GOVERNMENT OF INDIA
MINISTRY OF POWER

सत्यमेव जयते

NATIONAL ENERGY CONSERVATION AWARDS 2022
(NECA- 2022)

Bureau of Energy Efficiency
(Ministry of Power, Government of India)

Contents

INTRODUCTION

The Bureau of Energy Efficiency (BEE), under Ministry of Power, is mandated as per the Energy Conservation Act 2001, to regulate and promote energy efficiency and its conservation in India. The BEE is fulfilling its mandate by implementing flagship schemes such as Standards and Labelling (S&L) programme for appliances and buildings, Perform, Achieve and Trade (PAT) for Designated Consumers, Demand Side Management (DSM) initiatives in Agriculture, Municipalities, DISCOMS, Micro, Small and Medium Enterprises (MSME), Strengthening State Designated Agencies (SDA), and Awareness and Outreach. BEE is also implementing the National Mission for Enhanced Energy Efficiency (NMEEE), one of eight missions under National Action Plan on Climate Change (NAPCC) under Hon'ble Prime Minister of India. Through all these schemes, BEE is encouraging to save energy, help reduce carbon footprint and bring down the energy intensity in the country. Ultimate objectives of all these endeavours are to save precious resources for the nation, mitigating climate change and promote sustainable life.

One of the important endeavors under awareness and outreach programme has been the Energy Conservation Awards. To raise awareness on energy efficiency and its conservation, the BEE, under the guidance of Ministry of Power, recognizes and encourages endeavors of industrial units, institutions and establishments in reducing energy consumption by felicitating them with Energy Conservation Awards on the occasion of National Energy Conservation Day, celebrated on 14th December every year.

The awards were given for the first time on December 14, 1991, which was declared as the 'National Energy Conservation Day'. Since then, National Energy Conservation Awards (NECA) has been attracting the attention of all the stakeholders and has witnessed increasing participation level year after year. These awards are presented on EC day by eminent dignitaries and highest functionaries such as Hon'ble President, Hon'ble Prime Minister and Hon'ble Union Minister of Power.

With the approval of Ad Approval Cell, PMO; the Advertisement for inviting online applications from eligible sectors was released on September 25th, 2021 in leading National News-papers across country. The online application process was open from 25th September 2021 and the last date of receiving applications was 25th October 2021. The applicants from Industry, Transport, Building, Institution and Appliance category, which were further divided in 29 sub sectors were approached to apply.

ADVERTISEMENT OF NECA 2022

NECA 2022 PORTAL MAIN PAGE

SUB-SECTORS OF NECA 2022

INDUSTRIES:	Chemical (Bulk, Special, Agro) | Consumer Goods | Manufacturing (Non-Ferrous, Electrical & Machinery Equipments) | Edible Oil / Vanaspati | Integrated Steel Plant | Ordnance Factory | Petrochemical | Refractory | Sugar | Textile
TRANSPORT:	Railway Station | Metro Station
BUILDINGS:	Institutional Buildings (School, College & University, Government Buildings)
INSTITUTIONS:	State Designated Agency
APPLIANCES:	Most Energy Efficient Appliance of the Year (Air Conditioner, Refrigerator, Pump, Ceiling Fan, Distribution Transformer)

PARTICIPATIONS IN NECA 2022

A total of 448 applicants participated for NECA 2022 till final submission date. The sub sector wise participation is as follows:

Industries		**Transport**	
Chemical	28	Metro Station	8
Consumer Goods	18	Railway Station	85
Edible Oil/Vanaspati	4	**Total**	**93**
Integrated Steel Plant	28	**Appliances**	
Manufacturing	30	Air Conditioner	7
Ordnance Factory	5	Ceiling Fan	5
Petrochemical	10	Distribution Transformer	4
Refractory	3	Pump	2
Sugar	11	Refrigerator	6
Textile	38	**Total**	**24**
Total	**175**	**Buildings**	
Institutions		College and University	25
State Designated Agency	36	Government Buildings	74
		School	21
		Total	**120**
Grand Total		**448**	

The **Technical Committee** under chairmanship of Chairman, CEA with representatives from following organizations evaluated the applications to decide First, Second and CoM positions under various Sectors:

(1) Central Electricity Authority (CEA)

(2) Energy Efficiency Services Limited (EESL)

(3) Ministry of Railways (MoR)

(4) Petroleum Conservation Research Association (PCRA)

(5) National Productivity Council (NPC)

(6) Bureau of Energy Efficiency (BEE)

The recommendations of Technical Committee were placed before Award Committee chaired by Secretary, Power. The Award Committee, consisting of following members, after due diligence, finalized the awardees for NECA 2022.

- Chairperson, Central Electricity Authority
- Additional Secretary & Financial Adviser, Ministry
- Senior Adviser, Ministry of Power
- Director General, Bureau of Energy Efficiency
- *Managing Director, EESL*
- *Secretary-BEE-Member Secretary cum convener*

DETAILS OF AWARDEES

49 Awardees as detailed below were selected by Award Committee:

19

8

22

5

Sector

Category	Sector	1st Prize	2nd Prize	Certificate of Merit (COM)
Industry	**Chemical**	**UPL Ltd. Unit-02** Ankleshwar (Gujarat)	**Transpek Industry Ltd.** Vadodara (Gujarat)	**Indorama Ventures Oxides Ankleshwar Pvt. Ltd.** Ankleshwar (Gujarat)
	Consumer Goods	**Tata Consumer Products Ltd.** Jalpaiguri (West Bengal)	--	**Godrej & Boyce Manufacturing Co. Ltd**. Satara (Maharashtra)
	Manufacturing	**Kirloskar Oil Engines Ltd**. Nashik (Maharashtra)	**TK Elevator India Pvt. Ltd.** Pune (Maharashtra)	**Marelli Motherson Automotive Lighting India Pvt. Ltd.** Pune (Maharashtra)
	Edible Oil / Vanaspati	**Marico Ltd.** (Puducherry)	--	**Jugal Kishore Vanaspati Products Pvt. Ltd.** Bikaner (Rajasthan)
	Integrated Steel Plant	**SAIL Rourkela Steel Plant** Rourkela (Odisha)	**SAIL- IISCO Steel Plant** Asansol (West Bengal)	**Nalwa Steel & Power Ltd.** Raigarh (Chhattisgarh)
	Textiles	**Zenitex** Surat (Gujarat)	**Arvind Ltd. - Denim Business** Ahmedabad (Gujarat)	**(1) GBTL Ltd.** Bhiwani (Haryana) **(2) Orient Syntex** Alwar (Rajasthan) **(3) Welspun India Ltd.** Vapi (Gujarat)
	Ordnance Factory	--	--	**Ordnance Factory-Ambajhari** Nagpur, (Maharashtra)
	Petrochemical	**Kothari Petrochemicals Ltd.** Chennai	--	**GAIL (India) Ltd.** Pata (Uttar Pradesh)

Category	Sector	1st Prize	2nd Prize	Certificate of Merit (COM)
		(Tamil Nadu)		
	Refractory	--	--	**Calderys India Refractories Ltd.** Nagpur (Maharashtra)
	Sugar	**Ponni Sugars Erode Ltd.** Erode (Tamil Nadu)	**Kothari Sugars & Chemicals Ltd.** Sathamangalam (Tamil Nadu)	--
Transport	**Railway Stations**	**Kacheguda Railway Station (South Central Railway)**	**Guntakal Railway Station (South Central Railway)**	**(1) Kanpur Central Railway Station (North Central Railway) (2) Rajahmundry Railway Station (South Coast Railway) (3) Tenali Railway Station (South Coast Railway) (4) Vijayawada Railway Station (South Coast Railway)**
	Metro Stations	--	--	**Khan Market Metro Station (Delhi Metro)**
Buildings	**Government Buildings**	**Ajmer Group of Workshop (Admin Building) Ajmer (Rajasthan)**	**BSNL Uttarakhand Telecom Circle Indira Nagar Dehradun (Uttarakhand)**	**(1) Railway Hospital (Guntakal Division) South Central Railway (Andhra Pradesh) (2) Electric Traction Training Centre Vijayawada South Central Railway (Andhra Pradesh) (3) Divisional Railway Hospital Pratapnagar Western Railway (Gujarat)**
	College & University	**Dayanand Science College Latur (Maharashtra)**	**Lokpanchayat Rural Technical Training Institute Ahmednagar (Maharashtra)**	--
	Schools	--	--	**Amity International School Sector 46, Gurugram (Haryana)**
Institutions	**State Designated Agency (SDA)**	**Group 1: Karnataka Renewable Energy Development Ltd.**	--	**Group 1: Rajasthan Renewable Energy Corporation Ltd.**

Category	Sector	1st Prize	2nd Prize	Certificate of Merit (COM)
		Group 2: **Andhra Pradesh State Energy Conservation Mission** **Group 3:** **O/o Chief Electrical Inspector-cum-Adviser** **Govt. of Assam**	**--** **--**	**Group 2:** **Telangana State Renewable Energy Development Corporation Ltd.** **--**

INDUSTRIES

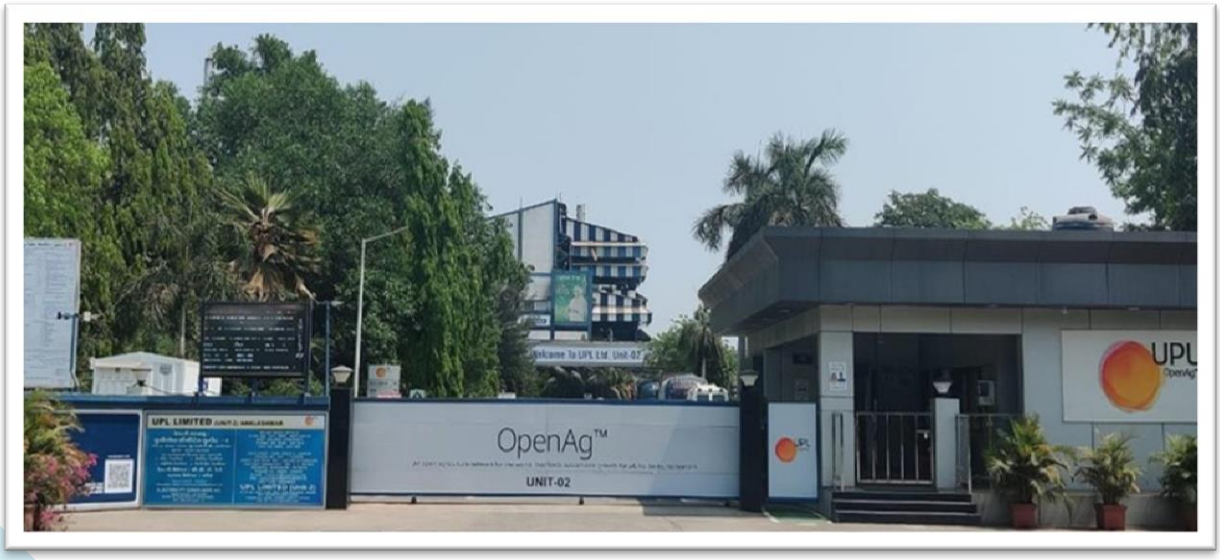
Chemical

First Prize

UPL LIMITED, UNIT-02
Bharuch, Gujarat

Unit Profile

UPL Limited Unit-02 is one of the key manufacturing facility of UPL group (Global Conglomerate having world wide footprints in manufacturing, supply-chain and sales) situated in Ankleshwar, Dist- Bharuch in the state of Gujarat.The entire facility is spreded in an area of 65,000 Sq.meter having turnover of Rs. 2615 Cr. Unit-02 is India's first Agrochemical plant with 'Zero Liquid Discharge' facility. Unit-02 has been operational since 1993 with steady growth over the years and caters to the AI Business of UPL that boast of a diverse product mix ranging from Insectice, Fungicides/Herbicides and Speciality chemical. We are market leader in Acephate catering 80% of indian market demand. Also we take pride in roburst practices and systems in our operation with state of the art infrastucture and technology supported by TQM methodology of work. We trully stand for environment, preservation, conservation and sustainable goals. Unit-02 is ISO-9001, ISO-14001, OHSAS-18001 and ISO-50001:2018 certified. We have been confered with numerous award from reputed agencies in field of operational excellence, safety, energy management and others. We have received sustainability 4.0 platinum award by Frost & Sullivan in 2018. We are truly commited to contribute to the cherished vision of our organisation to be an icon for technology, growth and innovation.



Energy Consumption Data

Particulars	Unit	2018-2019	2019-2020	2020-2021	2021-2022
Total Electricity Consumption	Lakh kWh	239.14	228.46	336.42	321.47
Total Thermal Energy Consumption	Million kcal	41920.12	40411.34	63267.76	60759.42

Specific Energy Consumption

SEC Reduction	Unit	2018-2019	2019-2020	2020-2021	2021-2022
SEC Electrical (Total Electrical Energy Consumption/Weighted Equivalent Product)	Lakh kWh/tonne	0.011268	0.010524	0.007547	0.007199
SEC Thermal (Total Thermal Energy Consumption/Weighted Equivalent Product)	Million kcal/tonne	1.975230	1.861488	1.419290	1.360755

Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh)

Electrical Energy Saving	Unit	2018-2019	2019-2020	2020-2021	2021-2022
Total Energy Saved	kWh	673200	855954	860112	2362857

Thermal Energy Savings data for 19-20, 20-21& 21-22 (kcal)

Thermal Energy Saving	Unit	2018-2019	2019-2020	2020-2021	2021-2022
Total Energy Saved	kcal	3957900	5753150	3515350	11431150

List of Energy Conservation Measure

- Online condenser cleaning for York-1, Phorate chiller and York -3
- Single Circuit for Acephate Utility
- Energy Efficient CT Fan
- Additives for Refrigerant
- Neutralization Utility Change Over
- Back Pressure Turbine installation in place of PRV
- Common Evaporative Condenser for CHB Utility
- Operating Central Chilled water at 9.5 Deg C instead of 7 Deg C
- Operating 140 TR at -10 Deg C instead of -15 Deg C

- Advance Flow Reactor Technology in Acetalizations reaction
- Closed loop Single Circuit for CHW
- Advance Flow Reactor Technology in Isomerization reaction
- SFD heat integration with Cooling water Heat - Power
- Power norm reduction by installing Hot water VAM to recover waste heat available in ZLD batch evaporators.
- Incinerator waste heat recovery & Thermo-compressor for AAT plant
- Mechanical vapor recompression system for RO reject
- Scale-ban system installation to reduce effluent evaporation
- Steam Consumption Reduction Chemical House secondary flash steam recovery
- Evaporator feed preheating by waste heat
- MDC column feed preheating waste condensate
- MDC FFE preheating by waste heat
- Low grade heat utilization by absorption-based steam pump
- Steam reduction by SFD heat integration with compressor waste heat
- EALB Column heat pinching with vapor

Energy Management Policy and Certificates

UPL Limited, UPL House
610 B/2, Bandra Village
Off Western Express Highway
Bandra (East), Mumbai 400 051, India

w: upl-ltd.com
e: contact@upl-ltd.com
t: +91 22 7152 8000

ENERGY CONSERVATION
POLICY

We, at UPL are committed to continual improvement in energy efficiency by establishing effective energy management programs and will conserve energy in our operations. The scope of policy covers all facilities, personnel and technology that supports technical, manufacturing and project activities.

OUR OBJECTIVES:

- To reduce overall specific energy consumption substantially with each passing year after considering changes in levels of activities, weather and other relevant factors
- To integrate energy management with business objectives and to provide resources to improve energy performance
- To comply with all relevant legislations relating to energy and other specific requirements
- To adopt energy efficient designed technologies, equipment's, processes and services
- To organize periodic training and maintenance optimization programs in pursuit of improved energy performance to all relevant personnel
- To ensure that we publish the consolidated energy usage information every year as a part of the annual report
- To manage utilization of energy resources efficiently, upgrade equipment (s) as appropriate and to employ cleaner and more efficient technology

14th December 2020

UPL LIMITED MUMBAI

Raj Tiwari
Global Director (SCM)

Chemical | 2 | **Second Prize**

TRANSPEK INDUSTRY LIMITED
Vadodra, Gujarat

Unit Profile

Transpek Industry Limited, synonymous to Creative Chemistry, was set up in yea 1965 for manufacturing of transparent acrylic sheet, from there it was christened as “Transpek”. The company has grown in leaps and bounds, diversified and emerged as one of the most responsible producers and exporter of chemicals.

Over three decades of presence in international market, Transpek has earned for itself a name for being a quality manufacturer and supplier of chemicals. With its expertise in handling Chlorine and Sulphur, Transpek has indigineously developed process for chlorinated chemicals like Thionyl Chloride and various Acid and Alkyl Chlorides.

Currently we carry out reactions like Chlorination (Inorganic Chemicals). Acid Chlorination with Thionyl Chloride (Acid Chlorides & Fatty Acid Chlorides). Alcohol Chlorination with Thionyl Chloride (Alkyl Chlorides). Friedel-Crafts Reactions, Sulfonation and Amidation.

Transpek is accredited with ISO 9001:2015, ISO 14001:2015, BS OHSAS 18001:2007 for Management System and ISO 50001:2018 for Energy Management System by TUV India Pvt. Ltd. We are also signatories to Global Responsible Care Initiative and several measures of this initiative are under implementation at our company

Energy Consumption Trend

Description	Unit	2018-19	2019-20	2020-21	2021-22
Electrical Energy Consumption	Lakh kWh	213.5	163.6	122.4	154.1
Thermal Energy Consumption	Million kCal	96354.6	67629.5	42301.4	58837.4

SEC Reduction Trend

SEC Electrical Reduction data for 19-20, 20-21 & 21-22 (Lakh kWh/tonne)

Description	Unit	2019-20	2020-21	2021-22
SEC Electrical Reduction for TPC/IPC	Lakh kWh/tonne	0.00678	0.00759	0.00540
SEC Electrical Reduction for Other Products	Lakh kWh/tonne	0.00217	0.00360	0.00166
SEC Thermal Reduction for TPC/IPC	Million kcal/tonne	3.884	3.641	2.899
SEC Thermal Reduction for Other Products	Million kcal/tonne	0.571	0.839	0.470

Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh)

Year	2019-20	2020-21	2021-22
Electrical Energy Savings data(kWh)	1108240	1137791	592068

Thermal Energy Savings data for 19-20, 20-21& 21-22 (kcal)

Year	2019-20	2020-21	2021-22
Thermal Energy Savings data (kcal)	2022735000	788034000	4602102000

List of Energy Conservation Measures

- Replacement of 8 TPH Furnace Oil (Fossil Fuel) Boiler with 10 TPH FBC Boiler based on Bio Briquette (Carbon Neutral) as fuel to reduce the Fossil Fuel (Furnace Oil) Consumption and reduction in the SOX (GHG gas) generation with Fuel Cost reduction as additional advantage - Reduction of 507 MT/Annum in Furnace oil consumption.
- Effective Operation & higher utilization of 10 TPH & 6 TPH Boilers (based on Bio Briquette) in grid to minimize operation of 4 TPH FO fired boiler, has resulted in reduction in FO consumption with additional benefit of substantial reduction in fuel cost as well as greenhouse gas (SO2) emission - Reduction of 164.4 MT/Annum in Furnace oil consumption.

