GUJARAT INDUSTRIES POWER COMPANY LIMITED

SURAT LIGNITE POWER PLANT

Best O & M Practices

GIPCL - Company Profile

An IMS (9001, 14001, 18001, 50001) Company, Established in 1985

TOTAL: 1089.4 MW

At Baroda

Gas Based Power Plant
145 MW (Year 1992) 165 MW (Year

Solar Plant 80MW (2017), 75MW (2018) At Charankha, Gujarat, 100MW (WIP) at Radhnesda Gujarat

At Surat

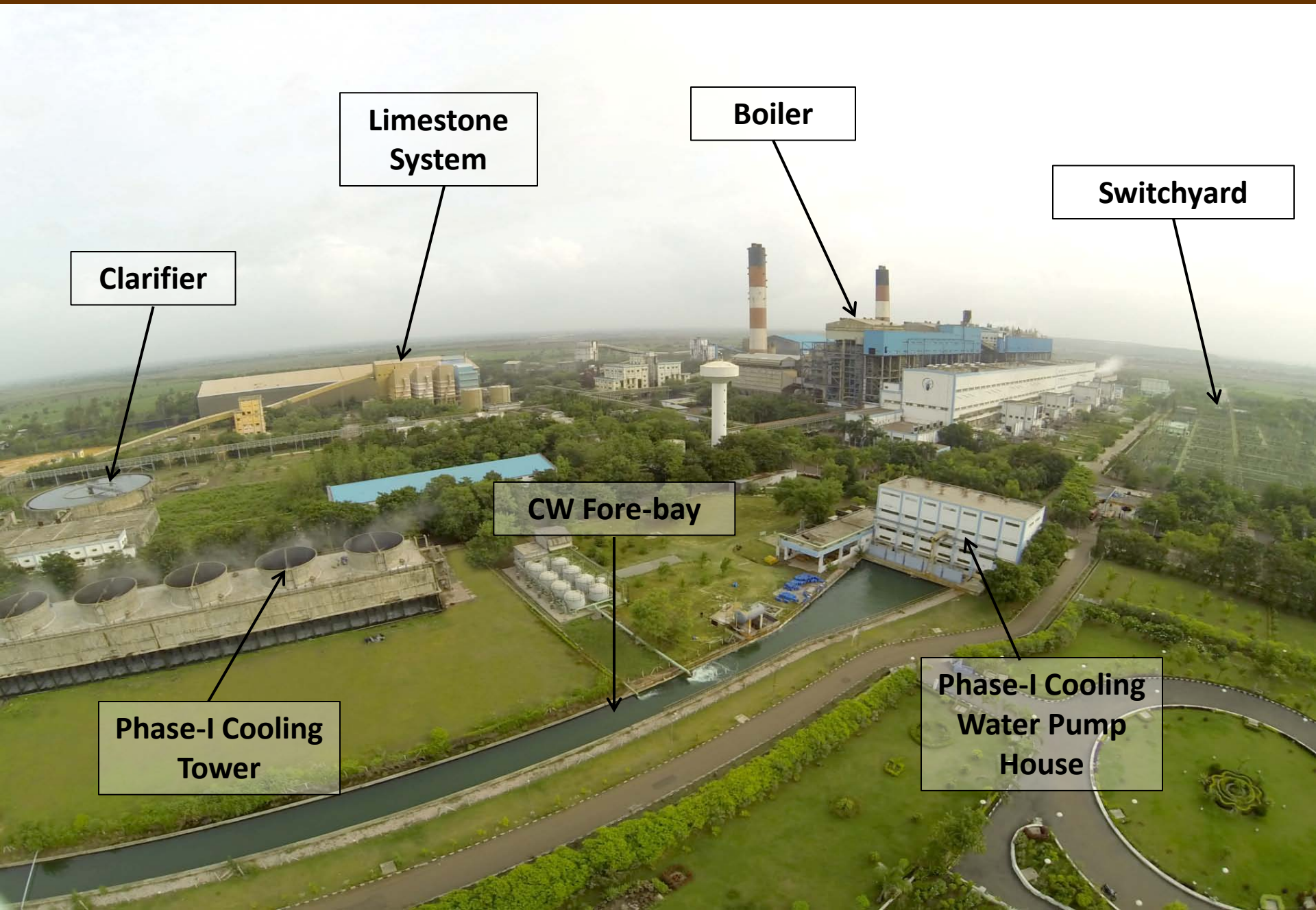
4x125 MW Lignite Based CFBC Units Phase-I (Year 2000),

112.4 MW Wind Power -2016

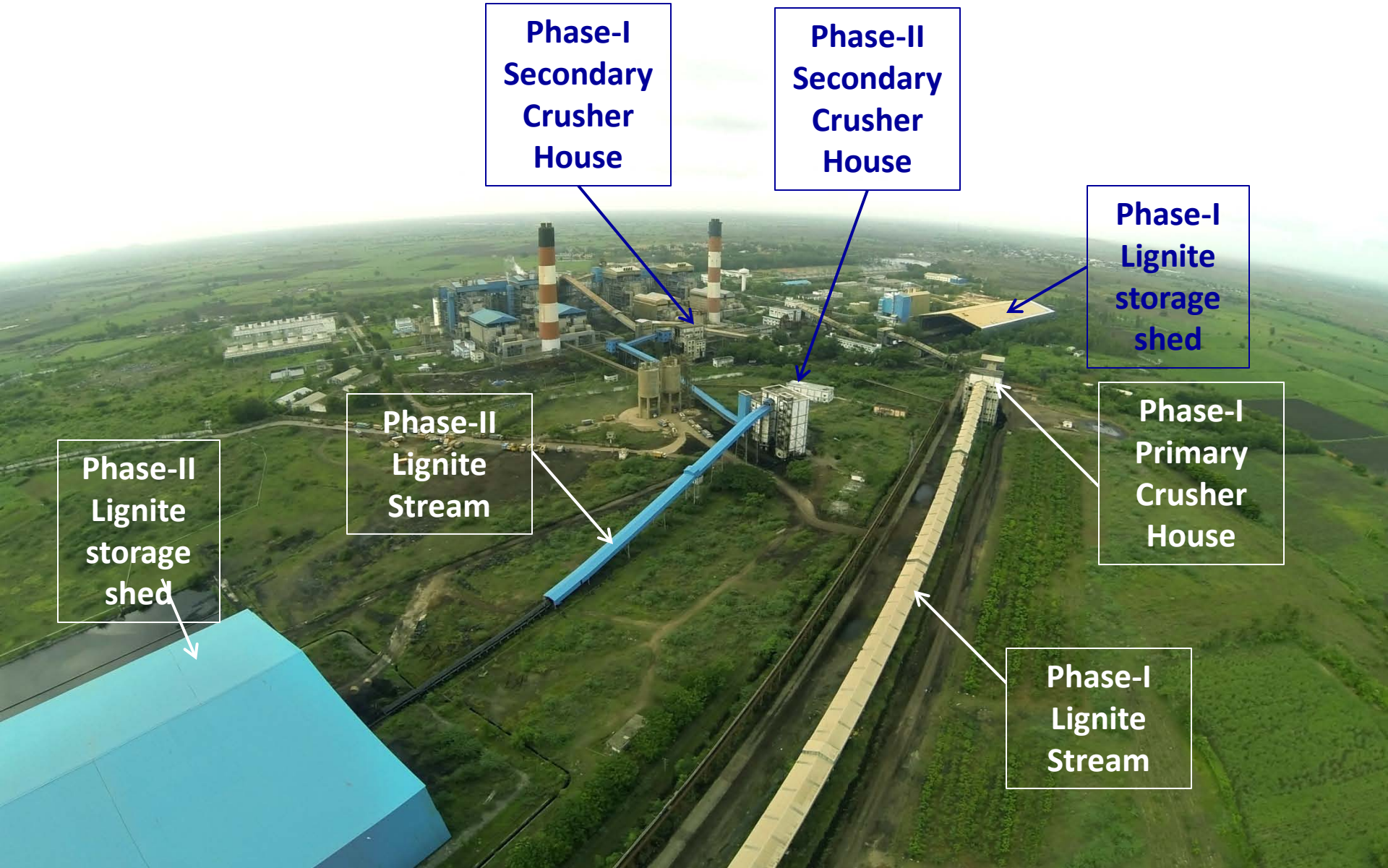
5 MW Solar Plant at SLPP (2012)
2x1 MW Distributed Solar Power cum Agriculture Pilot Projects-2016

