

***Hindustan Zinc Limited  
Rampura Agucha Mine***

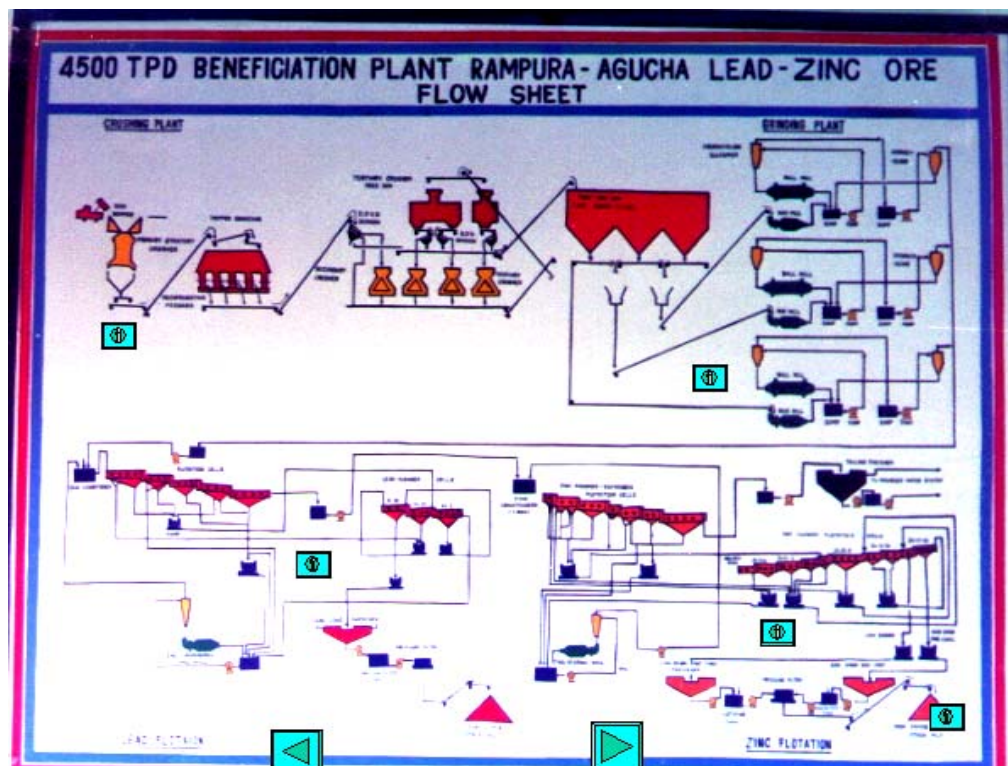
**UNIT PROFILE**

*Rampura Agucha Mine is one of the units of Hindustan Zinc Limited, a Sterlite group company. It is an open pit mine having 40.2 Million tons. It ranks 5<sup>th</sup> globally in terms of grade. It is in operation since 1991, presently having a capacity of 2.4 million tones of ore treatment per year and additional 1.4 million ton is going to be added in the year 2004-05. Its method of mining is mechanized open cast excavators and dumpers.*

*It has been certified ISO 9001, ISO 14001 and OHSAS 18001. It has already implemented TPM and SAP R/3 module. Projects based on Six Sigma are going to be implemented soon.*



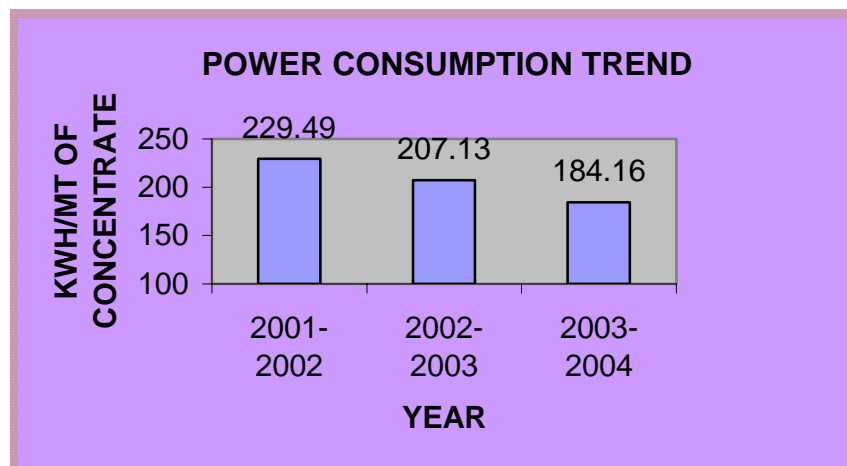
## PROCESS FLOW CHART



### **Energy consumption: –**

There has been a steady decrease in the electrical energy consumption per MT of concentrate due to the implementation of the various energy conservation measures.

