

1. Organization Profile:

Jindal Steel and Power (JSP) is one of India's leading business houses, with a significant presence in steel, mining, power and infrastructure. With business operations spanning across India, Africa, and Australia, JSP has firmly established itself as a global player in its chosen industries.



MISSION
Building Nations,
Empowering Communities

VISION
An ever-flourishing company focused on
nation building, value creation and
sustainable development.

- VALUES**
- Extreme Ownership
 - Better Than Before
 - Respect for People
 - Sustainability

Under the visionary leadership of Mr Naveen Jindal, JSP has achieved remarkable growth. Currently, the company offers a product portfolio that caters to markets across the entire steel value chain and contributes to realising the vision of Make in India. The organisation's focus on innovation, enhancing capabilities and enriching lives continue to propel its growth and commitment towards building a self-reliant nation.

Jindal Steel and Power's (JSP) operations across steel, mining and power are seamlessly integrated, spanning from its own iron ore mines to the production of finished steel products. This holistic approach enhances JSP's value proposition, allowing it to meet the dynamic requirements of various industries, both in India and globally.

Jindal Steel & Power (JSP) is a leading player in the steel industry, renowned for its robust steel business. With cutting-edge manufacturing facilities, JSP offers a wide range of customised and standardised high-quality steel products from its integrated steel plants in India. The company serves various sectors with its diverse product portfolio, including infrastructure, construction and automotive, establishing a formidable presence for JSP in both domestic and international markets across 36+ countries.

Jindal Steel & Power (JSP) has a robust mining capacity that exceeds 33 MTPA, dedicated to coal and iron ore extraction. These resources are strategically positioned, both within India and internationally, boosting the company's self-sufficiency. This strategic approach has significantly reduced JSP's reliance on external suppliers, yielding remarkable reductions in costs and enhancing operational efficiencies.

Jindal Steel & Power (JSP) maintains a total Captive Power Plant (CPP) capacity of 1,634 MW, distributed between its Raigarh and Angul facilities. JSP is actively expanding its power portfolio by acquiring an under-construction power plant in Angul, which will contribute an additional 1,050 MW capacity in the near future.

Plant at Tensa Location:

Jindal Steel & Power (JSP) – T.R.B. Iron Ore Mines is situated at Tensa valley in district of Sundargarh, Odisha. Operational **since 1990** equipped with fully mechanised techniques, JSP's Tensa iron ore Mine currently produces about 3.11 MTPA of iron ore. This partially fulfils the company's requirement of iron ore for producing sponge iron. The Mining commenced in the year 1990 and the mining lease is **valid up to year 2035**.

The unit comprises of Heavy Earth Moving Equipment and Crushing & Screening Plant to provide raw material to Steel Plant & Pellet Plant. The Mine has a dry crushing and screening plant.

The Iron Ore from Mines of size less than 800 mm are fed into Primary Crusher through hopper & further goes to Secondary Cone Crusher conveying, Screening & Separation takes place at different stages & the Final products are:



(10-40) mm
{Used in Blast Furnace
(60 to 62% Fe)}



(5-20) mm
{Used in DRI Plant
(58 to 60% Fe)}



Fines (-5mm)
{Used in Sinter Plant &
Pellet Plant (60 to 62% Fe)}

2. Milestone on the Journey of Manufacturing Excellence:

TRB Iron Ore Mines has adopted TPM as a tool to achieve Business Excellence for fulfilling our company vision & mission. Accordingly, Total productive maintenance (TPM) is the process of using machines, equipment, employees and supporting processes to maintain and improve the integrity of production and the quality of systems. Improvement OME through TPM is often done by forming small, multidisciplinary teams to address core areas such as preventive and autonomous maintenance, training employees who operate machinery, and the security and standardization of work processes. Total productive maintenance focuses on the efficient and effective use of the means of production, meaning all departments should be involved. These small teams work together to increase productivity and decrease downtime through equipment reliability.