Captive Lignite Mines

Surat Lignite Power Plant



Lignite Handling System

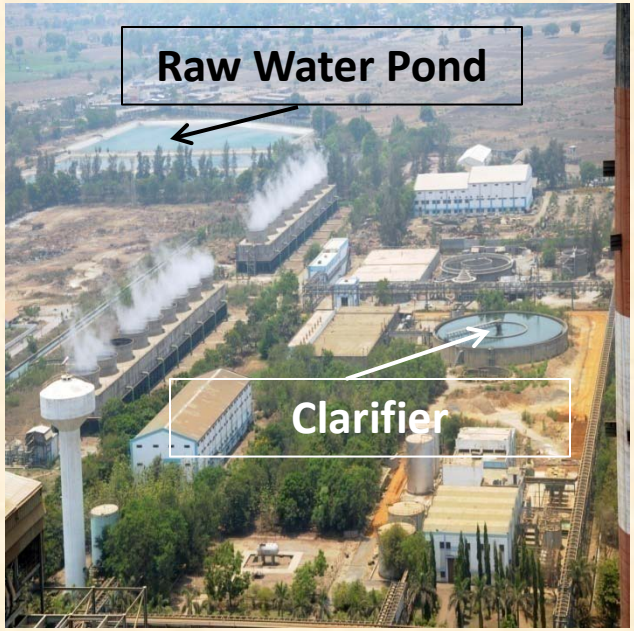


Raw water

- The source of raw water is river Tapi and approx. pipeline distance is 18 Kms from intake well(s) at Bodhan & Patna village to SLPP Power Plant site.

- Raw water reservoir having three compartment and total storage capacity is about 150,000 M^3 considering 06 days of plant requirement.

- After pre-treatment plant, water is stored in clarified water storage tank for further use in CW forebay make-up, DM Plant, Fire fighting system and service water requirement.

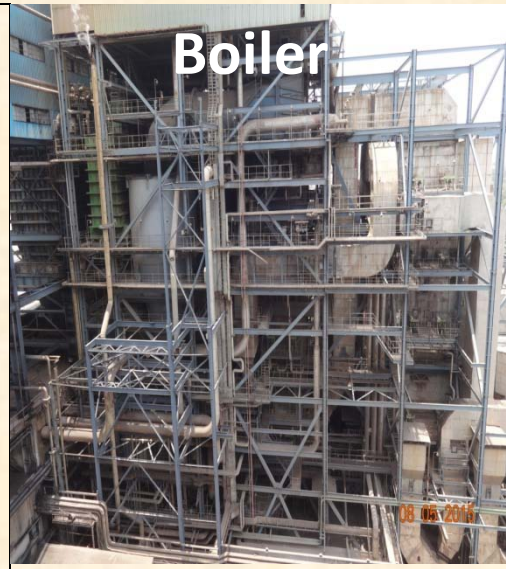


SLPP- Salient Features

- 4 Units of 125 MW each (4x125 MW)
- Fuel Source: Lignite from Captive mine(s) : Vastan (South) and Mangrol-Valia.
- Additive : Limestone – from captive mine.
- Raw Water : From Intake well(s) at River Tapi (about 18 Km pipelines).
- Power Evacuation for 4x125 MW : 220 kV – 6 Nos. of transmission lines to Zagadia (2 Nos.), Gavasad (3 Nos.), Karjan (1 no.).
- Power Purchase Agreement (PPA) with GUVNL for Ph-I & Ph-II

SLPP- Salient Features

- Boiler – based on CFBC technology : Supplied by BHEL, Technology Provider – LLB, Germany.
- Turbine Generator : Supplied by BHEL, designed by Siemens, Germany.
- Tandem compound HP-IP combined module
- Air Cooled Generator
- Other BOP packages like Lignite Handling System, Ash Handling System, DM Plant, Cooling Tower, etc. by different reputed vendors



CFBC Boiler

- Environment Friendly Circulating Fluidized Bed Combustion (CFBC) technology based Boilers.

- Main Operating Parameters :
  - Capacity : Phase-I : 390 T/hr,
    Phase-II : 405 T/hr
  - Pressure : 132 kg/cm^2
  - Temperature : 540 Deg C.

- Ph-I Design Lignite : 24% Moisture and 4240 kCal/kg GCV.
- Ph-II Design Lignite : 45% Moisture and 2900 kCal/kg GCV.

  Actual Lignite GCV : about 2600-3000 kcal/kg, moisture about 45-52%.

- HFO for Unit Start-up & Secondary fuel.

Salient features of CFBC Boiler

Pros :

- Suitable for low grade fuel like lignite having low GCV.
- Environment Friendly: In-Situ Sulfur Capture, Low Nox generation
- High combustion efficiency
- Fuel Flexibility (Type & Quality).
- Simplified Fuel Preparation & Feeding.
- No requirement of pulveriser
- High Sustainability under Cyclic Loading.
- High Operation Stability.
- Quick Restart under Hot Box-Up condition.
- FGD (Flue Gas De-sulphurization) not required.

Cons :

- Huge refractory work (around 1500 MT in each Boiler).
- Higher unit outage duration owing to huge refractory.
- High Auxiliary Consumption.
- Maintenance intensive Boiler.
- High erosion in Boiler.

Improvements in Phase-II

- Higher Steam Generator Capacity
- Increase in Combustor area to reduce erosion
- Variable Frequency Drive in ID Fans
- Provision of SCAPH (Steam Cooled Air Pre-Heater)
- Additional manual MFT (Master Fuel Trip)
- Additional Soot Blowers
- One additional field in ESP with first field dummy
- Elimination of MEJ (Metallic Expansion Joint) in RALF (Rotary Air Lock Feeder)
- Additional Bed Material Bunker
- Over load Valve in HP Turbine
- SS Tubes in Condenser
- Elimination of Station Transformer

Ash Disposal System

- **Ash is the by product after combustion of Lignite in Boiler and addition of Limestone.**

- **Ash generation is about 10-12% of fuel consumption.**

- **Conversion of Ash Disposal System from Wet to Dry since 2003-04. 100% Ash Utilization in being maintained since FY 2003-04. Ash is being given to land looser & others for brick manufacturing.**

Performance Improvement Practices

- Identifying the Critical Areas for Performance improvement
- Identifying the Best Operating Parameters
- Adoption of Best O&M Practices and Bench-Marking
- Focus on Optimum Maintenance requirements and reduction in downtime
- Optimization of Energy Consumption
- Optimum Utilization of available Resources and Vendor Development
- SOP (Standard Operating Procedure) for all processes

Plant Monitoring Practices

Plant Monitoring Practices

Particulars	Frequency of meeting	Agenda
Daily Plant Meeting	**Daily**	Review of daily plant performance, analysis for less power generation, equipment status & defects.
O & M Meeting	**Monthly**	Review of monthly plant performance, action plan for performance improvement. Discussion & Review of station level & interdepartmental issues & coordination between departments
IMS review meeting	**Half yearly**	Review of internal audit observations and action plan for improvement
Summer Preparation	**Yearly**	Review of summer preparation measures
Monsoon Preparation	**Yearly**	Review of monsoon preparation measures
AOH review meeting	**Daily (during unit overhaul)**	Review of maintenance activity progress, facilitating Inter-departmental coordination & action plan for timely completion of overhaul
Safety Committee meeting	**Quarterly**	Review of Safety related aspects of Power Plant
Energy Management Cell meeting	**Quarterly**	Review of new suggestions, implementation plan, future plan, etc. for energy conservations
Environment and Legal Cell meeting	**Quarterly**	Review of compliance related to Environment and Legal requirements

