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"We spent a lot of time to zero in on the exact technology and automation needed to see us through twenty years." — Subhajyoti Mukherjee

1. Almost 96% of inputs at Hazira are received through sea routes via Essar's own port.

DRIVING INTO ESSAR STEEL'S STATE-OF-THE-ART Hazira complex, one if forced to admit one's insignificance in the grand scheme of things. The impressive 3,000-acre steel plant towers in both scale and complexity of operations. Making 300 grades of steel, the company caters to the needs of every industry from defence and earth-moving equipment, to railways, automotive and white goods. Supported by Essar's very own port, the company's steel business produces close to a mammoth seven million tonnes of steel per annum. That figure is only set to grow to around eight million tonnes in this coming year on the back of the industry's slow, but steady recovery from the slump that has haunted steel makers these past couple of years.

"With the intervention of the Government in terms of policy changes and MIP, the market has definitely improved. Things are looking better now. The Indian market has also grown. Of course, this was until demonetisation came in, but we have reduced retail and increased exports to counter the short-term effects of demonetisation," states Dilip Oommen, CEO & MD, Essar Steel India.

The strategy seems to bode well for them. "We have been able to seamlessly ramp up volumes. Between the end of last year and this year, in the space of one year, we have more than doubled volumes without increasing the inventory levels. And that is very important. It is because we emphasise on quality products that our products are well received in the markets. Therefore, the moment we came back, we started ramping up our volumes with production volumes and sales volumes, and there was ready acceptance in the market," confesses Oommen.

MASS MOVEMENT

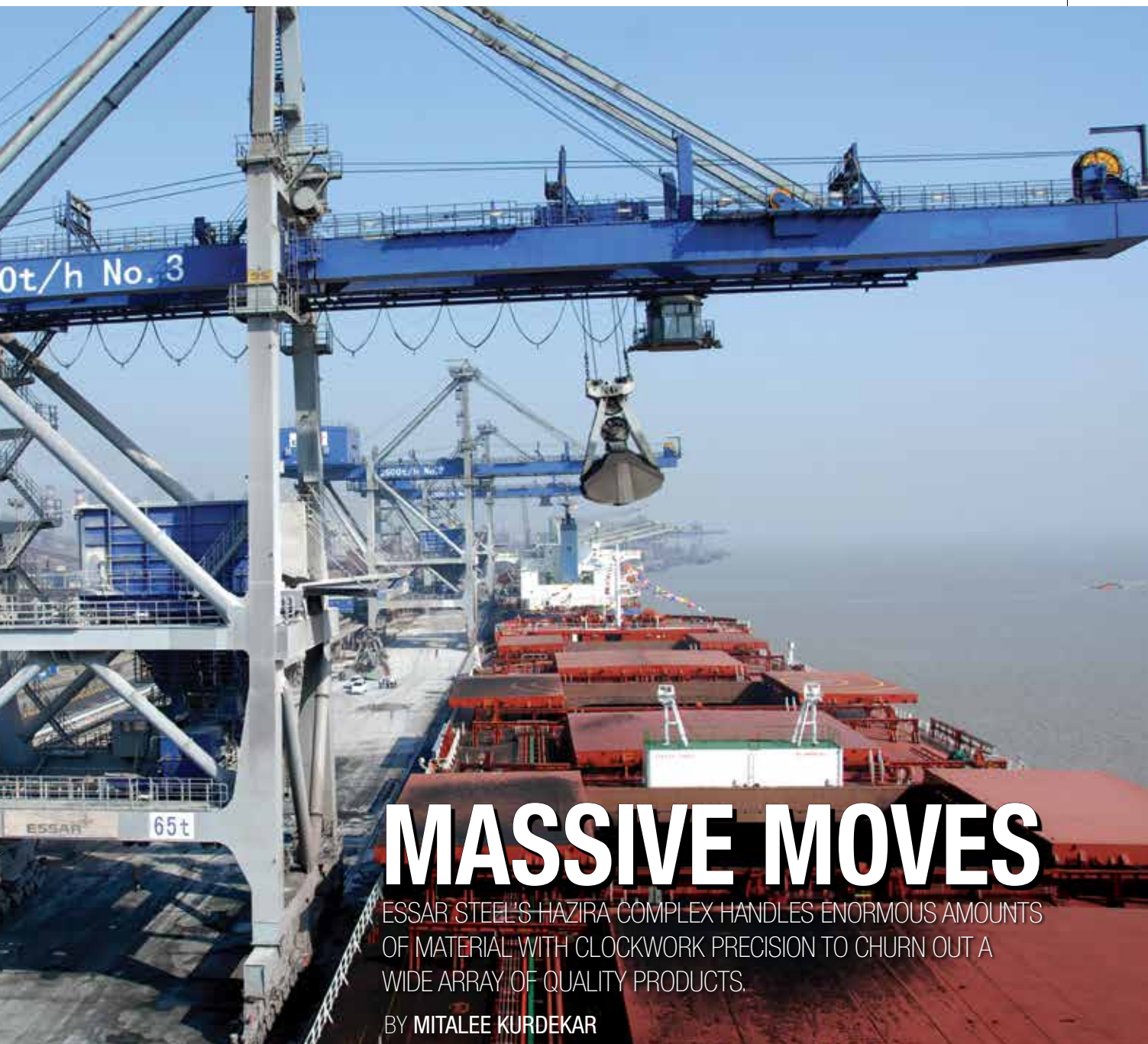
Of course, such high production figures require a sturdy supply chain backbone. And this is Essar Steel's strong suit. In fact, for every tonne of steel produced, three tonnes of material is handled. The company relies on sea, road and rail networks for transport. Right from the time the raw material – shipped from their Visakhapatnam and Paradip facilities – is received at the Essar Port in Hazira, there is a seamless material handling network in place. Around 96% of inputs are received through sea routes. Once the vessel reaches Hazira, these shipments are then unloaded onto a conveying system.

