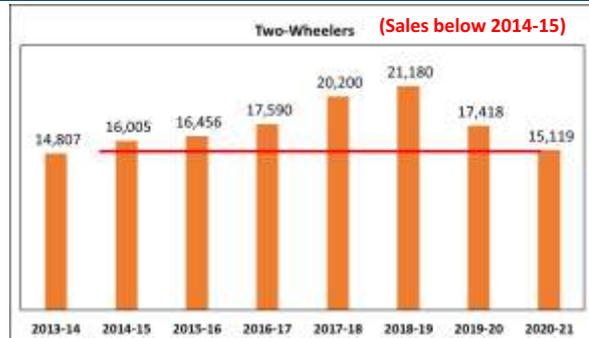
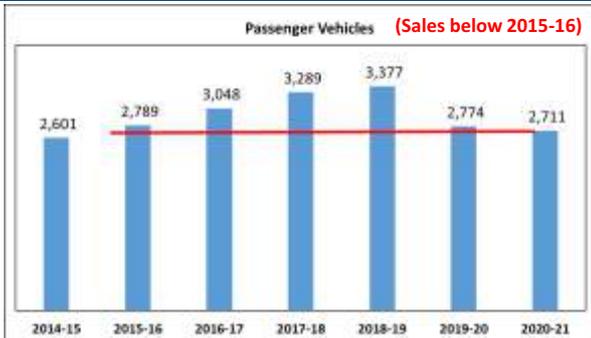
Email : info@steelworld.com | info@metalworld.co.in

Website : www.steelworld.com | www.metalworld.co.in



Domestic Sales: April 2020 – March 2021 – Comparison with Past Years

(Numbers in '000)



SIAM									
Summary Report: Cumulative Production, Domestic Sales & Exports data for the period of April-March 2021 with % Change									
									Report I
									(Number of Vehicles)
Category Segment/Subsegment	Production			Domestic Sales			Exports		
	April-March			April-March			April-March		
	2019-2020	2020-2021	% Change	2019-2020	2020-2021	% Change	2019-2020	2020-2021	% Change
Passenger Vehicles (PVs)*									
Passenger Cars	2,156,868	1,772,972	-17.80	1,695,436	1,541,866	-9.06	475,801	264,927	-44.32
Utility Vehicles(UVs)	1,136,209	1,182,085	4.04	945,959	1,060,750	12.13	183,468	137,825	-24.88
Vans	131,487	107,164	-18.50	132,124	108,841	-17.62	2,849	1,648	-42.16
Total Passenger Vehicles (PVs)	3,424,564	3,062,221	-10.58	2,773,519	2,711,457	-2.24	662,118	404,400	-38.92
Commercial Vehicles (CVs)									
M&HCVs									
Passenger Carrier	44,289	10,010	-77.40	40,016	7,322	-81.70	7,859	4,040	-48.59
Goods Carrier	188,125	171,232	-8.98	184,412	153,366	-16.84	14,474	13,508	-6.67
Total M&HCVs	232,414	181,242	-22.02	224,428	160,688	-28.40	22,333	17,548	-21.43
LCVs									
Passenger Carrier	45,291	15,475	-65.83	45,814	12,088	-73.62	4,300	1,641	-61.84
Goods Carrier	479,020	428,222	-10.60	447,351	395,783	-11.53	33,746	31,145	-7.71
Total LCVs	524,311	443,697	-15.38	493,165	407,871	-17.30	38,046	32,786	-13.83
Total Commercial Vehicles (CVs)	756,725	624,939	-17.42	717,593	568,559	-20.77	60,379	50,334	-16.64
Three Wheelers									
Passenger Carrier	1,016,261	521,918	-48.64	525,532	134,087	-74.49	495,278	387,337	-21.79
Goods Carrier	116,721	89,253	-23.53	111,533	82,110	-26.38	6,373	5,604	-12.07
Total Three Wheelers	1,132,982	611,171	-46.06	637,065	216,197	-66.06	501,651	392,941	-21.67
Two Wheelers									
Scooter/ Scooterette	6,026,741	4,556,398	-24.40	5,565,684	4,479,848	-19.51	369,998	231,972	-37.30
Motorcycle/Step-Throughs	14,356,051	13,154,501	-8.37	11,213,662	10,019,836	-10.65	3,135,548	3,037,439	-3.13
Mopeds	649,678	636,218	-2.07	636,812	617,247	-3.07	13,859	8,313	-40.02
Electric Two Wheelers	457	2,824	517.94	274	2,456	796.35	0	0	-
Total Two Wheelers	21,032,927	18,349,941	-12.76	17,416,432	15,119,387	-13.19	3,519,405	3,277,724	-6.87
Quadricycle	6,095	3,836	-37.06	942	-12	-101.27	5,185	3,529	-31.94
Grand Total of All Categories	26,353,293	22,652,108	-14.04	21,545,551	18,615,588	-13.60	4,748,738	4,128,928	-13.05

