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Delhi Chapter
Jawahar Dhatu Bhawan
39, Tughlakabad Institutional Area
M B Road, Near Batra Hospital, New Delhi-110062
Tel: 011-21820057, 011-29955084
E-mail:iim.delhi@gmail.com
Website: iim-delhi.com

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Executive Committee : 2020-21

Name	Designation	Mobile	E-mail
Shri K K Mehrotra	Chairman	9868112514 9968653355	kishorekmehrotra@gmail.com
Shri A C R Das	Vice-Chairman	9811330571 7678470803	ajoycrdas@gmail.com
Shri N K Kakkar	Secretary	9871008505	nirmalkakkar@gmail.com
Shri N Vijayan	Treasurer	9818695690	technothermaindia@gmail.com
Dr Ramen Datta	Joint Secretary	9958084110	dattaramen@gmail.com
Shri B D Jethra	Member	9818326878	jethra@yahoo.com
Shri S C Suri	Member	26949167 9650936736	scsuri.iimdc@gmail.com
Shri K L Mehrotra	Member	9810203544	klmehrotra48@gmail.com
Shri G I S Chauhan	Member	9717302437	gisc.delhi@gmail.com
Shri R K Vijayavergia	Member	9650155544	rkv.sail@gmail.com
Shri P N Shali	Member	9810708510	pnshali@gmail.com
Shri Deepak Jain	Member	9868640986	deepakjain@bis.org.in
Shri Manoranjan Ram	Member	9999303008	manoranjanram@yahoo.com manoranjan.ram@paulwurth.com
Dr Mukesh Kumar	Member	9584032329 9650080849	drmukeshkumar@gmail.com
Shri K R Krishnakumar	Member	9818277840	kuduvak059@gmail.com
Shri R K Narang	Member	9899298857	rknarang62@gmail.com
Dr Rajesh Prasad	Member	9818538085	rajesh@iitd.ac.in
Shri B R Thukral	Special Invitee	9818563381	balwantthukral@gmail.com
Shri P K Chatterjee	Special Invitee	9210844819 9958228404	parijat.chatterjee@yahoo.com

BRIEF REPORT ON TECHNICAL TALK ON "INNOVATIVE ROLL PROFILE DESIGN FOR THIN-STRIP COLD ROLLING MILLS" ON 14.08.2021 (VIRTUAL MODE)

Presented by – Shri Navneet Singh, Managing Director, YOGIJI-DIGI Group

A Technical Talk on "Innovative Roll Profile Design For Thin-Strip Cold Rolling Mills was organised by IIM Delhi Chapter on Google Meet Platform on 14th August 2021.

At the outset, Shri K K Mehrotra, Chairman IIM Delhi Chapter welcomed all the participants to the Technical Talk. He welcomed the speaker - Mr Navneet Singh, Managing Director, YOGIJI-DIGI Group. Mr. Mehrotra gave brief details about the activities of Indian Institute of Metals at National level. He also highlighted the activities being undertaken regularly at Delhi Chapter level even during the present challenging times. It was emphasised that the focus of the programmes being organised is on different issues related to metallurgical industry and to keep members abreast of the iron and steel industry even during the pandemic period.

Shri Nirmal Kakkar Honorary Secretary, IIM Delhi Chapter introduced the speaker, Mr. Navneet Singh. After introductory reference, the floor was handed over to Mr Singh.

Mr Navneet Singh made his presentation under following broad heads, viz.

- Background
- Fundamentals of Cold Rolling and Hat Generation in the Rolling Process
- Optimisation of Roll size to Reduce the Roll Flattening Effect
- Simulation of Stress Analysis on 6HI Cold Rolling Mill Stand
- Mill Thermal Analysis and Mechanics of Rolling
- Conclusion

Mr Singh stated that in recent times, the market shift is towards reducing the finish gauges, conserve energy and increase production rates. Thin gauge rolling demand is increasing with increasing competition and pressure to reduce final equipment weight without compromising on strength. There is also demand from certain markets in Asia and Africa for thin gauge roofing sheets, in low budget consumers.

Mr Singh's Technical Talk was based on the optimised roll design of the 4-HI and 6-HI reversing cold rolling mills across the world producing relatively thinner gauges.

Fundamentals of Cold Rolling and Heat Generation in the Rolling Process:

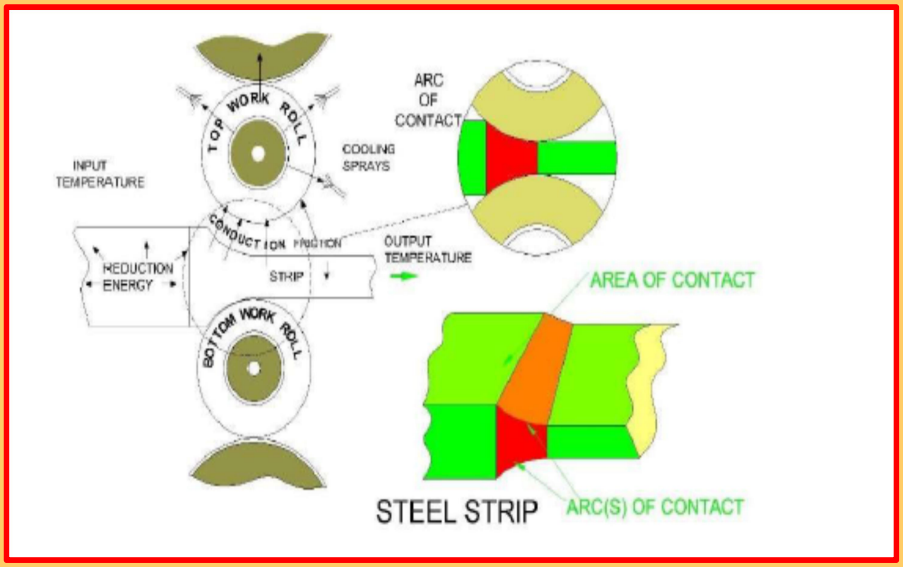
Mr. Singh explained that in Cold Rolling Mill, it is the Arc of Contacts between the hard work roll surface and the softer steel strip surface where friction is created and thus plastic deformation occurs and heat is generated.