Activity Reports

Particulars	Frequency of Reports	Details
Vibration Monitoring	**Monthly**	Report of critical plant auxiliaries' vibration
Plant Performance Report	**Monthly**	Report on various plant efficiency related parameters
Unit Outage Report	**Covering each Outage**	Report on Boiler tube leakages
Unit Tripping Analysis	**Covering each Tripping**	Report on Unit tripping
MIS Reports	**Monthly**	PM activities review, Generation loss & pending defects
Equipment Performance Report	**Quarterly**	Cooling towers, etc. being covered
Report on Unit Annual Overhaul	**Yearly**	Report on major works carried out during Overhaul

PLANNING AND DEFECTS MANAGEMENT

- One of the pioneer companies adopted SAP for O&M
  - Raising Defects
  - PTW System
  - Plant Performance Reports
  - Spares Management
  - Budgeting
  - Payroll System
- Daily plant meeting to discuss critical defects, inter-department coordination, follow-ups, etc.
- E-tendering system for material procurement and service contracts
- Advanced preparation for generation budget, setting up target, Spares Management for shutdowns and normal maintenance
- Vendor development for quality material at competitive price within short time
- Advanced planning for monsoon and summer season

Operation & Maintenance

Safety

Environment

Energy Conservation

Housekeeping

Best Practices in Major Areas

- Operation & Maintenance
- Safety
- Environment
- Energy conservation
- Housekeeping

Best Operation Practices

Changes in Operation Philosophy for Process Improvement

Measures Taken For Process Improvement

Change in operation philosophy for process Improvement (OEM Practices)

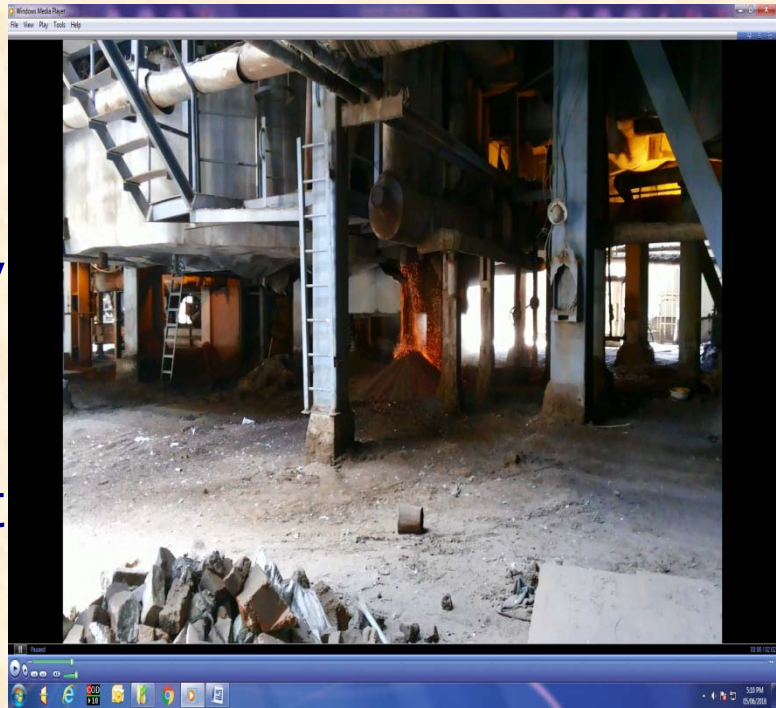
- Fast cooling down of boiler to minimize force outage duration
- Change in operational practice during shutdown of the units to minimize force outage duration
- Use of metal tube thermocouples for measurement of skin temperature of the tubes inside refractory
- Removal of Start Up Burner and Igniter after unit synchronization
- Change in practice of charging bed material inside combustor for early light up of boiler after maintenance work (time saving of around 16 hrs).
- Change In Combustor DP From 190 mbar To 130 mbar to minimise back shifting and PA duct NMEJ Failure
- Change in operational philosophy in Fly Ash Conveying System
- Change in operation philosophy of FBHE blower's to avoid DP fluctuation and maintained uniform combustor temp during lignite firing

Fast Cooling down of Boiler

- **Earlier practice**: 2 to 3 days time required for cooling down before maintenance work

- **Present practice**:
  - Draining of hot bed material
  - Removal of burner blocks
  - Maintaining ambient air circulation by running ID fans

- **Technical & financial advantage**:
  - Improvement in Plant availability by one day
  - Saving of One day generation (i.e. 3 Mus; Rs. 90 Lacs) for each unit during each outage



Change in Operational Practice during Unit Outages

- **Earlier Practice/ problem faced**:
  - Only ID fans kept in service for cooling down during BTL
  - Choking of fluidizing nozzles
  - Increased down time of the unit

- **Present Practice**: PA fan, FBHE and seal pot blowers kept in operation till draining of water

- **Technical & financial advantage**:
  - Choking of fluidizing nozzles avoided
  - Saving in down time of the units

Installation of thermocouples inside refractory

❖ **Original scheme/ practice:**

- Huge amount of refractory to cover boiler tubes in CFBC as compared to Pulverized Fuel boilers
- Tube failures in water wall between seal pot and FBHE (Fluidized Bed Heat Exchanger) due to high tube metal temperature

❖ **Problem faced:** Very difficult to survive thermocouple in circulating inventory and measure the tube metal temperature

❖ **New practice adopted :**

- Installation of Metallic Thermocouple with ceramic beads inside the refractory to measure the tube metal temperature
- Display in control room for close monitoring

❖ **Advantage:**

- Real time monitoring of tubes metal temperature
- Timely actions in operating parameters to reduce Boiler Tube Leakages

Change in operational philosophy in Fly Ash Conveying System

- **Earlier practice:**
  - Coarse particles collected in first field of Electrostatic Precipitator
  - More time for evacuation

- **Present practice:**
  - Interconnection of Fly ash conveying lines of first and second fields with necessary logic modifications
  - Parallel evacuation of fly ash from both the fields

- **Advantage:**
  - Reduction in ash evacuation time due to mixture of coarse (from first field) and fine (from second field) material
  - Improved ash conveying rate
  - Reduction in Auxiliary Power Consumption

Change in operation philosophy for process Improvement (Own Practices)

- Online O2 Monitoring after APH and ID outlet to identify air ingress area
- Cleaning of lignite conveyors during backing down to avoid conveyor outage
- Emptying of lignite bunkers in monsoon season to avoid frequent lignite flow interruptions
- Use of Thermography

Online Monitoring of Oxygen

- **Problem faced:**
  - Air Ingress in Flue Gas Duct
  - Manual Oxygen Measurement to ascertain exact area of air ingress
  - O_2 analyzer available at APH Inlet

- **Remedial measures taken:** O_2 analyzer probes installed at APH outlet and ID outlet

- **Benefits:**
  - Online monitoring at Control Room
  - Assessment of damage in very early stage
  - Advance planning
  - Attending the defects in opportunity shutdown

Use of Thermography

❖ **Earlier practice:**

- Failures of switchgear components like LT contactor or cable end termination area due to overheating
- Hot spots identified in the night hours in 220 kV switchyard
- Condition of refractory in Cyclones through visual inspection during shutdown of Unit