<i>DESCRIPTION</i>	<i>UNIT</i>	<i>2001 - 2002</i>	<i>2002 - 2003</i>	<i>2003 - 2004</i>	
<i>Annual production</i>	ZnS	MT	317023	379239	485118
	PbS	MT	19679	28930	39285
<i>Total energy consumption</i>	kWh	77270174	84546053	96732822	
<i>Specific energy consumption</i>	kWh / MT	229.49	207.13	184.46	
<i>Energy cost as % of manufacturing cost</i>	%	17.60	17.50	16.30	



# ENERGY POLICY

*WE, AT RAMPURA AGUCHA MINES ARE COMMITTED TO CONTINUOUSLY IMPROVE OUR ENERGY PERFORMANCE IN ALL OUR ACTIVITIES AND PRODUCTS SO AS TO MAKE IT ENVIRONMENTALLY SUSTAINABLE FOR FUTURE GENERATIONS.*

**Our mission: -**

*To be the lowest specific energy consumer in the industry segment we operate.*

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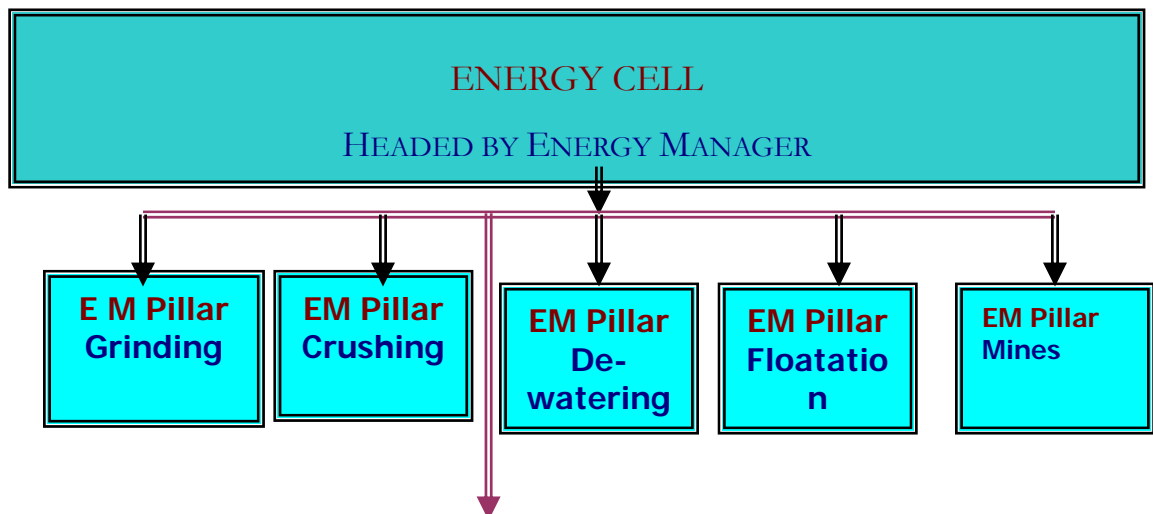
**THIS MISSION WE ACHIEVE BY IMPLEMENTING THESE: -**

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- *To train employees to make Rampura Agucha mine the pace starter in the field of energy conservation .*
- *To carry out regular internal and external audits to identify areas for Improvements.*
- *To benchmark continuously our performance against the best in the world .*
- *To enrich our experience on energy conservation by exchange of ideas with other organizations .*
- *To promote awareness among all the members of the company.*
- *Replacement of energy inefficient equipment with energy efficient equipment .*
- *To adopt energy efficient technologies/equipment for all new projects.*
- *To comply with energy legislation and other regulations.*
- *To communicate energy management policy to all employees and encourage their participation through proper training .*
- *To recognize effects of our employees in energy conservation.*

