Gujarat Industries Power Co. Ltd.

Surat Lignite Power Plant

22nd National Award for Excellence in Energy Management

Presentation by

Vikas R Gupta, DGM (EM Cell)

Nilesh Dhori, Sr. Manager(Operation)

GIPCL - Company Profile

An IMS (9001, 14001, 45001, 50001) Company, Established in 1985

At Baroda

Gas Based Power Plant

145 MW (Year 1992) 165 MW (Year 1997)

112.4 MW Wind Power (2017)

TOTAL: 1084.4 MW

Solar Plants 2X40MW (2017), 75MW (2019)
At Charankha, Gujarat, 100MW (WIP) at Raghanesda Gujarat

5 MW Solar Plant at SLPP (2012)

2x1 MW Distributed Solar Power cum Agriculture Pilot Projects-2016

At Surat

4x125 MW Lignite Based CFBC Units
Phase-I (Year 2000), Phase II (Year 2010)

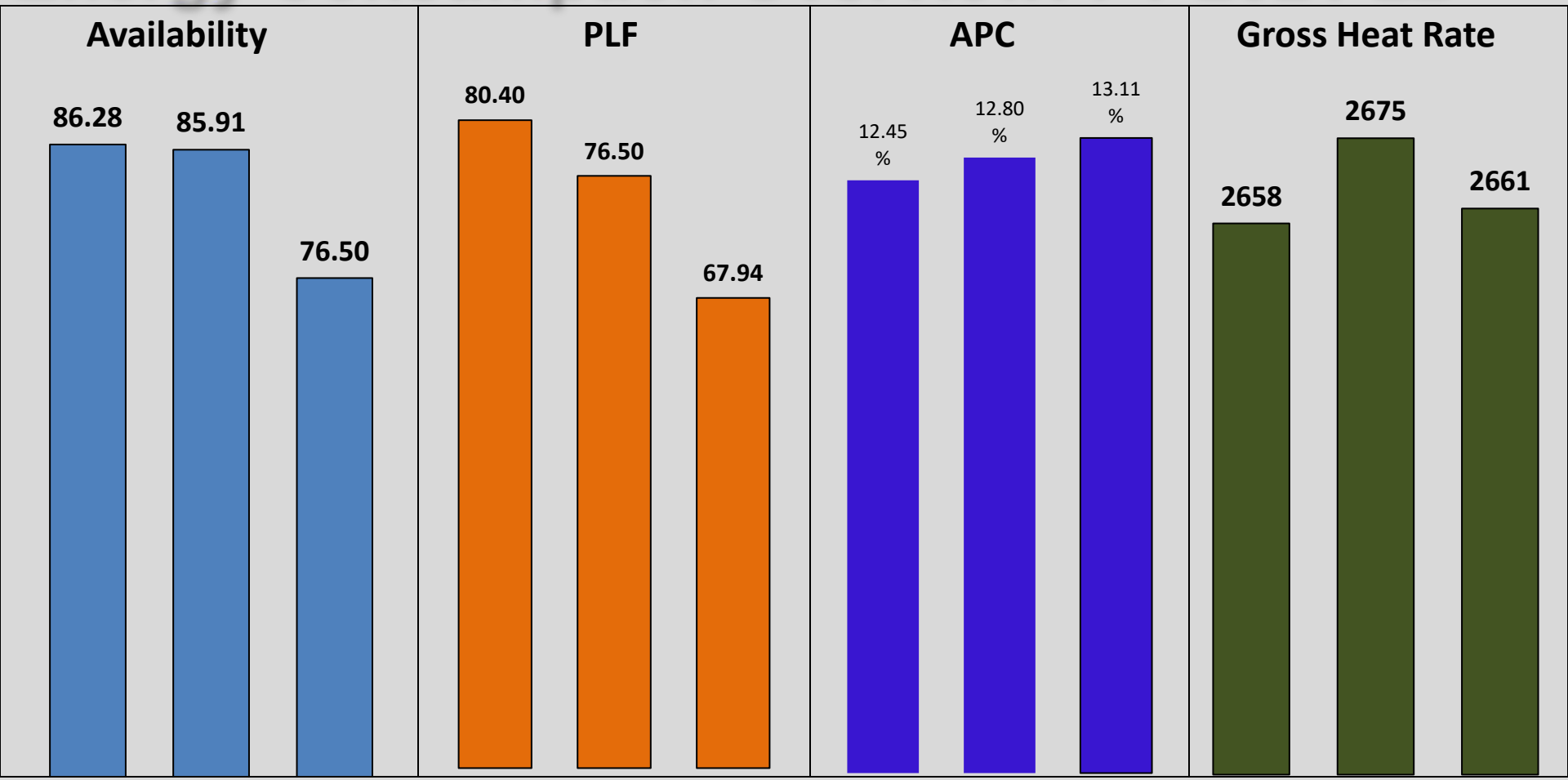
Captive Lignite & Limestone Mines

Energy Consumption Overview

Plant Performance: FY 2020-21

– Annual Generation	2975.65 MUs
– PLF	67.94%
– Availability	76.50%
– Gross Heat Rate	2661.05 kCal/kWh
– Auxiliary Power	13.11%
– Boiler Efficiencies	77.56%
– Turbine Heat rate	2064 kCal/kWh
– DM Water consumption	2.07%
– Raw Water Consumption	2.22 M^3/MW
– Specific Oil Consumption	0.4019 ml/kWh

Energy Consumption Overview: FY 2021-22



Lower Plant Availability, PLF & Higher APC than previous year was mainly due to COVID-19 Pandemic impacts like :-

1) Delay in supply of eco beam material from European countries resulting in U2 outage of 198 days.
2) Extended Unit-1&4 Annual Overhauling works by 18 days approx. due to resource & supply constraints.
3) Challenges faced in restoration of units after forced outages of other Units due to resource & supply constraints
4) Non availability of Oxygen for cutting & welding.
5) Improved Plant Heat Rate than previous year due to use of blending with imported coal

BENCHMARK DATA

Comparison of Specific Energy Consumption

Based on same CFBC technology & FBHE Design

Name of Power Station	Net Station Heat Rate Kcal/Kwh
Surat Lignite Power Plant	2974.62
Barsingsar Thermal Power Plant, NLC Limited	3002.62
Akrimota Thermal Power Station	3220.36
Kutchh (Lignite) Thermal Power Station	3860.67
Giral Lignite Power Limited, Rajasthan	4804.08