* BMW, Mercedes and Volvo Auto data is not available



<i>SIAM</i>						
Segment wise Comparative Production, Domestic Sales & Exports data for the month of March 2021						
(Number of Vehicles)						
Category Segment/Subsegment	Production		Domestic Sales		Exports	
	March		March		March	
	2020	2021	2020	2021	2020	2021
Passenger Vehicles (PVs)*						
Passenger Cars	111,782	190,588	80,727	156,985	17,450	25,909
Utility Vehicles(UVs)	73,870	141,704	48,291	122,350	16,796	13,992
Vans	7,009	12,057	6,178	11,604	57	282
Total Passenger Vehicles (PVs)	192,661	344,349	135,196	290,939	34,303	40,183
Three Wheelers						
Passenger Carrier	54,325	62,589	22,215	21,614	25,751	38,767
Goods Carrier	5,488	11,142	5,393	10,316	148	1,005
Total Three Wheelers	59,813	73,731	27,608	31,930	25,899	39,772
Two Wheelers						
Scooter/ Scooterette	331,710	518,395	263,070	457,677	22,801	27,883
Motorcycle/Step-Throughs	787,209	1,381,625	570,858	993,996	195,211	327,347
Mopeds	42,825	50,135	32,808	44,688	316	942
Electric Two Wheelers	82	666	109	445	0	0
Total Two Wheelers	1,161,826	1,950,821	866,845	1,496,806	218,328	356,172
Quadricycle	453	336	-131	7	216	270
Grand Total of All Categories	1,414,753	2,369,237	1,029,518	1,819,682	278,746	436,397

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

<i>SIAM</i>									
Summary Report: Cumulative Production, Domestic Sales & Exports data for the period of January-March 2021 with % Change									
(Number of Vehicles)									
Category Segment/Subsegment	Production			Domestic Sales			Exports		
	January-March			January-March			January-March		
	2019-2020	2020-2021	% Change	2019-2020	2020-2021	% Change	2019-2020	2020-2021	% Change
Passenger Vehicles (PVs)*									
Passenger Cars	513,129	594,030	15.77	404,202	513,765	27.11	71,126	74,315	4.48
Utility Vehicles(UVs)	283,523	425,250	49.99	220,309	383,643	74.14	50,146	38,141	-23.94
Vans	33,907	37,025	9.20	31,088	36,175	16.36	575	771	34.09
Total Passenger Vehicles (PVs)	830,559	1,056,305	27.18	655,599	933,583	42.40	121,847	113,227	-7.07
Commercial Vehicles (CVs)									
M&HCVs									
Passenger Carrier	10,735	4,943	-53.95	10,810	4,744	-56.11	1,974	1,211	-38.65
Goods Carrier	33,966	82,622	143.25	37,730	75,790	100.87	3,346	6,593	97.04
Total M&HCVs	44,701	87,565	95.89	48,540	80,534	65.91	5,320	7,804	46.69
LCVs									
Passenger Carrier	11,429	5,688	-50.23	10,170	4,662	-54.16	1,168	733	-37.24
Goods Carrier	99,408	141,939	42.78	88,189	125,160	41.92	7,514	11,503	53.09
Total LCVs	110,837	147,627	33.19	98,359	129,822	31.99	8,682	12,236	40.94
Total Commercial Vehicles (CVs)	155,538	235,192	51.21	146,899	210,356	43.20	14,002	20,040	43.12
Three Wheelers									
Passenger Carrier	221,569	175,511	-20.79	105,263	57,252	-45.61	110,373	119,272	8.06
Goods Carrier	25,017	31,186	24.66	24,548	28,344	15.46	1,049	2,335	122.59
Total Three Wheelers	246,586	206,697	-16.18	129,811	85,596	-34.06	111,422	121,607	9.14
Two Wheelers									
Scooter/ Scooterette	1,259,683	1,499,650	19.05	1,101,805	1,376,736	24.95	83,720	82,365	-1.62
Motorcycle/Step-Throughs	2,967,427	3,971,854	33.85	2,259,423	2,820,684	24.84	748,432	1,021,570	36.49
Mopeds	151,851	176,351	16.13	141,135	155,140	9.92	2,422	1,774	-26.75
Electric Two Wheelers	457	1,349	195.19	274	1,039	279.20	0	0	-
Total Two Wheelers	4,379,418	5,649,204	28.99	3,502,637	4,353,599	24.29	834,574	1,105,709	32.49
Quadricycle	1,099	1,536	39.76	-12	15	-225.00	751	1,272	69.37
Grand Total of All Categories	5,613,200	7,148,934	27.36	4,434,934	5,583,149	25.89	1,082,596	1,361,855	25.80

