



JINDAL STEEL AND POWER LIMITED, RAIGARH

A BRIEF WRITE UP

i) UNIT PROFILE:



Aerial view of the JSPL Plant, Raigarh

JSPL's rapid growth has been a result of its inherent towering strengths of its committed employees, thinking out of the box, backward and forward integration in the group and using technology to cut costs and bring efficiency. Its emergence as one of the leaders in steel and power sectors brings it closer to fulfilling its commitment to work for a prosperous India.

- Milestones:**
- Spreading out globally in steel production and mining.
 - The largest private sector investor in the state of Chhattisgarh.
 - An ISO 9002 & ISO 14001 certified Company.
 - Manufactured 120 meters Rail, longest in the world.
 - First to produce the 3.5 meters wide steel plates.
 - Pioneered manufacturing of Hot Rolled Parallel Beam & Columns in medium and large size.
 - World's largest coal based Sponge Iron manufacturing unit with its captive mines & power plant.



120mtr long Rails

Recognitions:

- JSPL was nominated as one of the emerging companies by Economic Times in 2001.
- Among the top 20-investor friendly companies listed by Business Today in 2004.
- One of the ten fastest growing large size companies listed by Dalal Street, 2006.
- One of the ten most investor friendly companies listed by Dalal Street, 2006.
- National Energy Conservation Award six times between 2001-07.
- Eight Environment Awards between 2003-08.
- Six Performance Awards between 2001-2005.
- Three Safety Awards and two HR Awards.

2.4
million TPA
Steel

0.75
million TPA
Rail & Universal Beam Mill

340
MW
Power Generation

1.0
million TPA
Plate-cum-Coil Mill

36,000
TPA
Ferro Alloys

Current Capacities:

Product Name	Capacity (Million tonnes/annum)	Remarks
At Raigarh:		
Sponge Iron (DRI-1)	0.65	<ul style="list-style-type: none"> World's largest coal-based sponge iron production capability One of the lowest cost producers of Sponge Iron, with in-house availability of the three Key raw materials, coal, iron ore and power.
Sponge Iron (DRI-2)	0.72	
Mild Steel	2.40	-
Hot metal (BF-1)	0.25	-
Hot metal (BF-2)	1.25	<ul style="list-style-type: none"> New projects completed
Ferro Alloys (SAF)	0.036	<ul style="list-style-type: none"> 24 MVA furnace
Rolled product (RUBM)	0.75	<ul style="list-style-type: none"> Facility to produce 120 meter, Worlds longest Rail & 240/480-meter Flash butt-welded rails. Increase in production/product mix through upgrading conventional mill with Tandem Universal (First in the Country) for rolling high quality structurals & rails (Fig-1).
Coke	0.80	Non-recovery type, Environmental friendly and power generation from COG is a CDM project.
Plate mill	1.00	<ul style="list-style-type: none"> Mill can offer both plate and coils from the same facility (Fig-2). Projects completed in 2006-07
Sinter	2.50	<ul style="list-style-type: none"> Projects completed in 2006-07
Producer gas (old)	129.6 Lakh m ³	-
Producer gas (new)	1960 Lakh m ³	New projects completed in 2007-08
Oxygen	1915.2 Lakh m ³	-
Power plant	333 MW	<ul style="list-style-type: none"> Projects completed in 2006-07

Apart from above,

- Captive Iron Ore Mines at Tensa Orissa. Meeting partly requirement of existing Sponge Iron unit.
- 1000 MW super thermal power station is set up at Raigarh with an investment of 4300 crores. The project has been accorded Mega power projects status by the Ministry of Power, Govt. of India and is the one of its kind in the private sector in India.
- JSPL has own the development rights for 20 million tons of iron ore reserves in Bolivia (South America)

Further expansion at Raigarh plant:

- ❑ 2 MTPA cement plant
- ❑ Additional power generation 270 MW
- ❑ Mini blast furnace upgradation
- ❑ 1 MT SMS bloom caster & oxygen plant
- ❑ Medium structure mill
- ❑ Pipe conveyor from mines to plant



(New producer gas plant of capacity 2275 Nm³/hr each of total 10 nos.)

Company is certified to ISO 9001:2000 and ISO 14001: 1996. Company is recognized by DSIR, Govt. of India as “in-house R & D Center” and by Central Boiler Board, Govt. of India as “ **well known steel maker**” for Boiler quality steels.