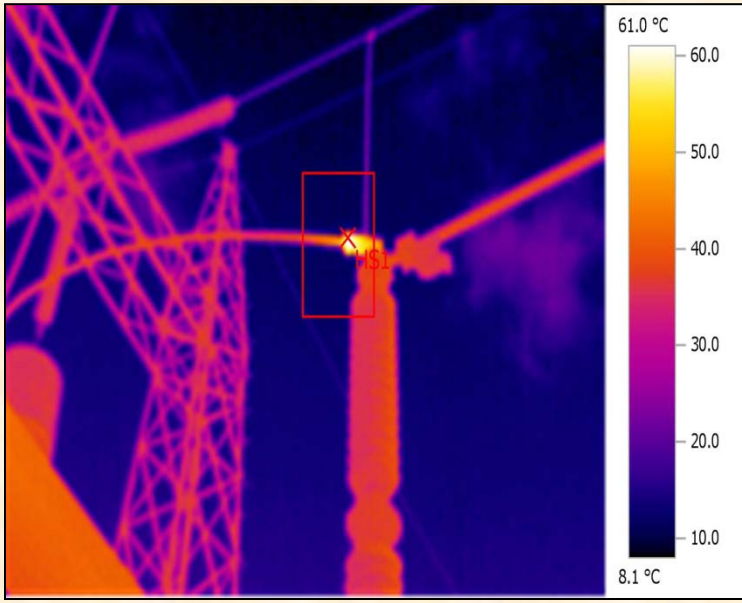
❖ **Problem faced:** Not possible to get exact value of temperature of the hot spot area and condition of refractory during normal running of Unit

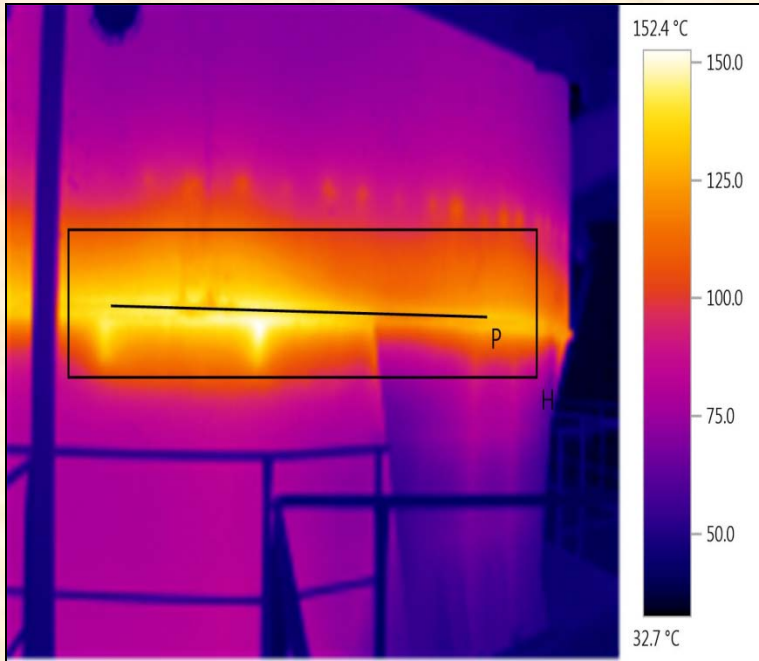
❖ **Present practice:**

- Thermography of all critical electrical equipments, refractory, insulation, cooling tower cells
- Proactive actions before further deterioration

❖ **Advantage:**

- Assessment of damage in very early stage
- Advance planning for material procurement and resource requirements
- Attending the defects in opportunity shutdown





Measures Taken For Process Improvement

- Modification in Boiler Protection – 3 logic
- Implementation of additional Boiler Protection in case of Main steam temperature exceeds 555 deg. C
- Logic modification in Cooling Tower System
- Logic Modification for Providing Lignite Conveyor Biasing Facility to maintain generation and process parameters
- HP heaters Protection Logic Modification to avoid Unit tripping at ‘Low Drum Level’
- Logic Modification to improve availability of stand by CEP and avoiding subsequent Unit Tripping

Modification in Boiler Protection – 3 logic

- **Earlier practice/scheme**: Both lignite conveyor streams trips when any cyclone outlet temperature exceeds 965 deg.C resulting to fluctuation in unit load

- **Present practice:** Logic modification to trip respective lignite conveyor without affecting operation of other lignite conveyor

- **Advantages:** Reduction in load fluctuation and increased plant stability

Implementation of additional Boiler Protection in case of Main steam temperature exceeds 555 deg. C

- **Earlier practice/ scheme:** Activation of Boiler protection – 1 when Main Steam temperature reaches to 560 deg.C and subsequent tripping of Unit

- **Present practice:** Implementation of Logic to trip both lignite conveyers when main stream temperature reaches to 555 deg. C

- **Advantages:** Restriction of main steam temperature reaching to unit tripping value

Logic modification in Cooling Tower System

- **Earlier practice:** Manual intervention to stop / start Cooling Tower fans as per cooling water temperature and condenser vacuum

- **Present practice:** Implementation of Control logic for Auto off of Cooling Tower fans depending on the cooling water temperature and condenser vacuum

- **Advantages:** Elimination of manual intervention and optimized operation of cooling tower system

Best Maintenance Practices

Best Maintenance Practices

- Fast Erection of Combustor Scaffolding during shutdown period
- Attending bed material leakages on line
- Metallic Expansion Joints to Non Metallic Expansion Joints
- Thickness Survey of Combustor Tubes
- Shielding arrangement in Hanger tubes, Start Up Burner and Seal-pot slant portion

Fast Erection of Combustor Scaffolding

- **Earlier practice**:
  - Construction of scaffolding by conventional pipes and couplings
  - 3 days time for erection and 1.5 days for dismantling (total 4.5 days)
  - Interdependent series activities (welding and cutting of combustor tubes, metal spray application work, refractory work and nozzles repair/replacement work etc.) consuming lot of time

- **Present practice**:
  - Wedge and slot type scaffolding
  - Erection and dismantling of scaffolding within one day and half day respectively
  - Dividing combustor longitudinally into three compartments by proper scaffolding and sealing arrangement
  - Interdependent series activities converted into parallel activities without compromising on safety aspects

- **Technical & financial advantage**:
  - Saving of generation for 3 days in each unit during Annual Overhauling
  - Enhanced Safety and comfort

Wedge and slot type scaffolding around the combustor water wall

Conventional scaffolding

Wedge and slot scaffolding


Partition at “Refractory Transient Zone” Level (Total Two Partition Provided one at RTZ Level and Second at Above Cyclone opening area)


Partition above Cyclone opening area

Attending Bed Material Leakages on-line

- Bed material is circulated in combustor and cyclone with high velocity in CFBC Boiler
- Erosion in combustor walls and subsequent bed material leakage

- **Earlier practice:**
  - Unit shutdown required to attend Bed material leakages
  - Resulting to Boiler Tube Leakage

- **Present practice:**
  - Attending online leakage by applying ready mix ceramic wool and sodium silicate
  - Fixing of Seal box arrangement stuff with refractory

- **Advantage:** Avoiding forced shutdown of Unit due to timely attending of bed material leakages

Combustor membrane water wall tubes

Hot bed material leakage from membrane water wall

Mixture of sodium silicate and ceramic wool

Ceramic wool

Sodium silicate

Attended bed material leakage by mixture ceramic wool and sodium silicate

Metallic Expansion Joints to Non Metallic Expansion Joints

Expansion joints used to facilitate expansion of Boiler at various locations.

- **Earlier practice:** 3 days time required for MEJ replacement

- **Present practice**: Installation of NMEJ over the damaged MEJ

- **Advantage**:
  - Reduction in maintenance time
  - Improved plant availability

Thickness Survey of Combustor Tubes

- **Earlier practice:** Tube thickness of only affected zone

- **Present practice**:
  - Thickness survey of all combustor tubes at every 500 mm distance
  - Preparation of detailed map
  - Identification of tubes for replacement
  - Identification of erosion pattern and necessary remedial measures

- **Advantage:** Reduction in Boiler tube leakages

Shielding arrangement in Hanger tubes, Start Up Burner and Seal-pot slant portion

In cyclone outlet and other erosion prone areas, some tubes are exposed directly and it gets eroded.