YOGIJI-DIGI Team worked on the principle that if we can identify the heat generated and its distribution among the work rolls and the strip, then the work roll design could be optimised so that stress levels are minimised and the rolled strip will have uniformity along its width.

He further explained how they identified and worked on the optimised roll design. Details are as below:

Within the roll gap or the arc of contact, energy is distributed in to three main areas:

- Deformation energy uniformly distributed within the strip
- Frictional energy due to relative sliding between the roll and strip
- Heat transfer from the strip to the rolls due to temperature difference



The heat absorbed by the rotating roll is subject to a more complex mechanism. The heat will continuously migrate to cooler zones in the roll and out of the roll body at localised chill zones created by the coolant spray impingement on the roll surface.

The roll is subject to following thermal and mechanical fatigue during rolling:

- Thermal fatigue as the roll cycles through the elevated temperature in the roll bite and

lower temperature zones cooled under the coolant sprays

- Mechanical fatigue by mechanical compression (flattening) and physical deflection caused by the rolling force and the torque applied by the motor
- Also, if the strip is very thin, the top and bottom work rolls may contact each other beyond the edges of the strip. It is a known fact that the strip plastic deformation and roll deformation can be directly used in the control of strip shape and profile during rolling.

With the above picture Mr. Singh explained the principle of a cold rolling mill and the process of cold rolling of steel.

Optimisation of Roll size to reduce the Roll flattening effect

In any mill, it is not possible to roll with strip width equal to the roll face width. So, roll bending and roll flattening are two key phenomenon in the cold rolling process. The rolls act like beams and the separating force causes the rolls to bend and the amount of bending depend on the size and length of the rolls and the strip width.

In a 6-HI Mill, the intermediate rolls can be laterally shifted to roll virtually any width of strip with any incoming profile at any roll separating force to nullify the roll bending movement but the roll bending cannot be eliminated.

The roll flattening will depend on:

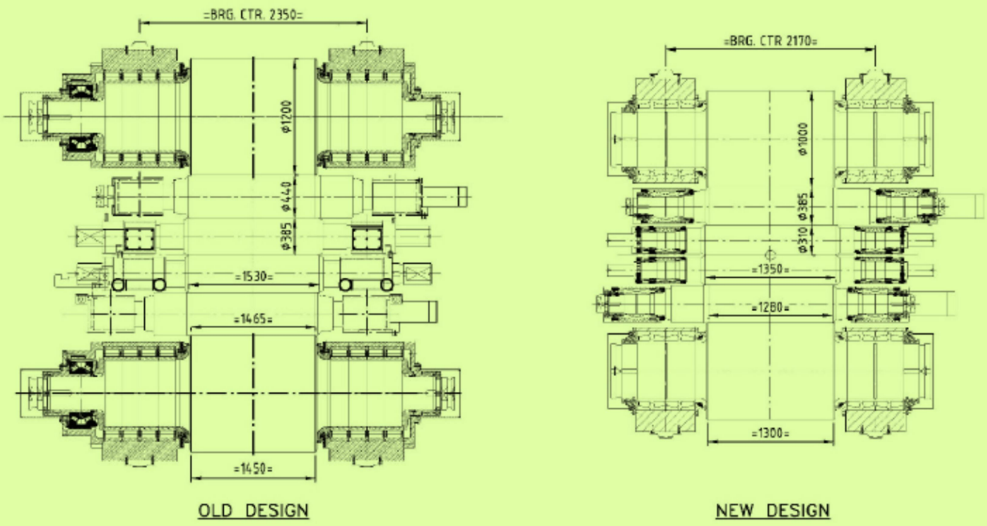
- The total RSF (Roll Separating Force)
- Diameter of the roll - the exponent ratio of roll flattening to roll diameter is 3 to 2
- Face width of the roll or the roll contact outside the strip edges

With the market trends moving towards thinner gauge and high strength steels it was imperative to further optimize the cold rolling process to increase the reduction on the strip without compromising the strip quality.

With the above principles YOGIJI-DIGI team designed the work roll barrel length, back up roll barrel length and the intermediate roll barrel length, to accommodate the minimum and maximum strip widths to be rolled.

The reduction in barrel lengths subsequently led to reduction of the bearing centres or the loading points which helped to improve the strip profile significantly.

Figure below compares the old design and the new design of rolls of a cold rolling mill



Subsequently, Mr Singh stated that the findings were validated through a "Simulation of Stress Analysis on 6HI Cold Rolling Mill Stand" and "Mill Thermal Analysis and Mechanics of Rolling" tests and the results were found to be positive.

Mr. Navneet Singh concluded his presentation by providing an overall view of the new work roll design of YOGIJI-DIGI 6-HI cold rolling mills and enumerated the benefits if its path breaking design.

Benefits of the Unique Roll Profile:

The unique roll profile in the YOGIJI-DIGI reversing cold rolling mills has led to the following benefits:

1. 12 - 15 % more reduction on the strip and hence lesser number of passes.
2. Reduced number of passes means lesser yield stresses on the strip.
3. Better strip shape profile on account of controlled work roll edge contact force.
4. Reduced thermal and mechanical fatigue on the rolls.
5. Elimination of cooling arrangement for emulsion system.
6. 2 - 3 % reduction in the rolling power consumption.
7. 356 tons of CO_2 emissions saved every year.

The presentation of Mr. Navneet Singh was supported by easy to understand power point presentation materials and evoked a lively response amongst the audience. There were a number of interesting questions/observations and suitable responses amongst the

participants after the Presentation.

The talk was attended by about 25 persons.

The audience found the programme very interesting and intellectually stimulating for those in the Engineering Industry.

Mr. Nirmal Kakkar, Hon. Secretary, IIM DC, proposed a vote of thanks to Mr Navneet Singh, his organisation Yogiji Digi and all the participants in the Technical Talk.