JSPL has consistent record of achievements. Same of the laurels conferred on the company are listed below,

Sr. No.	Name of the Award	Arranged By
1	National Energy Conservation Award 2001: 1 st Prize	Ministry of Power, Govt. of India.
2	National Energy Conservation Award 2002: 2 nd Prize	Ministry of Power, Govt. of India.
3	National Energy Conservation Award 2003: 1 st Prize	Ministry of Power, Govt. of India.
4	National Energy Conservation Award 2004: 2 nd Prize	Ministry of Power, Govt. of India.
5	National Energy Conservation Award 2005: 2 nd Prize	Ministry of Power, Govt. of India.
6	National Energy Conservation Award 2007: 1 st Prize	Ministry of Power, Govt. of India.
6	CII Energy Conservation Award 2006: Certificate of Appreciation.	CII (Eastern Region).
7	CII (ER) Fuel Conservation Award 2001-02: Certificate of Appreciation.	CII (Eastern Region).
8	I.I.M. Quality Award 2000–2001: 1 st Prize	The Indian Institute of Metals.

9	I.I.M. Quality Award 2002–2003: 1 st Prize	The Indian Institute of Metals.
10	Rajiv Gandhi National Quality Award 2001: Commendation Certificate for Large Scale Manufacturing Industry (Metallurgical).	Bureau of Indian Standard (B.I.S.)
11	Golden Peacock National Quality Award-2002: Runners up Manufacturing Large.	Institute of Directors (I.O.D.)
12	CII (ER) Quality Award 2001-2002: Certificate of Appreciation (for Medium Sector).	CII (Eastern Region).
13	Golden Peacock Environment Management Award 2002-03: 1 st Prize.	Institute of Directors (I.O.D.)
14	Greentech Environment Excellence Award 2002-2003: Silver Award.	Greentech Foundation.
15	Greentech Environment Excellence Award 2006: Gold Award.	Greentech Foundation.
16	Srishti Good Green Governance Award 2006: Runner up	Srishti Publications Pvt Ltd
17	Golden Peacock Eco-innovation award 2007 : First Prize	Institute of Directors (I.O.D.)
18	Greentech Environment Excellence Award 2007: Gold Award	Greentech Foundation.
19	Greentech Safety Award 2002-2003: Silver Award.	Greentech Foundation.
20	National Safety Award for the year 2003: Gold Award for Longest Accident Free Period (Large Scale Industry of Iron & Steel)	Ministry of Labour, Govt. of India
21	Asia Pacific HR Excellence Award 2003 for Organization with Innovative HR Practices: 1 st Prize.	Asia Pacific HR Congress and Center for Change Management.

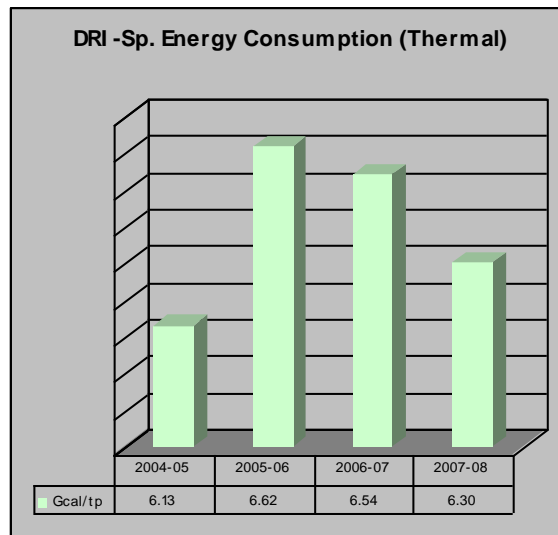
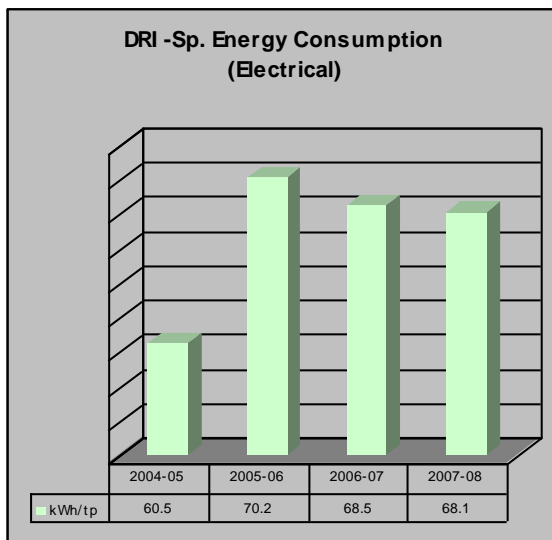
ii) **ENERGY CONSUMPTION:**