- Replacement of Evaporative Condenser in place of shell & tube type Heat exchanger-based condenser to get lower condensing temperature in 257 Tr chilled water plant to reduce power consumption. - Reduction of 851763 KWh /Annum in power consumption.
- Stoppage of 25 HP Primary pump in 150 Tr Chilled water Plant after implementation of Indirect cooling in ACL 6 utility plant has resulted in energy saving - Reduction of 144000 KWh /Annum in electricity consumption.
- Fuel feeding nozzles redesigned & replaced in 10 TPH FBC Boiler based on Bio Briquette to eliminate clinker formation, resulted in better combustion & boiler efficiency. Also installed on-line tube cleaning system designed by M/S Thermax make (Dan-Blast) has eliminated fire tubes chocking, resulted in effective heat transfer - Reduction of 485.8 MT cumulative Briquette consumption.
- Installation of Energy Efficient IE3 motors in place of low Efficiency IE1 motors in utility (24 X 7 Operation) has given energy saving - Reduction of 112477 KWh /Annum in power consumption.
- Installed condensate recovery system with flash steam recovery in ACL 2/3 & 6 Plants from MSPTFE Jacketed piping and Process equipment to improve condensate recovery & water conservation. This has improved condensate recovery to 78% - Cumulative reduction of 349.45 MT in Briquette consumption.
- Ceramic Coating in various Utility pumps (24 X 7 operation) has decreased friction loss thus improved pump efficiency, resulted in energy saving - Reduction of 226670 KWh /Annum in power consumption.
- 60 HP pump replacement by 15 HP in utility cooling after after commissioning of new chilled water plant based on Evaporative condenser - Reduction of 201960 KWh /Annum in power consumption.
- TC plant cooling tower -75 HP pump stoppage by modifying 100 HP pump piping to cater the supply to distillation section from reaction section to reduce power consumption - Reduction of 269280 KWh /Annum in power consumption.
- VFD installation in 10 TPH FBC Boiler's FD & ID Fan to reduce power consumption - Reduction of 264963 KWh /Annum in power consumption.
- Operating multiple distillation units on single ejector in ACL 3/6 plants to decrease steam consumption & effluent generation - Reduction of 561.9 MT cumulative in Briquette consumption.
- New 150 Tr chilled water plant installation & commissioning with Evaporative condenser to get lower condensing temperature to reduce power consumption - Reduction of 135000 KWh /Annum in power consumption.
- Brown Gas Generator to reduce Fuel Consumption in Boiler 10 TPH FBC Boiler. Steam to Fuel ratio improved from 4.72 to 5.2 - Reduction of 60.9 MT in Briquette consumption.
- Eliminating operation of primary pump in brine circuit by modifying secondary circuit in ACL-6, 25 Tr Brine water system to reduce power consumption - Reduction

of 39916.8 KWh /Annum in power consumption.

- Detailed audit of utility pumps (24 X 7 Operation) carried out and 7 nos of low efficiency pumps replaced by high efficiency pumps. Also impeller replaced in 4 nos of pumps to get the actual operating point (Flow & Head). NRV removed from one pump discharge line to reduce the pressure drop. Saving figures verified by certified energy auditor after corrective action in all 12 nos. of pumps - Reduction of 592068.49 KWh /Annum in power consumption.

Energy Management Policy and Certificates

Transpek

TRANSPEK INDUSTRY LIMITED

INTEGRATED MANAGEMENT SYSTEM POLICY
(COVERING QUALITY, ENVIRONMENT, OCCUPATIONAL HEALTH, SAFETY AND ENERGY)

Transpek is engaged in the business of chlorinated and sulphur based products. The company is committed to conduct its business by manufacturing various industrial chemicals to cater to the needs of its customers.

Transpek strives for total customer satisfaction; adherence to all legal and statutory requirements, environment protection, pollution prevention, employee health & safety and conservation of natural resources and energy. Transpek also attempts to ensure that all these aspects are taken care by all those working for or on behalf of Transpek. Transpek continuously works for improving performance and effectiveness of its Integrated Management System.

Transpek believes that above commitment can be achieved through:

- Proactive approach for ensuring compliance to applicable legal and other requirements relating to quality, environment, occupational health & safety and energy.
- Consistent delivery of quality products and services that conform to specified standards.
- Improving trustworthiness by way of transparency and providing appropriate and timely information to customers, suppliers, service providers, contractors and visitors.
- Conservation of resources like water, energy as well as raw materials for improving efficiency, use and consumption.
- Developing and maintaining of green belt within plant premises and surrounding areas.
- Prevention of pollution by recycle, reuse and recovery of inputs in its daily operations, including reduction of effluent or waste at source of its generation.
- Continuously exploring improvement opportunity in Process Safety Management by incorporating suitable technologies, processes and changes for elimination of hazards and reduction of OH&S Risks.
- Operate and maintain all plants, machineries and equipment in safe manner and continuous improvement in QEHSEn performance.
- Provide safe and healthy working environment for all those working in Transpek premises including employees, contractors, suppliers and visitors for prevention of injury and ill health.
- Provide relevant information and necessary resources to achieve objectives for IMS performance improvement.
- Ensure involvement of relevant interested parties in effective implementation of Integrated Management System.
- Support protection of environment, prevention of pollution, elimination of hazard, reduction of OHS risk and energy efficiency improvement through regular work place monitoring and integration of criteria at planning & procurement stage for new projects, modification/ expansion projects.

At Transpek, all employees shall be trained to involve in this endeavor and in effective implementation of this policy.

01st August, 2020
Vadodara

Bimal Mehta
Managing Director
Transpek Industry Limited

Consumer Goods

First Prize

TATA CONSUMER PRODUCTS LIMITED
Jalpaiguri, West Bengal

Unit Profile

Tata Consumer Products is a focused consumer products company uniting the principal food and beverage interests of the Tata Group under one umbrella. The Company's portfolio of products includes tea, coffee, water, RTD, salt, pulses, spices, ready-to-cook and ready-to-eat offerings, breakfast cereals, snacks, mini meals and plant-based foods and health supplements. As Tata Consumer, we stand 'For Better' – a reflection of our commitment to improvement by pushing boundaries and aiming for better every day for all our stakeholders. The Company had employed 3,500 plus people and having a significant brand presence in 40 countries worldwide. Annual turnover for the financial year ending 31st March 2022 is US$ 1.5 bn. In India TCPL has 12 Factories for Packing Tea, 1 factory for bottling water in Poanta Sahib, Instant Tea Division in Munnar and export Unit in Cochin. Tea Factories are in Assam, Kolkata, Damdim, Sampla, Indore, Hyderabad, Aurangabad, Gopalpur and Munnar.

TCPL, Damdim Packeting Center is one of the Tea Packing Center situated at Amalgamated Plantation Private Limited's Damdim Tea Estate location in West Bengal's Jalpaiguri District in the scenic beauty of Dooars region. It is certified with FSSC 22000 V5.1 for food safety, ISO 140001for EMS and ISO 45001 for OHSMS. Its one of the oldest packeting centers established in 1992. Being old, this site is always focusing on new technology and energy conservation methodology for sustainability and food safety which is recognized by CII and QCFI different times.

Energy Consumption Trend

Electrical Energy Consumption data for 18-19, 19-20, 20-21 & 21-22 (kWh)

F-Y	18-19	19-20	20-21	21-22
Grid units	286546	229775.3	254285	234934
Genset units	48495.5	43281.2	27466	31431.4
Total	**335041.5**	**273056.5**	**281751**	**266366**

Specific Energy Consumption

F-Y	19-20	20-21	21-22
Specific Energy Consumption (kWh/Ton)	53.1	55.2	49.7

Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh)

F-Y	19-20	20-21	21-22
Energy saved	**66624.3**	**57528.5**	**55523.7**

List of Energy Conservation Measures

- RS1 single track 8 no's machines replaced with one Multi track machine (8 track machine)
- Old moisture analyser of 500 watt replaced with Halogen moisture analyser of 250 watt
- Outside security lights LDR based switch
- Installation of transparent roof sheet
- All CFL lights & sodium vapour lights are replaced with energy efficient LED.
- VFD Install in Compressor 1
- Install VFD changeover panel (in house)
- APFC Panel Installation
- VFD Installation with New Dust collector motor (IE-2, 89.8% efficiency)
- Installation of on-grid solar plant of 120kw.

Energy Management Policy and Certificates

bsi.

By Royal Charter

CARBON FOOTPRINT VERIFICATION
VERIFICATION OPINION STATEMENT

This is to verify that

Tata Consumer Products Limited
Kirloskar Business Park
Block C, 3rd Floor
Hebbal
Bengaluru 560 024, Karnataka
India

Holds Statement No: **CFV 735000-001**

Verification opinion statement

As a result of verification procedures, it is the opinion of BSI with reasonable assurance that:

- The Greenhouse Gas Direct emission and Indirect Emissions from imported energy, transportation, use of Recycling services for waste treatment and part of sold packaging waste of Tata Consumer Products Limited for the period from 01/04/2021 to 31/03/2022 is 51402 tonnes of CO2 equivalent.
- The base year Greenhouse Gas emissions is 38,509 tonnes of CO2 equivalent, which is the annual direct and indirect emissions from imported energy for the period 01/04/2010 to 31/03/2011 and 17,391 tonnes of CO2 equivalent on account of indirect emissions, for the period of 2019-20 for transportation, use of Recycling services for waste treatment and part of sold packaging waste.
- Main operational activities carried out in the defined organizational boundary include 'Packaging and marketing of Tea, Coffee, Water, Pulses and Spices.'
- No material misstatements in the selected year Greenhouse Gas Emissions calculation for Tata Consumer Products Limited were revealed.
- Data quality was considered acceptable in meeting the principles as set out in ISO 14064-1:2018 and ISO 14064-3:2019

For and on behalf of BSI: Theuns Kotze, Managing Director – IMETA Assurance

Originally registered: **26/07/2022** Latest Issue: **26/07/2022**

...making excellence a habit."

Manufacturing **First Prize**

Kirloskar Oil Engine Ltd.
Nashik, Maharashtra

Unit Profile:

At KOEL Nashik Plant, we are in the business of Mfg. of Engine & DG set for Marine , Defense & Nuclear power corporation ranging from 5 kVA to 1000 kVA.Our product range is varied from higher HP to lower HP. We set our goals, targets & internal Benchmarks to achieve SEC.

Last few years, our average monthly consumption of electrical units & diesel has shown a downward trend which is the result of our ENCON awareness & efforts for implementation of associated activities. Comparison of the electrical units consumption with total sales figures shows consistent trends.

There is a continuous improvement towards conservation of Energy and Environment throughout the year. Periodic meetings and awareness programs are conducted to minimise the energy consumption.

Various awards & certificates grabbed on this front encouraged us to set new milestone.

Energy Consumption Data

Description	Unit	FY 18-19	FY-19-20	FY-20-21	FY-21-22
Electrical Energy Consumption	Lakh kWh	3.45	2.71	1.79	2.12
Thermal Energy Consumption	Million kCal	614.11	367.42	191.93	203.16

Specific Energy Consumption

Description	FY-19-20	FY-20-21	FY-21-22
SEC Electrical reduction	0.000087	0.000069	0.000068
SEC Thermal reduction	0.011818	0.007444	0.006565

Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh)

Sr. no.	Description	FY-19-20	FY-20-21	FY-21-22
1	Electrical energy saving data	24,636	26,079	56,883

Thermal Energy Savings data for 19-20, 20-21& 21-22 (kcal)

Sr. no.	Description	FY-19-20	FY-20-21	FY-21-22
1	Thermal Energy Savings data (Kcal)	34554600000	43040160000	70990020000

List of Energy Conservation Measures

- Installation of auto off hydraulic power pack for CNC machine-2Nos
- Installation of VFD for M/c shop 5T crane Long Travel motor
- Installation of level switch for cooling tower transfer pump.
- Installation of FRP fan for cooling tower Fan motor
- Replacement of CMM compressor old motor
- Replacement of Washing booth Pump old motor
- Replacement of paint booth old motor
- Switch off the SL 90 & DV test bed pump(55 KWh in day for 30 days in a year)
- Installation of auto off hydraulic power pack for CNC machine-2Nos
- Installation of FRP fan for cooling tower Fan motor
- Overhauling Air Intake valve of CMM compressor for better performance
- Total Project 5.6KW Battery Charger -Total 17 Nos Observations Shared with AE for improvements related to functional & BOM purification. Major Observations are as mentioned below, a) GEMS make (4-20 mA) sensor not compatible with Deep Sea for oil pressure, Oil pressure Sendor fitted for communication with deep sea. b) Safety grill for Axial Fan. (Defined in BOM but not suitable) .
- Project 2 X 40KVA AICL - Total 22 Nos Observations Shared with AE for improvements related to functional & BOM purification. Major Observations are as mentioned below, a) Voltage Drop 398 VAC to 355 VAC observed from 30KVA to 40KVA Load, Existing Alternator AVR R438 is not suitable,R150 AVR required

(Presently trial taken with R121 which is Used in 5.6KW Battery Charger) b) RFI (Radio Frequency Interference)Kit Req. for Alternator –Not available on Alternator.

- Orifice of 1.5mm Introduced to eliminate Fuel Leakge Issue due to Overflow in APU-7.5KW
- In WLR System, Engine was reaching to over speed during bypass mode, So Constant 5V power source introduced in consultation with AE in bypass starting mode to maintain 1500 rpm during bypass mode in WLR system.
- In WLR System -Timer circuit implemented in synchronizing panel in CAC heater circuit, now heater gets cutoff after 3Min (Settable) automatically, thereby eliminating risk of cable and heater burning due to continuous operation.6) Adaptation of Injector testing set up for small Engines .7) Project wise Document Folders to TM containing respective projects sequence wise Assembly Images, SOP, BOM, Job Card and In Process Check sheet.
- Implementation of Tool for Fitment of Push Rod Tube on HA294 Engine. HA Series Engine Valve seat and Spring Assembly tool for ease of Engine Assembly. RTD Scanner-02 No with Fixed location on test bed for Marine DG sets set up in Assy. shop
- Implementation of Glow Plug in Ascentech-10KVA DG Set to achieve DG Cold Starting @-30 Deg. Successfully Implemented Mechanical Governor on DV10 Fishing Engine FIP. Reinforcement done in 5KVA Exh. Pipe. Additional support fitted to improve rigidity in Exh. Pipe Exh. Bellow changed.
- Portable Trolley for Diesel Filling and Removal from Canopies DG set. Portable SFC Meter for Engine / DG Performance testing. Portable Multiple Channel Scanner for Engine / DG Parameters recording.
- Dowel Guide bolts Introduced for Base Plate to Canopy Assembly. Flexible type Exhaust pipe implemented. Solid elbow with interlock type hose and both side swivel flanges added. Earlier it was straight interlock type hose was defined, which was unable to fit in position and getting break. Noise Reduction-Before modification Noise observed 81dB.After Modification Noise observed 73dB.Humming noise from Air intake duct fitted on Canopy Air intake pipe directly fitted on Engine. Foam Added on Exhaust door duct.
- Below are the actions implemented to resolve the issue of High Coolant Temp. issue. Auxiliary tank set up as per vehicle application done. Radiator Top Cover In-House Modification done. Additional Clamp for Coolant outlet pipe implemented to resolve issue of coolant Air trap.
- Scada System Upgradation done on SL90 test Bed, Throttle Control Lever Implemented on SL90 test bed, Implementation of BOSCH make FIP in place of Motorpol FIP. Standardization of Instrumentation on Marine DG sets. Simplification of Main Failure test set up.
- Implementation of Semi-Automatic Back Pressure valve on SL 90 Engine test bed Flexible Exhaust pipe Arrangement done,Reduced Assembly set up time and

Eliminate stoppage of Engine testing due Leakages through Exh. Pipes. Test bed mounted all Sensors and RTD's Calibration and tagging done.This Imprvoed correctness of readings and reduced Engine testing time.

- Flywheel, Flywheel Housing Changed and Adaptor plate between Engine Housing and Alternator housing added.

Energy Management Policy and Certificates

kirloskar
Oil Engines

Kirloskar Oil Engines Limited
A Kirloskar Group Company

ENERGY POLICY

We, the KOEL, leading manufacturer of Diesel Engines, Gensets, and Pumpsets in the country are committed towards Nation's Mission for Enhanced Energy Efficiency by making continuous efforts to optimize use of energy and to bring about improvement in the energy efficiency in all our manufacturing processes and products.

We shall strive to achieve the above by:

- **Benchmarking all our products for energy consumption by comparison with the regional and national best.**
- **Procuring and Using highly energy efficient products and technologies in our operations to reduce carbon footprint.**
- **Eliminating wastage of energy and promoting reuse and recycling of resources, and be environmental friendly in our operations.**
- **Promoting and increasing use of renewable energy resources, with in and outside KOEL.**
- **Adopting national energy conservation norms and codes in new Building constructions as well as in existing buildings.**
- **Conducting periodic energy efficiency improvement studies and implementing all improvement measures and continuously monitoring gains obtained through Energy Management System.**
- **Involving all stake holders including employees in the energy conservation efforts through training & awareness programs. Recognizing employee's efforts through competitions and schemes.**
- **Sharing and enriching our experiences on energy conservation with our group of companies and other organizations.**
- **Complying with National Energy legislations and other related legislations.**

KOEL, as part of our energy efficiency improvement strategy, will make every effort to reduce our specific energy consumption by 2-5% per year by promoting culture of innovation, creativity and aligning commitments at all levels.

Issue No : 3
Issue Date : 01.08.2003
Review Date : 20.05.2019

ATUL KIRLOSKAR
Executive Chairman

2

Manufacturing

Second Prize

TK ELEVATOR INDIA PRIVATE LIMITED
Pune, Maharashtra

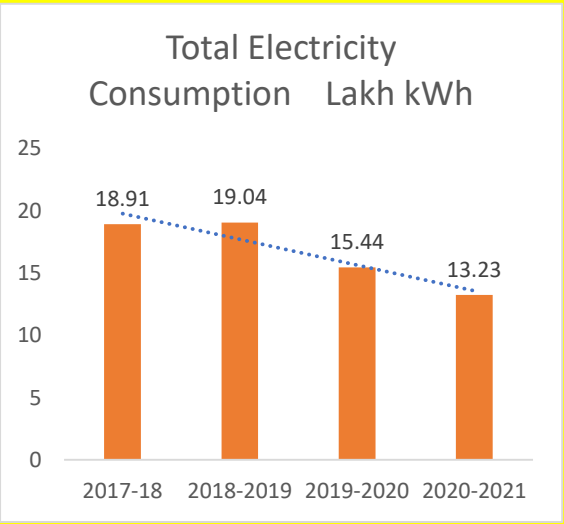
Unit Profile

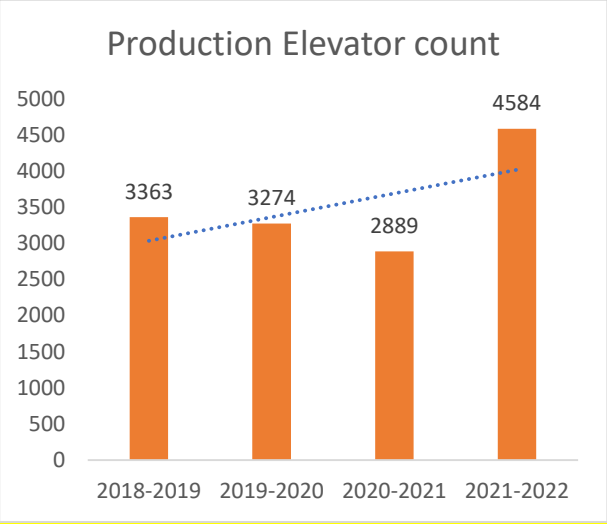
K Elevator- German engineering that keeps India moving

With customers in over 100 countries served by more than 50,000 employees, TK Elevator has established itself as one of the world's leading elevator companies and became independent since its separation from Thyssenkrupp AG in August 2020. TK Elevator achieved sales of around €8 billion in the fiscal year 2020/2021. Over 1,000 locations around the world provide an extensive network that guarantees closeness to customers. TK Elevator's most important business line is the service business represented by over 24,000 service technicians. It's product portfolio covers commodity elevators for residential and commercial buildings to cutting-edge, highly customized solutions for state-of-the-art skyscrapers. In addition, it also consists of escalators and moving walks, passenger boarding bridges, as well as stair and platform lifts. Integrated cloud-based service solutions, such as the MAX platform, are gaining in importance. With these digital offerings, there are no limits to urban mobility anymore.