- **Earlier Practice**: Measurement of tube thickness and replacement based on observation
- **Present practice:** Installation of additional SS shields above the hanger tubes in addition to thickness measurement
- **Advantage**: Reduction in Boiler Tube Leakages due to failure of hanger tubes

Best Practices for Environment

Environment

- ***Environment Friendly Technology to control emission of SOx and NOx***
- ***Optimization of limestone consumption*** **by ensuring its quality through sampling at Mines end & plant end on daily basis**
- ***Effluent water and drain water treatment*** **(pH is maintained & continuously monitored) in guard pond and reuse in fire system**
- ***ESP fields replacement/ repair for improving SPM*** **emission**
- ***Maintaining cycle of concentration (COC) of Cooling Towers at 6.0 by dozing of new type of chemical (polymer dispersant) to reduce water consumption***
- ***Use of clear water generated after treatment of Side Stream Filter (SSF), Clarifier Blow-down water and backwash water via Thickener & Centrifuge in cooling water***
- **Use of centrifuge sludge in gardening**

Environment Awareness Programs

- Environment Management Cell for review of Environment Management Activities and other related matters for continual improvement.
- Lectures given in nearby village schools
- Celebration of Environment Day (Plant, School, Colony) and Earth Day
- Quiz & Poster competition
- Celebration of Energy conservation week (quiz competition, slogan completion, article/ poster completion)
- Plantation of trees on Environment Day
- Implementation of suggestion scheme
- Programs in local communities to create environmental awareness

Environment Practices

- ❖ Online continuous monitoring of pollution parameters
- ❖ Continuous feeding of limestone to control the SOx
- ❖ Maintaining healthiness of ESP for SPM control
- ❖ Maintaining zero waste water discharge system

Environment Practices

- Optimum Use of Water by taking several steps like maintaining higher CoC of CW system

- Use of Effluent Treatment Plant discharge in fire hydrant water system

- Regular Water Consumption Audit

Best Practices

Energy Conservation Practices

- Energy Management Cell established in the year 2010
- Company Energy Manager - convener of the cell
- Total 27 BEE certified Energy Auditors/Energy Mangers of various departments
- Energy Management Cell meetings conducted under chairmanship of Station Head
- Review and implementation of suggestions
- Suggestion format in the common server

Energy Conservation Practices

- Suggestion boxes at various locations to enable wide participation of the employees

- Celebration of Energy conservation day and conducting quiz / Slogan / Painting competition amongst employees & their family members

- Energy awareness camps in schools of the surrounding villages

Best Practices for Reduction in APC

TÜV NORD

CERTIFICATE

for the Energy Management System as per

EN ISO 50001 : 2011

In accordance with TÜV NORD CERT procedures, it is hereby certified that

GUJARAT INDUSTRIES POWER COMPANY LIMITED
Unit II - Surat Lignite Power Plant (SLPP),
At & Post : Nani Naroli,
Taluka : Mangrol, Dist. : Surat - 394 110,
Gujarat, India

applies a management system in line with the above standard for the following scope

Generation of Electricity from 500 MW (4 x 125 MW) Lignite based Power Plant

Certificate Registration No. 44 764 070933-002
Audit Report No. 3518 0744

Valid until 2019-07-28
Initial certification 2013

Certification Body
at TÜV NORD CERT GmbH

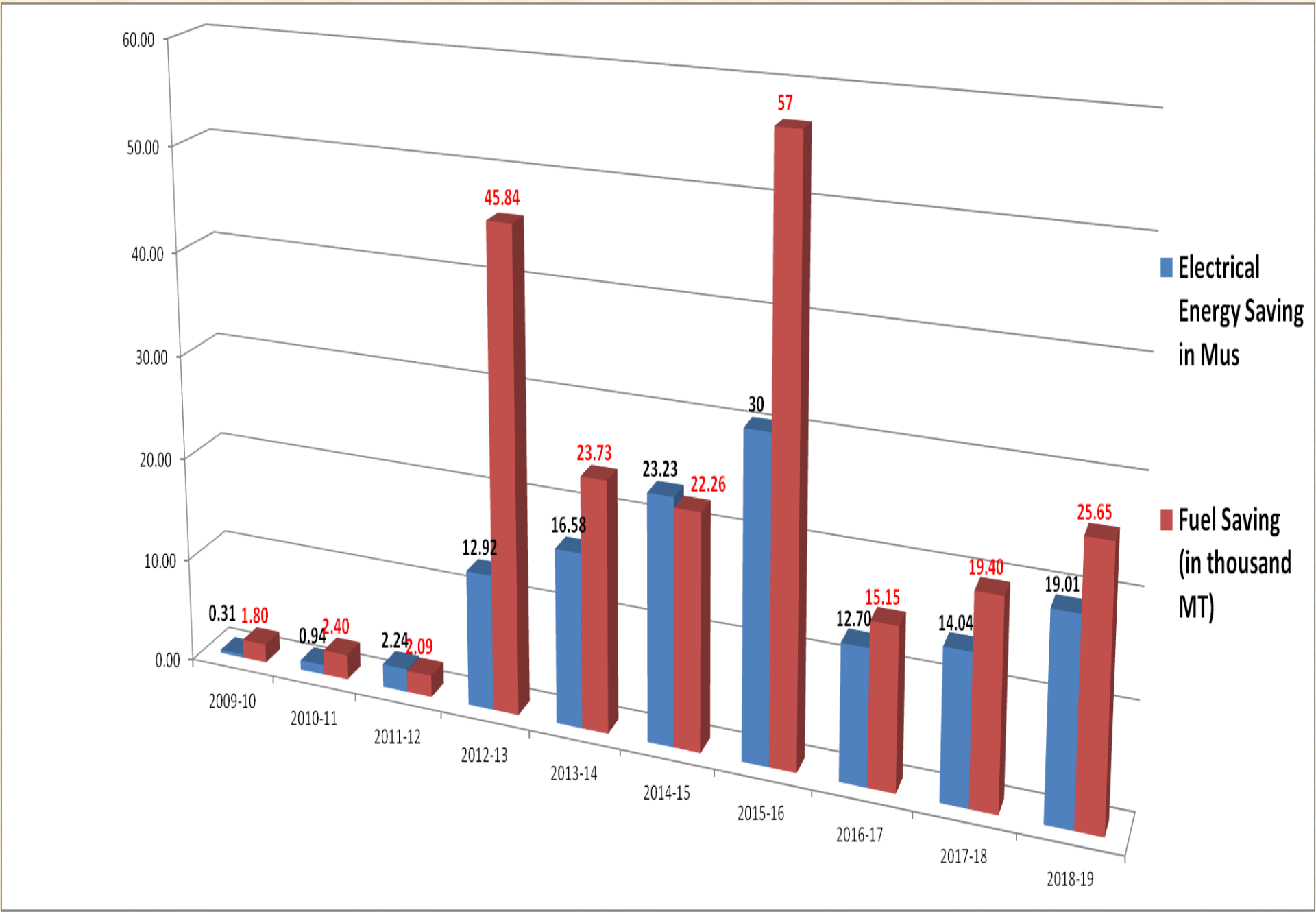
Essen, 2016-09-08

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits. This certificate is valid in conjunction with the main certificate.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com

DAkkS
Deutsche Akkreditierungsstelle
D-ZM-12007-02-01

Summary of Energy Savings From 2009 to 2019



Summary of Energy Savings From 2009 to 2019

Finn. Year	Annual Electrical Savings		Annual Thermal Savings		Total Annual Savings	Investment	No of Projects Implemented	
	Electrical Energy Saving in MUs	Annual Electrical Cost Saving (Rs million)	Fuel Saving (in thousand MT)	Cost (Rs million)	Rs Million	Rs Million	With Investment	Without Investment
2009-10	0.31	0.00	1.80	1.47	2.16	3.76	4	0
2010-11	0.94	0.00	2.40	0.00	35.78	55.39	3	2
2011-12	2.24	5.28	2.09	2.32	7.60	13.26	3	2
2012-13	12.92	0.00	45.84	0.00	38.78	23.29	17	10
2013-14	16.58	44.83	23.73	20.62	65.44	38.47	8	7
2014-15	23.23	61.49	22.26	20.81	82.30	26.77	23	7
2015-16	30	86	57	74	160	175	7	4
2016-17	12.70	39.50	15.15	22.38	61.87	13.41	7	4
2017-18	14.04	41.13	19.40	24.99	66.12	30.76	9	3
2018-19	19.01	51.97	25.65	27.53	79.50	97.47	11	1
Grand Total	132.38	330.62	216.560	195.42	601.29	478.25	93	40

Impact of Energy Saving

- Implementation of more than 148 (Identified & Accounted From 2009 Onwards) Energy Saving measures since commissioning

- Saving of more than 132.4 MUs Electrical Energy and 2,16,560 MT Lignite.