Product	Production		
	2005-06	2006-07	2007-08
(Million TPA)			
Sponge Iron	1017746	1196330	1185739
Hot metal	269711	577494	1278159
Steel	522334	803303	1424585
Rolled products	287389	209418	494751
Ferrochrome	32452	31070	17905
Power (MWH)	2225232	2668358	2665071
Sales turn over (Rs. Lakhs)	287800.00	394876.00	520503.00

Energy & Cost:	2005-06	2006-07	2007-08
Net Electrical Energy consumption (purchased +generated-sold) (Lakh kWh)	10571.41	22332.11	17751.11
Coal purchased for process (Ton) (Coking coal +Washed coal +Steam coal)	1652153	2321784	2911635
Coke purchased for process (Ton) (BF coke+coke fines+pero coke)	210994.0	76457.0	160023
F.O. consumption in process (KL)	7835.55	6199.32	27439
Diesel consumption in the process (KL)	19401.0	24852.0	24395
Total Thermal Energy used in process (Gcal)	9020049.2	11849495.2	16300136.4
Total Energy cost (Rs. Lakhs)	34397.65	54230.78	96193.53
Total Manufacturing cost (Rs. Lakhs)	100580.0	160135.0	298521.6
Energy cost (As % of manufacturing cost)	34.20	33.87	32.20

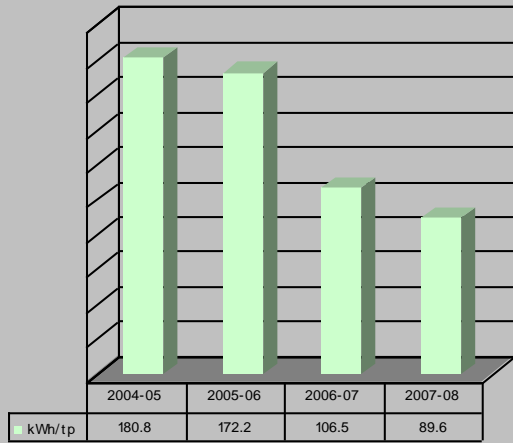
Specific Energy Consumption:

DRI Plant

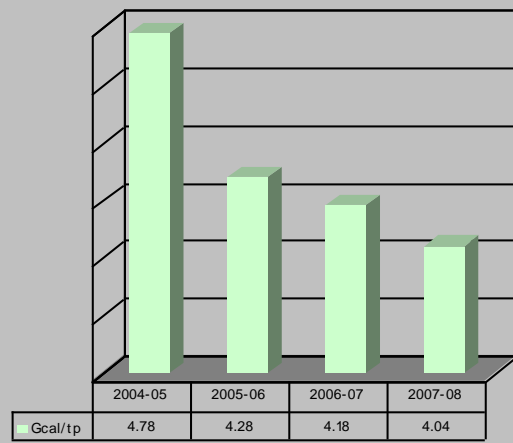


Blast Furnace

**BF-Sp. Energy Consumption
(Electrical)**

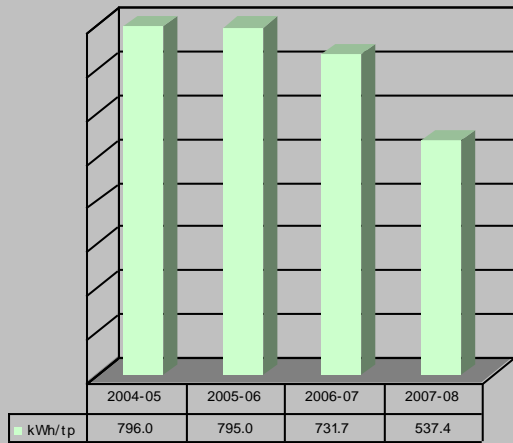


**BF-Sp. Energy Consumption
(Thermal)**

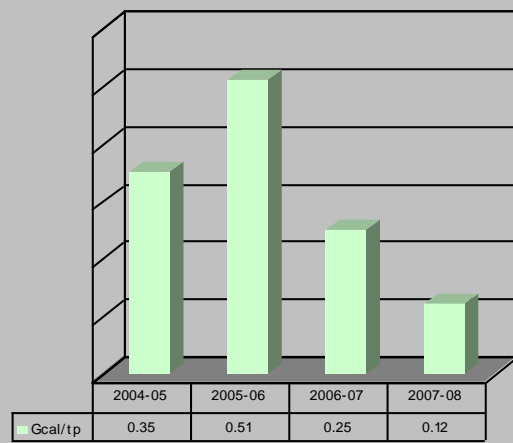


SMS

**SMS -Sp. Energy Consumption
(Electrical)**

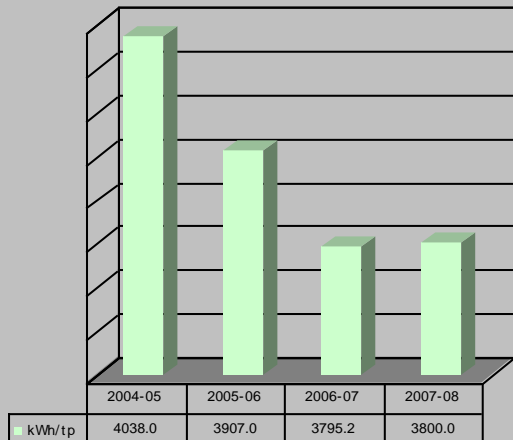


**SMS -Sp. Energy Consumption
(Thermal)**

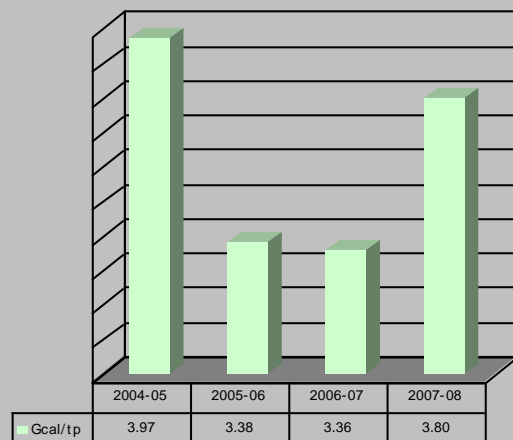


SAF Plant

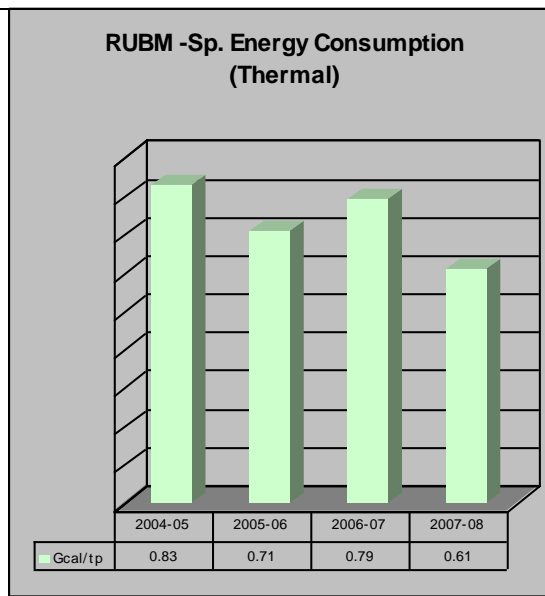
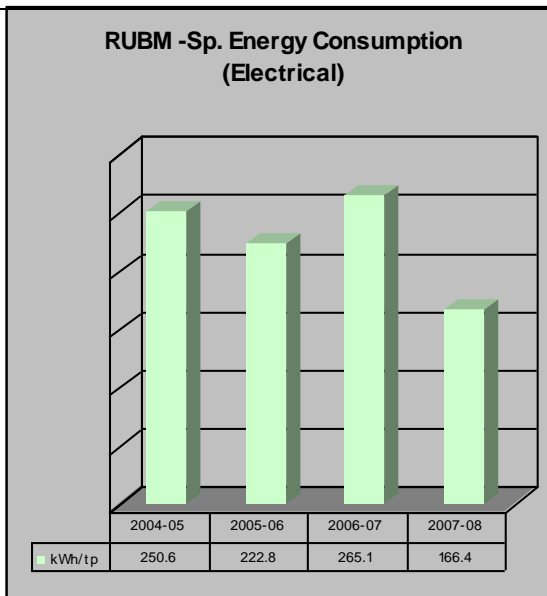
**SAF-Sp. Energy Consumption
(Electrical)**