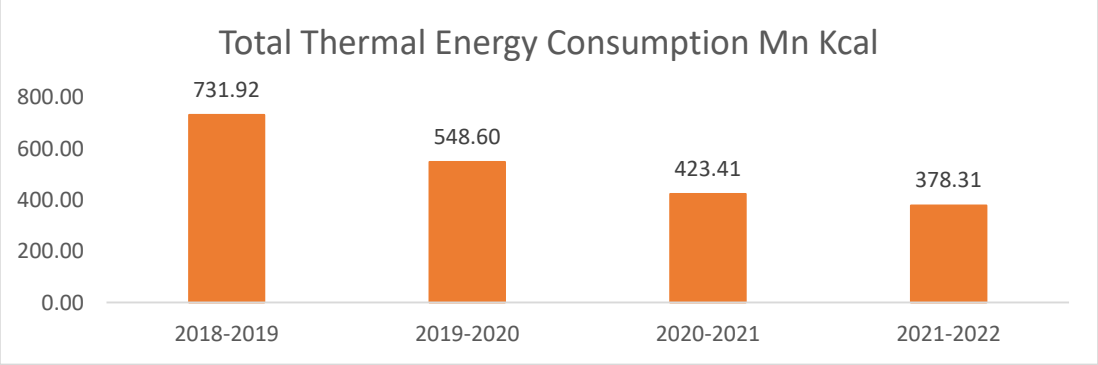
Electrical Consumption

Year	2018-2019	2019-2020	2020-2021	2021-2022
Total Electricity Consumption Lakh kWh	19.04	15.44	13.23	14.84





Thermal Energy Consumption data for 18-19, 19-20, 20-21 & 21-22 (Million kCal)

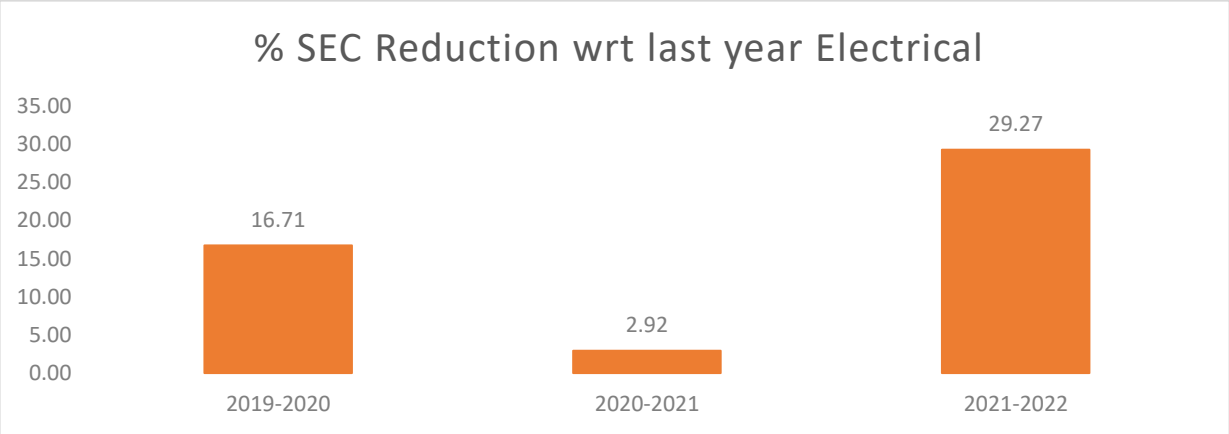


Year	2018-2019	2019-2020	2020-2021	2021-2022
Total Thermal Energy Consumption Million kcal	731.92	548.60	423.41	378.31

SEC Reduction Trend

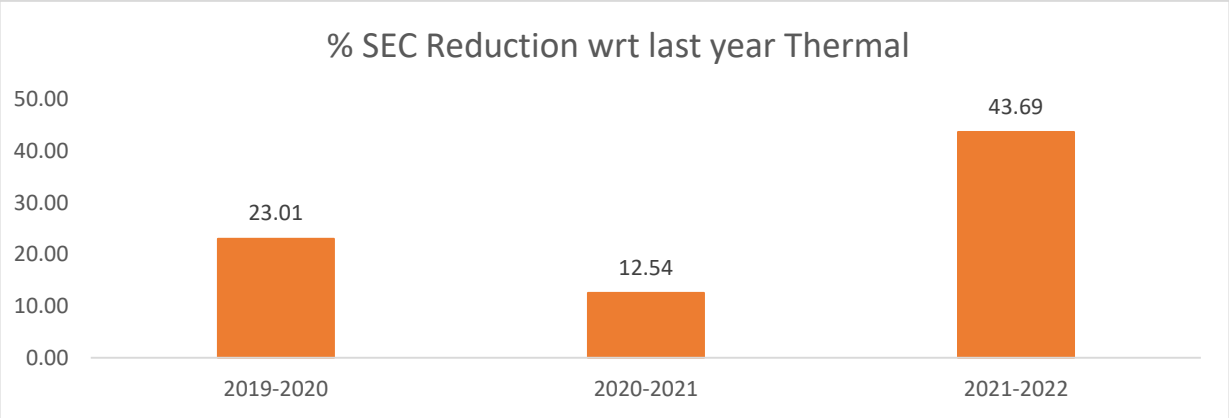
SEC Electrical Reduction data for 19-20, 20-21 & 21-22 (Lakh kWh/tonne)

Year	2019-2020	2020-2021	2021-2022
SEC Electrical (Total Electrical Energy Consumption/Weighted Equivalent Product) Lakh kWh/Elevator	0.00472	0.00458	0.00324
% Sec Reduction wrt last year Electrical	16.71	2.92	29.27



SEC Thermal Reduction data for 19-20, 20-21 & 21-22 (Million kcal/tonne)

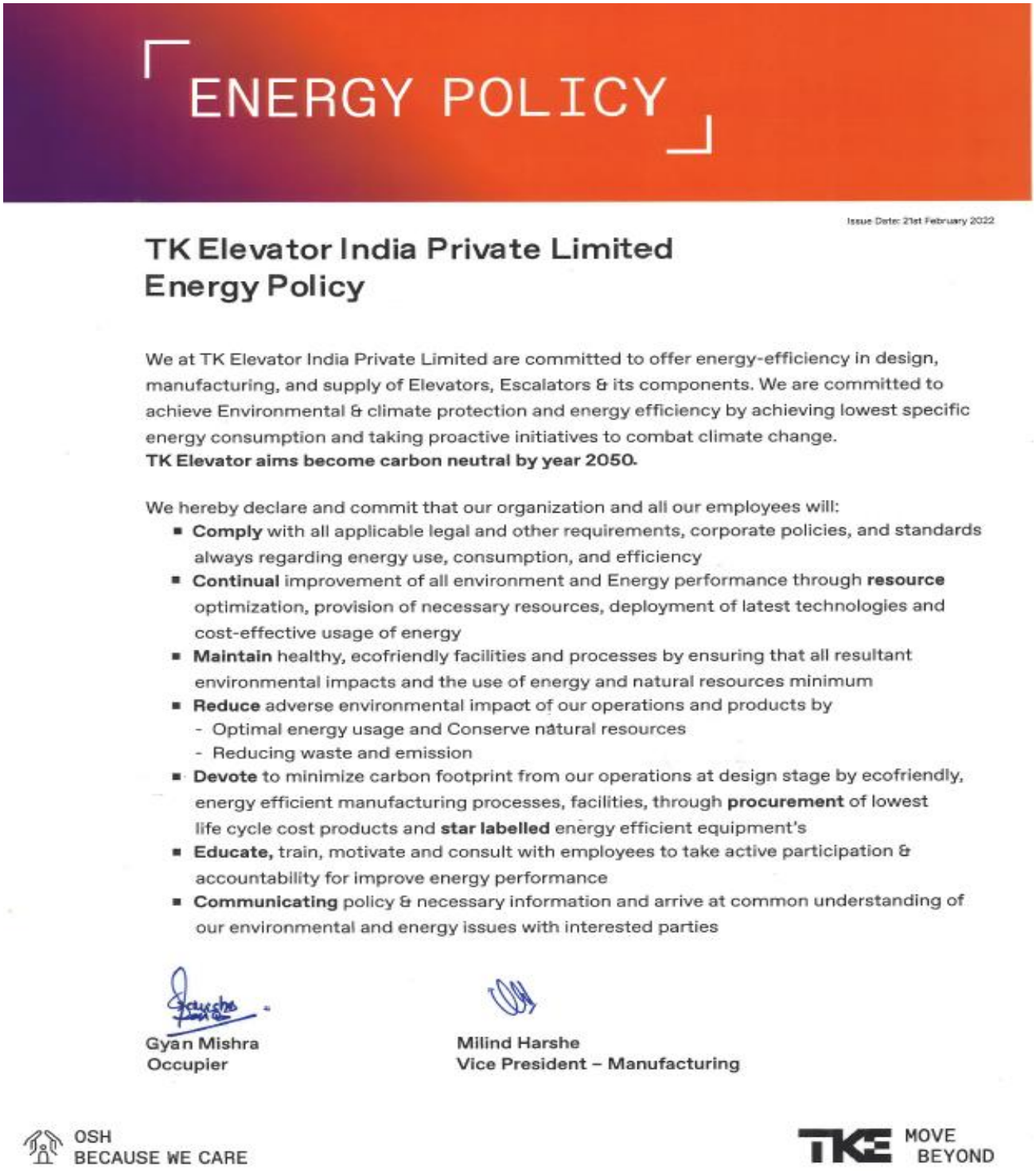
Year	2019-2020	2020-2021	2021-2022
SEC Thermal (Total Thermal Energy Consumption/Weighted Equivalent Product)	548.60	423.41	378.31
% Sec Reduction wrt last year Thermal	23.01	12.54	43.69



List of Energy Conservation Measures

- Timer for Tube axial fans 12 nos to start and off avoided 1 hrs idle use.
- Air Conditioning Switch ON done 15 minutes before Shift Start & after Office15 min before shift end. Individual lighting provided for workstation lightening.RO Water Cooler turned Off after Office Hrs. All Exhaust Blowers turned on 1 Hr prior & switched Off 15 Min. after Office Hrs.
- Timer for HVLS fan to avoid running in lunch time & switch off after Shift end.
- Installation of Energy meters 25 nos and online energy monitoring system.
- Installation of 850 kWh roof top solar system.
- Switching off HVAC & Use of fan for Controller Assembly area.
- Switching off HVAC & Use of fan for Shop Floor Offices.
- Optimization of powder Coating Plant Electricity saving.
- Switching off idle running transformer.
- Installation of Small Capacity 82.5 KVA DG set for running night instead of Underloaded 1500 KVA DG.
- Electrical equipment's instead of Pneumatic like Drill, Jig Saw, Grinder & Studder.
- Occupancy Sensor for Washing rooms.
- Installation of Heaters in Panel to save Diesel cost for running DG sets due to breakdown in HT panels.
- Optimization of Powder coating plant to reduce PNG Consumption.

Energy Management Policy and Certificates



ENERGY POLICY

Issue Date: 21st February 2022

TK Elevator India Private Limited
Energy Policy

We at TK Elevator India Private Limited are committed to offer energy-efficiency in design, manufacturing, and supply of Elevators, Escalators & its components. We are committed to achieve Environmental & climate protection and energy efficiency by achieving lowest specific energy consumption and taking proactive initiatives to combat climate change.
TK Elevator aims become carbon neutral by year 2050.

We hereby declare and commit that our organization and all our employees will:

- **Comply** with all applicable legal and other requirements, corporate policies, and standards always regarding energy use, consumption, and efficiency
- **Continual** improvement of all environment and Energy performance through **resource** optimization, provision of necessary resources, deployment of latest technologies and cost-effective usage of energy
- **Maintain** healthy, ecofriendly facilities and processes by ensuring that all resultant environmental impacts and the use of energy and natural resources minimum
- **Reduce** adverse environmental impact of our operations and products by
  - Optimal energy usage and Conserve natural resources
  - Reducing waste and emission
- **Devote** to minimize carbon footprint from our operations at design stage by ecofriendly, energy efficient manufacturing processes, facilities, through **procurement** of lowest life cycle cost products and **star labelled** energy efficient equipment's
- **Educate,** train, motivate and consult with employees to take active participation & accountability for improve energy performance
- **Communicating** policy & necessary information and arrive at common understanding of our environmental and energy issues with interested parties

Gyan Mishra
Occupier

Milind Harshe
Vice President – Manufacturing

OSH
BECAUSE WE CARE

TKE MOVE
BEYOND

Edible Oil/Vanaspati

First Prize

Marico Limited, Pondicherry

Unit Profile

Marico's Pondicherry facility manufactures 'Parachute' Coconut Oil with a production capacity of 240 Ton per day of Crushing and energy consumption potential of **37852 GJ** per annum (both thermal & electrical as per the baseline period of FY19)

For driving the energy conservation activities in a structured systematic approach, the plant leadership team established a dedicated Energy Cell in the year 2008. This cell has been entrusted with the responsibility of engaging regularly with multiple stakeholders (both internal and external) as well as gather strategic insights to leverage various opportunities in the energy conservation sector across Process, Design and Technology segments.

The energy conservation approach followed by the Pondicherry unit as well as all other manufacturing operations within Marico's business ecosystem are aligned with the overall sustainability vision of transitioning to 100% carbon neutral operations by 2030.

The long-term systematic approach and continual exploration of future-forward opportunities enabled us to reduce our energy consumption **by 4.5%** level in FY22 as compared to FY19 baseline value. This implies a reduction of carbon emissions by **336 tCo2e**

Energy Consumption Data

Description	Unit	2018-19	2019-20	2020-21	2021-22
Total Electricity Consumption	Lakh kWh	48.29	39.52	41.66	48.38
Total Thermal Energy Consumption	Million kcal	4891.94	3751.46	3863.82	4601.42

Specific Energy Consumption

Description	Unit	2018-19	2019-20	2020-21	2021-22
SEC Electrical	Lakh kWh/Ton	0.001125	0.001197	0.001167	0.001111
SEC Thermal	Million kcal/Ton	0.113930	0.113636	0.108252	0.105646

	Unit	2019-2020	2020-2021	2021-2022
Energy Savings from all Energy Efficiency Projects (Electrical)	kWh	128563.20	183778.80	102905.52

	Unit	2019-2020	2020-2021	2021-2022
Energy Savings from all Energy Efficiency Projects (Thermal)	kcal	1290516000.00	1404865000.00	777233000.00

List of Energy Conservation Measures

- Screen Conveyor replacement in the place of Vibro-Sieve
- Oil Expeller Internals design change for reducing the Crushing Load
- Cooker Coupling Design Change to Gear Coupling
- Boiler ID & FD Fan Balanced Draft Closed Looping Automation
- Electro Pneumatic PRV Installation for Process Cooking
- Descaling of Cooker Compartments for Cooker Heating Efficiency Improvement
- Cooker Coupling Design Change Intervention
- VFD Installation in Process Equipment
- LED Lights Installation in Farm Tank, Utility & Parking Area
- Equipment downsizing based on Energy Audits-Cooling Water Pump from 2.2KW to 1.5KW & chain to direct drive conversion
- BLDC Technology in Fans
- Motion Sensor Installation in Restroom
- Imported Oil Expeller Installation with Auto Compress Module Setup from Desmet, UK
- Double Orifice Float Trap Installation in Process Equipment
- Effimax System Installation in Solid Fuel Boiler for optimizing excess Air there by Improving Boiler Efficiency

.Energy Management Policy and Certificates

Integrated Steel Plant

First Prize

Rourkela Steel Plant
Sundargarh, Odisha

Unit Profile

Rourkela Steel Plant (RSP) an unit of Maharatna Company SAIL, is the first of the three integrated steel plants set up by Government of India in 1959. The first Steel Industry set up under Hindustan Steel limited on 19th January 1954 which paved way for laying up of infrastructure for rapid industrialization of the country. The plant was set up in collaboration with leading steel makers of Federal Republic of Germany. In the initial phase, 1.0 MT units were commissioned between December‟ 1958 and early part of 1962. Hot Metal production in RSP started with lighting up of first Blast Furnace „Parvati‟ on 3rd February‟ 1959 by his Excellency President of India, ***Dr Rajendra Prasad***.

Rourkela Steel Plant has carved a name for itself as a unique producer of special purpose steels in the flat steel segment. Plates, Hot Rolled Coils, Cold Rolled Sheets and Coils, Chequered Plates, ERW Pipes, Spiral Weld Pipes and Silicon Steel Sheets and Coils are the products in RSP‟s repertoire.

As a part of SAIL Corporate Plan-2012 to enhance the Hot Metal production capacity of RSP from 2 MTPA to 4.5 MTPA, Crude steel production to 4.2 MTPA and Saleable Steel production to 3.9 MTPA

All the major production departments and some service departments certified to ISO 9001: QMS. ISO 50001: En MS, ISO14001, ISO45001,

Winner of Greentech Energy Conservation Award 2021, won 1st Prize in National Energy Conservation Award (NECA) in the year 2015. Adjudged **best Integrated Steel Plant** among SAIL units in the year 2021.