- During FY 2018-19 The SLPP has saved total 19.0 MUs of electrical power and 25650 MT of Lignite

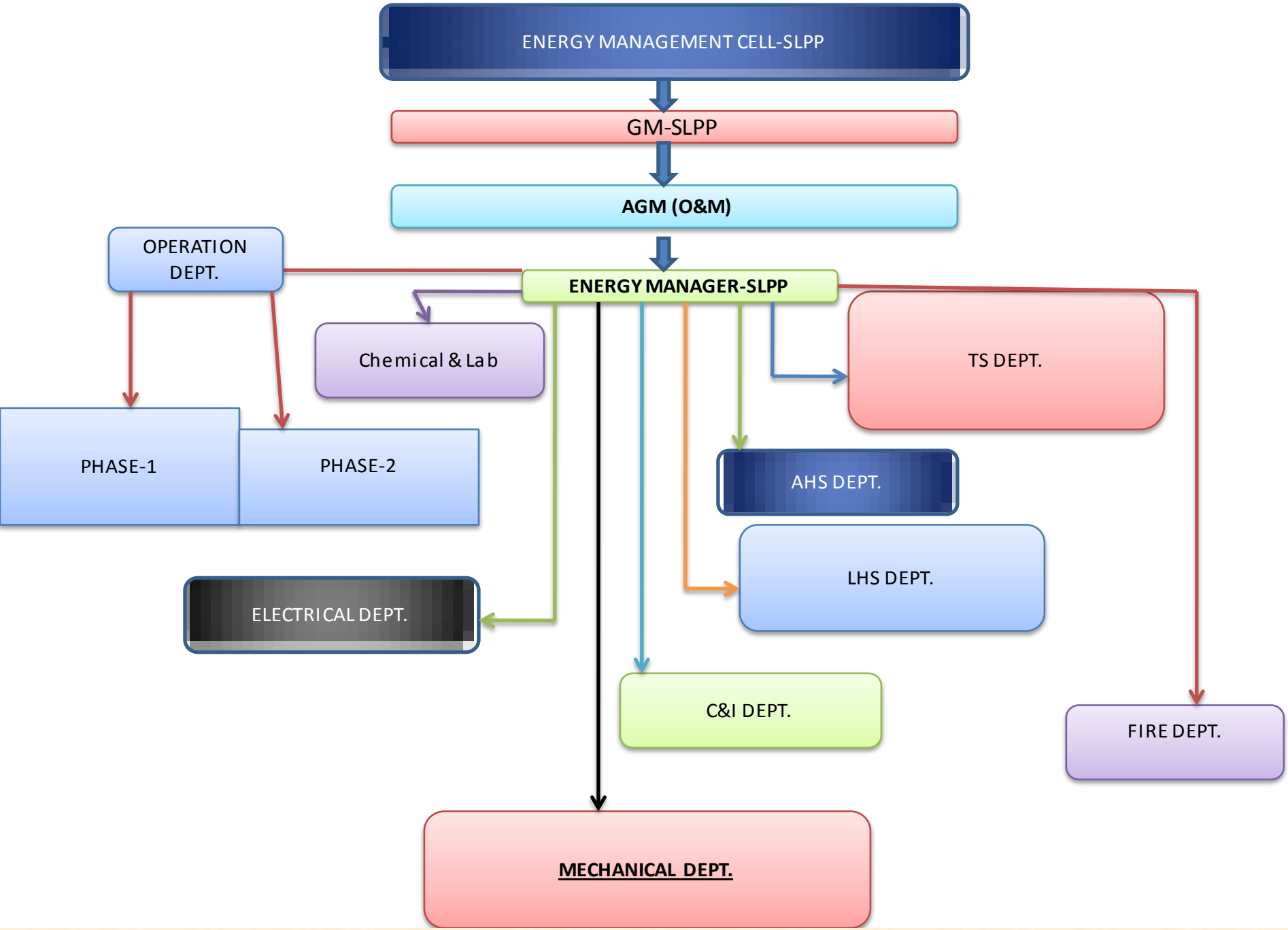
- During 2017-18 total 14.037 MUs Electrical energy and 19401 MT Lignite is saved

- Total Rs 14.11Cr saved in last two years.

- The SLPP has received total five National Awards on Energy Conservation

Impact of Energy saving on Auxiliary Power Consumption

Particulars	Unit	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Generation	MU	3607.485	3017.463	3266.592	3083.904	3178.196	3271.715	3521.714
APC of Phase-I&II	MU	455.525	400.43	399.809	385.641	408.825	420.524	438.339
%APC of SLPP	%	12.63%	13.27%	12.24%	12.50%	12.86%	12.85%	12.45%
Energy Saving	MU	12.92	16.58	23.23	30.41	12.70	14.04	19.01
APC without Energy Saving	MU	468.45	417.01	423.04	416.05	421.53	434.56	457.35
APC% without Energy Saving	%	12.99%	13.82%	12.95%	13.49%	13.26%	13.28%	12.99%
Impact of Energy Savings	% of APC	2.84%	4.14%	5.81%	7.89%	3.11%	3.34%	4.34%
	% of Gen	0.36%	0.55%	0.71%	0.99%	0.40%	0.43%	0.54%


ENERGY MANAGEMENT CELL-SLPP
GM-SLPP
AGM (O&M)
OPERATION DEPT.
ENERGY MANAGER-SLPP
Chemical & Lab
TS DEPT.
PHASE-1
PHASE-2
AHS DEPT.
LHS DEPT.
ELECTRICAL DEPT.
C&I DEPT.
FIRE DEPT.
MECHANICAL DEPT.

APC Reduction

Practices Adopted

Modifications

Energy conservation Practices

- Procurements with insistence of Energy Efficient specifications
- Reduction in paper consumption by adopting E-procurement and FLM
- Use of Intranet & internet for all communication
- “Switching off the lights before leaving” awareness created by sign boards and stickers near the switch board
- Attending energy leakages (Steam, water, fuel, air) on top priority
- Utilization of renewable energy sources by promoting Solar Cookers for colony residents and Use of Bicycle by employees
- Colony street lighting replaced with LED lightings & use of Solar street Lighting in Solar Plant.