We started our TPM journey with 5 Pillars i.e. Jishu Hozen, Kobestu Kaizen, Planned Maintenance, Education Training & Safety Health Environment and subsequently after getting Award for TPM Excellence, Category B. We have activated other 3 Pillars i.e. **OTPM, QM & DM** Pillar in Excellence in Consistent TPM Commitment Award & In Level - 3, many of our Major equipment has been shifted to other mines, so we have **merged AM & PM Pillars as Autonomous Planned Maintenance (APM)**, Pillar & also added **Sustainability** as new Pillar to serve the surrounding society & community in line with corporate vision and all our activities are carried out through these **9 Pillars**.

After adopting TPM as a tool the major initiatives has been introduced.

- ❖ Maximize **profitability by Cash Score Concept** through KK Pillar Approach.
- ❖ **Enhancement of EBITDA** through continuous development of more High Appealing Customized Products
- ❖ **Resource Enhancement** by Extension of Common boundary working with adjacent mines & dewatering project.
- ❖ **Process wise loss identification & elimination** by adopting Kobestu Kaizen methodology by using tools like **Advance Why-Why Analysis, Bottleneck analysis, SMED** etc.
- ❖ **Customer complains elimination** through Quality maintenance approach.
- ❖ **People development** by Conducting a skills gap analysis, Planning up job shadowing events, Mentorship programs, Up skilling or reskilling programs, Knowledge sharing activities & Online learning courses etc. by **Long Term human resource development programme.**
- ❖ **Reduction of downtime, breakdown & outsourcing job** by required Skill & Training
- ❖ **Implementation of E-Compliance portal** (JINSAFE, SORA & Complinity) for compliance of statutory obligation
- ❖ **Corrective maintenance of the machines by increasing the operational conditions, safety, maintainability, reliability and quality of repair** by PM Methodology
- ❖ **Automation & Digitization** of Logistic Process
- ❖ Reduction of Truck turns around time through **Makigami Analysis.**
- ❖ **Developed equipment competent operator** and role sharing has been enhanced between operator & mechanic
- ❖ **Achievement of Dispatch Target** by reducing Inbound & Out bound Truck turnaround Time.
- ❖ Study of **Safety Sensitivity Index & Health Wellness Index** by SHE Pillar Approach
- ❖ **Setting development and design goals, Reliability & Ease of production** through DM approach.
- ❖ **Reject to resource** theme is taken for selling of reject materials.

3. Benefits Achieved

Perfect production' with zero breakdowns, zero defects and zero harm may seem like a dream. But the Total Productive Maintenance (TPM) approach is bringing manufacturers closer to making this a reality. We reviewed in detail understanding of TPM in right spirit & practicing in day-to-day basis over years has brought significant changes in work culture system orientation, analytical approach & flexibility.

- ❖ Improving teamwork among the entire organization members – top management to the front line.
- ❖ Making machines function with high reliability and consistent performance.
- ❖ Improving machine availability through reduction of down time and elimination of major losses which are defined elaborately according to TPM definitions.
- ❖ Increased morale of the team members or front line members
- ❖ Empowering and formally authorizing operators through TPM training and support to own and take pride in maintaining their own machines/ Equipment.
- ❖ Imparting training for self-development
- ❖ Future leaders identified through Leadership development programme

4. TPM Award Assessment Achievement Sheet

Special Award for TPM Achievement

Jindal Steel & Power

TRB Iron Ore Mines, Tensa



Company	Jindal Steel & Power
Plant name	TRB Iron Ore Mines, Tensa
TPM Slogan/Objectives	TPM - Innovation beyond Experience
Year when TPM activity started	2014 - 15
Year of benchmarking	BM - 1 : 2014-15, BM - 2 : 2017-18, BM - 3 : 2019-20