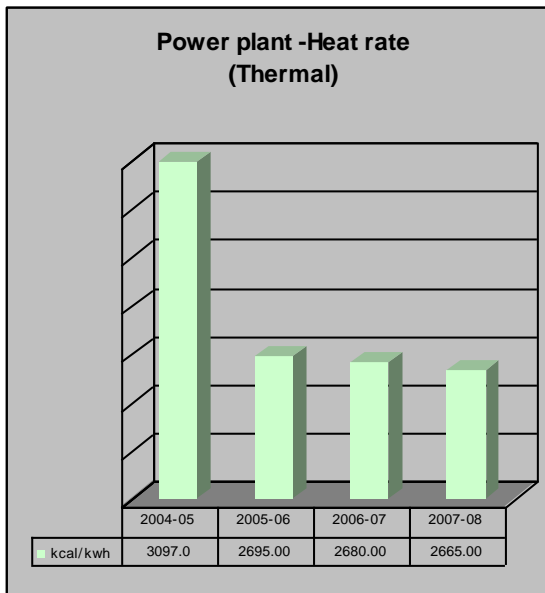
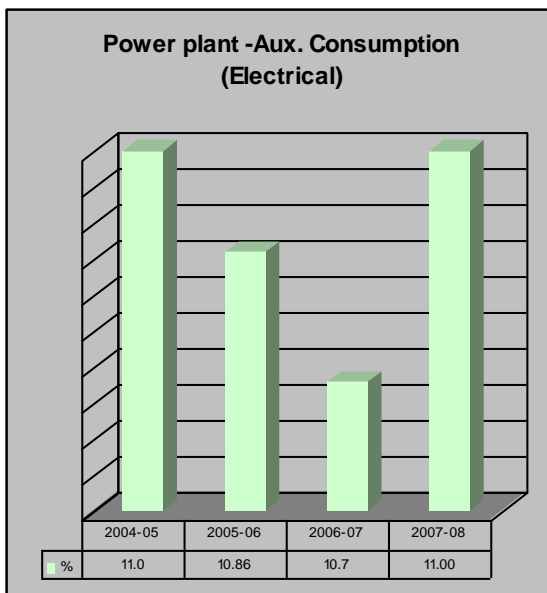
**SAF-Sp. Energy Consumption
(Thermal)**



RUBM



Power Plant



iii) Energy conservation Commitment, Policy & set-up:

All the above figures clearly indicate the culture of energy conservation imbibed right from initiation of the company in 1991. When the plant started, to utilize the waste heat of rotary kilns, producing Sponge iron, waste heat recovery boilers (WHRB) were installed on-line and the steam used for generation of electrical power. Thus all the six kilns are fitted with WHRB. Continuing the commitment for Energy conservation, all new kilns (4 Nos.) are also fitted with WHRB. Boilers generating steam utilize the in-house waste of washery reject and rotary kiln char. In fact, commitment for energy conservation and waste utilization is so high in the plant that the Power Plant unit-II & now power plant unit-3 was planned for utilization of waste basically. Towards this end, energy policy has been formulated and Executive Director takes structure monthly meeting on energy conservation.

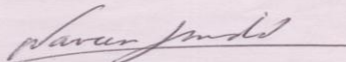


ENERGY POLICY

Jindal Steel & Power Ltd., Raigarh, is committed to work for effective utilization of all types of energy. This is achieved by:

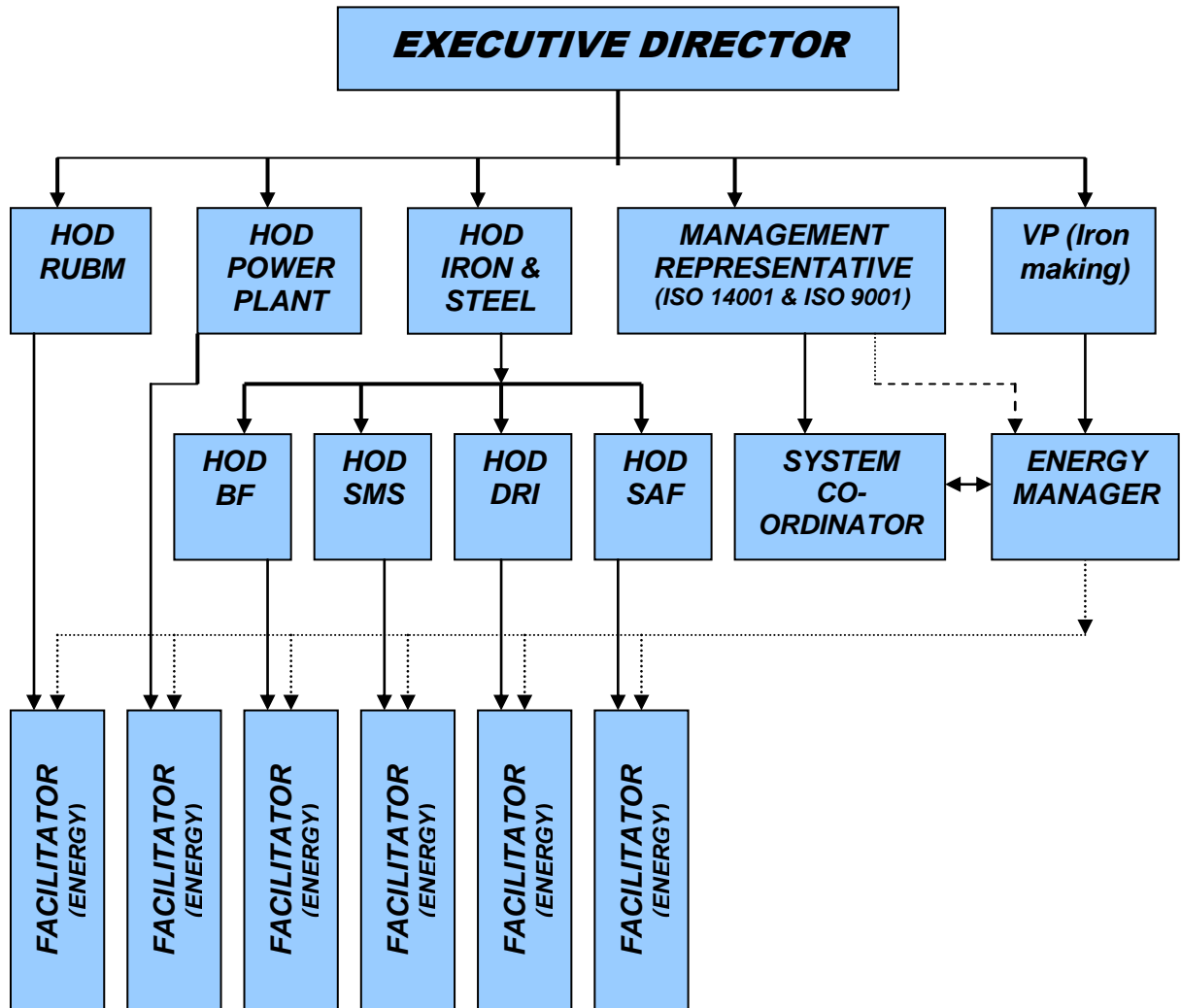
- ◆ taking specific objective of energy conservation through process / equipment modification.
- ◆ monitoring of energy consumption.
- ◆ creating innovativeness in employees through awareness.
- ◆ converting waste as resource.
- ◆ benchmarking the energy consumption norms.
- ◆ adherence to statutory requirements.

16 September 2002


NAVEEN JINDAL
(EXECUTIVE VICE CHAIRMAN
&
MANAGING DIRECTOR)

An Energy Management organization set up has been made for the philosophy of the management, energy management is part of the total management system, and that is why HODs are the key elements in the total structure, for planning and execution of the action plans, Supported by Energy Coordinator.

ORGANISATION STRUCTURE
OF
ENERGY MANAGEMENT CELL



iv) ENERGY CONSERVATION ACHIEVEMENTS:

Major achievements are:

1.



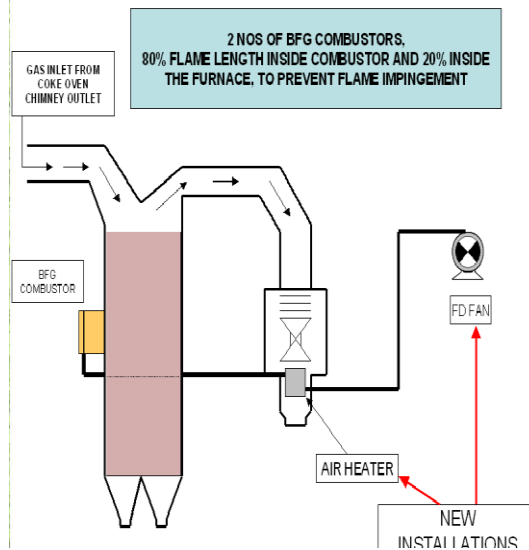
New producer gas plant (PGP-3) of capacity 22,750 Nm³/hr is installed. In the FY: 2007-08, 21584874 Nm³ producer gas is generated and replaced petrofuels and thus equivalent cost saving is achieved.