Practices Adopted to Reduce APC

- Switching off CT fans during low load condition and during winter season : Power saving of 35 kw/hr per CT fan
- Switching off SA Fan during low load condition: Power saving of 440 KW /Hr Per Fan
- Optimization of excess air during low load operation to reduce loading of SA and ID fans
- Running of minimum required axillaries during station shutdown
- Optimization of auxiliary running hours during start up and shut down of unit
- Stopping of one CCW pump in each unit during winter season

Practices Adopted to Reduce APC

- Stopping of air washery fans during winter season and pumps during night hours
- Running of one fuel oil pump instead of two for auxiliary saving
- Energy saving by reduction of SA fan header pressure
- Change in operating pressure of seal and purge air blowers and stopping of one blower
- Reduction of Discharge pressure of Air compressors by 0.5 kg/cm^2 (from 7.7 existing to new setting at 7.2 Kg/Cm2)
- Reduction in suction air temp of Instrument air compressor
- Cooling tower fan operation from DCS

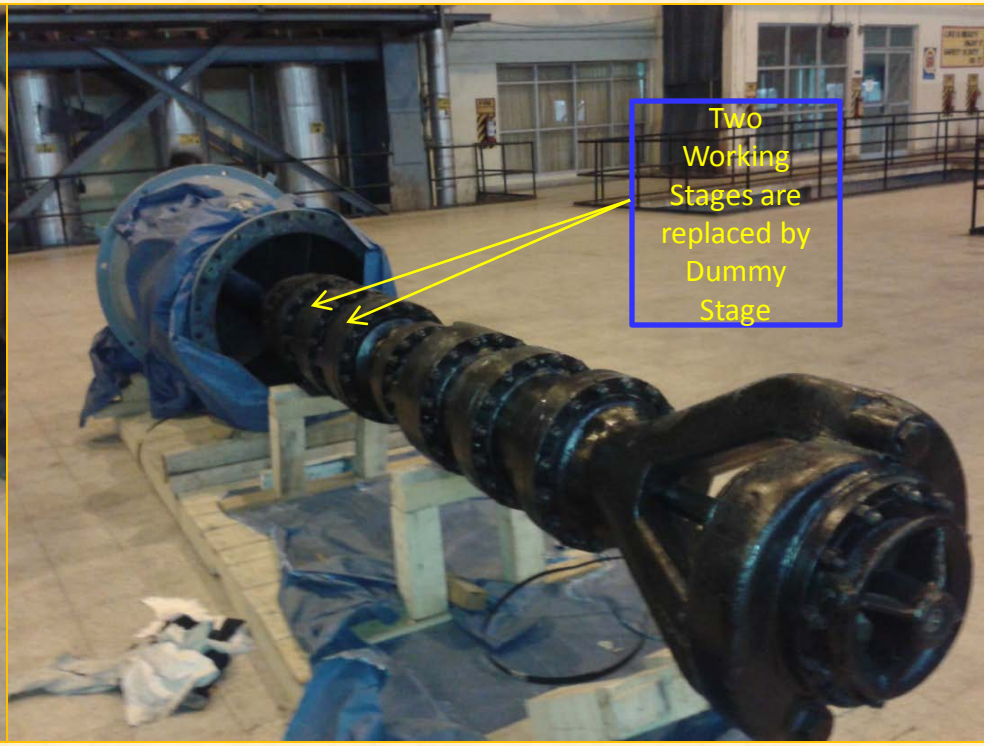
Modifications to Reduce APC

- Stage reduction in Condensate Extraction Pumps
- Installation of Energy Efficient Fans in Cooling Tower
- Use of Primary Air for cooling of Bed Ash
- Interconnection in CW System
- ACW system modification in Limestone compressor

Stage reduction in Condensate Extraction Pumps

Before Modification

After Modification



Installation of Energy Efficient Fans in Cooling Tower

Phase-II CT fan Assembly old design having 4 Nos. blades

Phase-II CT fan Assembly new design having 6 Nos. blades

Phase-I CT fan Assembly old design having 8 Nos. blades

Phase-I CT fan Assembly new design having 6 Nos. blades

Use of Primary Air for cooling of Bed Ash

Interconnection in CW System

- **Earlier practice:** While shutdown of a unit, Cooling Water pump for that Unit was kept in service for cooling of “Auxiliary Cooling Water” which is required for TG barring gear.

- **Present practice:** Cooling water pumps (of both Units) discharge line has been interconnected (Figure 6b). In case of shutdown of one unit, cooling water is charged through interconnection from running unit.

- **Advantages:** This has helped to stop Cooling Water pump (1900 kW) of a unit which is under shutdown.

(1) Interconnection of CW System of Unit-3 & 4

(2) AC system condensers cooling water supply given from CW system

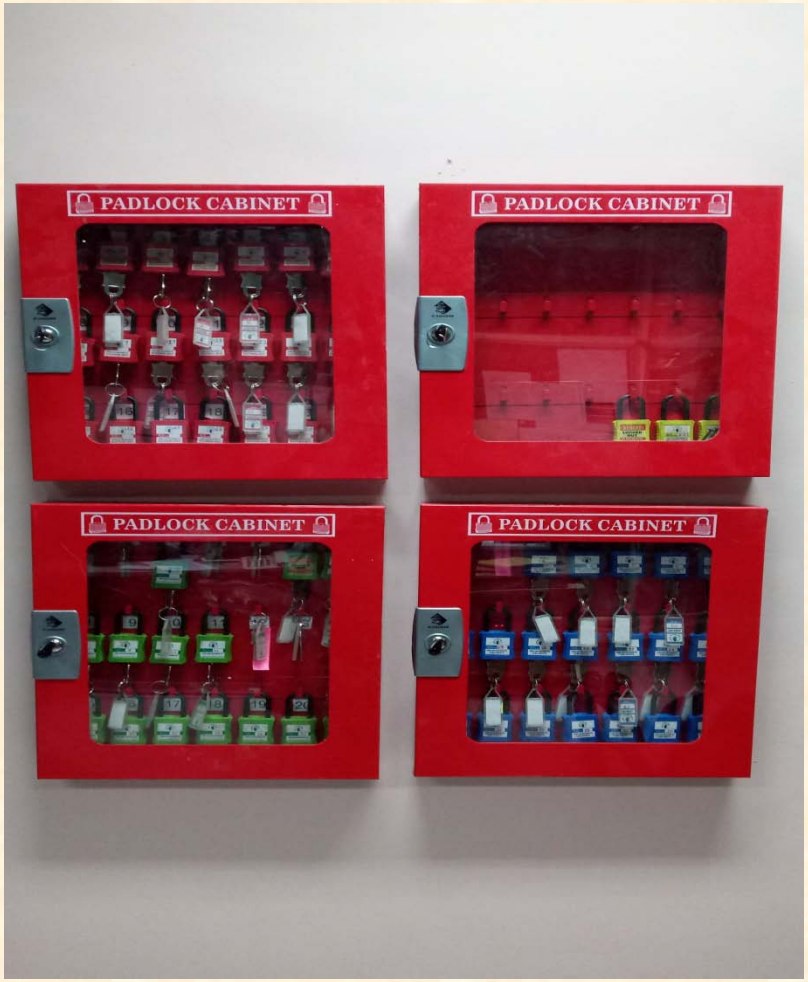
Best Practices

Safety Practices

- Implementation of LOTO system for permit to work
- Color coding on HT/LT panels to differentiate incomer, bus coupler and tie feeder breakers
- Electrical single line diagram on panels for better understanding the system during operation / isolation / normalization
- Regular safety meeting
- Conducting safety audit
- Mock drills
- Periodic safety training to all employees and contract workers
- Nomination of department wise safety coordinators
- Safety related defects categorized separately in SAP system; same are discussed in Daily Plant Meeting and attended on top priority

LOTO System


09
PA FAN-2A
09
PA FAN - 2A
FBHE
ABB
HPA


PADLOCK CABINET
PADLOCK CABINET
PADLOCK CABINET
PADLOCK CABINET

Incomer and tie/bus coupler breaker feeder painted with different color to differentiate with other feeders

Tool box talk & On job safety training

Voltage detector 230V to 33KV & 230V to 330KV

Best Practices for Housekeeping

Improvement in Housekeeping

- Very challenging task for Coal/ Lignite based power stations
- SLPP considered as one of the companies maintaining best housekeeping
- Identification and attending root cause
- Nomination of housekeeping coordinators from each department
- Conducting regular meetings and audit

तार/Telegrams : 'कें.वि.प्रा.' CENTELEC
फेक्स/Fax : 26197267
Telefax: 011- 26715475

भारत सरकार
GOVERNMENT OF INDIA
केन्द्रीय विद्युत प्राधिकरण
CENTRAL ELECTRICITY AUTHORITY
विद्युत मंत्रालय
MINISTRY OF POWER
सेवा भवन, रामाकृष्णा पुरम, नई दिल्ली - 110 066
SEWA BHAWAN, RAMAKRISHNA PURAM, NEW DELHI - 110 066

सं० No. CEA/TETD-MP/2018/G-3/331

दिनांक Dated 20.03.2018

Dear Shri N.K. Singh,

This refers to my visit to your 4x125 MW Surat Lignite TPS and Valia lignite mine on 12.03.2018 alongwith two other officers of CEA. I express my sincere thanks for the courtesy extended during the visit and I would like to convey that our visit to the power plant and lignite mine was very fruitful. It was very heartening to note that all the four CFBC units were operating at near full load. The dense green environment created and maintained by SLPP surrounding the plant & facilities is unique in itself. The ambience inside the power plant premises was maintained in very good condition with low noise level and excellent housekeeping.