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Note:

A technical paper on the above subject has been accepted and presented at the AISTech-2021 conference held at Nashville, TN, USA. The paper is included in the conference proceedings and is published on the AIST (Association of Iron & Steel Technology) website vide Digital Object Identifier number DOI 10.33313/382/068. A patent has also been filed on this innovation with title "A COLD ROLLING MILL" vide Indian Patent Application No. 202011045856 on 21.10.2020. The author has also been awarded the "MOST PROMISING BUSINESS LEADER OF ASIA 2018-19" at the Asian Business Leaders Conclave held at Hong Kong.

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SAIL RETURNS TO BLACK; POSTS RS 3,897-CR NET PROFIT FOR JUNE QUARTER

Domestic steel major SAIL returned to the black, posting a consolidated net profit of Rs 3,897.36 crore for the June 2021 quarter. The company had posted a Rs 1,226.47-crore net loss in the year-ago quarter, Steel Authority of India Ltd (SAIL) said in a BSE filing. Its net income during April-June 2021 more than doubled to Rs 20,754.75 crore, compared with Rs 9,346.21 crore in the year-ago period. Total expenses stood at Rs 15,604.07 crore, against Rs 11,325.10 crore a year ago. In a statement, the company said its crude steel production during the quarter stood at 3.77 million tonnes and sales 3.32 million tonnes.

Its Chairman Soma Mondal said, "The performance during the quarter bears testimony to objective-driven strategy and resilience by the SAIL collective despite the adverse impact of the dominant second wave of COVID-19." She added that though demand for steel products in the quarter has not had the same momentum as during the March 2021 quarter, focused

interventions in several areas of operations have helped in achieving this robust performance. The demand in the latter part of the year is expected to remain healthy with sustained domestic consumption coming from sectors like infrastructure, manufacturing, packaging and automotive, Mondal said. She added it is indicated from the present consumption cycle and future sectoral trends. SAIL, under the Ministry of Steel, is the country's largest steel-making company having an annual steelmaking capacity of about 21 million tonnes.

Source: Business Standard

TATA STEEL Q1 CONSOLIDATED PAT AT RS 8,907 CR VS LOSS OF RS 4,416 CR YOY

Tata Steel, the country's oldest steel producer, reported a consolidated net profit of Rs 8,907 crore in June quarter as against a loss of Rs 4,416 crore in the corresponding period last year on the back of increased revenue in Q1'FY22 and low base on account of Covid-19's first wave last year.

FINANCIALS

Consolidated figures in ₹ Crore

	Q1FY21	Q4FY21	Q1FY22	YoY	% chg QoQ
Sales	24,997	48,951	52,574	110.3	7.4
PBIDT	742	14,607	16,395	2109.2	12.2
Net profit	-4,417	6,644	8,907	LTP	34.1

Source Exchange (Results Filing); Compiled by BS Research Bureau

Led by strong steel prices, top line or total revenue from operations in the period under review stood at Rs 53,372 crore, up 108 per cent from the same period last year, as both India and Europe operations contributed sizeably.

Steel deliveries at Tata Steel Europe increased by 17.4 per cent year-on-year (YoY) to 2.33 million tonnes (MT) in Q1 FY22, while India deliveries were up 41.6 per cent YoY to 4.15 MT. Sequentially, both regions saw a decline in steel deliveries due to partial lockdowns and temporary shutdowns in few steel consuming sectors in India (second covid-19 wave), and lower flex sales in Europe.

As per *Bloomberg* estimates, consolidated net sales was seen at Rs 52,497 crore, while analysts had estimated the EBIDTA and bottomline to be at Rs 16,219 crore and Rs 8,997 crore, respectively. So, while the topline beat estimates, EBITDA (at Rs 16,185 crore) and net profit fell a tad short of expectations. EBITDA is earnings before, interest, taxes, depreciation and amortisation.

"Over the last 15 months, the global economy has been recovering driven by policy support and progressive vaccination which has led to improvement in business and customer confidence. However, Indian markets were adversely impacted again during the last quarter due to the 2nd wave of Covid-19 which impacted our steel production as well as deliveries," TV Narendran, chief executive officer and managing director was quoted as saying.

Narendran, further, added that demand has begun recovering in India, though domestic steel prices continue to be at a steep discount to China import parity prices. "We continue to focus on our objective to attain and retain market leadership in chosen segments by building strong customer relationships, superior distribution network, rolling out brands and developing new products & solutions in steel and new materials," he said.

The consolidated EBITDA increased 13.3 per cent sequentially and 25.7 times YoY to Rs 16,185 crore with improved realisation across key entities. Tata Steel India operations registered the highest-ever quarterly EBITDA at Rs 10,274 crore, with 11.6 per cent in quarter-on-quarter and 8 times YoY growth in Q1 FY22.

Alongside, Europe EBITDA improved sharply to 150 million pound in the quarter under review.

While consolidated topline for the period under review is the highest-ever quarterly sales for Tata Steel, EBITDA and net profit are also the highest since March 2018 quarter.

On a consolidated basis, Tata Steel generated free cash flow of Rs 3,553 crore during Q1'FY22 despite working capital absorbing Rs 8,272 crore. Free cash flow is cash flow from operations (minus) capital expenditure (capex). With regard to debt, the gross debt reduced to Rs 84,237 crore with debt repayment of Rs 5,894 crore. Net debt as on June 30, 2021, declined to Rs 73,973 crore. The company's net debt/EBITDA improved to 1.59x, while net debt/equity improved to 0.91x.

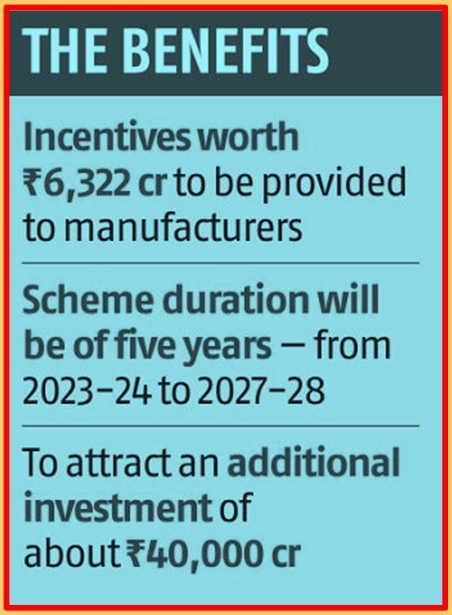
"We continue to prioritise capex spend on ongoing projects and strategically essential investments," the company's release quoted Koushik Chatterjee, executive director and chief financial officer as saying.