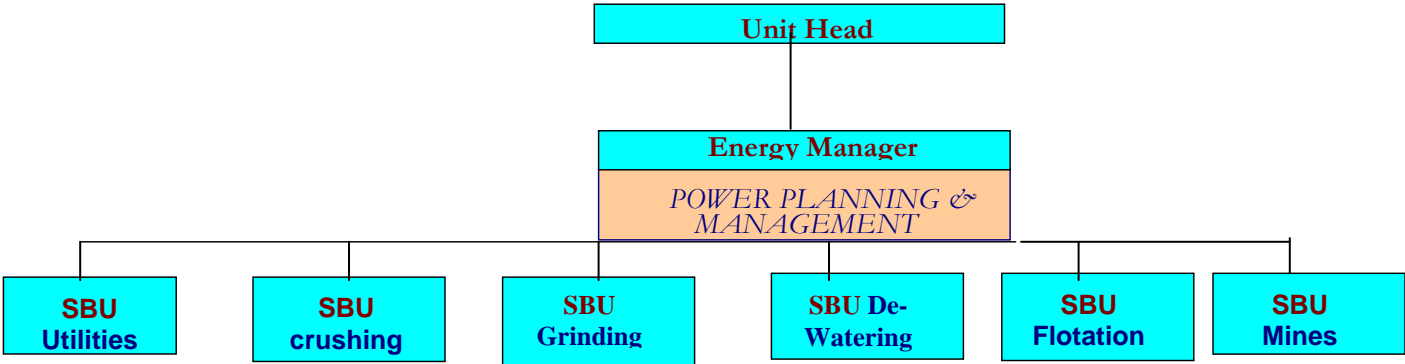
Unit head  
Rampura Agucha Mine  
Hindustan Zinc Limited

**Energy Management setup**



**E M Pillar  
UTILITIES**

EN. CON. CELL STRUCTURE



# ENVIRONMENT AND SAFETY POLICY

*We at Rampura Agucha Mines, producers of lead and zinc concentrates are committed to :-*

- *Continual improvement in our environment and safety performance indicators.*
- *Comply with all applicable Environmental and Occupational Health and Safety legislations.*
- *Work towards prevention of pollution and minimizing occupational Health and Safety risks.*
- *Minimize pollution and conserve key input resources.*
- *Minimize loss time accidents.*
- *Use environmentally sound technologies and standard safety equipments wherever viable.*
- *Train all employees, departmental as well as contractors, in sound environment, Health and Safety practices.*

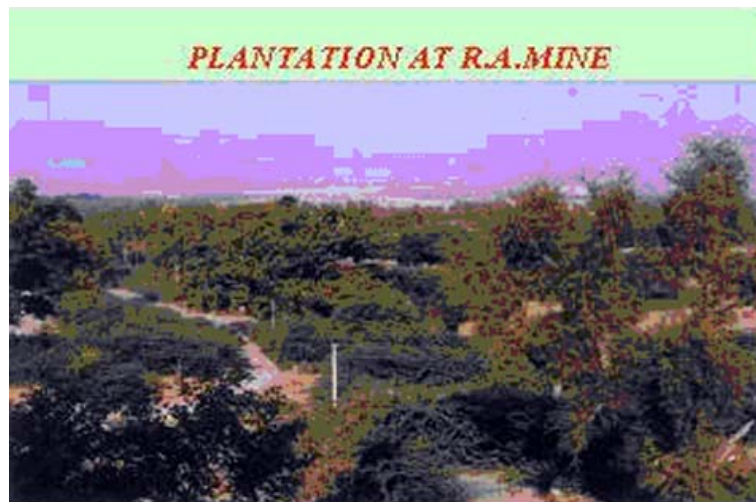
**SOME OF OUR INITIATIVES FOR ENVIROMENT PROTECTION: -**



