

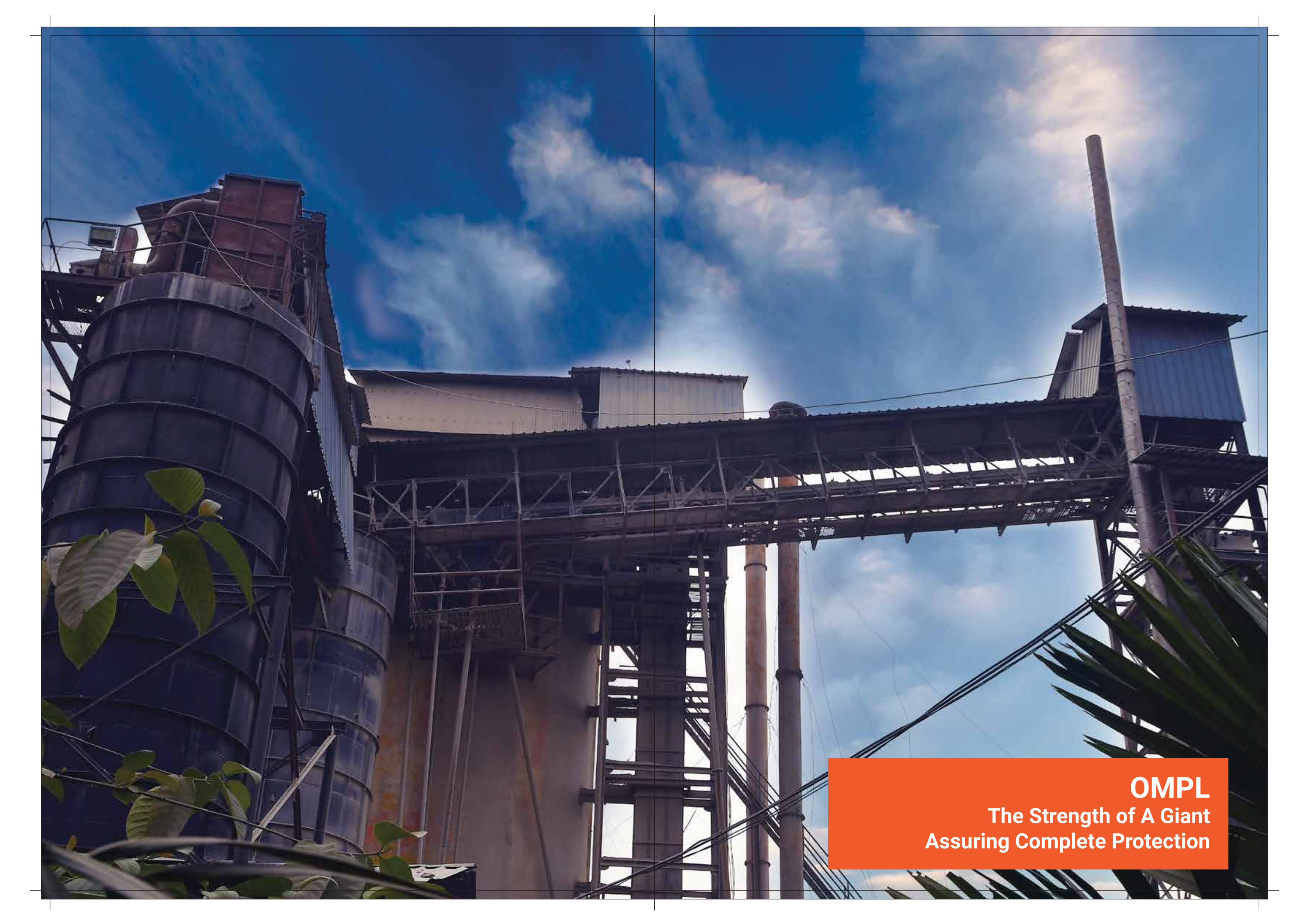
IS:1786



CM/L- 5100199403



Orissa Metallurgical Industry Pvt. Ltd.
Shyamraipur Gokulpur Kharagpur West Midnapur West Bengal
www.orissametaliks.com