The company spent Rs 2,011 crore on capex during the quarter; work on the Pellet plant, the Cold Roll Mill complex and the 5 MT per annum expansion at Kalinganagar is ongoing, said the company.

Source: Business Standard

UNION CABINET APPROVES RS 6,322 CRORE PLI SCHEME FOR SPECIALITY STEEL

The Union Cabinet recently approved Rs 6,322 crore production-linked incentive (PLI) scheme for speciality steel in a move that is expected to attract an additional investment of about Rs 40,000 crore and capacity addition of 25 million tonnes in the segment. According to a government statement, the scheme will give employment to about 525,000 people of which 68,000 will be direct employment. Speciality steel has been chosen as the target segment by the government because out of a production of 102 million tonnes of steel in 2020-21, only 18 million tonnes of value-added steel/speciality steel were produced in the country. Moreover, of 6.7 million tonnes of imports in the same year, approximately four million tonnes were of speciality steel, resulting in forex outgo of approximately Rs 30,000 crore, as per government estimates.



The five categories of specialty steel which have been chosen in the PLI Scheme are: coated/plated steel products, high strength/wear resistant steel, speciality rails, alloy steel products and steel wires, electrical steel. Speciality steel can be used in various strategic applications like defence, space, power, automobile sector, specialised capital goods, among others. There are three slabs of PLI incentives, the lowest being four per cent and highest being 12 per cent, which has been provided for electrical steel (CRGO). The duration of the scheme will be five years, from 2023-24 to 2027-28.

Dilip Oommen, president, Indian Steel Association, and chief executive officer, ArcelorMittal Nippon Steel India (AM/NS India), said that it would help bring the country at par with the best in the industry globally. The steel sector is on an uptrend and major integrated producers have lined up major expansion plans; the PLI scheme is expected to boost those plans further.

Tata Steel managing director and chief executive officer, T V Narendran, said, “Committed to Nation building, Tata Steel has been a pioneer in import substitution, especially in the auto sector.” “As we continue on our journey of growth, the PLI scheme will provide an added

advantage to our future plans where value-added products will be a major focus."

Ranjan Dhar, chief marketing officer, AM/NS India, said that the scheme will incentivise investments from AM/NS in very high-end steel such as automotive segment and also coated steel for solar applications to name a few. "Value-added steel will be a major focus area for the company. All this will benefit our customers in India and abroad," he added.

Soma Mondal, chairman, Steel Authority of India Ltd (SAIL) said that this significant decision to introduce PLI for speciality steel would have far reaching positive impacts on the domestic steel industry in general and SAIL in specific. "We shall consider the scheme while deciding our next capex cycle and product-mix in the coming times," she further said.

JSPL managing director, V R Sharma, too, said that the company would "definitely" register for the scheme. "Most of the imports into India are in the value-added and speciality segment. The PLI scheme will boost manufacturing capacities by Indian mills in this segment and MSMEs will be able to source from them directly," he added. The government expects the benefits of the scheme to accrue to both integrated steel plants and smaller players (secondary steel players) as speciality steel production to increase to 42 million tonnes by the end of 2026-27.

"This will ensure that approximately Rs 2.5 trillion worth of speciality steel will be produced and consumed in the country which would otherwise have been imported. Similarly, the export of specialty steel will become around 5.5 million tonnes as against the current 1.7 million tonnes of specialty steel getting forex of Rs 33,000 crore," the government statement said.

Source: Business Standard

STRESSED STEEL PLANTS ACQUIRED VIA IBC SEEING FASTER TURNAROUND: CRISIL

Stressed steel plants acquired under the Insolvency and Bankruptcy Code (IBC) resolution process in India are seeing faster returns. Despite pandemic-linked blips, domestic demand outlook remains strong, helping acquirers ramp up utilisation levels, according to rating agency CRISIL. The steel plants acquired via IBC process include Bhushan Steel, Essar Steel, Electrosteel Steels, Monnet Ispat & Energy Ltd and Bhushan Power & Steel.

The ongoing steel upcycle will also mean stronger-than-expected realisations over the medium term. Consequently, acquirers may see about 20 per cent faster payback and are

well set to tap the brownfield potential housed under these assets. The five stressed steel capacities, totalling 21 million tonne (MT), were acquired mostly by other primary steel producers. These assets accounted for 70 per cent of total financial claims resolved or liquidated under IBC in the steel sector till March 31, 2021. They had total financial creditor claims of Rs.1.7 trillion. These were resolved under the IBC process between fiscal 2018 and 2021 with nearly 60 per cent of the total claims paid by the acquirers.

For acquirers, the debt inherited via acquisition became sustainable after the haircuts. Also, turnaround in operational performance led by improved efficiency was the key for a reasonable payback period of around six years, given average domestic steel prices of approximately Rs 39,000 per tonne in fiscal 2018. Expectedly, the acquirers have been able to turn these capacities around — utilisation rates improved from 65 per cent in fiscal 2018 to more than 80% by the end of fiscal 2021 — riding on operational debottlenecking, improved raw material sourcing, access to working capital and strong managerial oversight.

A bigger boost, though, has come from the current steel upcycle. Global steel prices have rallied strongly driven by strong demand and higher iron ore input costs due to supply tightness. Domestic steel prices, which are driven by the landed cost of imports, have also witnessed a similar surge – at 15 per cent higher in fiscal 2021 compared with fiscal 2018.

Manish Gupta, senior director, CRISIL Ratings, said domestic iron ore prices have increased. But a combination of higher steel prices and better utilisation rates, with operational debottlenecking, lifted operating margins for the acquired assets from nearly 13 per cent in fiscal 2018 to around 22 per cent last fiscal. This is expected to be even stronger at around 30% this fiscal.