Source: MoP Notification S. O. 1264 (E) – 31 March 2016

1) National / Global bench mark data are not found with respect to CFBC Technology Plant. 2) SLPP's consistent performance (Average PLF 73.6% and Average Availability at 82% Since commissioning) is always above National average as well as better than other utilities operating on similar CFBC technology & Boiler design is itself a Benchmark for others

Summary of Energy Savings: 2018-21

Finn. Year	No of Energy Saving Projects	Investment	Electrical Savings	Thermal Savings	Total Annual Savings
		Rs Million	(in Mus)	(in MTOE)	Rs Million
2018-19	11	93.067	19.038	11538	79.209
2019-20	18	103.387	20.799	38831	222.27
2020-21	16	36.54	21.822	27784	161.335
Grand Total	45	235.88	61.659	78153	462.817

Impact of Energy Saving on APC

Particulars	Unit	2018-19	2019-20	2020-21
Generation	MU	3521.714	3359.767	2975.65
APC of Phase-I&II	MU	438.339	430.08	390.04
%APC of SLPP	%	12.45%	12.80%	13.11%
Energy Saving	MU	19.01	20.80	21.82
APC without Energy Saving	MU	457.35	450.88	411.86
APC% without Energy Saving	%	12.99%	13.42%	13.84%
Impact of	% of APC	4.34%	4.84%	5.59%
Energy Savings	% of Gen	0.54%	0.62%	0.73%

Energy Saving Plans for FY 2021-22

1. Approx 15 MUs saving is expected in Boiler Draft Power by arresting Air ingress at different sections of Flue Gas Path / ESP Casing / TAPH Leaking Tubes Blanking and /or Replacement during opportunities like AOH, BTL Etc.

2. Total 2000 Sq. Mtr. Old & Damaged insulation will be replaced in which approx 5000MT lignite saving is expected.

3. Unit-4 Cooling Tower fills will be replaced. Approx. 45 kcal/kWh in Gross Turbine Heatrate is expected

4. Energy efficient blades will be replaced in CT fans-3/1 & 4/1

5. RW Pump-3 will be overhauled after which at least 12 kW saving is expected.

6. Interconnection of CW Fore-bay Make-up line with CW system PH-2 (Feasibility being studied)

Energy Saving Plans for FY 2021-22

7. **Remaining 3 Condensate Extraction Pumps in Phase-II will be de-staged from 7 to 5 stages, which will result in saving of approx. 37kW per hour**

8. **Phase–1 Air Compressors ACW circuit modification & Oil Coolers acid cleaning / replacement will be done. This will help in reduction of lube oil temp and increase in outlet flow**

9. **In instrument air system, replacement of 10 nos. pneumatic positioner with smart positioner will be carried out. Expected saving of 13200kWhr in a year & 13.9MT of Lignite**

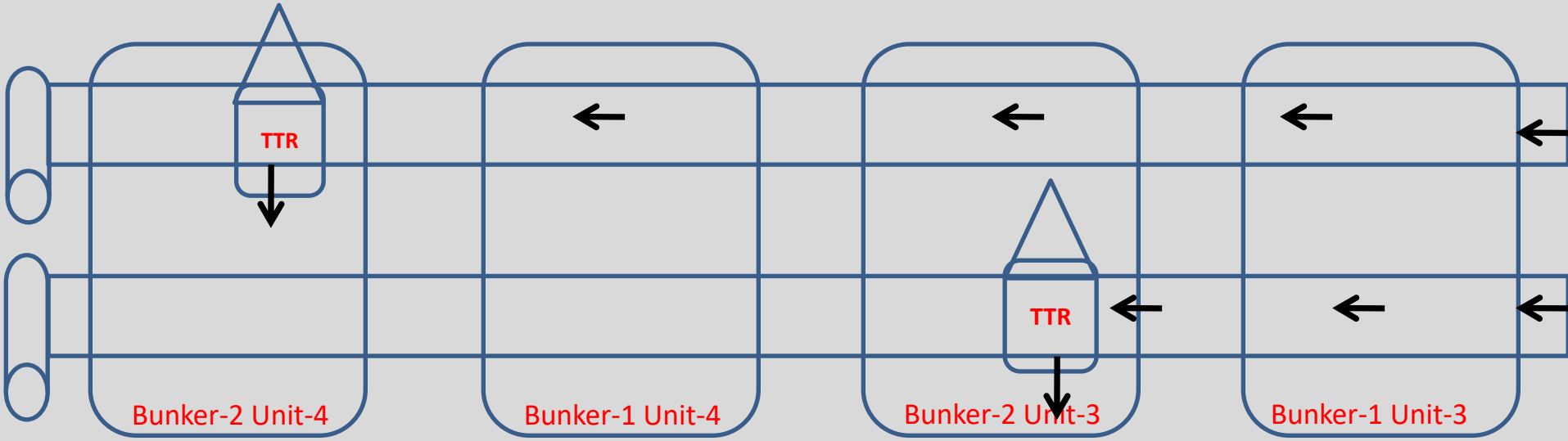
Replacement of Travelling Trippers by Plough Feeders
(Category C & D Mix type Innovative Project)