OMPL
The Strength of A Giant
Assuring Complete Protection

A Conglomerate with a Range of Products & Facilities

- Iron Ore
- Coal Production
- Sponge Iron Production
- Blast Furnace Operation
- Sinter Plant
- Captive Power Plant
- Billet/Bloom
- DI Pipe
- Wire Rod
- Fero Alloys
- Coal Washery
- Coke Oven
- Pellet Plant
- Own Railway siding

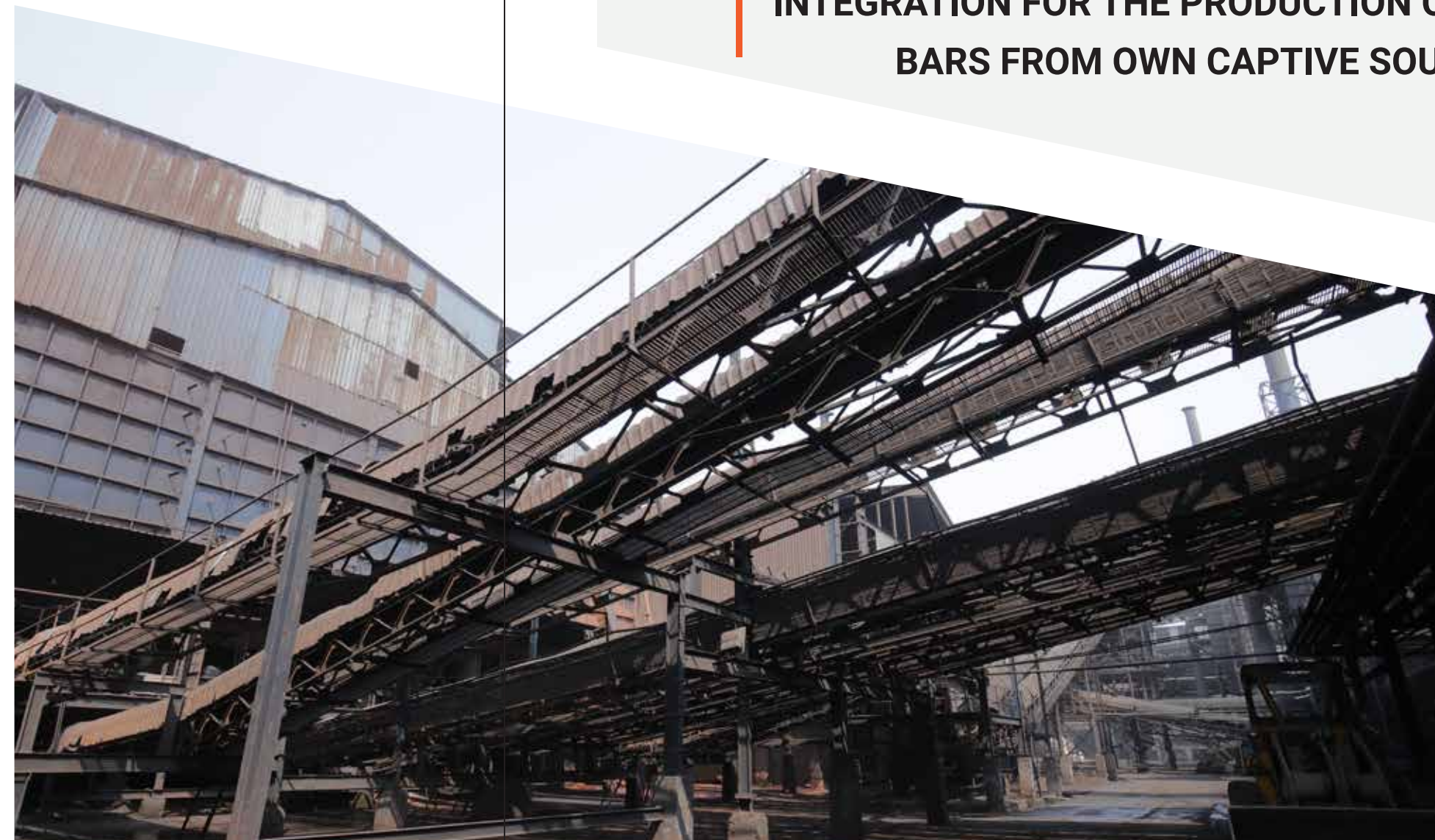


The Group also manufactures Ferro Alloys, Coal Washery, Seamless Pipe and DI Pipe and DI Pipe. It exports 4.0 Million TPA Iron Ore Fines to China & other South East Asian Countries, and mineral based products to many other parts of the World. Applying latest innovations and state of the art technology in the manufacturing of Integrated Steel, has enabled Rashmi to hold premium quality of products, meet adequate supply and control over price. Rashmi is awarded 'Ultra Mega Project' status by Govt. of West Bengal. It is among the first companies who got the environmental and pollution clearance in West Bengl. The Company has its excellent logistic support with its Captive Railway siding at Barbil & Kharagpur with three tracks inside the plant.

**IT IS AN APPROACH TOWARDS BACKWARD
INTEGRATION FOR THE PRODUCTION OF TMT
BARS FROM OWN CAPTIVE SOURCE ...**

Total Control Over Quality Integrated Steel Making

Orissa Metallurgical Pvt. Ltd., the flagship company of the Group was incorporated in the year 2004 in West Bengal. It is one of the leading Pig Iron & Steel Manufacturing companies today with capacity of 1.65 MTPA. Expanding from its existing set up of Pig Iron & Sinter Plant since 2007 with capacity of 7.7 Lac TPA, the company came up with own Billet producing Steel melting shop in 2009 with a capacity of 4.1 Lac TPA & the Rolling Mill in 2010 with a capacity of 5.3 Lac TPA. It is an approach towards backward integration for the production of TMT Bars from own captive source and have a complete control over the quality of materials used in the steel production process. As a result the customers have construction grade steel of world class quality. It also allows the company to insulate itself from any fluctuation in prices of raw materials. along with maintenance of healthy profitability.



Transforming Crude Iron to Super Strong Steel Treating Raw Materials at The DRI (Direct Reduced Iron) Plant