Despite some moderation, global prices could remain well above 2018 levels even next year. That is primarily due to China's continued focus on reducing carbon emissions, which should keep a leash on global steel supply. The upshot of all this is that paybacks for acquirers of the stressed assets will reduce by up to 20 per cent, from around six years to less than five years, CRISIL added.

Source: Business Standard

TATA STEEL BSL SETS UP UV OXIDATION PLANT IN ODISHA TO TREAT CYANIDE IN WASTEWATER

Tata Steel BSL Ltd has set up the "world's first" ultraviolet oxidation plant in the industry at its facility in Odisha's Dhenkanal district to treat cyanide in coke oven wastewater, a deadly pollutant, the company said. The UV oxidation unit has been established with support from

the research and development team of parent company Tata Steel, it said in a release.

The steel maker said the conventional method of treating cyanide in coke oven wastewater is called solid sludge separation technology, which may lead to cyanide toxicity by secondary means of toxic sludge decomposition. The UV oxidation technology would address the issue at the Narendrapur plant with capacity to treat 80 cubic metres of wastewater per hour, it said.

"One of the best ways to handle cyanide is complete destruction of it by oxidation," Tata Steel BSL Chief Operating Officer Subodh Pandey said. "The UV oxidation plant helps us achieve that and, thus, no footprint is left for further contamination of the environment," he said. Tata Steel BSL Ltd, formerly known as Bhushan Steel Ltd, was acquired by Tata Steel in May 2018 through its wholly-owned subsidiary Bamnipal Steel.

Source: Money Control

HINDALCO'S OUTLOOK REMAINS FIRM; ALUMINIUM PRICES DRIVE PERFORMANCE

Hindalco Industries Ltd.'s stellar June quarter (Q1 FY22) show was led by strong performance across segments. India aluminium margins were at record highs, led by firm base metal prices, while Novelis's outstanding performance with record profitability helped boost consolidated performance.

Indian operations were driven by aluminium prices (with premium) on the London Metal Exchange that averaged at about $2,556 per tonne during the June quarter. This compares to an average of $1,567 a tonne in the year-ago quarter and $2,020 a tonne during the previous quarter, respectively.

Aluminium business Ebitda rose 29% sequentially to Rs 2,352 crore, despite volumes declining 8% due to the impact of the lockdown. The company attributed this to favourable macros, improved product mix, and better operational efficiencies. This pushed overall India business Ebitda up 29.3% sequentially to Rs 2,430 crore.

With firm aluminium prices and gradual reopening of the economy, the outlook for the company's profitability remains strong. Rising domestic consumption will help improve margins. The company resorted to exports during the June quarter to offset the decline in domestic volumes during the lockdown.

"We believe higher prices, completion of alumina expansion by Q2FY22, focus on value-added products in both aluminium & copper businesses and completion of announced extrusion & flat-rolled product (FRP) capacity expansion over the next few years bodes well for India operations," said analysts at Elara Securities India Private Ltd.

Copper smelter maintenance shutdown seen in Q1 is also behind, and the segment will drive the company's performance further.

The company reported a strong show for its US subsidiary Novelis. Novelis recorded its best-ever quarterly adjusted Ebitda of $505 million in Q4. This was attributed to higher organic volume, favourable metal benefits, and improving Ebitda contribution from the acquired Aleris.

Overall, analysts have a buoyant outlook for Hindalco. Favourable factors for Novelis include synergy guidance for Aleris acquisition being revised upward, continuing expansions and strong demand for its products. For India aluminium, that is witnessing a sharp recovery in domestic demand, improving per tonne profitability with firm LME prices bodes well.

Other factors that keep analysts positive on the company, include management expectations for TC/RC improving in 2HFY22, strong free cash flow generation and focus on de-leveraging to contain net debt/Ebitda. Analysts at JM Financial Institutional Securities Ltd forecast net debt/ EBITDA reduction from 2.9x in FY21 to 1.7x in FY23, given strong free cash flow generation.

Source: www.livemint.com

SELF-CLEANING ALUMINIUM SURFACE

Researchers have developed a flake-like nano-structure on aluminium surface, making it durable and ideal for medical devices.

Aluminium is a light metal that has many industrial applications as it can be easily cast, machined and shaped. However, atmospheric degradation due to contaminants and humidity significantly limits its performance and sustainability. Besides, the leaching of aluminium causes environmental and health issues. Now, researchers have developed a nano-structured self-cleaning aluminium surface, which could have multiple applications ranging from biomedical to aerospace and automobiles to household appliances. The process is easily scalable to industrial-level production. Harpreet Singh Grewal, Harpreet Singh Arora and Gopinath Perumal, researchers from the Department of Mechanical Engineering; and Sajal Kumar Ghosh and Priya Mandal from Department of Physics, Shiv

Nadar University, Delhi-NCR, have jointly developed the surface, which shows immense mechanical, chemical, and thermal durability, and restricted corrosion and leaching.

They developed a flake-like nano-structure on aluminium surface by heating the sample in water at 80 degrees C for an hour. The surface obtained by this facile and environment-friendly approach showed a complete wetting nature (ability of liquid to spread over a solid surface). A coating of low surface energy hydrocarbon material ensures water droplets immediately roll off the surface. This makes it self-cleaning, reducing bacterial adhesion and growth, and hence suited for medical devices, including dental implants and heart-assistive devices.

Source: Business Line

INFLATION COMES FOR ALUMINUM, AS THE EVERYWHERE METAL SURGES

Aluminum is heading for a seismic shift as a long-running supply glut starts to fade, setting the stage for shortages and a price rally that could run for years. Demand is set to surge on the back of climate-change investment, and mega-producer China — which accounts for more than half of global output — is cracking down on smelting to reduce pollution and meet green targets.

Those combined forces mean the oversupply that's dominated the market for more than a decade is on the way out, leaving buyers bracing for a new era of scarcity and higher costs. With aluminum a feature of everyday items, from food packaging and beer cans to iPhones and cars, what's playing out in markets has implications for inflation and consumers' pockets. It's already jumped 26% this year to about $2,500 a ton, one of the best performers on the London Metal Exchange. Goldman Sachs Group Inc. is among those seeing more gains ahead, forecasting record prices above $3,000 by late next year. In the short term, the global economy's post-pandemic rebound, and demand in the automotive and construction industries, are eating into inventories. But while in the past, supply kept pace with additional demand, that could change once China's cuts kick in, leaving the market in a deep deficit by 2024, according to trading giant Trafigura Group.