Energy Consumption Data

Description	Unit	2018-19	2019-20	2020-21	2021-22
Electrical Energy Consumption	Lakh kWh	17388.73	17752.65	17013.78	17438.95
Thermal Energy Consumption	Million kCal	26676442.41	21825497.80	21500320.59	26540365.39

SEC Reduction Trend

Description	Unit	2019-20	2020-21	2021-22
SEC Electrical Reduction	Lakh kWh/tonne	0.002899	0.002666	0.002137
SEC Thermal Reduction	Million kcal/tonne	3.563522	3.369322	3.252511

Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh) :

2019-20	2020-21	2021-22
25439271.76	47324400	6036000

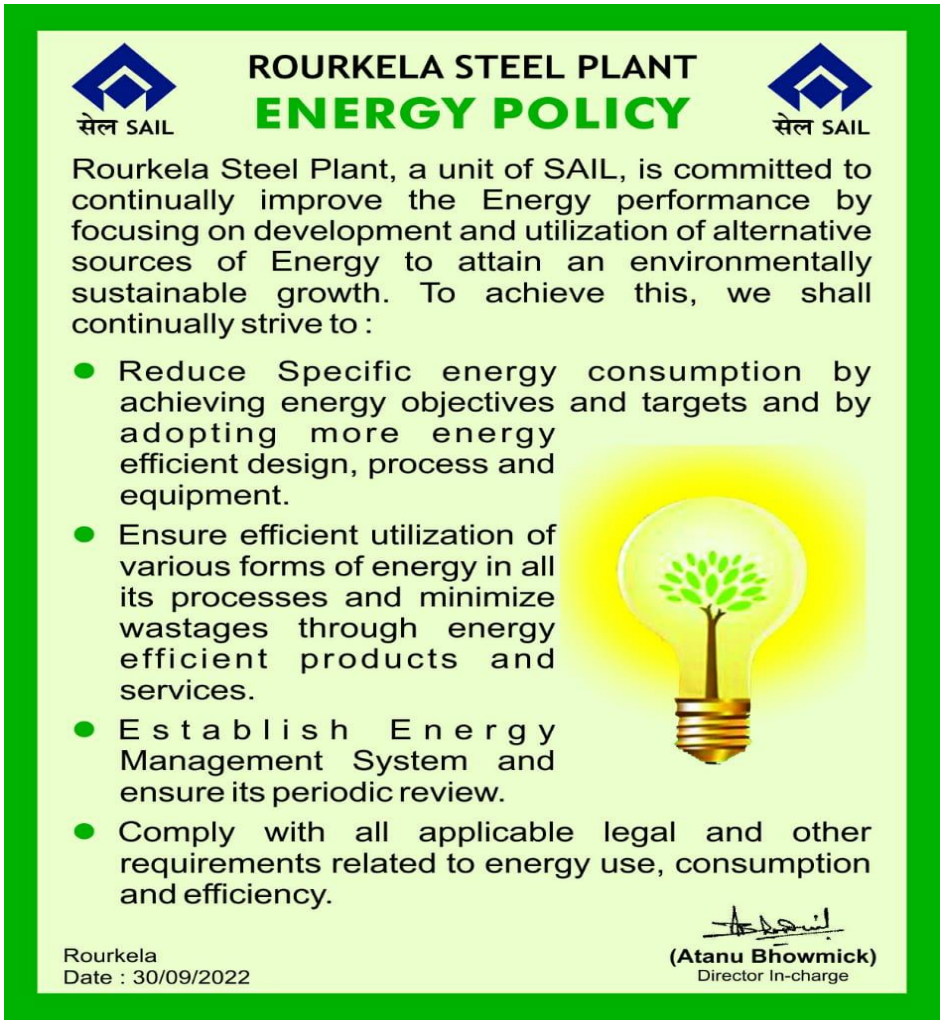
Thermal Energy Savings data for 19-20, 20-21& 21-22(kcal):

2019-20	2020-21	2021-22
10584000000	33159230000	177516000000

List of Energy Conservation Measures

- Increase in power generation through WHRS in BPTG of COB-6
- Modification of Orifice in BFG U/f line to COB#6
- Installation of VVVF drives in ID fans of converter A & B in SMS-II
- Increase in power generation in PBS by supplying more BF Gas
- Replacement of 20MVA transformer with 25MVA transformer at TRT (Top recovery turbine) Blast Furnace-V
- Stoppage of Hot Well pumps in cooling tower of SMS-II Caster
- Minimizing steam leakages in CCD area of COB-1 to 5 & steam line distribution grid.
- Reducing Coke consumption in Blast Furnaces and use of more PCI (pulverized coal injection)
- Reduction of Boiler Coal consumption in CPP-1
- Commissioning of Energy Efficient New Hot Strip Mill-2

Energy Management Policy



Certificate

TÜV NORD

CERTIFICATE

Management system as per
ISO 50001 : 2018

In accordance with TÜV INDIA procedures, it is hereby certified that

STEEL AUTHORITY OF INDIA LIMITED
Rourkela Steel Plant
Distt. Sundargarh,
Rourkela – 769 011, Odisha,
India

सेल SAIL

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

Operation & Maintenance Activities of New Plate Mill, Blast Furnace # 5,Coke Oven Batteries # 6 and Power Blowing Station

Certificate Registration No. **ENMS 04 00008**
Audit Report No. **Q 10282/2020**

Valid until **01.02.2023**
Initial Certification **02.01.2020**

Certification Body
at TÜV INDIA PVT. LTD.

Issue **19.12.2020**
Place : **Mumbai**

This certification was conducted in accordance with the TÜV INDIA auditing and certification procedures & shall be valid subject to regular Surveillance Audits.

TUV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg, Ghatkopar (W), Mumbai - 400 086, India cert.helpdesk@tuvindia.co.in

TÜV INDIA NABCB IAF

2

Integrated Steel Plant — Second Prize

SAIL- IISCO STEEL PLANT
Paschim Bardhaman, West Bengal

Unit Profile

IISCO Steel Plant (ISP) is the fifth integrated steel plant of SAIL. It has been set up in a compact area of 953 acres. ISP is strategically located at Burnpur (West Bengal) along the river Damodar, well connected with four lane national highway connecting Kolkata to Delhi; it is served by both South Eastern Railways and Eastern Railways. SAIL –ISP has annual hot metal capacity of the Plant - 2.9 million tonnes per annum (MTPA), to be increased to 5.70 MTPA as per vision 2025. IISCO Steel Plant is certified with ISO 9001:2015 Quality Management System (QMS) in three functions- Works, Personnel & Administration and Town Services Department; ISO 14001:2015 Environment Management System (EMS) and ISO 45001: 2018 Occupational Health and Safety Management System (OH&SMS).

Energy Consumption Data

	Unit	2018-19	2019-20	2020-21	2021-22
Electrical Energy Consumption	Lakh kWh	11799.69	12285.46	11609.53	12379.64
Thermal Energy Consumption	Million kCal	29835282.60	30386962.22	27605713.97	30494119.61

SEC Reduction Trend

	Unit	2019-20	2020-21	2021-22
SEC Electrical Reduction	Lakh kWh/tonne	0.005897	0.006284	0.005557
SEC Thermal Reduction	Million kcal/tonne	14.585198	14.942734	13.687579

Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh)

	Unit	2019-20	2020-21	2021-22
Electrical Energy Savings	kWh	102550740.4	88227774	105552801.7

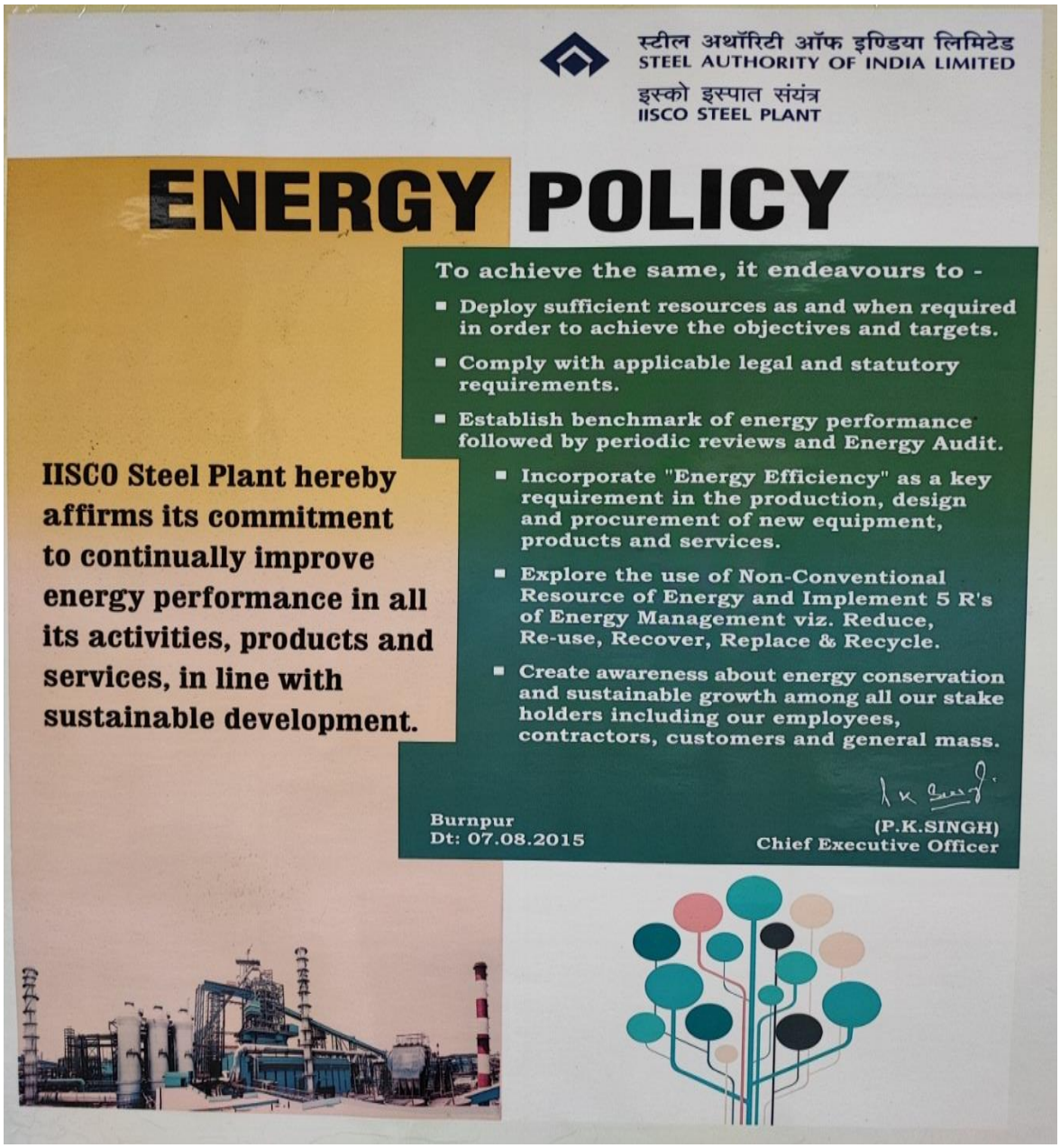
Thermal Energy Savings data for 19-20, 20-21& 21-22 (kcal)

	Unit	2019-20	2020-21	2021-22
Thermal Energy Savings	kcal	860842695400	902134026200	1145899906000

List of Energy Conservation Measures

- Optimization of Oxygen in PBS boiler 2 &3.
- Optimization of Oxygen in WRM Furnace.
- Optimization of Oxygen in Bar Mill Furnace.
- Optimization of Oxygen in Universal Mill.
- Running of rolling Mills with (N2 + CBM) mixing mode during BF shutdown.
- Optimization of Oxygen in Universal Mill.
- Utilization of available COG in mills from Old plant.
- Replacement of HPMV by LEDs.
- Energy saving by overhauling transformers.
- Generation of RES (Solar energy).
- Overhauling of the pumps in water treatment plant for WRM & BM to enhance efficiency,

Energy Management Policy and Certificates



Textiles **First Prize**

ZENITEX

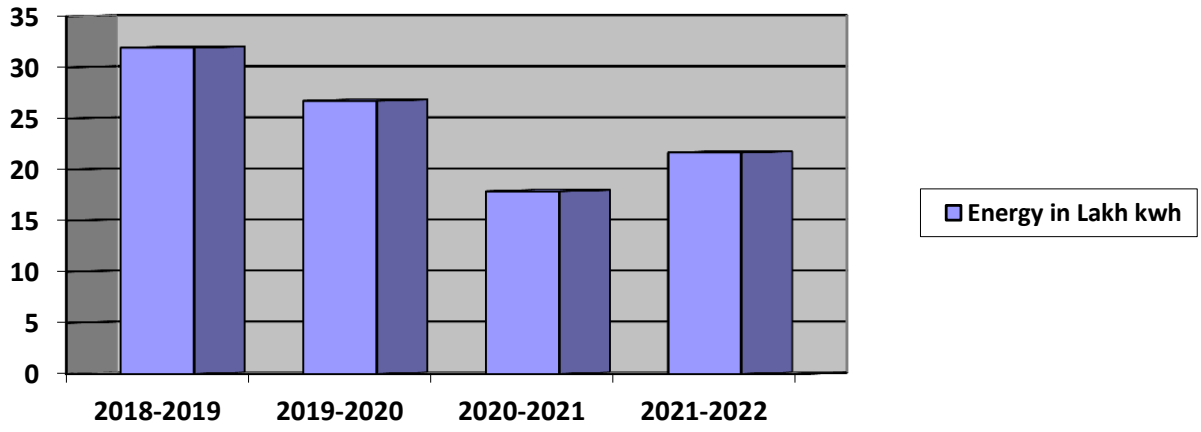
UNIT PROFILE

Zenitex, based in Surat district, is a business enterprise which cares for itself and nature in the same breadth and is a fine example of running a textile enterprise in a non-conservative, environment-friendly manner. Its a textile company, but its main focus is sustainability and that is why energy conservation, environment protection or biodiversity is at the center in all the steps or vision of Zenitex. The CEO of Zenitex Mr. Viral Desai's was also awarded with the prestigious Global Environmentalist and Climate Action citizen award in Dubai, UAE. Though Zenitex is an SME, yet for its sustainable vision Zenitex has established an NGO called 'Hearts at Work Foundation' and through it has taken up a nationwide campaign like 'Satyagraha Against Pollution and Climate Change'. In which so far more than fifty thousand youth have been made aware for environmental protection and energy conservation, they have been educated and they have been made to strive in the direction of sustainability. Through it's foundation, Zenitex has planted and taking care of three huge urban forests and more than five lakh trees. The company's approach of giving back to nature and society is the only reason why Zenitex has been able to work successfully in this direction of sustainability. Zenitex will always be actively involved and seeking to contribute die hardly to the incredible cause of sustainability and environment protection.

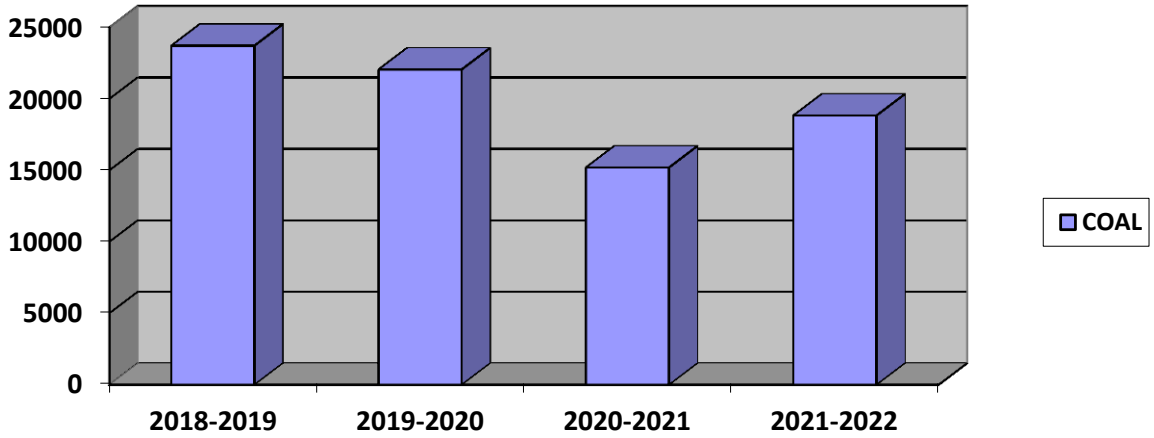
Energy Consumption Trend

Description	Unit	2018-19	2019-20	2020-21	2021-22
Electrical energy	Lakh kWh	31.92441	26.73472	17.88434	21.66988
Thermal Energy	Mkcal	23717.7	22056.51	15199.42	18836.68

Electrical Energy Consumption data for 18-19, 19-20, 20-21& 21-22 (Lakh kWh)



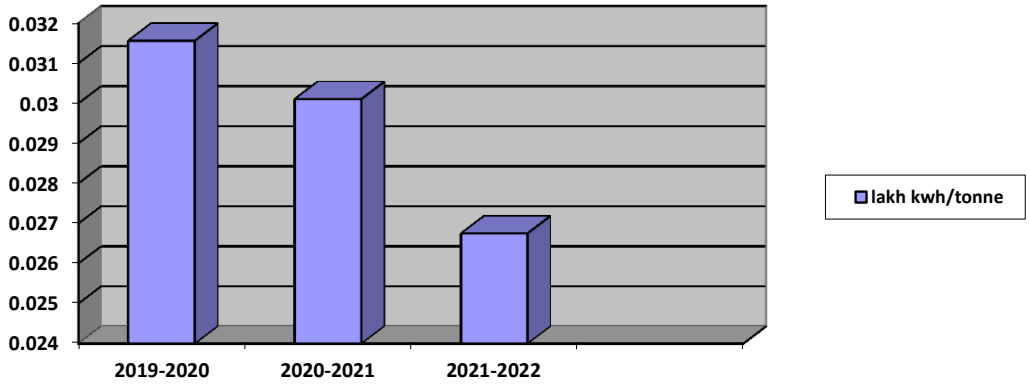
Thermal Energy Consumption data for 18-19, 19-20, 20-21& 21-22 (Million kCal)



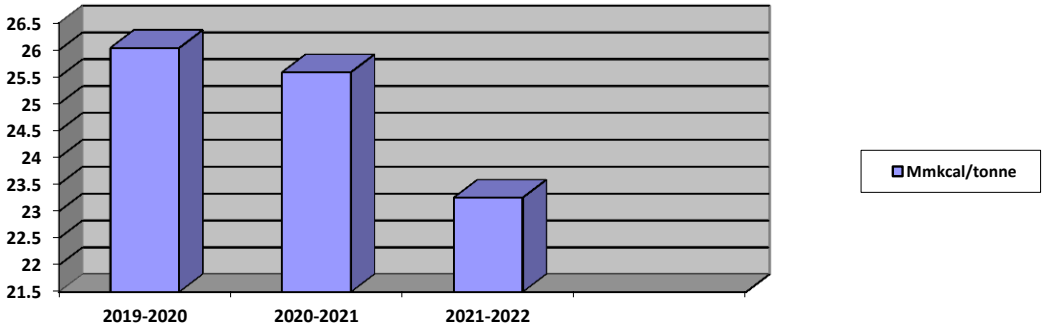
SEC Reduction Trend

Description	Unit	2019-20	2020-21	2021-22
SEC in Electrical	*Lakh kWh/tonne*	0.031564	0.030108	0.026753
SEC in Thermal	*Million kcal/tonne*	26.040743	25.588250	23.255156

SEC Electrical Reduction data for19-20, 20-21& 21-22 (Lakh kWh/tonne)



SEC Thermal Reduction data for 19-20, 20-21 & 21-22 (Million kcal/tonne)



Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh)

	2019-2020	2020-2021	2021-2022
Electrical energy saving data in kwh	476317	164586	54986

Thermal Energy Savings data for 19-20, 20-21& 21-22(Mkcal)

	2019-2020	2020-2021	2021-2022
Electrical energy saving data in Mmkcal	2205.9	3613.8	3055.2

Energy Conservation Measures

Thermal:

COAL

- Reduce water to fabric liquor ratio in Drum m/c.
- Proper Maintenance of feed water temperature and Air Pre heating system to maximize heat Recovery and thus increasing the efficiency of the Boiler and reducing coal consumption.
- We replace both boiler I d fan because low cfm high pressure because of that furnace pressure cannot maintain. After replaced it we set O2 as per new I d fan cfm and pressure.
- Installation Of 30 Hp Low Pressure High Cfm I D Fan Impeller In Thermopac Boiler.
- Set O_2 in steam boiler synchronize ID fan, FD fan and coal feeder based of O_2 % in stack as per new high cfm ID replaced.
- Install guide roll in stenter m/c chamber and pass fabric in chamber 5 times so more quantity of fabric store in chamber get heat and dry thus production increase.
- Remove mechanical throttling on each jet machine then reduce rpm of jet m/c vfd thus we get saving in power consumption.
- Reduce water consumption in drum m/c 40 nos.
- 7 no. Reduced steam consumption by optimize process water ration in drum m/c (40 nos.)
- Install water meter and auto control valve. Reduce liquor ratio 9 to 7 in drum m/c

Textiles

Second Prize

ARVIND LIMITED, DENIM BUSINESS
Ahmedabad, Gujarat

Unit Profile

Arvind Mills was set up in the year 1931 by Lalbhai family in response to Mahatma Gandhi's call for Swadeshi during the struggle for Indian Independence. Today Arvind Limited is one of the largest manufacturers of textiles in the world and contributes a significant percentage in terms of textile exports from the country and hence contributing to the foreign exchange earnings for the country.