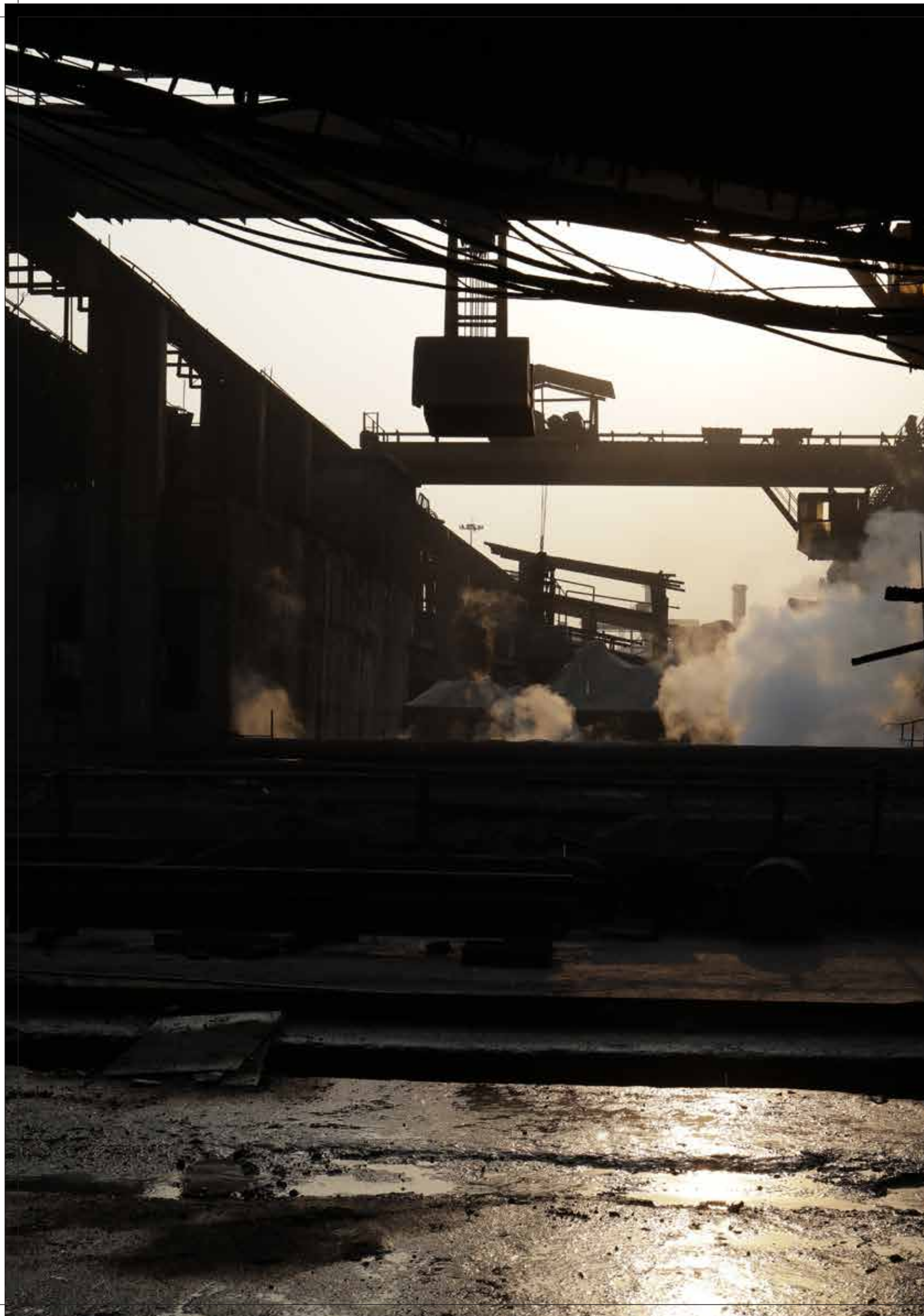
The Integrated steel production process kick starts with the raw materials in form of Iron ore (Red Hematite) being extracted from the Mines and taken to the DRI Plant to obtain Sponge Iron. The same is charged with different sizes of Coal (Carbon) by conveyor from different stock houses into the Rotary Kiln. Physical factors like Temperature & Air Volume in the compartments of the Kiln determine the course of the reduction reaction, known as the 'BURWAD' reaction. Reactants eventually get reduced and Sponge Iron mixed with Charcoal is obtained, which gets collected out of an exit point fitted with the Water Cooling system. A Magnetic Separator comes into play that extracts the Sponge iron which is then stocked in a Stock House. A sample is taken and grades are assigned after testing.



Obtaining High Quality Billets From The Steel Melting Shop

The Sponge Iron with Molten Pig Iron now enters the Steel Melting Shop, the junction for the production of Superior Grade Billets. The temperature in the furnace is increased from 1600°C to 1680°C to melt it owing to the prescribed requirements. The iron in the molten state are send to a special AOD vessel where molten material is then oxidized, controlling the chemistry of the steel as per desired specification and requirement. After degassing & mixing some alloy elements, the molten material is then tapped into the ladle to allow to go to the continuous caster through EOT crane for manufacturing of Billet/Bloom in desire size/section. The final sample is collected and sent to the laboratory for a stringent checking of its properties. Finally, the casted billets are forwarded to the Quality Control Department, which ensures it complies with IS: 2830 & 2831.