Name of the Project	Trigger for the project (Statement of Problem)	Brief description on What is Done	Why Innovative	Replicability	Impact on SEC	Annual Savings	Investment
Replacement of Travelling Trippers by Plough Feeder and Relocation of Drives of belt conveyor BCN-7C&7D	SLPP Phase –II was commissioned in Yr 2011. Bunkering of phase- II units was being done by Travelling trippers (TTR) provided on conveyor belts BCN-7C & 7D which had to travel & align over a particular bunker before bunkering. It was a time consuming activity due to which whole system had to be kept running idle and delay in bunkering. Due to this full bunkering capacity was not achievable and also continuous dust nuisance at the tail pulleys creating fire hazard so a continuous pressure on housekeeping	In phased manner, first we replaced 4 travelling trippers with 6 Plough Feeders over three bunkers (3 Plough feeders on each conveyor), thereafter the need of installing remaining 2 plough feeders on last 4/1 bunker was fulfilled by shortening the belt conveyor by installing belt drives directly over bunker. The benefit was energy saving due to reduced idle running and cleaner surrounding with reduced housekeeping due to dust falling directly into the bunker.	Category C & D Mix type innovation Idea was Risk taking / beyond OEM (Complete change in Design & Method by OEM) Also Known Concept but Unique Application	Yes. It can be replicated in other Utilities like thermal power plants, metal extraction plants or any other plant where large amount of material being fed to bunkers by TTR	1) Idle running of whole stream is avoided that accounts for major saving. 2) Impact of direct power saving due to belt shortening only is 17% of total LHS system power consumption	Rs 27.6625 Lakhs with substantial indirect saving of total Rs 64.28 Lacs 1) Rs 15.0 Saving in Technical design detailing & validation. 2) Rs 5.0 Lacs in Erection & commissioning of BCN-7C&D modified drives & plough diverters. 3) Rs 40.16 lacs saving in procurement of New Plough diverters 4) Rs 3.36 Lacs towards Spares.	Rs 102.346 Lakhs

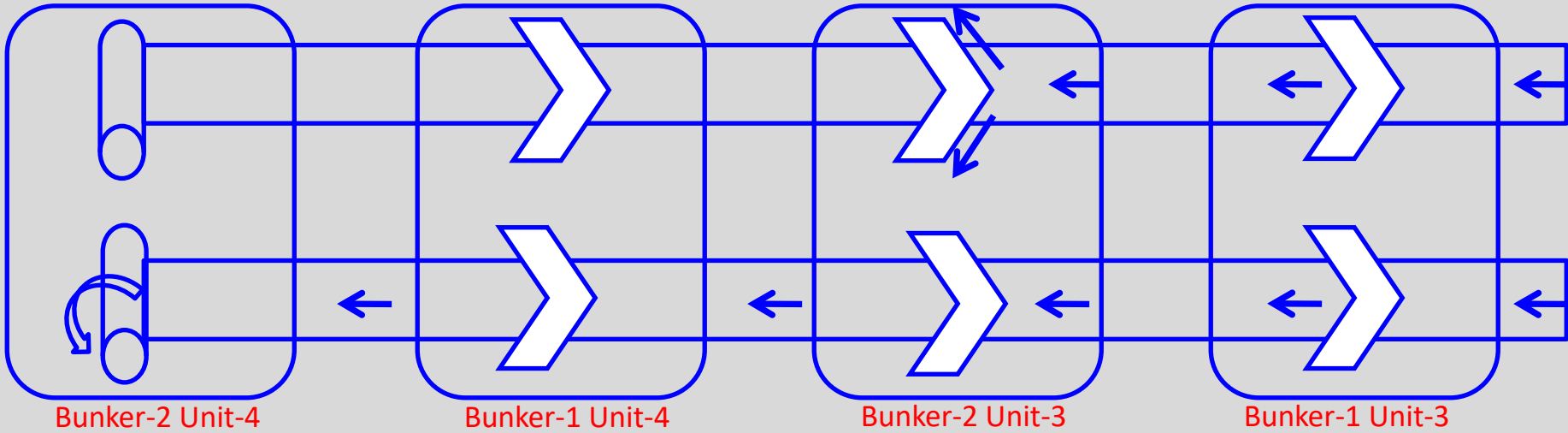



Schematics of TTR & Plough Feeders

Before Modification – with Travelling Trippers



After Modification – with Plough Feeders



Renewable Energy Installation Details

GUJARAT INDUSTRIES POWER COMPANY LTD.

ABOUT US | POWER GENERATION | MINES | SERVICES

SOLAR & WIND ASSETS

Home > Power Generation > Solar & Wind Assets > Solar & Wind Assets

GIPCL GRID CONNECTED SOLAR PV PLANTS

Project	Installed Capacity(MW)	Location	Commissioning
GIPCL SOLAR	5	SLPP, MANGROL	January 2012
Distributed Solar Power Project	1	AMROL	April 2016
Distributed Solar Power Project	1	SLPP,VASTAN	May 2016
GIPCL Plot -1 40 MW GIPCL Plot- 3 40 MW	80	CHARANKA SOLAR PARK	September 2017
75 MW Solar Power Project	75	CHARANKA SOLAR PARK	June 2019
TOTAL	**162**		

GIPCL WIND POWER ASSETS

Project	Installed Capacity(MW)	Location	Commissioning
Kucchadi	50.4	Porbandar	March 2017
Nakhatrana SN1	10.5	Kutch	Oct. 2016
Nakhatrana SN5	10.5	Kutch	Oct. 2016
Rojmal	26	Botad & Rajkot	Dec. 2016
Kotadapitha	15	Amreli	Nov. 2016
TOTAL	**112.4**	-	-

Renewable Energy Generation

Total Present Renewable Power Generation Capacity
274.4 MW

Type of Renewable Energy	Installed Capacity	Annual Generation in MUs for 2018-19	Annual Generation in MUs for 2019-20	Annual Generation in MUs for 2020-21
Wind Energy	112.4 MW	252.31	252.51	208.22
Solar Plants	(5+1+1+80+75) - 162MW	163.88	273.4	317.26
Building Integrated Solar	(25+25+20) kW	0.101792	0.09545	0.095461

Above figures are based on Net Export Basis

Environment Management – Ash Utilization

Particulars	UOM	2018-19	2019-20	2020-21
Ash Generated	Tons	603310	570772.33	477177
Ash Utilization	%	100	100	100
Ash Utilized in Fly Ash Bricks	MT, %	400350	281391, 49.3%	257676, 54%
Ash Utilized for Road pavements	MT, %	202960	289382, 50.7%	219501, 46%
Ash Utilized in Mine Filling	MT	Nil	Nil	Nil
Ash Utilized in manufacturing of Cement / Concrete-other similar products	%	Nil	Nil	Nil
Expenditure on Ash Utilization* (*Annual -Against Road Pavements)	INR (Lakhs)	163	268.56	161