* BMW, Mercedes and Volvo Auto data is not available



LEAD ZINC UPDATE

ilzda e-newsletter

Feb – March 2021

No.72

Global Lead-Zinc Scenario

LEAD

World Refined Lead Supply & Usage 2016-2021											
000 tonnes	2016	2017	2018	2019	2020	2020	2021	2020/2021			
						Jan	Oct	Nov	Dec	Jan	
Mine Prodn.	4713	4588	4593	4721	4493	353	366	413.6	417.1	417.2	366.2
Metal Prodn.	11546	11897	12186	12187	11741	933	999	1027.2	1072.4	1090.8	999.4
Metal Usage	11508	12046	12232	12162	11545	933	1021	1040.2	1057.9	1079.8	1021.2

ZINC

World Refined Zinc Supply & Usage 2016-2021											
000 tonnes	2016	2017	2018	2019	2020	2020	2021	2020/2021			
						Jan	Oct	Nov	Dec	Jan	
Mine Prodn.	12668	12681	12820	12892	12145	1017	1042	1120.4	1117.8	1129.9	1042.1
Metal Prodn.	13560	13486	13102	13480	13641	1160	1190	1192.7	1189.6	1212.6	1190.2
Metal Usage	13665	13953	13658	13709	13105	1094	1178	1166.9	1186.0	1189.1	1178.5

(Source: ILZSG)

Global Zinc & Lead Markets in 2020

The global Zinc market was oversupplied by 11700 tonnes in January 2021 after a revised surplus of 23500 tonnes in December 2020, data from ILZSG showed. For 2020, the surplus in the market was 536,000 tonnes. In 2020 Lead supply exceeded demand by 223000 tonnes.

RINL-Vizag Steel... aiding Atma Nirbhar Bharat

Now get easy access to

RINL-Vizag Steel's Quality Products

at your doorsteps



logon to <https://esuvidha.vizagsteel.com/rinlesuvidha/index.jsp>

RINL recently launched a new customer friendly initiative i.e. "RINL eSuvidha" – a Online Retail Portal to procure steel by customers all over India.

"RINL eSuvidha"

- Desktop/Mobile enabled website for customers across the country, to logon and access RINL-VizagSteel's Quality products in a convenient, transparent & efficient manner.
- Portal enables RINL to offer quotation against the customer's enquiry and the customer can confirm the order on the portal itself.
- Facilitates the customer to book order-on-line for quantities, make payment on-line for getting the material at their door steps.
- Provides a hassle free access to purchase quality steel products from RINL –Vizag Steel from any part of India.