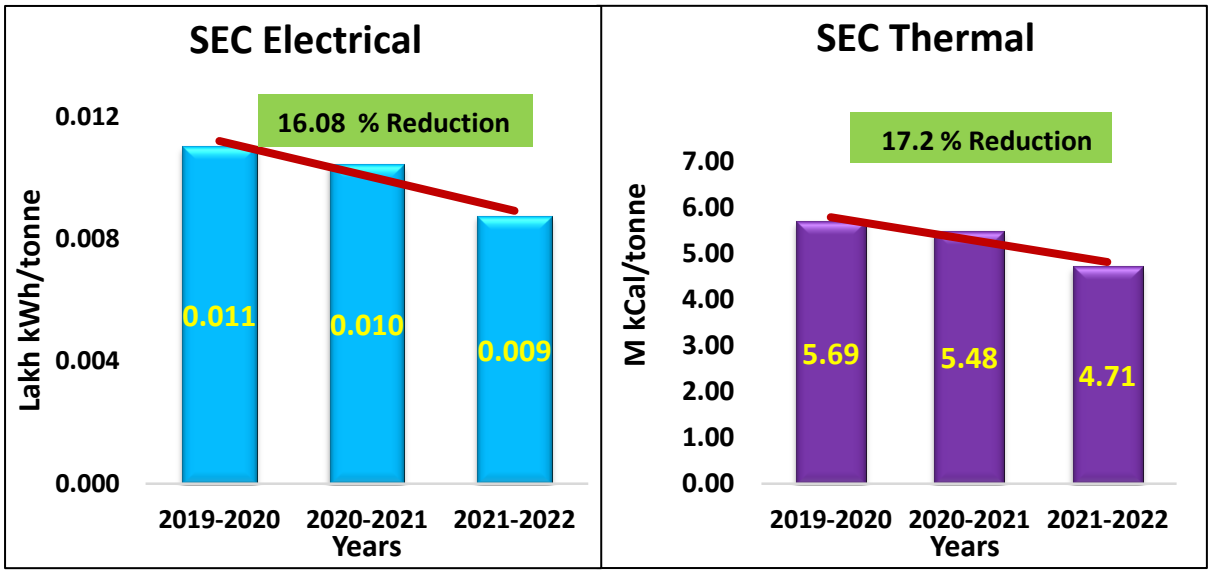
Denim Unit at Naroda, Ahmedabad is the flagship manufacturing facility of Arvind, where Denim fabrics are manufactured in a vertically integrated plant.

Over the years Arvind has been recognized as one of the most Sustainable suppliers globally due to our work on water recycling, sustainable cotton, chemical management, renewable energy and other leading Environmental and Energy efficient practices.

Electrical Energy Consumption:

	Unit	2018-19	2019-20	2020-21	2021-22
Total Electricity Consumption	Lakh kWh	592.18	489.37	386.67	508.71
Thermal Energy Consumption	M kCal	181006.4	207107.67	152519.75	103569.94

Specific Electrical and Thermal Energy Consumption:



Electrical Energy Savings:

Electrical Energy Saving	Unit	2019-20	2020-21	2021-22
Total Units Saved	Kwh	6097941	5637708	7219170

Thermal Energy Savings:

Thermal Energy Saving	Unit	2019-2020	2020-2021	2021-2022
Total Heat Value	Lakh kcal	206621.19	181144.43	199498.61

List of Energy Conservation Measures

- VFD installation In Boiler feed pump
- VFD installation in Lime dosing network
- Installation of IE3 motor in ID fan
- Installation of VFD in boiler FD fan
- Reduction in air leakages at ID Fan
- Process optimization of the water requirement of boilers
- Modification in Process cooling network of 36 rope dyeing
- Installation Energy efficient bore well pump
- Load optimization and load sharing of transformers
- Solar Power
- Wind Power
- VFD installation in IJT ID Fan
- Installation of energy efficient motors IE 2 to IE 3
- Installation of energy efficient water pump and motor in RODM supply water network
- VFD installation in Condensate Make up Pump
- optimization of utilization of compressed air and generation pressure reduction
- Elimination of compressed air pressure drop and leakage arresting
- Load distribution of Power Supply Room
- Installation of VFD`s in water distribution of 50-Rope Dyeing
- Installation of IE-3 Motor at spinning and weaving H-Plants

Major Thermal Saving Projects:

- Installed a machine which combines 4 finishing operations (Singeing, Desizing, Skewing and Sanforising) in a single machine resulting reduction in steam consumption
- Processing fabric with Wet Finish different machines Steam Consumption (Kg) = 7016503.02.
- Ozonation is a “green” process as it does not require steam and water. Therefore, it greatly reduces process time, water, chemical and energy consumption, and amount of wastewater. We installed Ozone based finishing machine.
- Fabric with Ozone processing machine then Steam Consumption (Kg)
- Installation of condensate recovery pump in Ozone finish machine dry stack, 10 Ton/Day * (90-35) Degree C*1000)*Day*312 days=171600000 Kcal
- APH installed in IJT boiler and improve boiler efficiency
- Installation of gas fired 10 chamber energy efficient heat recovery Stentor machine in

place of old oil-fired 5 chamber Stentor.

- IJT Boiler air nozzle diameter was 7.5mm which was reduced to 4.5mm which has resulted into better combustion including reduction in access in furnace. This has resulted into reduction in fuel consumption as well as exhaust temperature
- Steam condensate recovery from processing machines Fuel Saving

Energy Management Policy:

ARVIND
FASHIONING POSSIBILITIES

ARVIND LIMITED

ENERGY POLICY

Arvind Ltd plays a leading role in national & global economy by providing quality textiles.

Our mission is:

- To become number one energy efficient textile mill in India.
- To minimize the adverse impact of our operations on the environment.

We shall achieve this through:

- Integrating energy management with the business management and establishing performance driven goals.
- Upgrading hardware, deploying new technologies and improving our practices to increase energy efficiency, reduce greenhouse gas emissions and minimize environment impact.
- Optimizing specific energy consumption by implementing energy conservation projects, innovations and incorporating new energy efficient technologies, products and services.
- Setting and reviewing objectives & targets for continual improvements related to energy performance.
- Promoting energy conservation awareness among all members of the Arvind Family and community at large through trainings, workshops and seminars.
- To encourage the procurement of energy efficient products & services and consider energy efficiency in future designs.

Date: 01.04.2022
Place: Ahmedabad

ASHISH KUMAR
President & CEO
(Denim, AMD & Apparel)

Petrochemical **First Prize**

KOTHARI PETROCHEMICALS LIMITED
CHENNAI, TAMIL NADU

Unit Profile

Kothari Petrochemicals is a part of the established HC Kothari Group, we are the largest producer of high-quality, low-to-mid molecular weight Polyisobutylene in India since 1990. We are the market leader in various grades of Polyisobutylene in India and are present in segments such as Lubricant & Dispersant, Fuel Additive, Grease, Adhesive, Sealant, Rubber Manufacturing, Personal Care, Masterbatch Compounding, PVC Pipe & Fitting. The design capacity of the plant in 1990 is 5000 MT per Annum. After several capacity enhancement projects, the current production capacity of the plant is 48000 MT per Annum. Many energy-saving and resource-reduction projects were also carried out. 84.6% of thermal energy and 90.2% of electrical energy are met by renewable energy sources (Biomass – Husk). Power generation facilities include a 2MW captive power plant and a 249.6 kW solar farm. Internal Energy Committee has been formed and various initiatives have been taken to identify and implement energy reduction opportunities. Training has been regularly given to the employees to provide awareness on energy utilisation and following best energy utilisation practices. Instruments like thermal imager and ultrasonic detectors are used to identify an early failure of equipment.

Energy Data

Electrical Energy Consumption for FY 18-19: *96.75 Lakh kWh*
Electrical Energy Consumption for FY 19-20: *100.74 Lakh kWh*
Electrical Energy Consumption for FY 20-21: *96.72 Lakh kWh*
Electrical Energy Consumption for FY 21-22: *118.11 Lakh kWh*

Thermal Energy Consumption data for FY 18-19: *27290.37 Million kcal*
Thermal Energy Consumption data for FY 19-20: *27449.10 Million kcal*
Thermal Energy Consumption data for FY 20-21: *32100.66 Million kcal*
Thermal Energy Consumption data for FY 21-22: *34336.82 Million kcal*

SEC Electrical Reduction data for FY 19-20: *0.0042 lakh kWh/tonne*
SEC Electrical Reduction data for FY 20-21: *0.0038 lakh kWh/tonne*
SEC Electrical Reduction data for FY 21-22: *0.0038 lakh kWh/tonne*

SEC Thermal Reduction data for FY 19-20: *1.148 Million kcal/tonne*
SEC Thermal Reduction data for FY 20-21: *1.283 Million kcal/tonne*
SEC Thermal Reduction data for FY 21-22: *1.115 Million kcal/tonne*

Electrical Energy Savings data for FY 19-20: 135984 kWh
Electrical Energy Savings data for FY 20-21: 322080 kWh
Electrical Energy Savings data for FY 21-22: 485917 kWh

Thermal Energy Savings data for FY 19-20: 3414400000 kcal
Thermal Energy Savings data for FY 20-21: 2466192000 kcal
Thermal Energy Savings data for FY 21-22: 291860000 kcal

List of Energy Conservation Measures

- VFD provision for critical process pumps, process refrigeration compressor and utility boiler feed pump, PA fan.
- Capacitor provision for MCC Panel
- Captive power plant Turbine Generator frequency reduced from 50 Hz to 49.5 Hz
- Automation of knock-out drum pumps based on level
- Reduced operation of LPG unloading compressors and pumps by procuring high concentration feed monomer
- Replaced water cooled reciprocation air compressor with air cooled screw type air compressor
- Optimized cooling water flow in two different headers and reduced pumping load
- Through piping modifications optimised process water pumping operations and

reduced pumping load

- Process off-gas recovery and utilisation for fuel to Thermic Fluid Heater and Steam Boiler.
- Flash steam recovery at different sources and utilisation for preheating Boiler feed DM water and other process heating requirements.
- Storage tanks steam condensate recovery
- Periodic Ultrasound Leak Detection of LPG, Steam, and Compressed Air
- Condensate utilisation for process washing requirement

Energy Management Policy and Certificates

We at KOTHARI PETROCHEMICALS LTD are committed to continual improvement on overall energy performance.
We shall achieve this b y:

- Continuously improve energy efficiency by establishing and implementing effective energy management strategies that support manufacturing facility by providing a safe and comfortable work environment.
- Enhance Energy conservation awareness and encourage participation of employees as well as on-site Contractors/Suppliers working on our behalf have a role to play in conserving energy both in their work and home activities.
- Continually monitor and improve manufacturing process to reduce and control energy consumption.
- Procure energy efficient Equipment's by latest available technologies and design.
- Promote renewable energy and green initiatives to conserve natural resources.
- Optimize energy consumption throughout KPL which will improve cost-effectiveness and productivity, enhance working conditions, reduce greenhouse gas emissions, contribute to sustainability, and reduce waste associated with energy use.
- Review, Evaluate and Comply with Statutory, Regulatory, Legal and all other applicable requirements periodically to fulfill compliance obligations.

Sugar

First Prize

PONNI SUGARS (ERODE) LIMITED
NAMAKKAL, TAMILNADU

Unit Profile

Ponni Sugars (Erdoe) Limited was set up with 1250TCD capacityin 1984 in a record time of 12 months. It achieved full capacitycrushing during the very first year of its commercial operation. It was a trendsetter in mobilizing surplus cane duringits infancy stage from neighboring sugar mills and extending the crushing season to well above industry average. Its capacity was expanded to 2500TCD in 1994 and to 3500TCD in 2012. It commissioned a 19MW Co- Generation plant in 2012.

The ponni sugar mill has successfully implemented an innovative lift irrigation scheme by bringing in dry lands under cane cultivation, uilitizing the effulent discharge of the neighboring paper mill.This has helped secure multitudinal benefits-providing a dependable and perennial source of irrigation to farmers in the neighborhood, increase of land valuemanifold in the region, transforming the livelihood of local rural population, resolving the raw material needs of sugar and paper mills, and addressing ecological concernsin effluent discharge.

Energy Consumption Trend

Description	Unit	2018-19	2019-20	2020-21	2021-22
Electrical Energy Consumption	Lakh kWh	225.22	260.67	256.64	263.63
Thermal Energy Consumption	Million Kcal	439445.30	461124.52	464415.57	490758.46

SEC Reduction Trend

Description	Unit	2018-19	2019-20	2020-21	2021-22
SEC Electrical	Kwh / Ton	28.13	27.45	27.16	27.01
SEC Thermal	Kcal/Ton	276.14	262.96	268.82	256.95

Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh)

Electrical Energy Savings	2019-20	2020-21	2021-22
Kwh / year	175184	312496	411035

Thermal Energy Savings data for 19-20, 20-21& 21-22(kcal)

Thermal Energy Savings	2019-20	2020-21	2021-22
Kcal / year	8180000000	7962500000	9272500000

List of Energy Conservation Measures

- Solar water heater 200/150 &100Ltrs installed in Ponni Emergency quarters (C-type, D-type and E) -28 no's
- In pan floor implemented LED lamp 145W-24 no's
- VFD provided to Several motors and pumps
- Inverter Type Air conditioner installed-10 Nos
- Alternator coolers Control valves Automation
- Heat recovered in Condensate water cooling through PHE by preheating of DM water to deaerator from 30 Deg. To 75Deg.Celcius
- 110-9ATA live steam utilization is replaced by 9ATA extraction steam from TG for gland sealing and ACC steam ejector purpose

Sugar

2

Second Prize

KOTHARI SUGARS AND CHEMICALS LIMITED
Ariyalur, Tamilnadu

Unit Profile

Kothari Sugars And Chemicals Limited is a flagship company of H.C Kothari Group, established in the year 1961. The company is operating two integrated sugar complexes in TamilNadu and producing Plantation White Sugar, Cogeneration of power, fuel grade Ethanol, Extra Neutral Alcohol, Organic Manure, Co2, Liquid hand sanitizer etc.,

The Sugar complex at Sathamangalam was commissioned in the year 2007 with Cane crushing capacity of 3000 TCD and Cogeneration plant of 22 MW. The entire thermal and electrical energy required for the operation of the plant is produced from renewable biofuel like bagasse and biomass.

This unit is one of the major agro-based industries in the region and plays a vital role in the socio-economic development of the farming community. About 10,000 farmers are directly associated with the unit and the company extends guidance and support on sustainable sugarcane cultivation using modern techniques, mechanization, water conservation, soil health management through organic manure and bio fertilizers etc., besides timely procurement of their produce.

Energy Consumption Trend

Description	Unit	2018-19	2019-20	2020-21	2021-22
Electrical Energy Consumption	Lakh Kwh	113.109	115.333	127.552	131.760
Thermal Energy Consumption	Million Kcal	89098.067	93713.802	106073.210	117284.377

Specific Energy Consumption

SEC Electrical Reduction data for 19-20, 20-21 & 21-22 (Lakh kWh/tonne)

Description	Unit	2018-19	2019-20	2020-21	2021-22
Specific Energy Consumption (Electrical) - Major Product	Lakh Kwh/tonne	0.00281	0.00295	0.00281	0.00262
Specific Energy Consumption (Thermal) - Major Product	Million kcal/tonne	2.212	2.396	2.338	2.337

Electrical Energy Savings data for 19-20, 20-21 & 21-22 (kWh)

Description	Unit	2019-2020	2020-2021	2021-2022
Electrical Energy Savings	kWh	32400.00	269100.00	371323.00

Thermal Energy Savings data for 19-20, 20-21 & 21-22 (kcal)

Description	Unit	2019-2020	2020-2021	2021-2022
Thermal Energy Savings	kcal	-Nil-	8636429000	54180000

List of Energy Conservation Measures

- ACWP pump motor capacity reduced.
- Installation of VFD for sulphited juice pump.
- Installation of VFD for rotary screen drive motor.
- Installation of VFD for vacuum filter.
- Installation of VFD for clear juice pump 45kw.
- B-PUG mill planetry drive.
- Installation of VFD for SA fan no.02.
- Installation of VFD for cogen cooling tower fan no:02.
- Clear juice to melter.
- Waste heat recovery from second effect evaporator condensate.
- A pug mill- planetary drive upgraded.
- Installation of VFD for sugar RCC cooling tower fan no.01.
- Installation of VFD for sugar wooden cooling tower fan.
- Installation of VFD for SA fan no.01.
- Installation of VFD for cogen cooling tower fan no.1 & 3.
- Auto feed valve for continuous centrifugal machine.
- Clear juice condensate pump.
- Installation of plate heat exchanger.

Energy Management Policy and Certificates

HCK GROUP

Kothari SUGARS AND CHEMICALS LTD

Energy Management Policy

We at Kothari Sugars and Chemicals Limited shall strive to continually reduce our specific energy consumption for all our products in pursuant of energy conservation, cost saving and towards a positive environmental impact.

KSCL shall establish and maintain a system in pursuant of above mission by adherence to the following:

- Conducting detailed energy audit at least once in a year.
- Implement the best process technologies available in the globe which will results in lowest energy consumption.
- Replace Obsolete and energy intensive equipment in a phased manner to achieve overall energy efficiency.
- Conduct trainings and awareness programs to the employees in the field of energy conservation.
- Conduct periodical review and evaluation of energy conservation proposal and projects.