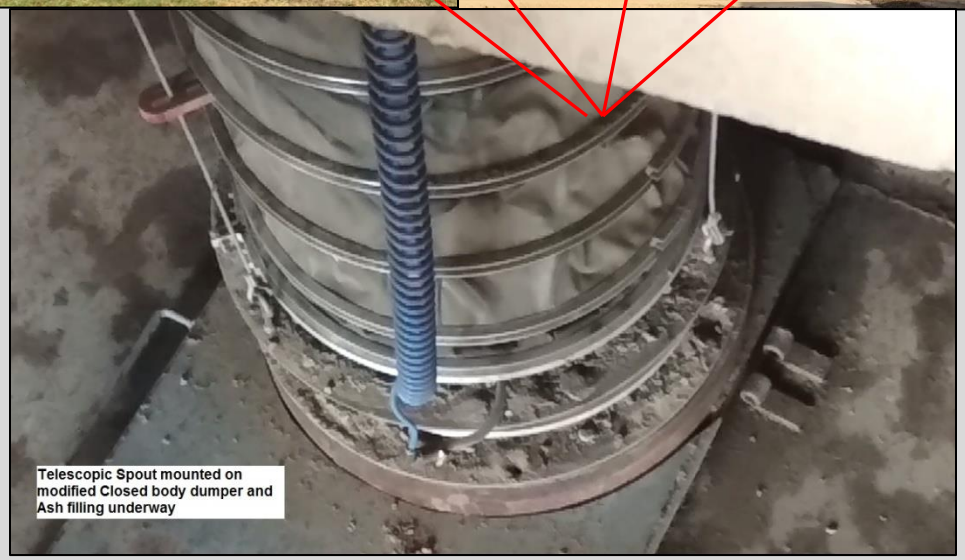
Remark: SLPP has employed the Dry method for Ash Handling in which Ash is conveyed pneumatically from hoppers to Bed Ash & Fly Ash Silos for collection and distribution to various interested parties Bulkers / Covered Dumpers filled through telescopic chute.

GIPCL-Surat Lignite Power Plant has achieved 100% ash utilization since 2004 and also got the "National Award for Fly Ash Utilization (first prize)" jointly awarded by Ministry of Power, Ministry Environment & Forests and Department of Science & Technology, Government of India in 2005.

Bagged National Awards for 100% Fly Ash Utilization in succession for 2016, 2017, 2018, 2019, 2020 conferred by Mission Energy Foundation.

Ash Disposal to Outside Parties

The major utilization of Fly Ash is in manufacturing of Bricks, AAC blocks, paver blocks, AC sheets and tiles etc by outside parties. Other use of Ash is for filling of low lying areas, partly in construction of roads etc.



Telescopic Spout mounted on modified Closed body dumper and Ash filling underway

Environment Management – Emission

Particulars	UOM	2018-19	2019-20	2020-21
Total CO_2 Emissions Per kW of Generation	Ton/kW	1.278989	1.292256	1.289861
Absolute CO_2 Emission	MT	3938925	3785902	3331842
Current SOx Emissions at Full Load	mg/Nm^3	97.36	117.49	101.38
Current NOx Emissions at Full Load	mg/Nm^3	46.75	65.75	19.53
Particulate Matter	mg/Nm^3	81.78	89.31	55.74
Mercury	mg/Nm^3	--	<0.03	<0.03

Environment Management – Water

Particulars	UOM	2018-19	2019-20	2020-21
DM water Consumption of Plant (Unit - %)	%	1.357	1.462	2.07
Raw Water Consumption of Plant (Unit – m3/MW)	M^3/MW	1.96	2.07	2.22
Weather Plant is Zero Liquid Discharge	Yes			
Best Practices in Water Management	Please refer next slide			

Waste Utilization- Water

Zero Discharge System: SLPP have Two Run-off ponds in which drains from Lignite, Limestone & Ash Handling plants gets collected; after settling of solid contaminations, fresh water is pumped to Guard pond from where it is used for various purpose after treatment.

Sr. No.	Particulars of Scheme Adopted	Approx. Quantity (M^3/day)
Details of Effluent Water diverted to Guard Pond		
1	Water collection from Different plant area pits & drains, collected in guard pond and after treatment this water is reused in fire water system, dust suppression, gardening, lignite water sprinkling etc.	**100**
2	Reduced blow down from cooling towers condenser cooling system by increasing cycle of concentration (COC) from 2.5 to 5.5 after adopting the chemical treatment	**2367**
3	DM Plant effluent reuse after treatment trough N-PIT system pumped to Guard pond	**100**
4	Lignite Run off pond water after treatment through Clarifier.	**27**
5	Water recovered from Storm water drains	**100**
	Total Effluent Water Re-Utilization (Used in Fire Hydrant System, Dust Suppression Systems at Lignite Handling System, Gardening, Plant area water-washing, water sprinkling over mining haul roads etc)	**2694**
Details of Fresh Water Re-Utilization		
1	Ash handling plant Air compressor cooling water is diverted to be utilized as Phase-I cooling tower make up water	**2000**
2	Cooling tower side stream backwash water is used as cooling tower make up water after chemical treatment	**220**
3	3 nos (50 Dia, 32 Dia, 12.5 Dia) Clarifier blow down water reuse in Cooling tower, after treatment through Thickener system	**150**
4	DM Water after Boiler Hydro-test recovered in CST for reuse as Process DM water.	**13**
5	Boiler blow down water is used as make-up water of cooling water system	**40**
	Total Fresh Water Re-Utilization	**2423**
	Total Water Saved per Day	**5117**

Best Practices in Plant (Other Areas)

Following topics have been covered in next 5 slides in brief

- **Maintenance and Reliability**
- **Asset Management**
- **Digitization**
- **Biodiversity**
- **Afforestation**
- **Research**
- **New Initiatives – Flexibility**
- **Beyond the fence Best Practices for Community & Others**

Maintenance & Reliability and Asset Management:
Through Various Productivity Enhancement Practices &Techniques

Planning and Defects Management

One of the pioneer company adopted SAP for O&M of Thermal Power Plant for activities like Raising & Monitoring Plant's Defects, PTW System, Spares Management, Budgeting, Payroll System, E-tendering system for material procurement and Service Contracts, Advanced preparation for Generation budget & setting up targets.