Category	Index (Calculation Formula)	Unit	Kick off/TPM Started (or last time awarded) FY 2019-20	Actual Status FY 2023 - 24 Upto Dec-23	Target FY 2023 - 24
S	Number of work-related accidents requiring days off work	Cases/ year	0	0	0
S	Number of work-related accidents not requiring days off work	Cases/ year	0	0	0
P	Productivity for main products	Parts/Operator hours	355	372	380
P	OEE (or Overall Plant Efficiency)	%	83.8	92.54	90
P	Availability	%	92	98	97
P	Performance Rate	%	92	98	97
P	Quality Products Rate	%	95	99	98
P	Number of breakdowns	Breakdowns/ year	0	0	0
P	MTBF	Hour	542.3	914.25	900
P	MTTR	Hour	3.18	1.6	2.50
Q	Number of customer complaints	Number/year	0	0	0
Q	In-line defect rate, scrap and rework	%	5	0.3	1
C	Cost index	Cost/MT (₹)	460	374	425
D	Production Lead time	Days	10	6	6
D	Delivery performance	%	100	100	100
S	Safety index	Accidents per 1,000,000 operator hours	0	0	0
M	Number of Employee Suggestions	Number/year	850	780	1000

Other	<p><Specify achievements not expressible in numerical terms></p> <ol style="list-style-type: none">1. Do you have a program where all employees can participate in TPM?<ul style="list-style-type: none">❖ Yes, we have TPM Circles, TPM Steering Committee, TPM Pillar and Sub-committees involving all employees.❖ Additionally there are TPM promotion events e.g. Theme based month celebration, Theme Based Kaizen Competition, TPM Quiz and Caricature Competition etc.❖ There is a separate time during working hours earmarked for routine autonomous maintenance activities.2. Do you have a program allowing employees to be recognized their achievements?<ul style="list-style-type: none">❖ Yes, we have suggestion scheme, where top suggestions are recognized every month in the Plant communication meeting.❖ In plant communication meeting we rewarded Employee of the Month, Half Yearly and Yearly are also recognized.❖ We have also introduced Spot recognition scheme where employees are recognized by their Head of the department immediately.❖ We have kaizen events where top management recognizes the best teams.3. Are top management involved in the audit/verification of completion of TPM pillar steps?<ul style="list-style-type: none">❖ Yes, TPM Chairman & Pillar Chairman himself conducts level-5 Jishu Hozen audit.❖ TPM Steering Committee conducts Pillar Activities review regularly at Gemba4. Are all pillar activity boards displayed and reviewed by top management?<ul style="list-style-type: none">❖ Yes, Plant Level Pillar Activity Boards are displayed at TPM Gallery.❖ These boards are reviewed by TPM Steering Committee & Top Management periodically.
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5. Key of our Manufacturing Excellence

Excellence is a continuous journey and we recognized that to realise our Vision, Mission Value, we had to rely upon a global best practice which has helped many big names in industry. We found TPM adopted by many multinationals and therefore we too embraced to achieve excellence in every sphere of our Operations TPM emphasises loss detection loss elimination. Although we have 8 pillars under TPM, we recognized a gap in terms of grating these pillars. To bridge this gap we thought of bringing together all these pillars under one umbrella called Collaboration Pillar. This collaborative effort had subtle elements such high impact, moderate impact and low impact programs. All the kaizens associated also linked under these heads which got integrated under Collaboration Pillar.

This energised all the pillars to lift the efficiency level to the next stage, wherein the benefits had a multiplier effect as against stand-alone pillar benefits. This not only had a positive impact at Gemba and work group but also impressed the Assessors to appreciate the efforts taken towards building a culture of excellence. To prepare for intense competition in mining across the globe, TPM was used as a key management tool to improve overall performances of the organization. The ultimate goal is to sustain the competitiveness and business performances in fast-paced and highly competitive business circumstances.

TPM activity is the key success of management tool in our manufacturing excellence programme that will assist us to continue this journey and achieve even greater success in the future.

6. Contact person name, telephone, facsimile, email, URL, Postal address

Special Award for TPM Achievement

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TRB Iron Ore Mines, Tensa



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