"The conveying system is directly connected to the respective process areas and the stockyard. So our philosophy of handling is that the material required for the day is discharged straightaway from the vessel to the process plant via silos, so that it doesn't touch the stockyard at all. This way, there is minimum double handling of the material. What we receive in excess of our day consumption goes to the stockyard, where it



is stacked in a level manner. It can then be reclaimed with the stacker-cum-reclaimer machine and brought back to the system as needed," explains BJ Dave, VP, services, Essar Steel India.

The entire conveying system – which was largely made by Essar at their heavy engineering fabrication centre – is around 90kms in length, varying in width from 650mm to 1,800mm with the base speed ranging from 1m/sec to 3m/sec, and the capacity starting from 100 tonnes/hr to 2,500 tonnes/hr. Material is or-



MASSIVE MOVES

ESSAR STEEL'S HAZIRA COMPLEX HANDLES ENORMOUS AMOUNTS OF MATERIAL WITH CLOCKWORK PRECISION TO CHURN OUT A WIDE ARRAY OF QUALITY PRODUCTS.

BY MITALEE KURDEKAR

dered according to the consumption needed for each process. For example, if 1 tonne of iron in the HBI process needs to be produced, 1.5 times of the input material is needed. So, for 12,000 tonnes of HBI, 18,000 tonnes of material has to be provided.

The company believes in demand forecasting, and works on their production plan a month in advance. The entire supply chain – from input to output – is monitored to the last tonne via a complex SAP software that is integrated into Essar Steel's IT system,

wherein a sales representative from a remote location can directly feed an order and check production capabilities before confirming it to a client.

MANUFACTURING ON AUTOPILOT

A similar degree of automation has been introduced in the production of the material itself, with each steel plant – the Plate Mill, Hot Rolling Mill, Cold Rolling Mill, Compact Strip Mill, and Pipe Mill – being operated through individual Control Rooms. Their activities and patterns



are further monitored and analysed via an advanced, one-of-its-kind Data Control Centre. This kind of tracking helps ensure quality assurance and reliability in operations, in turn assisting to streamline operating costs.