Best Operation Practices

Adopting change in Operation Philosophy For Process Improvement, monitoring & review of Plant Efficiency and Plant Heat Rate, Review of plant logics, permissive & interlocks etc., Total Covering of Monsoon Stocks of Lignite & Limestone

Best Maintenance Practices

Like shielding of Boiler tubes in different areas, Thickness Survey of Combustor Tubes during opportunities, Employing smart scaffoldings, Attending Bed material leakages on-line, Converting Metallic Expansion Joints to Non Metallic Expansion Joints

Optimization of Resource Utilization

Continuous monitoring for effective use of resources, minimizing the losses by identifying leakages, insulation condition etc., Recovery of wastes etc.

Environment Management through ISO-14001:2018,

Adoption of Environment Friendly CFBC Technology to control emission of NOx & SOx by adding limestone powder in Combustor. Continuous Monitoring of Electro-Static Precipitators (ESP) performance & Repair & Replacement, Maintaining COC above 5.5, Maintaining Zero Water Discharge System, Green Belt Development & Maintenance, Waste (water, ash, Kitchen waste) Management

Health and Safety Management through ISO-45001:2018

Significant risks are determined in Hazard identification and risk assessment (HIRA) register by each departmental as per their process/functions and being monitored & mitigated through Management program and additional measures, if required. Some highlights showing how safety is ensured in day to day works are

- Department wise safety coordinators are trained to monitor safety compliances, Creating Awareness, keeping vigilant everyone in their respective area
- Advanced Safety gears like Arc Protection Suits, Illuminated Windsock, LOTO system etc are in practice
- Training on basic safety, fire fighting & first aid being imparted to company & contract employees as time to time
- Permit to Work System, Regular Safety Meeting, Conducting Safety Audits, NDT & Load Testing of Pressure vessels, T&P, Cranes, Hoists, EOT load Testing, Conducting Electrical Safety Audit etc are being done effectively.
- Conducting various Mock drills and Periodic safety training to all employees and contract workers
- Safety related defects separately categorized in Defects Management System (in SAP)
- **2004 Reportable Accident Free days of Operation till FY 2020-21.**

Housekeeping

- Very challenging task due to Lignite handling and operating pressurized boilers
- Nomination of housekeeping coordinators from each department and regular meetings and Housekeeping Interdepartmental Audits being conducted at regular interval.
- Adopted various measures to maintain cleanliness, prevent fugitive emission after identification and attending root cause
- SLPP considered as one of the companies maintaining best housekeeping

Digitization

- Various modules of SAP are being used for Payroll System, Attendance System, Plants Defects Monitoring, Work Permit System, Resource Management, Finance Management etc. Day to day maintenance activities, Spare management & Procurements. Various day to day work like security gate pass issue for men & materials, attendance system, Fly Ash & Bed Ash distribution are automated.
- Company owns internet website & internal email system, intranet websites like ABT monitoring, APC Monitoring etc.
- Plants Design Drawing of various systems & equipment as well as O&M Manuals have been converted into soft formats and being used extensively.
- Use of Video conferencing & Microsoft Meeting App is being used extensively for all sorts of meetings
- Use of Window based platforms for Main plant, BOP & Equipment Operations. Solar & Wind Power generation plant data on-line monitoring using SCADA system.

New Initiatives – Flexibility & Research

Company's innovative thinking towards adopting new technology and flexibility in implementation: Keeping with the theme as above the Company has implemented total 61 measures during 2019-20, 39 measures during 2018-19 and 32 measures during 2017-18. These include outcome of adoption of new technology, new ideas, equipment, improvisations, change in MOC, methods etc. which has resulted in improving plant availability, economy, ease in O&M, Indirect/Intangible benefit in Energy Conservation/Environment Protection/ Safety Enhancement. For details please visit the company website (www.gipcl.com), download the Annual Reports of corresponding years.

Afforestation & Bio-Diversity

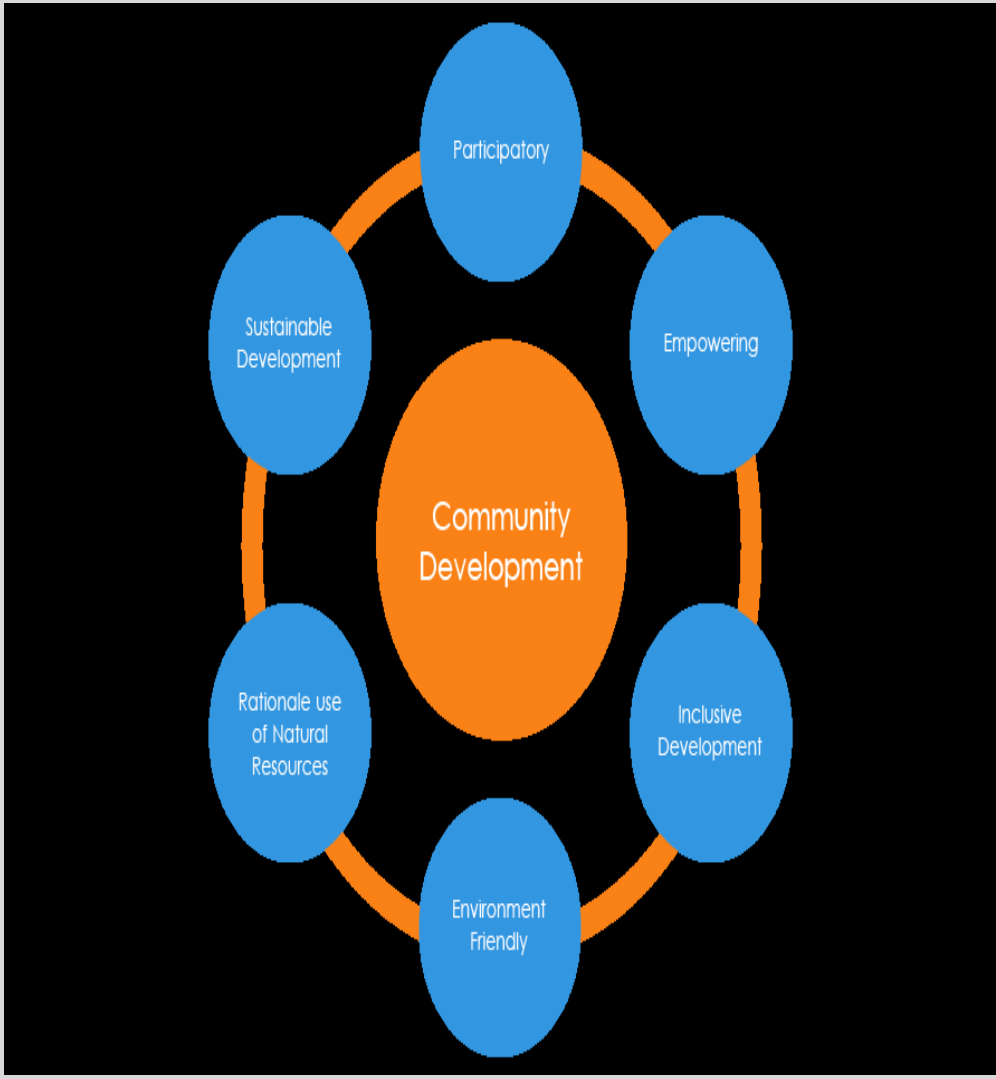
Green Belt Development Activity: GIPCL-SLPP has shown its commitment towards developing, mentoring & protecting environment since its establishment. The Company has planted more than 12.08 Lacs trees in 719 hectares area of Plant, Colony, Mines, Mine dumps since 1997-`98 with an average survival rate of 83.74%. Plants of different local species like Sissoo, Simea, Neem, Desi Babool, Ashok, Jatropha, Bamboo, etc. have been grown between the year 1998 to 2017. Seeds spraying activities were also taken up in 235 hectare area. At present, almost all the Power Plant Area (Apporx 30 Ha) has been covered & Colony areas, Mines area, Mine's Dump area has been converted into a forest. Bio-diversity is also maintained in these areas because of dense plantation and greenery developed and maintained herd of Nilgai, flocks of peacocks etc coexist in and around our plant & Mines premises. Large no of Peacocks can be witnessed here and even leopards are spotted in Mines & its dump (OB) areas.