## Environment

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- Intensive Green Belt Development
- Dust Control
- Wet drilling
  - Automatic water sprinkling on permanent haul roads
  - Water sprinkling on haul roads by water sprinklers
  - Truck Tyre Washing Station
- Collection & Recycling of Run-off/Spillage
- Zero Discharge by Recycling Tailing Dam Water & Water Conservation
- Monitoring & Control of Ground Vibration
- Regular Monitoring of Air, Water (Run-off & Sub-Surface), Soil, Dust Fall and Noise
- Studies for Structural Stability of Tailing, Water Dams
- Environmental Auditing for Chemical, Water & Energy
- ISO 14001/ OHSAS 18001 Certification Achieved



## **FOLLOWING MEASURES ARE TAKEN TO ATTAIN ZERO ACCIDENTS.**

- *Shop floor safety talk by the supervisors engineers on weekly basis.*
- *Inspection and safety Audit.*  
*Safety inspection by safety officer to be carried out regularly.*  
*Safety instruction to work person during inspection.*  
*Safety Audit of equipment are to be carried out quarterly by respective "ENGINEER"*
- *Training*  
*Training by vocation wise as per norms.*  
*Special Training for new method , new equipment.*
- *Refresher training to seriously injured person before joining to duty.*
- *Counseling of accident-prone person.*
  
- *TPM'S Ssafety pillar is one of the active pillar which has resulted to bring down the accident rate of the plant.*

## **ENERGY CONSERVATION PROJECTS UNDERTAKEN DURING 2003-04**

1. **INSTALLATION OF 6 NOS. AC DRIVES IN 2<sup>ND</sup> STAGE CYCLONE FEED PUMPS AND THEIR CLOSED LOOP CONTROL THROUGH SUMP LEVEL.**

*Cost of modification: 35 lakhs*

Power saving Rs : **21.02** lakhs/annum



2. **AUGMENTATION OF WATER RECOVERY SYSTEM.**

*Desliming hydrocyclones were introduced in the tailing circuit to increase the recovery of water from the tailings. This has resulted in reducing the fresh water consumption. AC drives were also provided in closed loop in the pump.*



*Cost of modification: 15 lakhs.  
Power saving Rs : 25.22 lakhs.*

### 3. SIZE REDUCTION OF FEED TO ROD MILL.

*The fed size to rod mill has reduced from -19mm to -12 mm. This has resulted in decrease in grinding specific power consumption by 0.5 KWH/MT and there was an increase in power consumption of crushing by 0.2 KWH/MT. Overall saving is 0.3 KWH/MT.*

*Cost of modification: - Nil  
Saving Rs : - 16.0 lakhs.*

### 4. CHANGING OF PUMPING PATTERN AT SHAHPURA AND BANAS.

*Instead of running 2 pumps in parallel single pump is operated for longer duration.*

*Cost of modification: - Nil  
Saving Rs : - 16.82 lakhs*

### 5. ENERGY SAVER IN LIGHTING CIRCUIT.

*All plant lighting circuit is controlled through photo cells/timers and energy saver units are installed in plant lighting. This has resulted in reduction of lighting power by about 20%.*



*Cost of modification: - 5 lakhs.  
Saving Rs. : - 4.2 lakhs.*

**6. INCREASE IN THROUGHPUT.**

*Throughput of the plant is increased from 265 MT/hr. to 290 MT/hr. by optimization of existing process and debottlenecking projects this has resulted in reduction of specific power consumption **2.25 kWh/MT**.*





*Modification cost: - 230 lakhs*

*Saving Rs : - 189.2 lakhs*

## **ENERGY CONSERVATION PLANS 04-05**

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1. *Use of lower size of grinding media*
2. *Increase in speed of Rod Mill and Ball Mill*
3. *Replacement of Seal Water pump*
4. *Replacement of Tertiary Crusher belt conveyor by A C Drives*
5. *Replacement of Cooling Tower fan with FRP fan*
6. *Installation of AC drives in 1st. stage cyclone feed pumps*
7. *Energy audit of all SPVC, other pumps and their optimization*
8. *Study and exploring possibility for replacing more efficient dust collector fan*
9. *Study and exploring possibility for replacing more efficient Blowers*
10. *Replacement of filter feed pumps*
11. *Energy audit by CII*
12. *Replacement of AC drives in Re grind cyclone feed pumps*

*Estimated cost Rs: - 75 lakhs*

*Target 1.2 kwh/MT OF ORE TREATMENT*