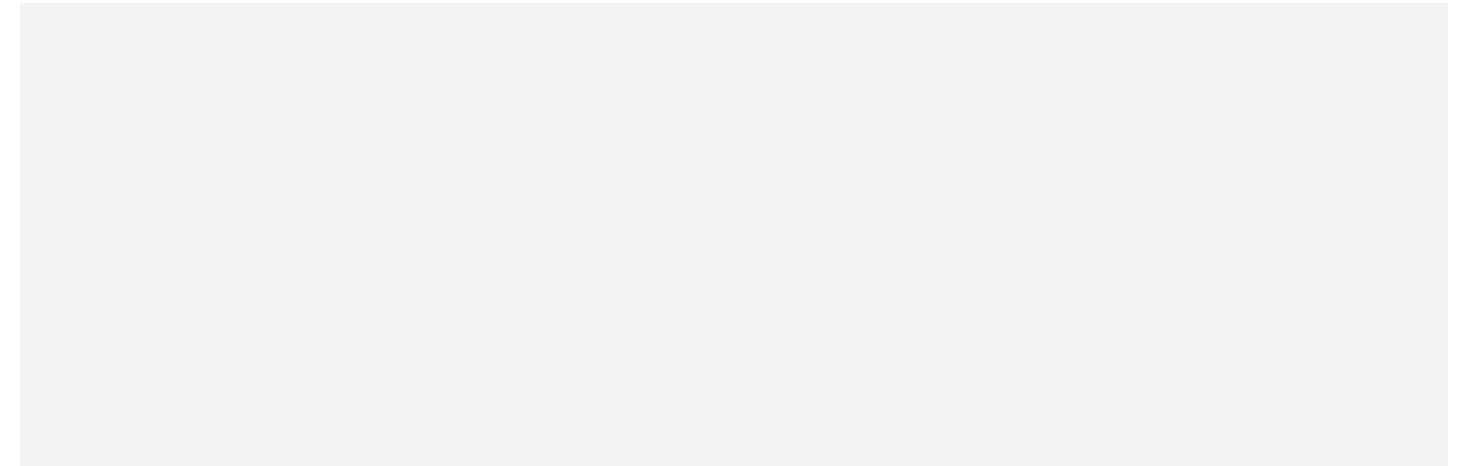




The State of the Art Rolling Mill For Superior TMT Rods

Here, the Billets are passed through different Rolling Sections with a view to achieve the desired shape & size. The Red Hot Metal passes through the Quenching box, undergoing a cooling treatment resulting in a sharp drop of temperature from 950°C to 350°C. The double cooling system results in the formation of a hardened structure called the Martensite ring on the periphery of the Rod, keeping the core of the Rod red hot.





The bar leaves the quenching section for **Self Tempering** with the temperature of the core being higher than that of the surface. This allows heat to flow from the core to the surface, consequently tempering the surface, resulting in a structure called 'Tempered Martensite'. The core remains austenitic at this stage.

Next to it, the **Atmospheric Cooling** comes in to play and the heat of the core area tempers the Martensite part consequently. The ductile Core now becomes the Ferrite Pearlite structure. The quenched & self tempered Martensite part is hardened, apt to withstand load of bigger proportions, while the Ferrite-Pearlite part is ductile and endowed with elongation properties. Once more these are subjected to a mechanical & Chemical tests at par with IS 1786:2008. After qualifying, the TMT Bars are cut into required length, bundled up and tagged.