Beyond the fence: Best practices for community & Others

The GIPCL-SLPP established & promoted - Development Efforts For Rural Economy And People (DEEP), is a Trust exclusively to undertake its Corporate Social Responsibility's (CSR) activities. DEEP operates independently under the visionary and professional guidance of the Board of governors. It work towards holistic development of the communities through integrated social development approach in nearby villages with a focus on multiple thematic sectors such as Health, Education, Social Up-liftment, Livelihood, Infrastructure Development, Environment Protection and helping in Land-Loser's development also. It works at grass-root level, Ensures active participation of communities at all stages of project development and implementation by employing consultative processes. It is working since commissioning of the plant.

Approach

The approach of DEEP is founded on Pillars shown in adjacent figure



The Deep has made large no of Toilets, Water Tanks, Small Stop Dams, School, Roads inside Villages, Self Help Individuals, Arranging various types of Programs for Social Uplift & Education. Please refer the attached annexure to know the details of work done by DEEP

Teamwork, Employee Involvement & Monitoring

1. Energy Management Cell was established in the year 2010. Company Energy Manager is the convener of the cell.

2. All BEE certified Ems / EAs from various departments are default members of the cell.

3. Energy Management Cell meetings are conducted once in a three months & chaired by Station Head.

4. Suggestion format as per IMS is available in common server. Employees who wish to put their suggestions can send filled format through e-mail. Suggestion boxes are also provided at various locations to enable wide participation of the employees.

5. Suggestions received are first reviewed by EM Cell & discussed in EM Cell Meetings. After discussion, implementable projects are accepted and conveyed to the concerned department for implementation.

6. Energy conservation day is celebrated every year and EM cell is conducting quiz program, Slogan competition, Painting competition etc among the employees & their family members.

Teamwork, Employee Involvement & Monitoring

1. **Daily Monitoring System** – Daily Gen. Reports, Through EMS Screens available to all as Intranet Website and Daily Planning Meetings

2. **EM Cell Review Meeting** – Every Three Months chaired by Station Head

3. **Separate Budget for Energy Conservation**

   – No, having different budgeting system, identify during review meeting & procedures laid.

4. **Energy Efficiency / Awareness Training Program**

   –Being arranged on EC Day / Energy Newsletter circulated on daily basis

5. **Projects implemented through Kaizens (Workers and Supervisor level)**

   – not exactly, but on similar methodology, involves everyone

6. **Major Areas of concern in terms of energy efficiency and reliability -** Boiler

TÜV NORD

CERTIFICATE

Energy Management System as per

ISO 50001 : 2018

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 070933/01**
Audit Report No. **2.5-3470/2006**

Valid until **28.07.2022**
Initial certification **2013**

Certification Body
at TÜV NORD CERT GmbH

Mumbai, **15.09.2020**

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

TUV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg, Ghatkopar (W), Mumbai - 400 086, India www.tuv-nord.com/in

IAF DAkkS Deutsche Akkreditierungsstelle D-ZM-12007-01-00

ISO-50001: 2011 Implemented Since Year 2013

% Investment of Energy Saving Projects on Total Turnover of The Company
1.032

Learning…

- Best practices adopted by Best Performers companies initiates replication of ideas
- Replication helps in facilitating easier adoption of projects leading to huge saving
- The platform provides opportunity to interact & network with individuals and companies of repute for further strengthening Energy Efficiency System
- Information about Latest market trends & innovative products for Energy Efficiency
- Comprehensive and rigorous assessment by experts helps in identifying strengths and opportunities to excel
- The Presentation files displayed in CII Energy Award Program or any other award programs are circulated through internal mails and share folders among all employees for awareness

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

Thank You

Contact

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Email: vrgupta@gipcl.com, Cell: 9909925346

Details of Energy Conservation Measures Implemented in 2020-21

Details of Energy Conservation Measures Implemented in 2019-20

Details of Energy Conservation Measures Implemented in 2018-19

Details of Waste Utilization- Water

Waste Utilization- Water

Views of Guard Pond

Run-off Pond Water Transfer Pumping Station

Waste Utilization- Food Waste Management

In Plant premises, we have developed vermin compost project in which **biodegradable waste from Industrial canteen, Guest Houses Mess and kitchen waste from colony residents** is being collected and converted in to Compost. This compost is utilized as a fertilizer in the garden and enhances fertility of soil as well as growth of the plants.

A view of Nursery developed near Industrial Canteen inside the plant – saplings are being grown using Vermi compost produced.