DATE: 14.12.2018

WHOLE TIME DIRECTOR

TRANSPORT

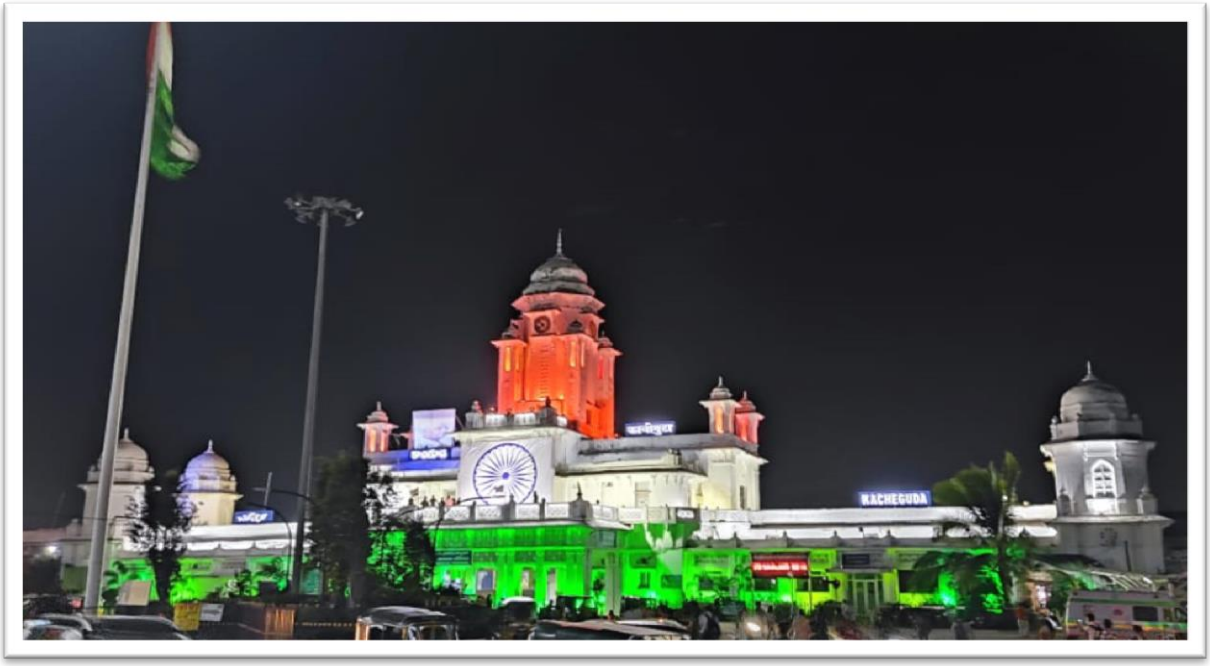
Railway Station

First Prize

Kacheguda Railway Station, Heritage Building, South Central Railway Hyderabad, Telangana

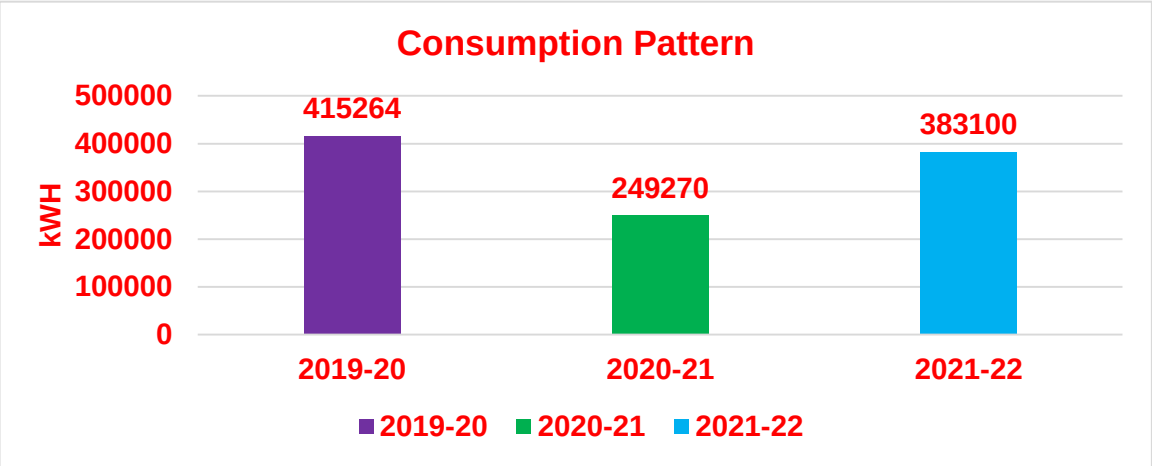
Building Profile

Kacheguda Railway Station is one of the three Central Stations in Hyderabad City of Telangana in India, operated by the South Central Railway of Indian Railways. Constructed in 1916, by the Nizam of the erstwhile Hyderabad State, this Station was the Headquarters of the then Nizam's Guaranteed State Railway. From the intricate stucco decorations of the Qutub Shahi to the distinct Osmanian style of architecture, it represents the transition period in Hyderabad's architecture history. Endowed with central and side domes and accompanying minarets, the traditional Islamic architecture can be seen and this station has aspects of Gothic style architecture. Housing many modern passenger amenities, this station now serves as A-1 station of the Hyderabad railway division of South-Central Railway. This station was bestowed with the Intach Heritage Award in 2004 for its architecture and historicity. The entire building was surrounded by green patches to provide serene and lush green ambience which will also add to the conservation of energy. This building has been awarded with Gold Rating by IGBC in Railway Stations category in 2018.



Energy Consumption Trend

Description	Unit	2019-20	2020-21	2021-22
Electricity from Grid &DG Sets	Lakh kWh	664	530	100
Electricity Generated by Renewable Energy Sources	Lakh kWh	414600	248740	383000
Total Electricity Consumption	Lakh kWh	415264	249270	383100



Energy Performance Index (EPI) for 19-20, 20-21 & 21-22 (kWh/m^2/year)

SI. No	Description	2019-20	2020-21	2021-22
1	Energy Consumption (kWh) including renewable energy	415264	249270	383100
2	Built up Area (Sq. mtr)	43021	43021	43021
	EPI *(kWh/m^2/year)*	**9.65**	**5.79**	**8.9**

Electrical Energy Savings from Energy Efficiency Projects for 19-20, 20-21 & 21-22 (kWh)

SI. No	Description	2019-20	2020-21	2021-22
1	*Electrical Energy Savings (kWh)*	83462	37273	42572

List of Energy Conservation Measures

- Replacement of Conventional Pumps with BLDC pumps for quick Watering
- Replacement of Conventional split AC unit to 5 star Inverter type AC
- Provision. of Occupancy Sensors for Lights
- Bifurcation of 30% & 70% fans circuits
- Replacement of BLDC fans in place of star rated ceiling fans
- Automation of Pumps
- Provision of Nature Switches
- Bifurcation of 30% & 70% fans circuits

Energy Management Policy and Certificates

Energy Conservation Policy of Hyderabad Division

1. Daily monitoring the Energy consumption through specially designed software.
2. Creating awareness among the users through various activities such as brochures / seminars.
3. To minimize the specific energy consumption w.r.t previous years.
4. Conducting of regular inter departmental energy audits aimed to minimize the energy losses.
5. Implemented the action plan of energy conservation items to reduce the Energy Consumption at least by 10% every year w.r.t. previous years targets.
6. Promote use of the renewable sources of energy.
7. Use of latest BEE 5 star rated Electrical Fittings and Equipments.

Office of the Senior Divisional Electrical Engineer, S.C. Railway, Hyderabad

వై. శ్రీలేఖ/Y. Sriteja

Senior Divisional Electrical Engineer,
Hyderabad Division, South Central Railway.

Senior Divisional Electrical Engineer
Hyderabad Division
S. C. Rly, Secunderabad

Railway Station — **Second Prize**

GUNTAKAL JUNCTION RAILWAY STATION
SOUTH CENTRAL RAILWAY
ANANTAPUR, ANDHRA PRADESH

Building Profile

Guntakal Junction railway station was established during 1861-71 and is located in Anantapur district, Andhra Pradesh state. It is headquarters of Guntakal Railway Division in South Central Railway. It is a major 5 way junction station at the intersection point of the Mumbai-Chennai line, the Vijayawada-Marmagova line and the Guntakal-Bengaluru line. It is classified as A-category station.

Guntakal is possessing 7 platform. The power supply for this station is fed through 11 KV HT Common Supply from Central Substation having CMD of 450KVA with Service No. HT SC No. ATP-048.

Jurisdiction:

The built up area of **87349.03** Sq mts with 6 platforms has been maintained upto July-2018 year. During Aug-2018 7th platform, additional station building and ciruculating area has been added with additional builtup area of **53554.45 sq.mt**., with total built area became **1,40,903.48 sq.mt**., and total area has been electrified as per Railway Board standards.

Energy Data

Electrical Energy Consumption Trend for 19-20, 20-21 & 21-22 (kWh)
Electrical Energy Consumption 19-20: **308522** KWH
Electrical Energy Consumption 20-21: **254141** KWH
Electrical Energy Consumption 21-22: **130643** KWH

Energy Performance Index (EPI) for 19-20, 20-21 & 21-22 (kWh/m^2/year)

Energy	Performance	Index19-20	:	**2.19**	(kWh/m^2/year)
Energy	Performance	Index20-21	:	**1.80**	(kWh/m^2/year)
Energy	Performance	Index21-22	:	**0.93**	(kWh/m^2/year)

Electrical Energy Savings from Energy Efficiency Projects for 19-20, 20-21 & 21-22 (kWh)
Electrical Energy Savings from Energy Efficiency Projects 19-20: ***25544*** *(kWh)*
Electrical Energy Savings from Energy Efficiency Projects 20-21: ***54381*** *(kWh)*
Electrical Energy Savings from Energy Efficiency Projects21-22: ***123498*** *(kWh)*

List of Energy Conservation Measures

- Replacement of 79 No's of 52 watt A.C.ceiling fans with 28 W BLDC fans
- Replacement of 230 No's 20 watt led tube light with 15 w down lighters
- Providing off delay timer for 70% lighting circuits
- Provision of LDR sensors for 30% lighting circuits to operate by sensing dusk and dawn
- Replacement of 120 No's of 52 watt A. Ceiling fans with 28 W BLDC fans
- Replacement of 05 No's of Window model ac's with inverter ac's
- Providing 08 No's of occupancy sensor
- Switching off pre cooling to coaches during Idle period
- Replacement of 35 Watt led flood lights with 20w Led tube light
- Replacement of 179 No's of 52 watt A. Ceiling fans with 28 W BLDC fans
- Replacement of 10 No's normal Ac with inverter Ac by saving
- Replacement of 10 No's of Geysers with solar water heater
- Provision of timers to 07 No's of Ac's
- Switching off Facade lights from 22:00 Hrs to 06:00 Hrs
- Providing solar power to 03 No's of High Mast
- Providing off delay timer to under gear examination light at p.f.
- Providing off Delay timer to rolling examination light
- Replacement of 20W street light with integrated solar light
- Replacement of 2x14W T5lamps in signage boards with 20W led light
- Replacement of 17 No's 600mm Air circulators with 400 mm air circulators
- Replacement of 200 Amps Battery charger with 40 A Battery charger

Energy Management Policy and Certificates

- Conducting energy audits by self or by third party on regular basis to identify the areas having potential of saving of electrical energy and to minimize the energy losses.
- Standardise and adopt use of appropriate energy efficient design / innovative technology.
- Conducting seminars and debates among Staff to educate in adapting energy efficient measures
- Inviting renown agencies/industrial representative to give seminar on new energy efficient products
- Taking maximum advantage of solar day light and solar power during day time.
- Got IGBC Green building certificate during 2020-21.

BUILDINGS

Government Building

First Prize

AJMER GROUP OF WORKSHOP, NWR
Ajmer, Rajasthan

Building Profile

The foundation of prestigious Central Workshop was laid in 1876 and established in1877 to undertake repairs and manufacture of steam locomotives, carriages and wagons of Rajputana-Malwa MG system. Carriage and Wagon activity was shifted in 1884 to south of this shop. It had privilege of producing 467 steam locomotives during 1896-1949, including 20 BG locomotives Works. The workshop started POH/IOH of steam locomotives in 1884. Loco Workshop has been renamed as Diesel Loco and Wagon Workshop and C&W Shop as Carriage Shop. The Ajmer group of workshop carries out the following activities such as

- POH of ICF and LHB AC / Non AC coaches
- IOH of ICF and LHB Bogies
- POH of Diesel and Electric LOCO.
- POH of DEMU/MEMU and Wagons.

Administrative building of Carriage Workshop

Energy Consumption Trend

Electrical Energy Consumption Trend for 19-20, 20-21 & 21-22 (kWh)

S.NO	YEAR	ELECTRICAL ENERGY CONSUMPTION (KWH)
1	2019-20	177901
2	2020-21	152214
3	2021-22	148803

Energy Performance Index (EPI) for 19-20, 20-21 & 21-22 (kWh/m^2/year)

S.NO	YEAR	EPI
1	2019-20	40.19
2	2020-21	34.39
3	2021-22	0.13

Electrical Energy Savings from Energy Efficiency Projects for 19-20, 20-21 & 21-22 (kWh)

S.NO	YEAR	Electrical Energy Savings data (Kwh)
1	2019-20	20740
2	2020-21	17990
3	2021-22	3411

List of Energy Conservation Measures

- Provision of LED lights
- Provision of latest generation intelligent AC controller in split AC.
- Occupancy Sensor has been installed in Officer Chamber.
- Lighting fixtures have been replaced with Energy Efficient LED light fittings.
- Occupancy Sensor has been installed in Officer Chamber.
- Temperature setting of Water Cooler (150 Litre Capacity 1.55KW) at 20 degree Celsius.
- Provision of BLDC Ceiling fans

Energy Management Policy and Certificates

- To continually improve energy performance by benchmarking energy consumption norms & it's monitoring.
- To take specific objective & energy target of energy conservation through process/equipment modification.
- To comply with applicable legal requirement and other requirement to which we subscribe related to our energy use consumption and efficiency.
- To procure star rated energy efficient product and services.

Certificates

- ISO 50001:2018- Energy Management System
- CII Green-Co Rating System- Gold

Second Prize

2

Government Building

BHARAT SANCHAR NIGAM LIMITED
Dehradun, Uttarakhand

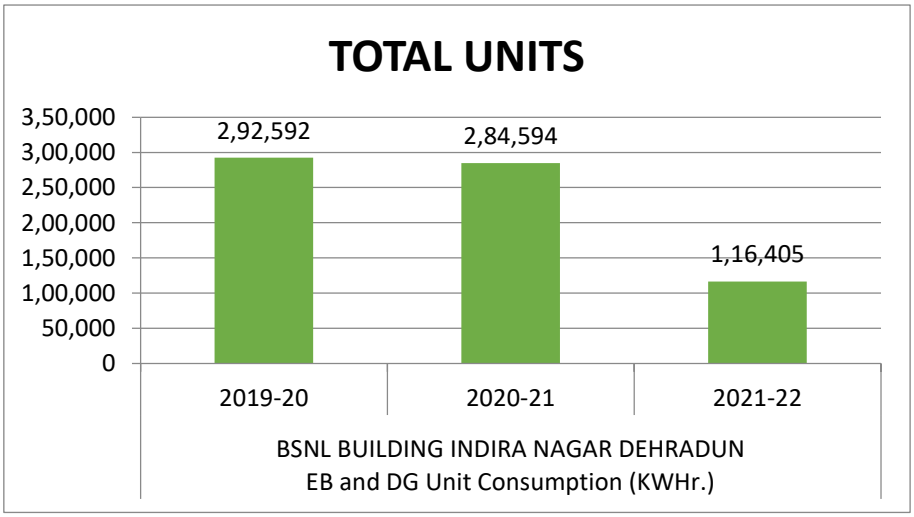
Building Profile

Indira Nagar Telephone Exchange building is an important telecommunication center of BSNL, which is situated in South West Part of Capital City of Uttarakhand, Dehradun. This Exchange building is providing all type of vital telecom services like Land line, Broadband services and high speed fiber FTTH connections to approx. 1400 subscribers, 50 Lease line Circuits, Mobile Services to ITBP Headquarters, UPCL Headquarters, FRI, Banks, subscribers in Indira Nagar, Vasant Vihar, Rishi Vihar and Balliwala area.
Important Transmission hub and equipment's as CPAN, OCPAN, MADM16 are installed providing redundant connectivity to important telephone exchanges. It is HUB for mobile connectivity with 4 working BTS. A Layer 3 (L-3) communication switch in installed here, connecting eight Mobile BTS. Two PRIs are working to provide communication to Forest Research Institute, an Organization of National repute. The air conditioning which was previously done through Package AC units, Split AC Units is now being done through Split AC Units and free cooling fans.

Energy Data

Electrical Energy Consumption Trend for 19-20, 20-21& 21-22 (kWh)

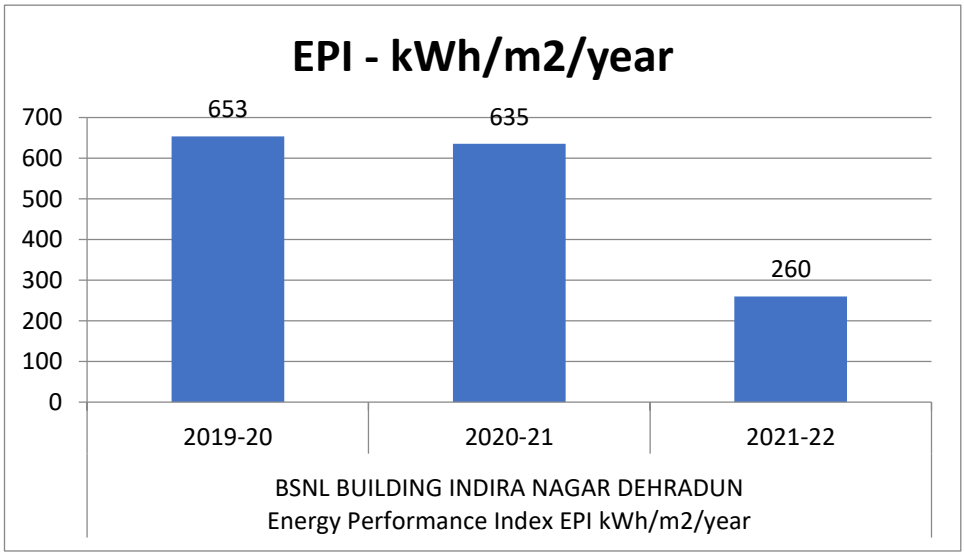
BSNL BUILDING INDIRA NAGAR DEHRADUN EB and DG Unit Consumption (kWHr.)			
YEAR	2019-20	2020-21	2021-22
TOTAL kWH	2,92,592	2,84,594	1,16,405



Data-2:

Energy Performance Index (EPI) for19-20, 20-21 & 21-22 (kWh/m^2/year)

BSNL BUILDING INDIRA NAGAR DEHRADUN Energy Performance Index			
YEAR	2019-20	2020-21	2021-22
EPI kWh/m2/year	653	635	260



Electrical Energy Savings from Energy Efficiency Projects for 19-20, 20-21 & 21-22 (kWh)

BSNL BUILDING INDIRA NAGAR DEHRADUN ENERGY SAVED (kWHr.)			
YEAR	2019-20	2020-21	2021-22
kWH saved	0	7,998	1,68,189

List of Energy Conservation Measures

- Removal of 04 nos Package AC Units by clubbing the MSC equipment's with other equipment's and shifting some equipment's at ground floor equipment room and installation of Split AC Units.