"It takes quite a mindset change — some viewed buying aluminum similar to buying groceries in the supermarket," said Philippe Mueller, head of aluminum trading at Trafigura. "It's not going to work like this anymore." The metal isn't alone in facing short-term issues. The combination of soaring demand and spluttering supply after Covid-19 disruption has upended many raw materials markets, all of which is feeding the global inflation scare that's taken hold in some corners this year.

For aluminum, China's actions are key. The government started cracking down in 2017, capping smelting capacity at 45 million tons a year, and its subsequent carbon emissions targets have dashed any expectations that policymakers might ease off on the sector. "The government is serious this time," Alison Li, co-head of base metals research at Mysteel, said by phone from Shanghai. "Now China has its carbon neutrality mission, we think they will stick to that limit."

Actual production will reach about 40 million tons in China this year, so for now producers still have some room to boost output, according to Goldman Sachs. But the industry is likely to hit the ceiling by 2024, and from then on the Chinese market will move into deficit. Producers elsewhere could help to plug the gap, but prices will need to rise substantially to make investment worthwhile, given higher costs for environmental compliance. Trafigura estimates aluminum needs to hit $3,500 within the next year to prevent shortfalls, given the time lag to build new smelters.

Source: Business Standard

INDIA COAL DEMAND TO RISE BY 9% IN 2021: IEA

With fast recovery in power generation, India's coal demand is expected to increase by almost 9 percent in 2021, double the rate at which global demand is expected to grow, International Energy Agency said. India's steep economic slide in 2020 pushed oil demand down by more than 8 percent, while coal demand for power generation and industry fell by 5 percent and 11 percent, respectively. But with India's economy expected to bounce back strongly in 2021, energy demand is set to rebound by 7 percent, pushing demand 2 percent above 2019 levels.

Coal demand is expected to increase by almost 9 percent, contributing the most to rebounding demand, as electricity demand recovers, IEA said in a recent report. Global coal demand in 2021 is set to exceed 2019 levels and approach its 2014 peak and is on course to rise 4.5 percent in 2021, with more than 80 percent of the growth concentrated in Asia, IEA said. As the world enters a second year of the Covid-19 pandemic, the annual Global Energy Review assesses the direction energy demand and carbon dioxide emissions are taking in 2021.

China alone is projected to account for over 50 percent of global growth. Coal demand in the United States and the European Union is also rebounding, but is still set to remain well below pre-crisis levels. The power sector accounted for only 50 percent of the drop in coal-related emissions in 2020. But the rapid increase in coal-fired generation in Asia means the

power sector is expected to account for 80 percent of the rebound in 2021.

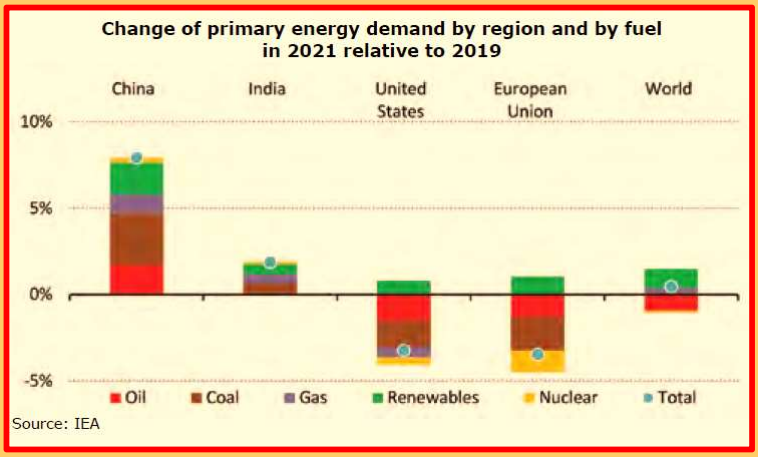
The outlook for 2021 is, however, subject to major uncertainty. It depends on vaccine rollouts, the extent to which the Covid-19-induced lockdowns scarred economies, and the size and effectiveness of stimulus packages. Current economic outlooks assume global GDP will surpass 2019 levels, lifting demand for goods, services and energy. However, transport activity and, particularly, international travel remain severely suppressed. If transport demand returns to pre Covid levels across 2021, global energy demand will rise even higher, to almost 2% above 2019 levels, an increase broadly in line with the rebound in global economic activity.

Key findings

- The Covid-19 pandemic continues to impact global energy demand. Third waves of the pandemic are prolonging restrictions on movement and continue to subdue global energy demand. But stimulus packages and vaccine rollouts provide a beacon of hope. Global economic output is expected to rebound by 6 percent in 2021, pushing the global GDP more than 2 percent higher than 2019 levels

> With India's economy expected to bounce back strongly in 2021, energy demand is set to rebound by 7 percent, pushing demand 2 percent above 2019 levels. Coal demand is expected to increase by almost 9 percent, contributing the most to rebounding demand, as electricity demand recovers."

- Emerging markets are driving energy demand back above 2019 levels. Global energy demand is set to increase by 4.6 percent in 2021, more than offsetting the 4 percent contraction in 2020 and pushing demand 0.5 percent above 2019 levels. Almost 70 percent of the projected increase in global energy demand is in emerging markets and developing economies, where demand is set to rise to 3.4 percent above 2019 levels. Energy use in advanced economies is on course to be 3



percent below pre-Covid levels.