Thermal energy saving: 25901.0 Gcal/annum

Investment: Rs. 6000.00 Lakhs

Monetary Saving: Rs. 602.0 Lakhs/annum

2.



Initially The WHR Boilers were designed to utilize coke oven exhaust gases. However the Boiler could not achieve rated steam flow due to insufficient supply of gas.

• Though 8 nos. of Boilers were designed for 33.5TPH of steam, but we achieved only 20TPH to 23TPH-superheated steam from each Boiler.

• BFG firing in WHRB was envisaged and Burner selection done by JSPL, detail designed and supplied by M/S Thermax • BFG firing in Coke Oven WHRB is first time in the world

• Challenges like firing a lean gas in non-fire type furnace without oil support was successfully done.

• BF gas, which was earlier being flared in BF Stack was successfully utilized for steam/power generation

• **3.0 MW extra Power Generation from each Boiler. Total 12 MW extra power from four Boilers.**

Electrical power saving: 95000400 kWh/annum

Investment: Rs. 1205 Lakhs

Monetary Saving: Rs. 2350 Lakhs/annum

3.

INTER-CONNECTION

We were facing serious problem in high stack emission due to high un-burnt carbon in our 2*25 MW power plant, which is having 4*57 tph DRI based WHR Boiler. During annual shutdown of one of the Boiler and after injection of around 10000 m³ air in three Boilers, we were able to generate 48 MW of load from three Boilers. Hence, it was concluded that steam generation is possible from these four Boilers. Nevertheless there was a shortage of steam in our 3*25 MW PP & there was a margin to increase the TG load by 20 MW.

efficiency improved by 0.7% in 2x100 TPH
Electrical power saving: 39600000 kWh/annum
Investment: Rs. 200 Lakhs
Monetary Saving: Rs. 982 Lakhs/annum

(v) ENERGY CONSERVATION PLANS AND TARGETS.

	ENERGY CONSERVATION PLANS	Project commencement & completion year
1.	Excess BF gas utilization in two more WHRB of power plant Unit-3	2008-09
2.	Installation of VFD panel in place of DOL starter in F.D. Fan no. 3A & 4A of WHRB# 9 & 10 at 2x25 MW CPP.	2008-09
3.	Installation dual speed(High / Low) starter in place of DOL starter in C.T.Fan at 2x25 MW CPP.	2007-08
4.	Provision of 2-way switches for On-OFF lights in cable cellers (Boiler & TG) at 3x25 MW CPP.	2008-09

(vi) ENVIRONMENT AND SAFETY:**Environmental Management:**

Following steps have been taken for Environmental Management at JSPL :

Installation of Waste Heat Recovery Boilers (WHRB) to use waste heat of sponge iron unit for generating electrical energy. Installation of AFBC boilers to reuse solid wastes (middlings) of coal washery. Installation of ESPs and Bag Filters in all dust generating sources. Waste gas from blast furnace is used as fuel in our Rolling mill (reheating furnace) DRI (rotary kiln & Coal dryer) and 63 TPH boiler. Installation of two Nos. of Sewage Treatment Plants to treat the domestic waste generated from the colonies and offices. This treated wastewater is 100 % reused for plantation and garden development purpose.

- ❖ Waste Management for reduction of the waste generation and exploring the use of the waste.
- ❖ Construction of the pucca road inside the plant

- ❖ Implementation of the concept of Green Productivity.
- ❖ Waste water recycling and zero discharge.
- ❖ Rain Water Harvesting
- ❖ Bio-gas plant established
- ❖ Vermiculture composting plant has been established.
- ❖ Use of Fly Ash for Brick Manufacturing.
- ❖ Use of fly Ash for various construction *works*.

I. Air Quality:

Regular monitoring of Stacks is carried out to maintain emission level within the stipulated limits. Opacity Meters have been installed in all the stacks.

II. Water Management :

Water consumption has been optimised by taking various conservation measures. Flow meters have been installed in all fresh water make up pipelines in all units, which helped a lot in water monitoring and optimising specific water consumption for long steel products in coming about 5.3 m³/T of product.