- Closure of 2 X 200 KVA transformer sub station as the building load reduced below 75 KVA and transformer core losses were saved by this action.

Energy Management Policy and Certificates

As per **"BSNL Energy Policy"** adopted in 2010, Bharat Sanchar Nigam Limited is committed to conserve Energy in all its operations. We have adopted Energy Conservation as a Strategic Business Goal and make it as a way of life.

"Goal & Objectives "

- Make Energy Conservation a Mass Movement with involvement of all our employees.
- Monitor and Control consumption of energy through Energy Management Groups.
- To reduce Specific Energy Consumption in all our operations and activities.
- Recognise the Efforts of our Staff in Energy Conservation.
- Share and Enrich experience on Energy Conservation with SSAs/ Circles.
- Quarterly Energy core meeting at Circle level /SSA level

College & University Building

First Prize

Dayanand Science, Latur
LATUR, Maharashtra

"अ नो भद्रा क्रतवो यन्तु विश्वतः"

Building Profile

Note: Brief Introduction about the Building in not more than 12/15 Lines, Max 200 words

Dayanand Science Colllege, Latur has a G+3 building having an infrastructure of classrooms, Departments, Office, Laboratories, Reading rooms alongwith Library used by about 4000 students & Lavatories. The design of the Building has free airation and Natural Light sources in day time upto 6:00 pm. Efforts are being made to develop the campus on green concepts, particularly focusing on water conservation, use of alternative sources of energy, solid waste management, vermicomposting, green belt development and sustainable architectural designs of buildings. As a sustainable initiative, we have a vermicomposting unit to recycle organic waste from kitchen and garden using earthworms. It is envisaged to create the campus into a prototype of a 'no waste' and 'carbon negative' site. The college campus is also installed with a Sewage Treatment Plant (STP) for recycling of water purification. The campus is designed with several initiatives for reducing energy consumption and utilizing renewable natural resources such as solar panels of about 70 KW generation. The college is also planning for Wind energy resources in communication with ***Suzlon*** Energy Limited, a world-leading wind energy company in future in the new campus outside the city by Dayanand Education Society, Latur.

Energy Data

Electrical Energy Consumption Trend for 19-20, 20-21 & 21-22 (kWh)

2	Electrical Energy Details	Unit	2019-2020	2020-2021	2021-2022
2.1	Electricity Purchased (From Grid)	kWh	59156.00	49232.00	32866.00
2.2	Electricity Generated by DG Sets	kWh	192.00	205.00	184.00
2.3	Electricity Generated by Renewable Energy Sources	kWh	22385.00	43301.00	18828.00
2.4	Electricity Purchased (by Open Access)	kWh	0.00	0.00	0.00
2.5	Others (Cogeneration, IEX, Natural Gas, etc.)	kWh	0.00	0.00	0.00
2.6	Total Electrical Energy Consumption	kWh	81733	92738	51878

Energy Performance Index (EPI) for 19-20, 20-21 & 21-22 (kWh/m^2/year)

		UNIT	2019-2020	2020-2021	2021-2022
4	**Energy Performance Index**	kWh/m^2/year	0.00	6.67	4.46

Electrical Energy Savings from Energy Efficiency Projects for 19-20, 20-21 & 21-22 (kWh)

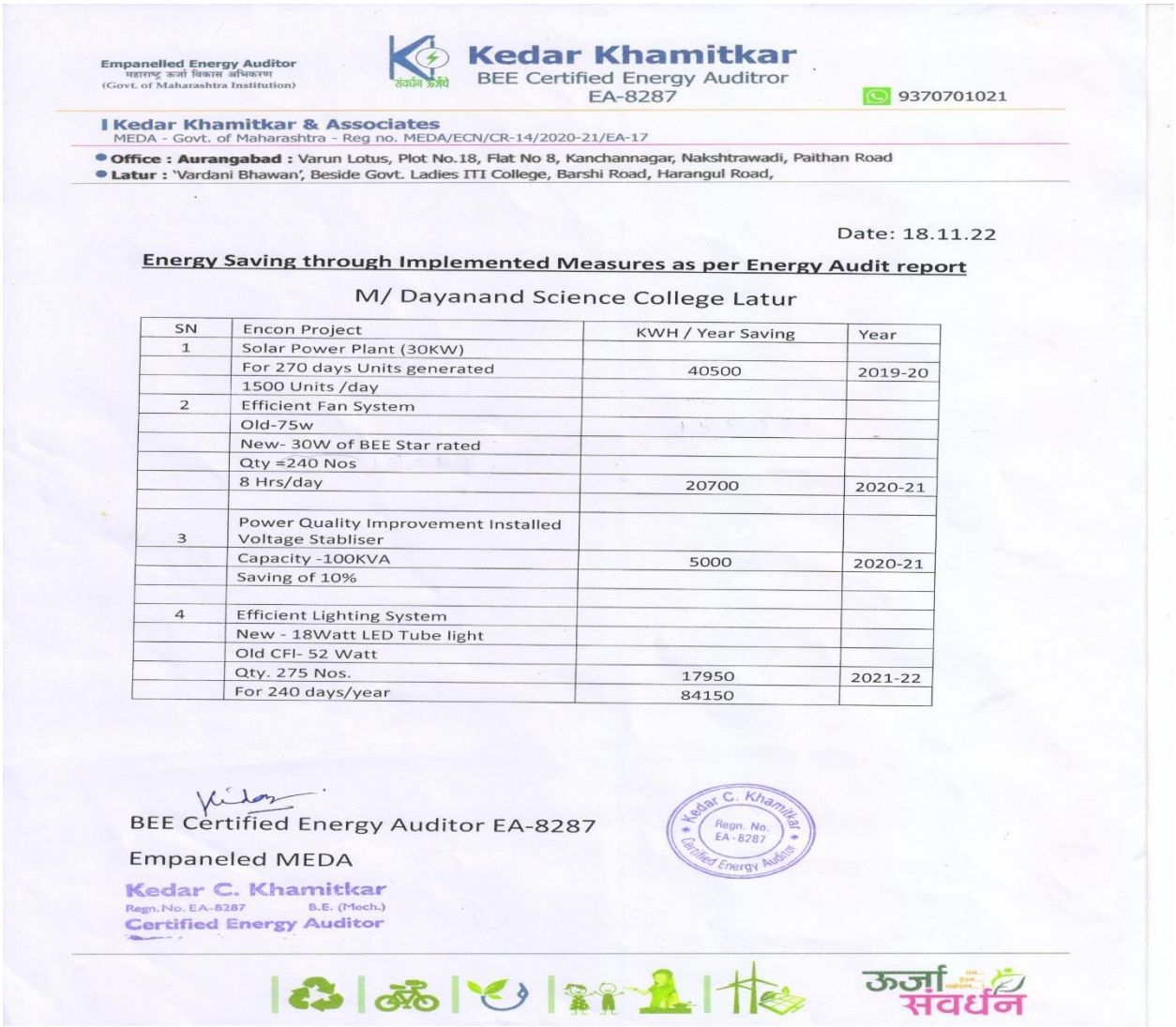
6	Achievement of Energy Savings from Energy Efficiency Projects - (DO NOT MENTION RENEWABLE ENERGY PROJECTS)	Unit	2019-2020	2020-2021	2021-2022
6.1	Energy Savings from **all** Energy Efficiency Projects	kWh	38400.00	20000.00	18000.00

List of Energy Conservation Measures

S. No.	Name of ECM (Energy Conservation Measure) Implemented	Description of ECM (Energy Conservation Measure) Implemented	Year of implementation of the ECM	Energy Saving through ECM (kWh)		
				2019-20	2020-21	2021-22
1	Solar Power Point	Installed PV Solar Power Generation Plant 30 KW	2019	38400		
2	Fan System	Replacement of 65w Ceiling Fans with 35W BLDC fans	2020		15000	

3	Improving Power Quality	**Improve Power Quality:** Install Voltage Servo Stabilizer of 100 KVA	2020		5000	
4	Lighting	Installation of Efficient LED Lighting system	2022			18000

Energy Management Policy and Certificates



Empanelled Energy Auditor
महाराष्ट्र ऊर्जा विकास अभिकरण
(Govt. of Maharashtra Institution)

Kedar Khamitkar
BEE Certified Energy Auditror
EA-8287

9370701021

Kedar Khamitkar & Associates
MEDA - Govt. of Maharashtra - Reg no. MEDA/ECN/CR-14/2020-21/EA-17

- **Office : Aurangabad :** Varun Lotus, Plot No.18, Flat No 8, Kanchannagar, Nakshtrawadi, Paithan Road
- **Latur :** 'Vardani Bhawan', Beside Govt. Ladies ITI College, Barshi Road, Harangul Road,

Date: 18.11.22

Energy Saving through Implemented Measures as per Energy Audit report

M/ Dayanand Science College Latur

SN	Encon Project	KWH / Year Saving	Year
1	Solar Power Plant (30KW)		
	For 270 days Units generated	40500	2019-20
	1500 Units /day		
2	Efficient Fan System		
	Old-75w		
	New- 30W of BEE Star rated		
	Qty =240 Nos		
	8 Hrs/day	20700	2020-21
3	Power Quality Improvement Installed Voltage Stabliser		
	Capacity -100KVA	5000	2020-21
	Saving of 10%		
4	Efficient Lighting System		
	New - 18Watt LED Tube light		
	Old CFl- 52 Watt		
	Qty. 275 Nos.	17950	2021-22
	For 240 days/year	84150	

BEE Certified Energy Auditor EA-8287
Empaneled MEDA
Kedar C. Khamitkar
Regn.No. EA-8287 B.E. (Mech.)
Certified Energy Auditor

Kedar C. Khamitkar Regn. No. EA-8287 Certified Energy Auditor

ऊर्जा संवर्धन

Dayanand Education Society's

Dayanand Science College, Latur

Energy Conservation Policy

To operate institute building in most efficient energy manner for optimum energy utilization and in compliance with all applicable energy codes and directives given by the experts. Share and enrich our experiences on energy conservation with other organization, and own group institutes. To conduct regular management reviews to ensure continual improvement and achieve of our goal.

We are committed to :

- Adopt Cleaner and Eco-friendly Renewable Energy sources.
- To carry out Energy Audits
- Promote use of Renewable Energy.
- Encourage use of LED lightings and energy efficient fittings
- To make efforts to improve Energy efficiency and adopt Environment friendly technologies & reduce electricity charges.

Principal

College & University Building

2

Second Prize

LOKPANCHAYAT (RTTI's ITI)
Ahmednagar, Maharashtra

Building Profile

The Lokpanchayat Rural Technical Traininig Institute's ITI is promoted by Lokpanchayat, a not-for-profit organization, registered as a society under the Societies Registartion Act with registration number F-2439, Ahmednagar (Maharashtra).

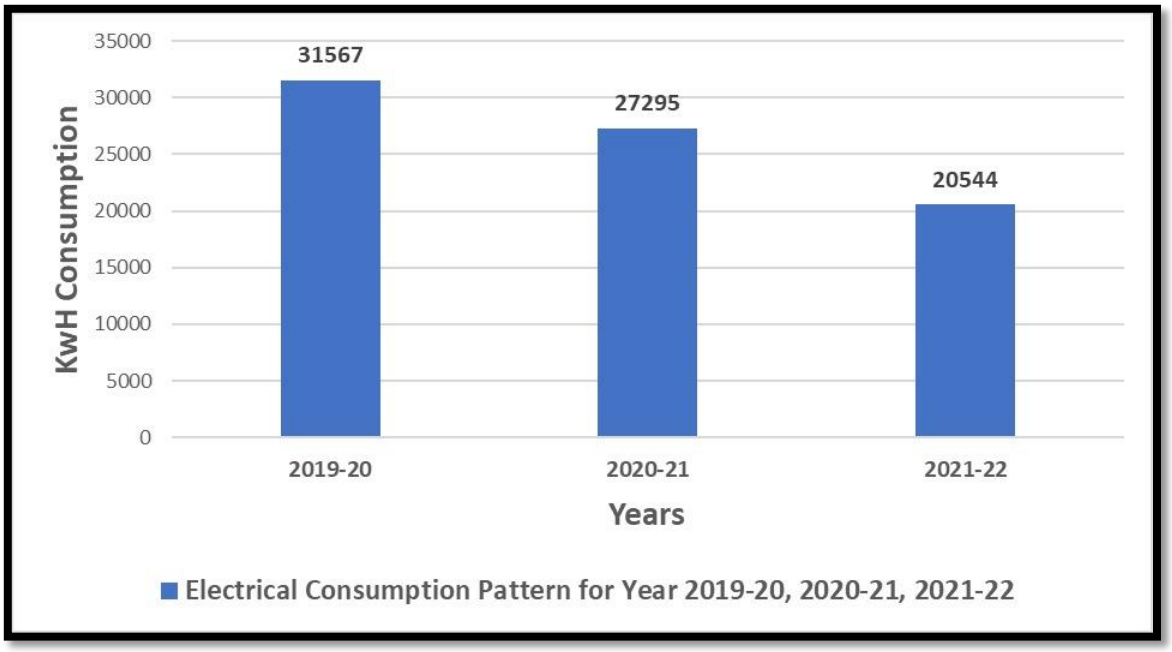
Lokpanchayat is a voluntary organization working in the field of sustainable rural development and women's empowerment for the last 30 years. Established in 1993, agriculture, water, women empowerment, forestry and sustainable livelihoods, technical education and children have been the major thrust areas of the organization's work

.Lokpanchayat in its effort to promote skill development and livelihoods for vulnerable sections of the society took up the initiative of providing technical & vocational skills to tribal and rural youth, who are deprived from sustainable livelihood options.

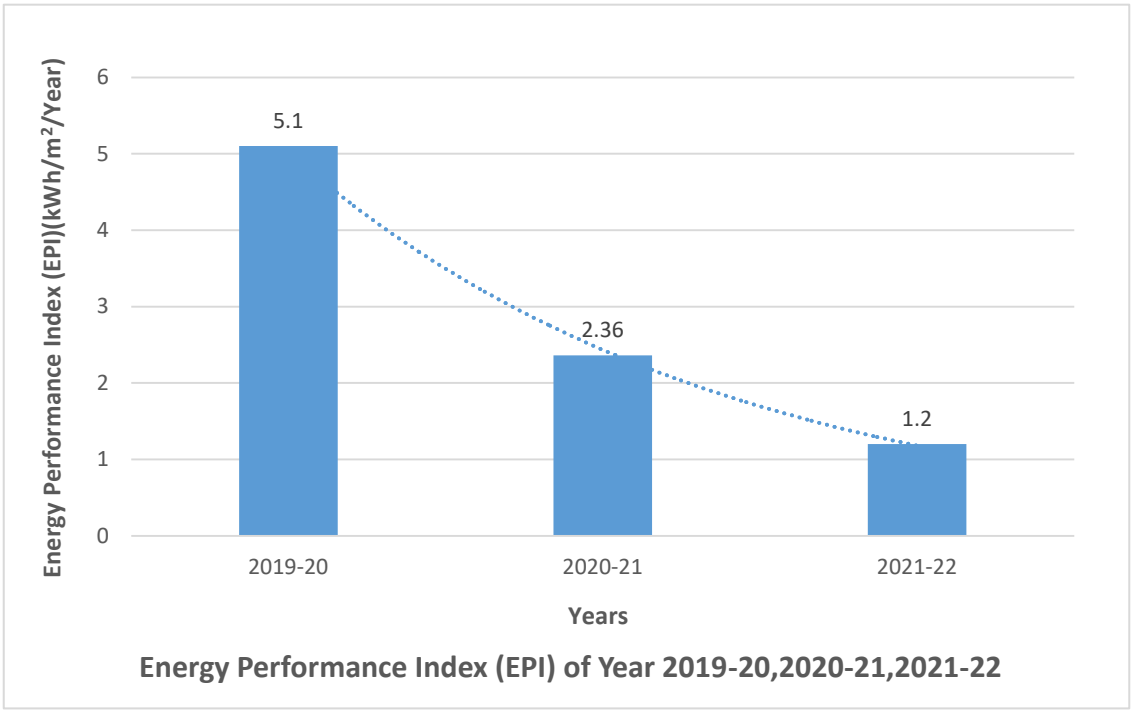
A Technical Training Institute was started with support from **Terre Des Hommes (TDH), Germany** and **Volkswagen Employees Foundation** in the year 2012. Quality training that is relevant to the current market needs is a key aspect of this initiative. Lokpanchayat RTTI is affiliated to the **National Council of Vocational Training (NCVT)** under the **Directorate Genral of Training (DGT)**. RTTI is providing subsidized quality training, imparting values, providing a wide exposure to quality standards in the industry, knowledge inputs by experts from the industry.

Energy Data:-

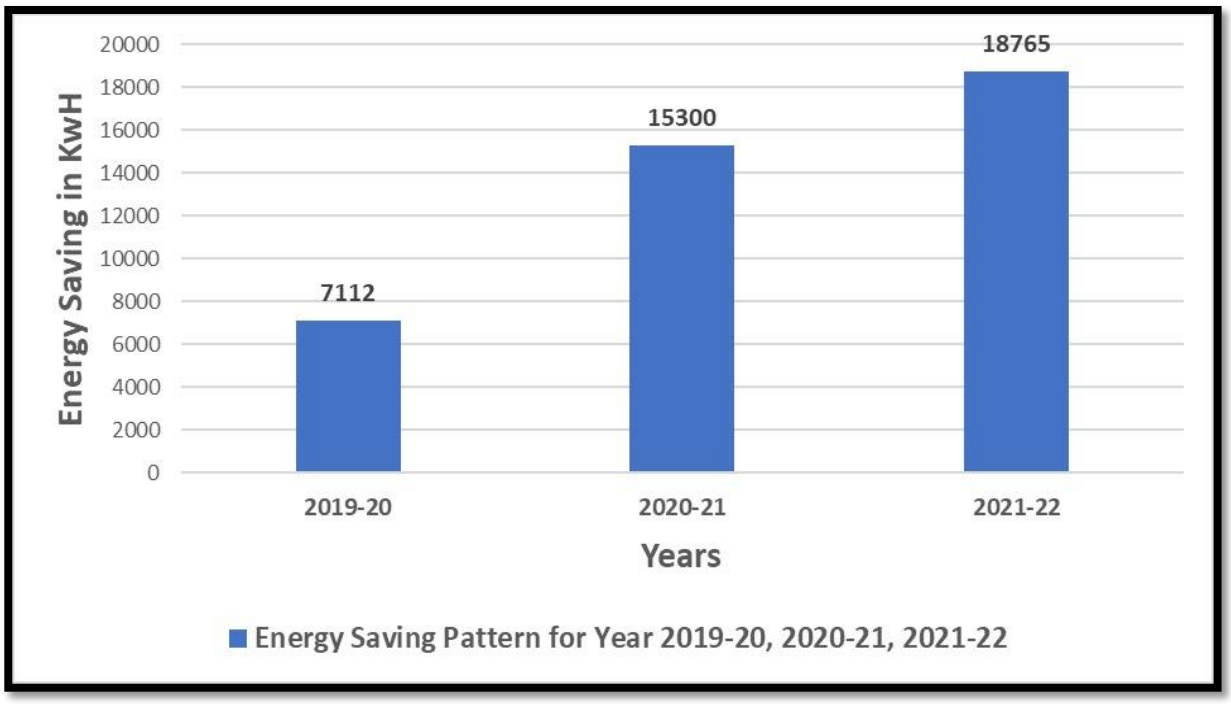
Electrical Energy Consumption Trend (kWh)



Energy Performance Index (EPI) (kWh/m2/year)



Electrical Energy Savings from Energy Efficiency Projects (kWh)



List of Energy Conservation Measures: -

- Installed 20 kW On Grid Solar plant for energy requirement.
- Installed Solar Water Heater in place of electric Heater in Hostel campus.
- Fluorescent Tube lights have been replaced by LED Tube Lights.
- CFL Bulbs have been replaced by energy sever LED Bulbs.
- All the Halogen Lamps have been replaced by energy saver LED focus lights.
- Installed high rated welding machines in the institute.
- Replaced Electrical Coil Stove by Induction Cooker in the Canteen.
- Replaced conventional fans with BLDC fans.
- Installed water level sensors with alarm siren on each water tank.
- Installed Motion sensor LED Lights in hostel premises.
- Replaced old PCs with upgraded Processors also LCD screens of computers with LED screens.
- In all toilets dual system flush tanks are used.