Mechanical Properties

Specification Properties	As Per ISO 1786:2008				OMPL TMT Grade			
	Fe 415	415D	Fe 500	500D	Fe 415	415D	Fe 500	500D
02% Proof Stress/ Yield Stress (Min.) N/mm ²	415.0	415.0	500.0	500.0	440.0	445.0	545.0	550.0
Elongation% (Min.)	14.5	18.0	12.0	12.0	20.0	22.0	19.0	23.0
Ultimate Tensile Strength (Min.) N/mm ²	485.0	500.0	545.0	545.0	540.0	545.0	650.0	670.0
Bend up to 20mm	3d	2d	4d	4d	3d	2d	4d	3d
Over 20mm	4d	3d	5d	5d	4d	3d	5d	4d
Rebend up to 10mm	5d	4d	5d	5d	5d	4d	5d	4d
Over 10mm	7d	6d	7d	7d	7d	6d	7d	6d

Chemical Properties

Specification Properties	As Per ISO 1786:2008				OMPL TMT Grade			
	Fe 415	415D	Fe 500	500D	Fe 415	415D	Fe 500	500D
% Carbon (Max)	0.30	0.25	0.30	0.25	0.19	0.19	0.21	0.20
% Sulphur (Max)	0.060	0.045	0.055	0.040	0.060	0.045	0.055	0.040
%Phosphorus (Max)	0.060	0.045	0.055	0.040	0.060	0.045	0.055	0.040
% Sulphur & Phosphorus (Max)	0.110	0.085	0.105	0.075	0.110	0.085	0.105	0.075

OMPL CRS (Corrosion Resistance Steel) TMT

% Carbon (MAX)	% Manganese (MAX)	% Sulphur (MAX)	% Phosphorus (MAX)	% Silicon (MAX)	% Chromium (MAX)	% Copper (MAX)
0.17	1.00	0.040	0.1	0.35	0.25	0.50

Total Reliability

Section Weight Chart

BARS DIA (mm)	BIS Standard		OMPL Standard
	Specified Weight (Kg/Mtr)	Tolerance Limit (Kg/Mtr)	Tolerance Limit (Kg/Mtr)
8mm	0.395	0.367 - 0.423	0.367 - 0.400
10mm	0.617	0.574 - 0.660	0.574 - 0.620
12mm	0.888	0.884 - 0.932	0.844 - 0.900
16mm	1.580	1.501 - 1.660	1.501 - 1.610
20mm	2.470	2.396 - 2.544	2.400 - 2.514
25mm	3.850	3.735 - 3.966	3.735 - 3.928
28mm	4.830	4.685 - 4.975	4.685 - 4.927
32m	6.310	6.121 - 6.499	6.121 - 6.436

An ISO : 9001-2008 certified Company
Licensed with BIS for ISI marking
as per IS 1786 : 2008 (for TMT Bars)

TMT Bar Size Ranges from 8 mm to 32 mm
(Fe 415, 415D & Fe 500, 500D)



Earthquake Resistant

The thermo-mechanical treatment attributes higher elongation to the rashmi bof low carbon tmt bars compared to the isi standard. The higher elongation helps it to be highly resistant to earthquakes.



Corrosion Resistant

At the time of manufacturing, the outer surface of the rashmi bof low carbon tmt forms a hard ferric oxide layer in presence of moisture and air when it is treated on the cooling bed. This coating helps the bar resist corrosion.



Fire Resistant

Rashmi bof low carbon tmt is specially manufactured to tolerate heat up to 600° centigrades without affecting its strength, which is not so high in the cases of ordinary ctd bars and tor steel.



Extra Strength and Ductility

The manufacturing process used ensures a combination of tempered martensite on the surface and fine grain ferrite-pearlite in the core providing higher strength, toughness, and ductility.



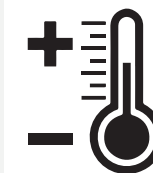
Super Bondability

The uniformly machine-ribbed bars develop a strong bonding with its surrounding concrete. It adds to the strength and firmness of a construction.



Higher Weldability

Raw materials for rashmi bof low carbon tmt has a presence of very low carbon. It helps at the time of welding without losing any strength at the joints.



Fatigue Resistant

As there is no residual /torsional stress, fatigue is zero.



Steel Saving

Maintaining a low tolerance of sectional weight enables rashmi bof low carbon tmt to save 15% approx. In steel, consumption compared to others.

Integrated Production Process Chart from Mines to Metal