Quiz organized on Energy Conservation Day

Oath Taking Ceremony on EC Day

Energy Conservation Day Celebration

Energy Conservation Suggestion format

(To be filled up separately for each Energy Conservation Measure)

Dept:	Name of equipment	Concept behind Energy conservation:
Date:		

Brief Description of the energy conservation measure:

Picture/ sketch/ drawing before modification	**Picture/ sketch/ drawing after modification**

Name of Department / Agency that will execute the project:

On annual basis	Electricity (kWh)	Coal (Tonnes)	Gas (Nm^3)	Oil (kL)
Actual Energy consumption (Avg. of last 12 months)				
Theoretical Energy consumption per year after implementation				
Expected Saving of energy				
Energy tariff, Rs/ (kWh or Tone or Nm^3 or Kl)				
Expected saving in Rs./year				

Other savings (Rs.)	
Investment required (Rs.)	

Proposer name:
Contact No.:
Signature

Energy conservation program

		Power (KWH)	Coal (Tones)	Gas Nm^3	Oil (KL)	Other			
A.	Annual Consumption of Energy prior to the proposal (Actual)								
A.	Annual Consumption of Energy if proposal is implemented.(Theoretical)								
A.	Energy saving (A-B)								
A.	Energy cost saving (Rs/year)								
A.	Other cost saving (Rs/Year)								
A.	Total Cost saving (D+E) (Rs/year)								
A.	Proposed investment (Rs.)								
A.	Payback period (Year)								
A.	Sign for acceptance of the proposal								
		Energy Mgr.		MR		AGM (SLPP)			
A.	Action plan for implementation of proposal after acceptance.								

SL. NO.	**ACTIONS PLANNED**	**RESPONSIBILITY**	**TARGET DATE**	**Completion Date**	**Resource requirement**

		Power (KWH)	Coal (Tones)	Gas Nm^3	Oil (KL)	Other		
A.	Consumption of Energy after implementing the proposal (Actual)							
A.	Total cost saving (Actual)							
A.	Remarks:							
A.	Closing of Management program	Date		Sign of MR		Sign of AGM (SLPP)		

Energy monitoring Format adopted

	Energy Aspect identification & Prioritization register.	**Doc. No:**	F/SLPP/27
		Rev. Date:	**01.01.2013**
		Rev. No:	00

BC= Business Concern, LC= Legal Concern, SEU Significant Energy Use, S = Significant, NS Non Significant (860 Kilo Calories = 1 KWH)

C = Consumption Level, E = Envisaged saving potential, P = Potential for Renewable Energy, I = Potential for increased exchange with Society

Sr. No.	Area	Main Equipment/ Auxillary	Capacity in KW / HP*	Energy Aspect (Use)	BC	LC	SEU	Renewable Energy P	Existing Consumption				Running Hrs./Day	Total Consumption Level (Per Day)		C	Potential % of Saving	Envisaged saving potential	Score =(C*E)	S / NS	Existing Controls		Aditional Measure
									Steam	Power	Coal	NG											
								Overriding Factor	Kg/ Hr	kW	MT / hr	SM^3/ hr		G Cal	KWH			% <= (E)			Operational Control	Engineering Control	

Energy Conservation: Other Regular 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
- Increasing use of LED lightings & Solar street Lighting in Solar Plant.
- Switching off CT fans during low load condition and during Winter Season & Low Load conditions: Power saving of 35 kW 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

Energy Conservation: Other Regular Practices

- Running of minimum required axillaries during Unit / Station shutdowns
- Optimization of auxiliary running hours during start up and shut down of unit
- Stopping of one CCW pump in each unit during Winter season or at least in Night hours
- Stopping of air washery fans during winter season and pumps during Night hours
- Running of one fuel oil pump instead of two between both phases
- Energy saving by reduction of SA fan header pressure
- Change in operating pressure of Seal & 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/cm^2)
- Reduction in suction air temp of Instrument air compressor

Awards & Recognition

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

CENTRE FOR SCIENCE AND ENVIRONMENT
GREEN RATING PROJECT AWARDS

THE FIVE LEAVES AWARD

BEST IN WATER USE

to

GUJARAT INDUSTRIES POWER COMPANY LIMITED
SURAT LIGNITE POWER PLANT

Presented by

Ashok Lavasa

Sunita Narain

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

2x1 MW Distributed Solar Power cum Agriculture Pilot Projects

The company has adopted the Cultivation of Crops & Vegetables in 2x1 MW Distributed Solar Power cum Agriculture Pilot Projects:

- **1MW commissioned at Village Amrol, Dist.: Anand in Central Gujarat region on 28.04.2016**
- **1MW commissioned at Village: Vastan, Taluka: Mangrol, Dist.: Surat in South Gujarat on 03.05.2016**
- **Both Power Plant are first of its kind to implement the innovative idea of direct connectivity in 11 KV network.**
- **Developed on novel concept of cultivation of agriculture crops under the Solar Panels.**
- **The unique advantage is water being utilized for dual purpose – Panels Washing & Irrigation both.**

ગુજરાત ઇન્ડસ્ટ્રીઝ પાવર કંપની લીમીટેડ

પી.ઓ. પેટ્રોકેમીકલ્સ: ૩૯૧૩૪૬, જીલ્લો: વડોદરા, ગુજરાત ઇન્ડિયા
ફોન: EPABX: (૦૨૬૫) ૨૨૩૦૧૮૬ / ૨૨૩૦૬૬૪, ફેક્સ: ૦૨૬૫-૨૨૩૦૦૨૬, ઇમેલ : estomd@gipcl.com

સંકલિત પ્રબંધન પ્રણાલી (આઇએમએસ) નીતિ

ગુજરાત ઇન્ડસ્ટ્રીઝ પાવર કંપની લીમીટેડ – એ વીજ ઉત્પાદક કંપની છે જે થર્મલ, પનુઃપ્રાપ્ય, વીજ સ્ત્રોત જેવા કે પવનચક્કી, ફોટો વેલટીક આધારિત ગ્રાઉન્ડ અને રૂફટોપ સુર્ય ઉર્જા, કુષિ આધારિત વિતરિત ફોટો વેલટીક સૂર્ય ઉર્જા વીજ મથકો જેવા વિવિધતાસભર માધ્યમો દ્વારા વીજ ઉર્જા નું ઊત્પાદન કરવાની સાથે વ્યવહારિક સંચાલન અને નીભાવના (ઓ એન્ડ એમ) ક્ષેત્રમાં તેમજ ઉર્જા નાં ક્ષેત્રમાં સલાહકારીતા (કન્સલટન્સી) અને ઇજનેરી સેવાઓ આપે છે. આ કંપની એ નીચે જણાવેલ પાયાના સિદ્ધાંતોને અનુસરીને સંકલિત પ્રબંધન પ્રણાલી નીતિ (આઇએમએસ) નો અમલ કર્યો છે.