Energy Conservation Policy

- Organization will always focus on Renewable energy, Green energy & implement the same in several projects of organization in most efficient manner.
- Access our energy usage and measure its impact on the environment.
- Install solar panel and small wind mills for the generation of alternate source of energy.
- Install LED Lights in complete campus to save energy.
- Develop rain water harvesting unit more and more efficiently and try minimizing the wastage of water.
- Planting more and more Bamboo & indigenous rare trees.
- Develop and maintain an environmental management system.
- Encourage use of advanced technology to minimize energy consumption.
- Monitor and respond to emerging environmental and energy issues.
- Provide Information and training opportunities on energy saving measures.
- Develop & research on the projects like Wind-E-Bike.
- Using white and green colors for the exterior of the building.
- Will focus on how to eliminate the use of Fridge and Air conditioner.
- Creating public awareness about not burning sugarcane stubble, paddy husk, wheat stubble, mulch. Making compost from local mulch
- Wipe the solar plates with wet and dry cloth.
- Use only dual system flush tanks in toilets.
- Monitor closely wastage of any energy and make control system.
- Regular Training system to Staff and students for save electricity and other form of energy.
- Encouraging citizens to do house-to-house Earthing under Mission Earthing Program.

This policy will be reviewed and updated periodically as public awareness, management techniques and technology change.

Lokpanchayat organization committed to a policy of energy efficiency and energy conservation to reduce our Fiscal and environment impacts.

President
Lokpanchayat, Sangamner

MOST ENERGY EFFICIENT APPLIANCE

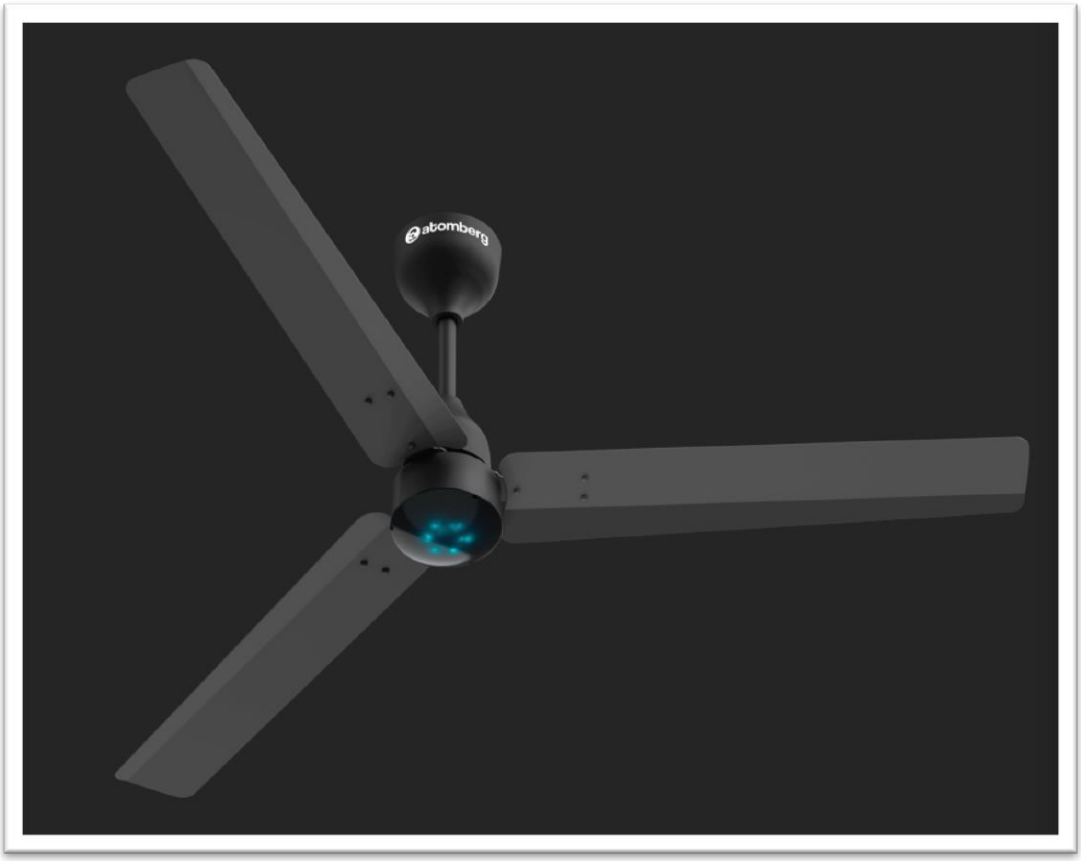
APPLIANCE OF THE

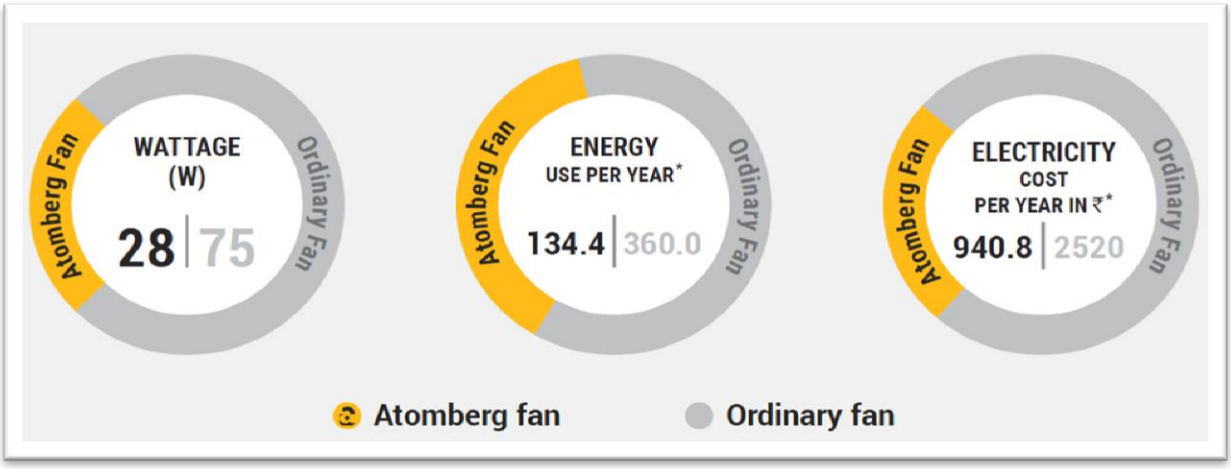
Atomberg Technologies Private Limited
Pune, Maharashtra

Model Name: Renesa 1200

Introduction: -

- Renesa 1200 is an Energy efficient BLDC motor-based fan.
- It has a Smart remote with many features like Boost Speed, Timer, and Sleep modes.
- It has a silent operation with Higher Air Delivery and better coverage
- It has a 100% pure copper winding motor for longer life.
- It runs up to 3X times on the Inverter.
- It has consistent speed even at low voltage with low motor heating.
- It saves up to 1500 INR in a year.





Technical Features

Model Name: Renesa 1200
Sweep Size (mm): 1200
Power Consumption (Watts): 28 W
Air Delivery (cu m / min): 230
Service Value (cu m / min / Watt): 8.2
RPM: 340
Power Factor: 0.98
Input Voltage Range (V): 140 – 285 VAC

APPLIANCE OF THE

C.R.I. PUMPS PRIVATE LIMITED
Coimbatore, Tamil Nadu

C.R.I. PUMPS
Pumping trust. Worldwide.

Model Name : PLANO - 104

Plano - 104 is an open well submersible pump set suitable for lifting water from sumps and open well. It is used for residential applications, rural water supply, fountains, gardens, drinking water supply, cooling water circulations, Commercial complexes, Bungalows and apartments.

Technical Features

- Specially designed to achieve the efficiency for 5 star rating.
- The pump set has the highest hydraulic efficiency and best in class water filled motor in the industry and in its category. The internal cooling fluid in the motor is of an anti-friction nature which also contributes to the efficiency of the system.
- The impeller and volute casing are designed to reduce the friction between each other which improves the pump efficiency and reduces the wear which in-turn increases the life of the pump set.
- The internal parts are coated to improve both efficiency and in turn the life of the product.
- The pump set is made up of stainless steel SS304 external parts with Polypropylene Oxide hydraulic parts.
- The bearings both journal and thrust bearing are processed to deliver low friction to the rotating parts of the motor to achieve best efficiency.
- The pump rotating parts have low Moment of Inertia which makes it a low energy consuming product.
- Energy saving of 2048.95 GWh from 2011 to Until 2022

APPLIANCE OF THE

Daikin Air Conditioning India Private Limited. Gurugram, Haryana

Model Name

FTKM50UV16U+RKM50UV16U

FTKM50UV16U+RKM50UV16U is a **5-star rating** Patented Swing Compressor Inverter split wall mounted Daikin Air Conditioner. This AC comes with **1.5 TR** cooling capacity, it has Patented Swing compressor and **ISEER of 5.20** It has a Variable Speed Inverter technology which is fully Automatic. It provides faster cooling and more power saving. It constantly adjusts the compressor's speed to maintain desired levels of temperature and assured savings- both power and electricity. This model is equipped with **R-32 Refrigerant** which is patented by Daikin Globally and having Zero ODP and low GWP.
Its Rated Annual Power Consumption in **kWh 785.67.**
We have tested the performance of this model in our NABL approved lab and it ensures **100% Cooling capacity @ 46°C.**
The indoor Unit noise levels are **32db** and Rated power consumption is **1360** watts.
Air Flow rate of this model is **593 CFM** with Moisture removal **1.8** Liters /Hour.
This AC has operating Ambient Temperature range **54°C.**

Technical Features

With the introduction of Variable Speed Inverter Technology and Daikin's Patented R-32 Refrigerant we are able to reduce greenhouse gas emissions and energy demand, it helps to save energy for consumers and businesses on running costs over the life of the products they choose to use. It has significant economic and environmental benefits. Daikin's energy-saving air-conditioning solutions create a peaceful and harmonious environment all around you. Daikin has the unique ability to add a sense of calm to your space both aesthetically and functionally. Daikin's Star rated range of technologically advanced Air Conditioners has higher ISEER, which consumes less energy.

Some of the Features that make this product so efficient-

- Amongst the top when it comes to **quality** and **Energy efficiency**.

-**Dew Clean Technology**-Cleans the heat exchanger automatically through Condensate water, ensures hygiene & maintains clog-free heat exchanger for a better airflow, which further ensures consistence performance

-Triple Display (on Indoor unit)- Estimated Power Consumption % of the Air Conditioners can be monitor via Indoor Unit Display which is one of the Unique feature of Daikin Inverter Split AC FTKM Series, Customer Can also see Set Temperature and Room Temperature & Auto Error code on Indoor Unit Display.
This Unique feature ensures complete monitoring control is available in the hands of consumer.

- **PM 2.5 Filter –**These fine particles are caused by combustion inside of automobiles as well as things such as furnaces and wood stoves. The **PM 2.5 filter** in the Air Conditioner acts as a sieve, catching all these unwanted particles while allowing the **clean and fresh air** to recirculate back into your room.

-Stabilizer Inside Operation-Regulate voltage across a wide range of fluctuation **(130V~285V)** Smooth operations during voltage fluctuations.

- **3D Airflow** system that cools the room quickly and ensures Uniform Cooling.

- **Air Throw-** With the Cross Flow Evaporator Fans, Daikin Air Conditioners Every product is perfected and re-perfected to ensure they deliver and carry the badge of trust. Ensure **uniform cooling and a powerful air-flow** that allows one to receive the cool air up to **16 meters*** (**52 Feet**) away from the unit.

-Anti-Corrosion Treatment- A special coating of Benzotriazole (BTA oil) is added to the

copper coil on indoor and outdoor heat exchanger copper tubes to prevent it from corrosion. it prevents the rusting of the copper coil and extend durability of the heat exchanger for a much longer period.
It is especially effective against the Indian climate conditions –rainy season, high humid area, coastal area and
industrial smokes & pollutants areas.

- **Auto restart feature** that enables to run the unit at the settings at which power failure occurred.

- **Self Diagnosis feature** detects the problem area and displays the error code related to that problem; it eases servicing.

- **Long Piping Length** for flexible installation.

APPLIANCE OF THE

Haier Appliance (India) Pvt. Ltd.
Pune, Maharashtra.

Haier

Model Name- HRD-1955

- HRD-1955 Model is Direct Cool Refrigerator.
- Single Door Refrigerator.
- HRD-195 is a 5Star Rating Model.
- Annual Electricity Consumption (kWh/year) is 106.
- Total Net Capacity-188 Litre.
- Get assured 10 years warranty on the inverter compressor and enjoy trouble free services.
- Additional storage to keep your potatoes, onions and a lot more.
- Separate crisper for your fruits doesn't allow the odors to mix into one another. Hence, it keeps the crispiness and freshness intact.

Technical Features

Technical Features of the model to be listed and they should be precise.

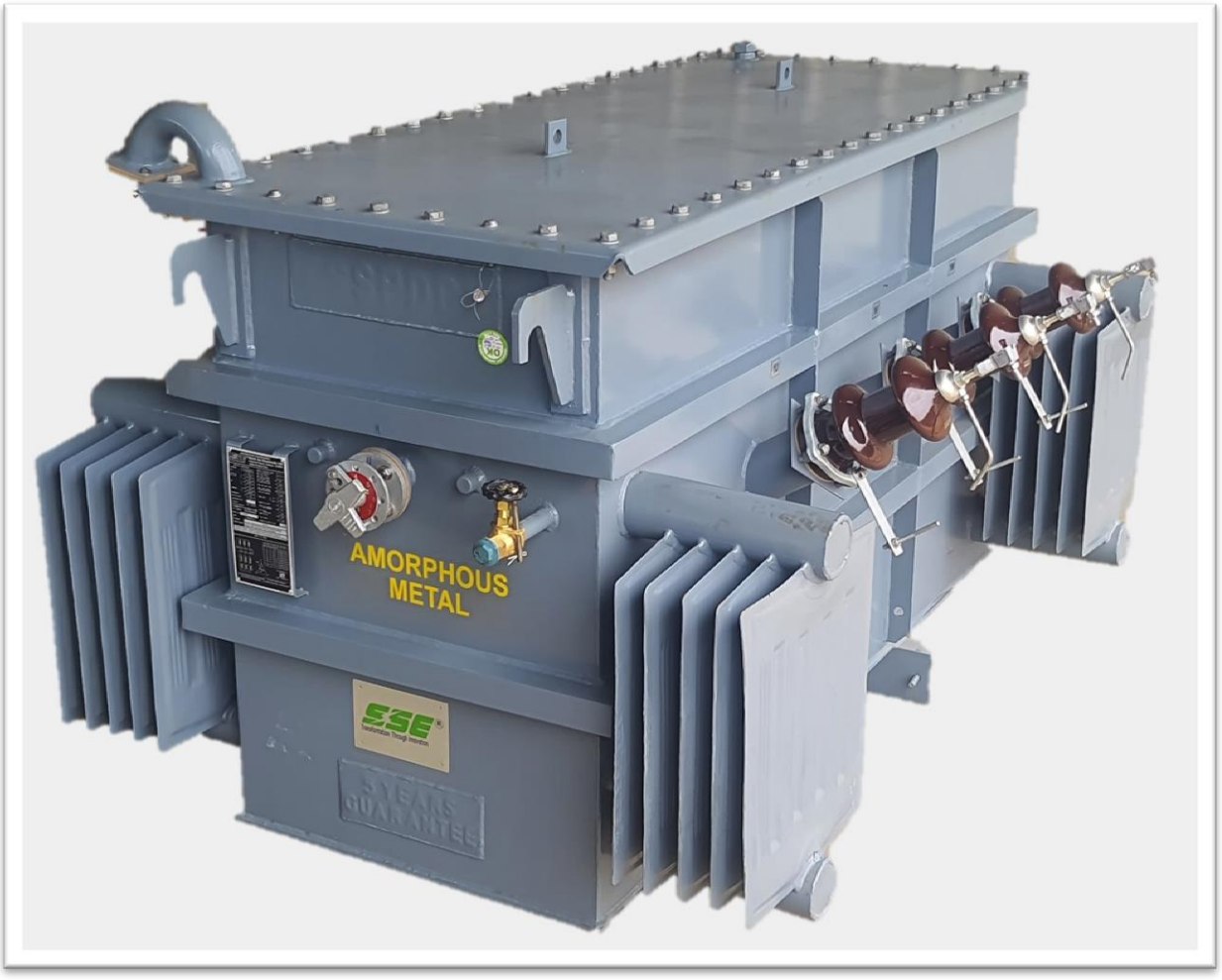
1. *HRD-1955 Direct Cool Invertor Refrigerator.*
2. *One hour Icing Technology.*
   - *With the long condenser coils and heavy-duty PUF insulation the cooling, remain sealed, fresh and intact. Due to this the freezer can make ice in about an hour.*
3. *Stabilizer Free operation.*
4. *5 Star rating.*
5. *Toughened Glass-*
   - *Toughened glass shelves can bear heavyweight up to 120 kg's easily. Now large curry pots and heavy vessels can be kept conveniently*

APPLIANCE OF THE

Shirdi Sai Electricals Limited, Kadapa, Andhra Pradesh

Model Name

Model Name: SSEL 315 5S (315kVA 3Phase, 11/0.433kV, Amorphous, Copper wound Sealed Type Distribution Transformer with BEE 5-Star rating)



Technical Features

Technical Specification	
Rating	315kVA
Number of Phase	Three Phase
Applicable Standards	IS, BEE.
Cooling	ONAN
Insulating Fluid	Mineral oil as per IS : 335
Frequency	50 Hz
Vector Group	Dyn 11
Primary Voltage	11 kV
Secondary Voltage	433 V
Core Material	Amorphous
Winding Material	Copper
Tapping Range	+5% to -10% in steps of 2.5%
Impedance	4.5% (IS Tolerance)

Fittings & Accessories: -

- Primary bushings
- Secondary bushings
- Off circuit tap changer
- Pressure relief device
- Oil level Indicator
- Filter valve
- Rating & Diagram plate
- Lifting lugs
- Bottom mounting channels
- Earthing terminal
- Thermometer Pocket with Cap
- Oil filling Plug