Safety Control:

Safety is our prime concern and our target is zero accident. To keep employees aware about safety and maintain zero accident targets several activities and program are being conducted in our plant. A few important activities are given below:

SAFETY OATH:- From 1st to 4th of every month safety oath program is being organized at Unit-I, RUBM, Projects and New DRI which is attended by employees of every level. After his message of safety Oath administrated by Executive Director.

SAFETY APPLIANCES:- All safety appliances such as helmet, Shoes, Hand gloves, aprons, safety belts etc are provided to all employees. The importance of these appliances is being communicated through field and classroom training.

SAFETY AWARENESS CAMPAIGN:- To generate safety awareness among the employees campaigns are being conducted. All departments are covered during the campaign. Employees of all levels including staff, workers & contract workers are covered. Awareness provides information about the type of Hazard, importance of safety appliances and preparedness for emergency situations related to the concerned departments.

FIRE SAFETY:- Being an hazardous industry more attention has been paid to enrich the knowledge of employees in field of industrial fire safety. Faculties from National Institute of fire Engineering Nagpur and other external agencies are called for this program time to time. Two fire tenders are available in the plant. Also, a network of fire hydrants has been installed through the plant to combat any fire hazard.

SAFETY AUDIT:- To eliminate unsafe conditions & unsafe practices external and internal auditing are being conducted. This technique helps in systematic and critical assessment of major work hazards, so as to eliminate, control and contain them by minimizing risk to the life

ACTION CENTER KORBA AT JSPL:- Safety activities of National Safety Council (M.P. Chapter) Action Center Korba , is being organized by the company since 2001 . This is an opportunity and responsibility given to JSPL Raigarh. We have organized safety programs for JSPL and also for other member industries also to achieve a good safety record of this zone.



INTEGRATED QUALITY AND ENVIRONMENTAL POLICY

Jindal Steel & Power Limited is committed for total satisfaction of customers and interested parties, and achieve business excellence by -

- ✦ Producing and supplying quality products in eco-friendly environment and conforming to product specification and delivery schedule.
- ✦ Protecting air, water and land by controlling emission, contamination and noise in all activities of the company
- ✦ Adherence to the statutory requirements related to product and environment.
- ✦ Conserving and improving the quality of resources, and conserving energy through scientific and systematic methods.
- ✦ Refinement of measures for prevention of pollution.
- ✦ Value addition to our products.
- ✦ Utilization of Solid Wastes.
- ✦ Implementing the concept of Green Productivity.
- ✦ Involving all employees for implementing and continually improving the effectiveness of quality management

Date : 31.07.2004

Naveen Jindal
EVC & MD



SAFETY AND OCCUPATIONAL HEALTH POLICY

Jindal Steel & Power Limited is committed for establishing safe work culture in the organization by -

- ✦ Creating awareness among human resource regarding importance of safety and safe work practices/ procedures.
- ✦ Complying all statutory obligations regarding safety.
- ✦ Establishing and implementing safe work practices to improve work environment
- ✦ Ensuring availability of appropriate safety appliances to all employees and maintaining good housekeeping.
- ✦ Striving for continual improvement of safety of all resources and enhancing their life.
- ✦ Ensuring continual improvement in quality of life of employees by improving safe working practices, hygienic work environment, occupational health practices and good housekeeping in workplace and residential areas.
- ✦ JSPL will constantly strive to implement safety policy across the organization for overall well being of the workforce.

Date: 01.09.2004

Naveen Jindal
EVC & MD



TOTAL PRODUCTIVE MAINTENANCE POLICY

We, at Jindal Steel & Power Limited will work for implementation of Total Productive Maintenance (TPM) at all spheres of our activities by -

- ✦ Aiming Zero defects, Zero breakdowns, Zero losses and Zero accident.
- ✦ Improving Overall Equipment Efficiency (OEE) for safe and efficient operation of the plant.
- ✦ Creating a clean and pleasant work environment leading to higher employee morale and greater organizational profitability.

Date: 14.04.2007

Naveen Jindal
EVC & MD



CORPORATE SOCIAL RESPONSIBILITY POLICY

JSPL believes that an effective growth policy of Nation must also address the fulfillment of basic needs of common public specially living in rural areas.

- ✦ Thus, JSPL endeavors to improve the quality of life of community in the area it operates.
- ✦ To achieve above endeavor, JSPL deploys its resources to the extent it can reasonably afford to improve infrastructure, education, health, water, sanitation, environment etc in the area it operates.

Date – 31.01.07

Naveen Jindal