

**CAPTIVE POWER PLANT
VEDANTA ALUMINIUM LIMITED
Bhurkamunda, Jharsuguda (Odisha)**

Unit Profile

M/s Vedanta resources Plc is a company Listed in London stock exchange operating its business throughout the globe and in to Copper, Aluminium, Zinc, Iron ore and Commercial Power Business.

- It is operating its copper business through M/s Sterlite Industries (I) Ltd having plants at Tuticorin and Silvasa in India, KCM (Konkola Copper Mines) in Zambia and Copper mines in Australia.
- It is operating its Aluminium Business through MALCO (The Madras Aluminium Company Ltd) at Mettur, Tamilnadu, BALCO (Bharat Aluminium Company Ltd) at Korba, Chattisgarh, Vedanta Aluminium Ltd at Jharsuguda and Lanjigarh, Orissa.
- It is operating its Zinc and Lead Business through HZL (Hindustan Zinc Limited), Chanderia, Rajasthan and at Vizag, Andhra Pradesh.
- It is operating its Iron ore Business through M/s Sesa Goa
- It is operating its Commercial Business through Sterlite Energy (I) Ltd (2400 in operational at Jharsugudain Orissa and 3x660 MW is under construction in Punjab)



The 1215 MW Captive Power Plant (CPP) of Vedanta Aluminium Limited at Jharsuguda (Odisha) is the largest CPP of India. Situated about 5 KM away from the bustling town of Jharsuguda, this coal-based thermal power plant of Vedanta Aluminium Limited has been built alongside one of India's largest deposit of coal at IB Valley and Asia's largest non-brackish reservoir - 'Hirakud Reservoir'.

Commissioning of its first unit started in Aug'08 and last i.e. 9th unit commissioning completed in March'10. The plant has 9x135 MW sub critical, direct pulverized coal fired, corner tangential firing, natural circulation boiler, single reheat, double cylinder, double flow, single shaft, extraction and condensing steam turbine of 'Shanghai Electric' Make. The plant has adopted the state-of-art Digital distributed Control System, High Concentration Slurry Disposal (HCSD) of fly & bottom ash, counter-flow forced Cooling Towers, and multi-flue Stacks. It sources water from Hirakud Reservoir over a distance of 33 kilometers. Coal is transported from Mahanadi Coal Fields through bottom discharge wagons and also by road from some of the mines. The firm strives to be at the forefront of technological innovation and establish itself as a leading player in both the domestic and global Aluminium industry.

Plant Performance and Energy Consumption

S. No.	Operating Parameters	Unit	Year	
			2009-10	2010-11
1	Actual Generation	MU	5639	7954
2	Plant Load Factor	%	70.69	75
3	Plant Availability Factor	%	84	81
4	Aux. Power Consumption	%	9.82	10.14
5	Specific Coal Consumption	gm/kWh	910	893
6	Specific Oil Consumption	ml/kWh	3.67	0.8
7	Heat rate	kcal/kWh	2730	2678

Energy Measures & Conservation

1. Provision of Both phase interconnections in compressor line.

This plant has total 16 nos. compressor, 8 nos. compressor for each phase, with separate headers for instrument & service air.

Purpose: for instrument air and Service air. Earlier 7 Compressors were running for each phase. Instrument & service air headers of both phases were interconnected through a pneumatic valve. After modification one compressor stopped without disturbing the system.

Total Investment: Rs 82500.

First year energy cost savings: Rs 42.26 Lacs



2. CW Pump Optimisation :

As per design two nos. circulating water pumps are to be in running condition. As Plant is able to get more than rated vacuum in winters, stopping one pump during winter season.

Total Investment: NIL.

First year energy cost savings: Rs. 686.76Lacs

3. CT fan blade replacement from GRP to FRP

For each unit 5 CT cell are there for maintaining desired parameters, blade material Glass reinforcement plastic, blade weight is more than FRP blade, power consumption rated motor is 132 KW. Plant replaced blade from GRP to FRP blade for 5 CT fans and saved power consumption. Plant also changed fan blade with gear box assembly, but motor was not changed

Total Investment: Rs. 2.65 Lacs.

First year energy cost savings: Rs. 25. 46 Lacs

4. Both phase HFO & LDO interconnection

Pump Operation before modification:

HFO: Total 6 nos pumps. Three pumps for each phase. For each phase two running, one standby.

LDO: Total Four pumps. Two pumps is for each phase. For each phase one running, one standby.

Total Investment: Rs. 0.2Lacs.

First year energy cost savings: Rs. 8.4Lacs

5. Change in Operation philosophy for turbine drains.

For turbine drains OEM has provided pneumatic valve as well as manual isolation valve in drain line, during normal operation pneumatic valve is to be in closed condition and manual valve is to be open. It was found that pneumatic valve was passing. The operation practice was changed and rather depending on only pneumatic valve power plant is now closing the manual valve also during normal operation, thus saving steam from direct dumping to condenser. Due to same the specific steam consumption reduced from 3.6 to 3.3 kg/kWh.

Total Investment: Rs. 15Lacs.

First year energy cost savings: Rs. 13726.7Lacs

6. Optimization of Service water & ICW pumps

For both phases service water requirement two service water pump in running condition and one standby (total three service water pump).

Plant has service water to industrial cooling water interconnection line in which one manual isolation valve and one NRV was there. Plant had taken out NRV from that line. Thus it was able to stop one service water pump and to maintain same header pressure plant run extra four ICW pump.

Total Investment: NIL

First year energy cost savings: Rs. 34.6Lacs



Energy Management at VAL 1215 MW Power Plant:

Plant has certified Energy Auditors. There is organization with in organization to monitor and take up the energy management initiatives. Vedanta has divided the plant in to various sub section like ash handling, coal handling etc where specific consumption is monitored. Example: The team working in Coal handling plant takes care and monitor the specific consumption i.e. power consumption per ton of coal handled. The optimization and new initiatives comes from the bottom line people in this way. The same is discussed in monthly meeting and any of the

financial approval is required is given then and there itself based on the payback. Usually less than 3 years payback items are taken on immediate basis.

On thermal side plant have one dedicated team to measure the performance of individual equipment like air pre-heaters etc and quantify the losses. The appropriate list of actions always kept ready before any unit goes for shut down.

Other than internal resources, Plant also takes external agencies help and in this year plant has taken the help of CII to identify the potential savings. Also NPC and BEE base line data audit is completed and the same is taken for bench marking. Plant also take the guidelines and findings from other group companies having similar power plant where audit is done by different party.

VEDANTA ALUMINIUM LIMITED, JHARSUGUDA

QUALITY, ENVIRONMENT & SAFETY POLICY

Vedanta Aluminium Limited, Jharsuguda strives to build world-class capabilities in aluminium sector and a high performance culture in every facet of business to enhance customer satisfaction.

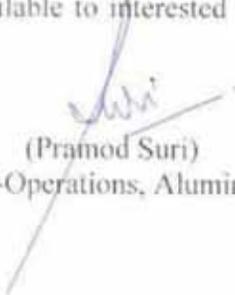
Strive to achieve and maintain organizational excellence and industry leadership by aggressive growth, relentless cost reduction and continual improvement in all our work processes by establishing and reviewing objectives.

Committed to comply with relevant statutory & other requirements, prevent pollution, injury & ill health by providing safe and healthy work environment.

Conserve natural resources, including raw materials, water and energy through state-of-the-art technology, process improvements, recycling and reducing waste.

Review the policy periodically, communicate across the organization to ensure adherence to individual obligations, and make available to interested parties on demand.

Dated: 08/08/08


(Pramod Suri)
CEO-Operations, Aluminium Sector