Speaking of operations, the plant is divided into distinct mills. The process starts with steel making, where a blast furnace makes molten iron, which is then transported in refractory-lined ladles carrying 150 tonnes each via an intra-rail network to the Plate Mill. A minor 40-500 drop in temperature takes place during this transfer. At the Plate Mill – which claims to produce the widest plate in the world at 5m (used for minimum weld-joint applications such as tanks, windmills and shipbuilding) – a walking beam lifts slabs of molten iron and two-directional rolling is carried out to create plates.

Similarly, slabs are transferred via a conveyor belt to the Hot Rolling Mill, where seven machines roll in one direction to reduce the thickness of the slab and create a uniformly thick coil. The coils are hardened according to final application and post finishing, each coil is checked for quality at the Measure House, before it is stamped with its production history and clamped for final packaging and dispatch.

In addition, there is also a Cold Rolling Mill, Compact Strip Mill and Pipe Mill, which makes both longitudinally- and latitudinally-welded pipes of as large as 134" diameter. Further customisations are available at the heavy engineering department, where one finds fabrication jobs being carried out for everyone from Reliance to IOCL, and many foreign customers too. Value addition such as galvanisation and pickling is also carried out on site. In case of product non-compliance with quality standards at any stage of produc-

tion, the product is immediately flagged off to be set aside for melting and re-use or as scrap to be sent to the scrap yard. The latter requires senior management approval and that is even though such scrap will still be incorporated into production post melting. This just goes to show how seriously operations are taken, ensuring almost zero-wastage at the plant.

In this regard, the ever-increasing level of automation plays a huge role in ensuring that productivity standards are maintained. Subhajyoti Mukherjee, executive director, Hazira operations, Essar Steel India, adds, "On the automation front, it's a continual improvement. When we set up this plant, we made the choice of equipment keeping in mind the automation levels. It's not like we have procured an equipment and then decided about automation. Instead, we decided at the strategy level that besides location and infrastructure available for putting up the plant, we would have an assembly line that used the best available technology. We spent a lot of time to zero in on the exact technology and automation needed

2. Two-directional rolling in action at the Plate Mill.

3. The Pipe Mill specialises in both latitudinal and longitudinal welding.



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PLANT VISIT ESSAR STEEL

to see us through twenty years. And that has been a continual process.”

FOCUS ON THE FUTURE

One of the most impressive features of Essar's steel business is its ability to adapt and improve. They have a full-fledged R&D Centre, which is constantly involved in developing innovations for all three avenues – raw materials, in process and finished products. Recent innovations have been seen in areas such as material used for defence applications and briquettes, which has been commercialised. But that's not all. Most of these are workable innovations, as there is a mandate from the company linking them to profit.

“We ensure that a significant portion of our sales – around 20-25% – are from products developed over the last three years. So we are always innovating and coming out with new products. We also ensure that our share from the internal value-added product mix gets the highest preference. In fact, we are always looking the maximise the production of niche products where competition is much lesser, whether it is colour coated steel – where we are the market leaders – or galvanised products, downstream products like pipes etc.,” suggests Oommen.

In fact, the company has seven Service Centres in Pune, Chennai, Hazira, Bhuj, Indore, Kolkata and Bahadurgarh, which complement the Hazira plant in terms of carrying out value-added services such



as colour coating of steel for varied industrial applications. This is something that has helped them sail through tough market conditions and continues to hold them in good stead, even today.

All in all, the company seems to be well set on the track to recovery. Commenting on the coming year's outlook, Oommen professes, “We will move as per the market. The market is still too volatile, even internationally. We expect the market to stabilise and it definitely will. There is growth seen in the US and Europe, and the domestic market in China is also looking up. Given this scenario, we see a better future for the next year.” **MT**

4. Essar has an internal rail network to transport material on site.

5. Finished steel coils being loaded onto the ship for dispatch.



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