As regards visit to Valia lignite mine, we convey our appreciation for maintaining good road transport of lignite by dumpers to the power plant situated more than 20 km from the mine, with no dust nuisance and no lignite spillage seen along the route.

I wish that high standards of plant performance and lignite mining would be maintained by SLPP and that these are taken as example cases by the power industry.

Best of luck for all endeavours of SLPP.

Regards

20.3.2018
(Dr. L. D. Papney)
Chief Engineer
TE&TD Division

Shri N. K. Singh,
General Manager,
Surat Lignite Power Plant
Gujarat Industries Power Company Ltd.
Post: Nani Naroli, Taluk: Mangrol,
District: Surat– 394110 Gujarat

MD, GIPCL

For kind perusal and information please.

20/3/18

HOUSEKEEPING IMPROVEMENT IN LHS

- Proper sealing at all conveyor receiving points
- Attending the leakages at transfer points
- Modification in Dust Suppression System for more Effectiveness
- Replacement /Repair of belt conveyor
- Providing deflector plate
- Stone box at high height of fall areas
- Modifications in Hood to accommodate high velocity at Secondary Crusher House

HOUSEKEEPING IMPROVEMENT IN LHS

BEFORE DFDS MODIFICATION

Dust generation during unloading

AFTER DFDS MODIFICATION

- Modification in DSS System at A/F unloading point
- Auto operation of system with dumper unloading
- Platform provided for Maintenance work
- Dedicated staff deployed for DSS

Covering of Lignite stock during monsoon


Responsibility
Corporate
Social

CSR Activities

Education Skill Development	**Community** Health Support	**Support in** Swachchh Bharat Abhiyaan,	**Rural** Infrastructure	**Livelihood** Development

Sanitation

Construction of House Hold Toilets

Construction of Common Toilet, Luna

Awareness camp through Bhavai & Puppet shows

Bhavai Shows		Puppet Shows	
Period	18.4.2016 to 29.4.2016	Period	19.9.2016 to 23.9.2016
Villages (Nos.)	21	Villages (Nos.)	21
Shows (Nos.)	21	School (Nos.)	23
Bene. (Nos.)	Approx.	Bene. (Nos.)	Approx. 2021

Visiting Specialists Doctor's Clinical Support to CHC, Mosali

Specialist	Patient
Paediatrician	1217 Nos.
Gynaecologist	764 Nos.
Total	1981 Nos.

General Medical Camp - Diagnosis & Medicines, Mangrol

Dt. 18.12.2016 Bene. 194 Nos. – 36 Villages

ગુજરાતમિત્ર
તથા ગુજરાત દર્પણ

■ સંક્ષિપ્ત સમાચાર ■

દીપટ્રસ્ટ દ્વારા યોજાયેલા આરોગ્ય સારવાર શિબિરનો ૧૯૪ દર્દીઓએ લાભ લીધો

મોસાલી: માંગરોળ તાલુકાનાં નાનીનરોલી ગામે કાર્યરત જી.આઇ. પી.સી.એલ. કંપની રચિત "દીપ ટ્રસ્ટ" દ્વારા માંગરોળ રેફરલ હોસ્પિટલ ખાતે, કીમ, સાઇનાં હોસ્પિટલનાં સહયોગથી એક આરોગ્ય તપાસ અને સારવાર શિબિર યોજવામાં આવી હતી. જેમાં વિવિધ રોગોનાં તબીબો દ્વારા સેવા આપવામાં આવી હતી. આસપાસનાં ૩૫ ગામોનાં ૧૯૪ દર્દીઓએ આ શિબિરનો લાભ લીધો હતો. આ પ્રસંગે સર્વશ્રી એન.કે. સીંગ, ડો.સુરેશચંદ્ર છાબડા, ડો.આર.પી. શાહી, જશવંતસિંહ ખેર, મગનભાઇ પટેલ દીપ ટ્રસ્ટનાં સી.ઇ.ઓ. નરેન્દ્રભાઇ પરમાર વગેરે ઉપસ્થિત રહયા હતા.

World Yoga day

Date	21.06.2016
Beneficiaries	218 Nos.

Mobile Medical Unit

Luna

Number of OPD Days	213
Total Patient	18842
Average Patient per day	88
Lab.Test	488

Nani Naroli

Bamboo Distribution to Kotwalia (PTG) Community through NGO – AKRSP

Bamboo cutting : 16480 Nos., Beneficiaries : 250 Nos.

Self Employment through Bamboo Products


ગુજરાત ઈન્ડસ્ટ્રીઝ પાવર કંપની લીમીટેડ
DEEP
રચિત
દીપ ટ્રસ્ટ, નાની નરોલી
આયોજીત
સ્વ - સહાય જુથોમાં સ્વચ્છ ઘર અને સ્વચ્છ ગામ સફાઈ અભિયાન
તારીખ :
થી

GREEN BELT DEVLOPMENT PLANTATION NEAR ELHS - SHAH VILLAGE

Awards & Recognition

Awards Received to SLPP in Recognition & efforts towards Energy Efficiency

Excellence in Energy Management Award By CII in 2014

National Energy Conservation Award Year 2013

Energy Efficient Unit Awarded By CII in 2018

Energy Conservation Award FY 2014-15 by SGCCI, Surat

Energy Efficient Unit Awarded By CII in 2017

Awards Received to SLPP in Recognition & efforts towards Ash Utilization & Water Consumption

National Award conferred to GIPCL – SLPP for 100% Ash Utilization Consecutively for three years i.e for 2017, 2018 & 2019 organized by Mission Energy 20Foundation jointly promoted by Ministry of Power (MoP), Ministry of Environment and Forest & Climate Change (MoEF and CC) and Ministry of Science and Technology.

National Award for Fly Ash Utilisation

Jointly Awarded By

Ministry of Power, Ministry of Environment & Forests and
Department of Science & Technology, Government of India

First Prize

Thermal Power Stations (≤ 500 MW Capacity)
Awardee: Surat Lignite Power Plant, GIPCL
On this day 4th December, 2005 at New Delhi

Prof. V.S. Ramamurthy
Secretary,
Department of Science & Technology

Shri R.V. Shahi
Secretary
Ministry of Power

Dr. Prodipto Ghosh
Secretary
Ministry of Environment & Forests

THE FIVE LEAVES AWARD

CENTRE FOR SCIENCE AND ENVIRONMENT
GREEN RATING PROJECT AWARDS

BEST IN WATER USE

to

GUJARAT INDUSTRIES POWER COMPANY LIMITED
SURAT LIGNITE POWER PLANT

Presented by

Ashok Lavasa

first prize in "**BEST IN WATER USE**"

FY 2015-16

Awards Received to SLPP in Recognition & efforts towards Environment Management

Outstanding performance in Environment Conservation and Pollution Control-2017 by SGCC Surat

Peacock Eco-Innovation Award 2017 for Distributed Solar Power Project (DSPP)

Environment Excellence Award- 2017 & 2018 for Outstanding Performance in Environment Management Conservation conferred by Mission Energy Foundation jointly promoted by Ministry of Power (MoP), Ministry of Environment and Forest & Climate Change (MoEF and CC) and Ministry of Science and Technology

Power Plant Performance Award (Lignite) - 2018

Thank You!