પ્રબંધના ધ્યેયોઃ

ઉર્જા ના ક્ષેત્રમાં અદ્યતન પ્રોઉદ્યોગીકીઓ (ટેક્નોલોજી) નો ઉપયોગ કરીને વિવિધતાસભર પરંપરાગત અને પુનઃ પ્રાપ્ય ઉર્જા નાં ઉત્પાદન દ્વારા પ્રભુત્વ સ્થાપિત કરવું. વિશ્વસનીય અને કરકસરભરી કીમતે વીજળી પુરી પાડીને સંપુર્ણ સંતોષની ખાતરી મેળવવી.

જોખમ પ્રબંધનઃ

ઉદભવતા પડકારો નો સામનો કરવા માટે સર્વગ્રાહી જોખમ પ્રબંધન માળખું (સંરચના) વિકસાવવું.

સાતત્યપૂર્ણ સુધારણાઃ

પવૃતીઓના તમામ ક્ષેત્રોમાં સતત અભીનવિકરણ, સુધારણા અને ઉદ્યોગોમાં પ્રવર્તમાન શ્રેષ્ઠત્તમ માપદંડો અપનાવવા તથા ઉદ્યોગો માટે નવીન માનદંડોનું સર્જન કરવું.

ઉર્જા સંરક્ષણ અને પુનઃપ્રાપ્ય ઉર્જા પરત્વે અભિનવ અભિગમ

સશક્ત ટેકનોલોજીનાં વિનિયોગ દ્વારા સક્રિયપણે પુનઃપ્રાપ્ય ઉર્જાને પ્રોત્સાહન આપવું અને તેમાં સ્થાનિક સમુદાયની સહભાગીદારી સુનિશ્ચિત કરવી. ઉર્જા માટે ઉર્જા સંરક્ષક કરકસરસભર પદ્ધતિઓ અપનાવવી અને ઉત્તેજન આપવું.

પર્યાવરણ સંરક્ષણ માટે સંકલ્પ પદ્ધતી

તમામ પવૃત્તિઓમા પર્યાવરણીય નિયમોનું સંપૂર્ણ અનુપાલન કરવું અને અપવ્યય ઘટાડવો.

વ્યવસાયિક આરોગ્ય અને સુરક્ષા

અકસ્માત મુક્ત વાતાવરણનું સર્જન અને એકમ (પ્લાન્ટ) સંચાલનના તમામ ક્ષેત્રોમાં સુરક્ષાને ટોચ અગ્રતા આપવી. કર્મચારીઓને સ્વચ્છ અને આરોગ્યપ્રદ કાર્યસ્થળ ની જાળવણી માટે પ્રેરિત કરવા.

કૌશલ્ય વિકાસ

ભૂમિકાઓ અને જવાબદારીઓ સુસ્પષ્ટ રીતે નિર્ધારિત કરીને તમામ સ્તરે અભીનવતા ને ઉત્તેજન આપવું. કારકિર્દી વિકાસ અને કૌશલ્યો સંવર્ધનની તકો આપવી.

કાયદાનું પાલન

ઉત્પાદન પ્રક્રિયા, પર્યાવરણ, વ્યવસાયિક આરોગ્ય, સુરક્ષા અને ઉર્જા પ્રબંધન પ્રણાલી ઈત્યાદી સંબંધમાં તમામ લાગુ પડતી કાયદાકીય અને વૈધાનિક આવશ્યકતાઓ, કાયદાઓ, સંજ્ઞા અને માપદંડોનું સંપૂર્ણ અને ચુસ્ત અનુપાલન ની ખાતરી મેળવવી.

AN ISO 9001, 14001 18001, 50001 COMPANY

૧૬ ડીસેમ્બર ૨૦૧૬
વડોદરા (ગુજરાત)

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CIN-L99999GJ1985PLC007868

સોનલ મિશ્રા
પ્રબંધ નિર્દેશક

INTEGRATED MANAGEMENT SYSTEM (IMS) POLICY

GUJARAT INDUSTRIES POWER COMPANY LIMITED is GENERATING COMPANY with a diverse portfolio of thermal, Renewable - Wind, PV based Ground & Rooftop Solar, Agri-Based Distributed PV Solar - Power Plants and additionally offering Consultancy & Engineering Services in the field of O&M in Utility and Energy Sector has implemented IMS with following underlying fundamentals.

Management Objective:
To become a dominant player in the Energy Sector with diverse portfolio of Conventional & Renewable Energy employing cutting edge technologies. To ensure complete customer satisfaction by delivering reliable and cost effective power.

Risk Mitigation:
Develop comprehensive risk management frame work to face the emerging challenges.

Continual Improvement:
Constantly innovate, improve and adopt best industry standards in all spheres of activities and create new benchmarks for the industry.

Innovative Approach to Energy Conservation & Renewable Energy :
Actively promote renewable energy using sustainable technologies ensuring co-opting of local community. Undertake and propagate cost effective methods of Energy Savings for the Energy Sector.

Commitment for Environmental Protection:
Ensure full compliance with Environmental regulations in all activities and reduce waste.

Occupational Health & Safety:
Zero tolerance for accidents and accord topmost priority to safety in all spheres of plant operations. Motivate employees to achieve a safe and healthy workplace.

Skill Development:
Encourage innovation at all levels with clearly defined roles and responsibilities. Provide opportunities for career advancement and skill up gradation.

Legal Compliances:
Ensure compliance of all applicable legal and statutory requirements, legislations, codes and standards in respect of product, process, environment, occupational health, safety and energy management system.

Managing Director

Energy Management Cell

Activities