- Global energy-related CO_2 emissions are heading for their second-largest annual increase ever. Demand for all fossil fuels is set to grow significantly in 2021. Coal demand alone is projected to increase by 60 percent more than all renewables combined, underpinning a rise in emissions of almost 5 percent. This expected increase would reverse 80 percent of the drop in 2020, with emissions ending up just 1.2 percent below 2019 emissions levels.
- Global coal demand in 2021 is set to exceed 2019 levels and approach its 2014 peak. Coal demand is on course to rise 4.5 percent in 2021, with more than 80 percent of the growth concentrated in Asia. China alone is projected to account for over 50 percent of global growth. Coal demand in the United States and the European Union is also rebounding, but is still set to remain well below pre-crisis levels. The power sector accounted for only 50 percent of the drop in coal-related emissions in 2020. But the rapid increase in coal-fired generation in Asia means the power sector is expected to account for 80 percent of the rebound in 2021.
- Electricity demand is heading for its fastest growth in more than 10 years. Electricity demand is due to increase by 4.5 percent in 2021, or over 1 000 TWh. This is almost five times greater than the decline in 2020, cementing electricity's share in final energy demand above 20 percent. Almost 80 percent of the projected increase in demand in 2021 is in emerging market and developing economies, with China alone accounting for half of global growth. Demand in advanced economies remains below 2019 levels.
- Renewables remain the success story of the Covid-19 era. Demand for renewables grew by 3 percent in 2020 and is set to increase across all key sectors – power, heating, industry and transport – in 2021. The power sector leads the way, with its demand for renewables on course to expand by more than 8 percent, to reach 8 300 TWh, the largest year-on-year growth on record in absolute terms.

Coal demand rebounding strongly in 2021

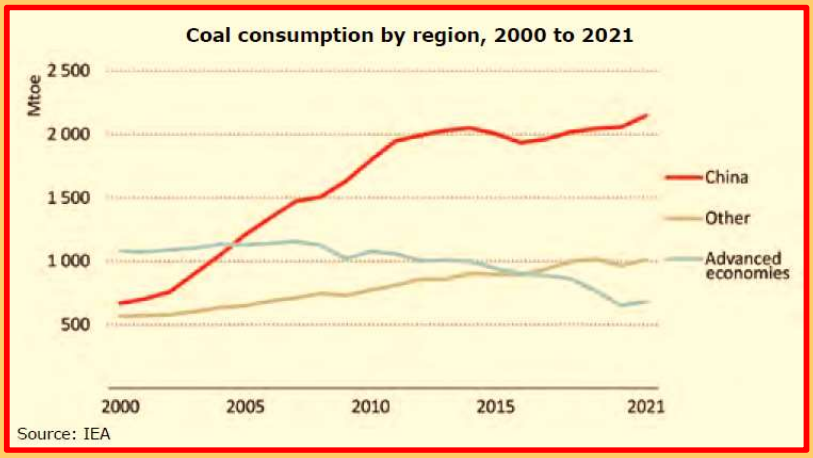
Coal demand rebounding strongly in 2021, driven by the power sector. "In 2021, we expect recovering economic activity to reverse 2020's decline in coal demand, with a 4.5 percent increase pushing global coal demand above 2019 levels," IEA said. The power sector accounted for just over 40 percent of the drop in coal use in 2020, but the rapid increase in coal-fired generation in Asia sees it account for three-quarters of the rebound in 2021.

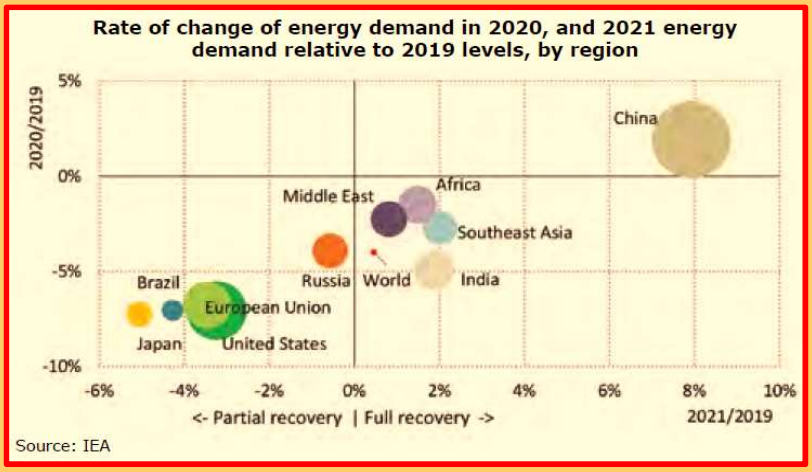
Gas prices are also expected to rise in 2021, leading to some switching back to coal, notably in the US and the European Union. The growth of coal consumption in 2021 is a continuation of the rebound in global coal demand that began in the final quarter of 2020. While an exceptional cold snap in December in northeast Asia was partly to blame for increasing coal demand, the rapid growth of coal-fired electricity generation is a reminder of coal's central role in fuelling some of the world's largest economies.

Gas prices are also expected to rise in 2021, leading to some switching back to coal, notably in the US and the European Union

Coal vs gas

Global gas demand in 2021 remains subject to significant uncertainty regarding not only electricity demand and industrial production but also the price evolution of gas vs. coal in key markets such as the United States, as well as in regard to the weather across the northern hemisphere towards the end of 2021. Global gas demand is expected to recover 3.2 percent in 2021, erasing the losses in 2020, and pushing demand 1.3 percent above 2019 levels. This recovery in gas demand has been driven mainly by fast-growing markets – primarily in Asia and, to a lesser extent, the Middle East – and subject to uncertainties regarding industrial rebound or fuel price competitiveness.





Demand in the EU is expected to rebound to levels on a par with 2019. Growth in the US is more gradual, with demand not expected to return to 2019 levels in 2021. Colder than average temperatures in the early months of 2021

across the northern hemisphere increased gas demand. Winter storms also led to some extreme supply-demand tensions and price spikes, first in January in northeast Asia and then February in North America, notably in Texas.

Rising prices have challenged the position of gas in electricity generation as seen in the US where demand in the first quarter of 2021 was lower than the first quarter of 2020. Across the year, higher gas prices are expected to keep gas demand in the US close to 2020 levels and around 2 percent below 2019 levels. In the EU, higher carbon prices provide some support to gas vis-à-vis coal; preliminary data for the first quarter show an 8 percent y-o-y increase in gas demand in Europe.