The principal products of RINL-Vizag Steel includes TMT Rebars, Wire Rod Coils, Rounds, Structurals, Squares & Flats. Manufactured from 100 % virgin steel with stringent tolerances in both physical and chemical properties, RINL-Vizag Steel is the preferred steel for a wide array of customers.

RINL-Vizag Steel's quality products are marketed through a vast network of distributors and dealers in 24 Nos. of locations pan India including Tuticorin (Tamilnadu) & Rayagada (Odisha) distributors under 2-Tier Sales & Distribution system.

RINL-Vizag Steel is the first integrated steel plant to be certified for ISO 9001:2015, ISO 14001, ISO 27001 & OHSAS 18001 standards. It is also one of the first Indian Steel Companies to certified for ISO 50001 - Energy Management Systems.

उत्पाद श्रेणियाँ व उपयोग PRODUCT MIX & APPLICATIONS



WIRE RODS

5.5mm - 45mm Dia

Wire drawing, Bright bars,
Fasteners etc.



ROUNDS

16 - 90mm Dia in straight length

Fasteners, Forging, Re-rolling,
Railways, Construction etc.



'VIZAG TMT' REBARS

8mm - 36mm Dia

Construction - Reinforcement etc.



BILLETS / BLOOMS

Billets : 65mm, 77mm, 90 mm, 125mm RCS
Blooms : 150 x 150, 200 x 200, 250 x 250
320 x 250mm

Forging, Re-rolling,
General Engineering purposes etc.

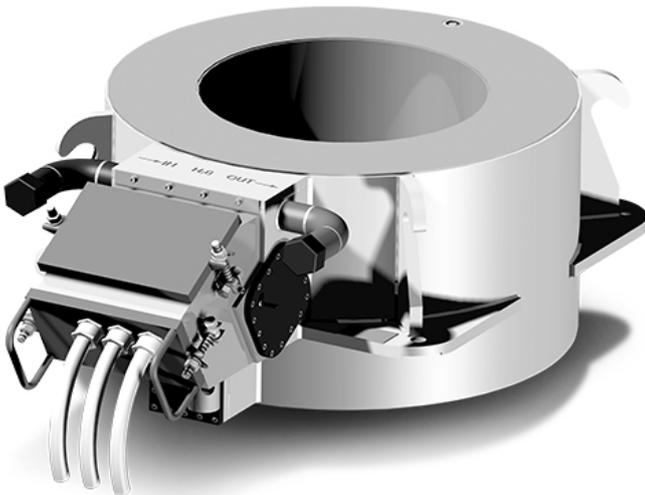


'VIZAG UKKU' STRUCTURALS

Angles 50 x 50 x 6 - 110 x 110 x 10mm
Channels 100 x 50 - 200 x 75mm
Beams 125 x 70 - 150 x 75mm
Flats 80 x 12 - 100 x 20mm

Construction, Fabrication,
Auto Leaf Springs etc.

Electrotherm, the most preferred steel plant maker up to 1 MTPA globally, is now the business partner of Ergolines (Italy), who is designer, manufacturer and market leader of Electromagnetic Stirrers (EMS) for Casters and Furnaces, non-radioactive automatic mould level controllers and automatic mould powder feeders with thickness control.



Caster EMS



MFM - Gaussmeter



EAF EMS



Automatic Powder Feeder



Mould Level Control

PRODUCT RANGE

- Mould Electro-magnetic Stirrers (M-EMS) for CCM
- Strand & Final Electro-magnetic Stirrers (S-EMS & F-EMS) for CCM
- Tundish Stirrers
- EAF, LF & ladles Stirrers
- Aluminum furnace Stirrers
- No-Fe caster Stirrers
- Mould Level Detectors based on inductive, ultrasonic or optical sensors (ILD, ULD, OLD)
- Powder Thickness Control based on ultrasonic, laser line or induction sensors
- Automatic Mould Powder Feeders (MPF)
- Vibrational & Optical Slag Detectors (VSD & OSD) for ladle-tundish
- Mould Oscillation Checker (OPI), portable or fixed
- Magnetic Field Meter (MFM) for Stirrers
- Stirrer maintenance & reconditioning