The picture is very different across developing Asia, where demand in 2021 is expected to increase by 7 percent on 2020 levels, putting demand 8.5 percent above 2019 levels. China leads the increase, with 2021 demand more than 14 percent (or 44 bcm) higher than 2019 levels. The industry and buildings sectors are expected to lead gas demand growth in 2021, with industry demand increasing by almost 5 percent as global output and trade volumes recover. China, India and other fast-growing Asian markets are driving this growth. Consumption from the buildings sector also grows around 5 percent, supported by colder temperatures in Q1. Gas use for electricity generation is expected to grow just 1 percent due to low electricity demand growth, increasing renewable capacity, and tougher price competition from coal.

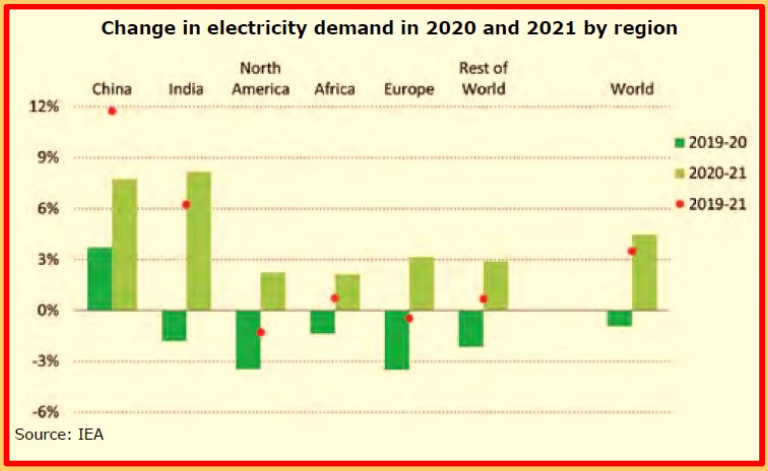
India outlook

In India, April 2020 marked the lowest point of coal consumption in many years as a significant economic slowdown in the second half of 2019 was followed by Covid lockdowns. The economic recovery since led to a continuous rebound of coal consumption, with a 6 percent increase in the fourth quarter of 2020. Higher coal demand was also driven by a decline in generation from hydro, following 2019's exceptionally high output. IEA's estimate for India coal consumption assumes a strong economic rebound in 2021, pushing Indian GDP firmly above 2019 levels and driving up coal demand by almost 9 percent to 1.4 percent above 2019 levels.

"Across developing Asia, gas demand in 2021 is expected to rise by 7 percent on 2020 levels, putting demand 8.5 percent above 2019 levels. China leads the increase, with 2021 demand more than 14 percent (or 44 bcm) higher than 2019 levels"

China outlook

China is the only major economy where coal demand increased in 2020. Strong economic growth underpins electricity demand in 2021, while post-Covid stimulus measures support production of steel, cement and other coal intensive industrial products.



"We expect coal demand to increase by more than 4 percent in 2021, keeping demand well above the 2014 peak and reaching the highest ever levels for China," IEA said. The Chinese coal power fleet (including combined heat and power, or CHP, plants) represent around one-third of global coal consumption. The future of both Chinese and global coal demand depends on the Chinese electricity system. Electricity demand growth remains closely linked to economic growth in China, with demand increasing on a one-to-one ratio with GDP. What additional share of electricity demand is met by coal depends on how fast technologies such as renewables and nuclear come on line. Last year, despite the Covid-19 outbreak, renewable capacity additions increased to over 100 GW, largely owing to rushes to complete projects before a subsidy phase-out deadline. Because of accelerating increases in renewables deployment, coal is expected to meet only 45 percent of the projected 8 percent increase in electricity demand in 2021.

Electricity demand outlook for 2021

With a projected 2021 GDP growth of 9 percent in China and 12 percent in India, electricity demand is expected to grow by around 8 percent in both countries compared with 2020.

For China, the projected increase comes on top of 2020 growth, putting demand in 2021 almost 12 percent above 2019 levels. Southeast Asian countries are also expected to see a strong return to growth, with demand increasing 5 percent in 2021, putting total demand 3 percent above 2019 levels. Electricity demand is expected to increase by 4.5 percent in 2021, supported by rebounding economic activity and rapid growth in major emerging

economies such as China.

In advanced economies, vaccination campaigns against Covid-19 are expected to enable the progressive lifting of restrictions between spring and autumn. The anticipated demand growth of 2.5 percent should be sufficient to push demand within 1 percent of 2019 levels. In the US, demand is expected to increase by around 2 percent, boosted by economic stimulus and colder temperatures during the early months of 2021. This increase should push demand to within 1.6 percent of 2019 levels.

Source: Coal Insights

NMDC REPORTS AN ALL-TIME HIGH PAT AT RS 3,193 CR IN Q1 FY22

State-owned iron ore producer, NMDC Ltd reported its best-ever quarterly net profit at Rs 3,193 crore, up 499 per cent during the June quarter of FY 22 mainly on account of better demand and due to peaking of international and domestic iron ore prices in the market. The company's previous record profit was in FY 15 with a PAT of Rs 1,915 crore.

"Indian steel majors reporting strong results and also announced expansion plans. That combined with the Government's determination to continue spending on infrastructure projects while we return to normalcy is extremely encouraging for us at NMDC," the company's CMD, Sumit Deb said in a media statement.

The company's turnover was at Rs 6,512 crore during the June quarter, up 236 per cent from Rs 1,938 crore in the same period, last year. NMDC's iron ore production was up 35 per cent year-on-year at 8.91 million tonnes, and sales grew 51 per cent to 9.45 million tonnes. The company's average sales realisation was at Rs 6,823 per tonne, up 123 per cent year-on-year. 94.49 per cent of its total iron ore sales were for the domestic market on the back of a shortage of iron ore which increased the demand for the steel sector's significant raw material. The company's Ebitda margins were at 66 per cent with consolidated Ebitda at Rs 4,322 crore from Rs 759 crore last year. During the quarter under review, the company's total expenses came at Rs 2,393 crore up 92 per cent year-on-year.

Source: The Economic Times