National Award for Excellence in Energy Management - 2021

Kidderpore Unit, India Tobacco Division, ITC Ltd.

August 2021

Presented By: -

R K Himanshu – Branch Engineer

N.M. Prasad – IC Electrical

Arun Chauhan – IC Utilities

Presentation Overview

- Overview of ITC and ITD Kidderpore Unit
- Energy Performance
- Energy Management –Energy Conservation Initiatives
- Innovative Projects for energy Conservation
- Renewable Energy Roadmap to maximise RE Portfolio
- Waste Utilization and Green Supply Chain
- Employee Engagement
- Rewards & Recognitions

ITC: An Exemplar In Triple Bottom Line Performance

Environment

- **Water Positive :** 19 years in a row
- **Carbon Positive :** 16 consecutive years
- **Solid waste recycling positive :** 14 consecutive years
- Soil & Moisture Conservation to 11,30,000 acres
- Renewable Energy share– 41.2 %
- Social & farm forestry initiative has greened over 800,000 Acres

Economic

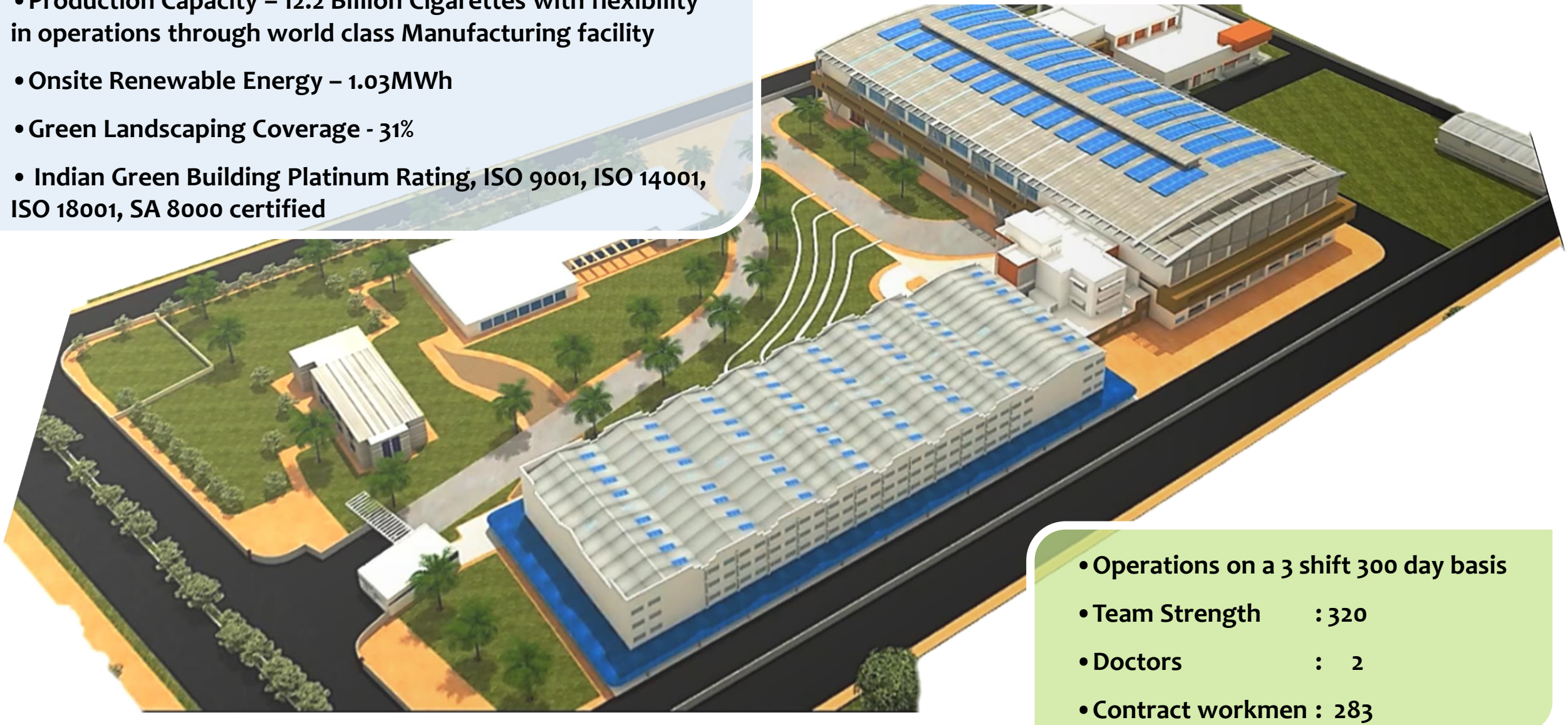
- Market Capitalization Over $ 36.79 billion
- Turnover: Over $ 06.48 billion
- Powered by the vitality of world-class brands

Social

- Creating around 6 million sustainable livelihoods
- Educating 7,75,000 children
- Benefitting 4 million farmers by e-choupal
- 147 million person-days of employment generated

ITD Kidderpore

- Cigarette manufacturing operations by ITC commenced in 1933 in Kolkata Port Area
- Production Capacity – 12.2 Billion Cigarettes with flexibility in operations through world class Manufacturing facility
- Onsite Renewable Energy – 1.03MWh
- Green Landscaping Coverage - 31%
- Indian Green Building Platinum Rating, ISO 9001, ISO 14001, ISO 18001, SA 8000 certified



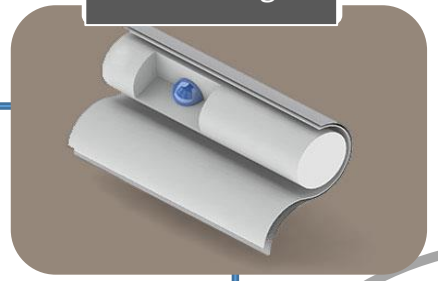
- Operations on a 3 shift 300 day basis
- Team Strength : 320
- Doctors : 2
- Contract workmen : 283

Manufacturing Process Flow – Cigarette

State of the Art fully Automated Manufacturing Facility

Encapsulated Flavour

Filter Mfg



Cut Tobacco

Cigarette Making

Dust Recovery System

Cigarette Packing

Finished goods storage

Spiral Conveyor

Kidderpore Factory Highlights – 20-21

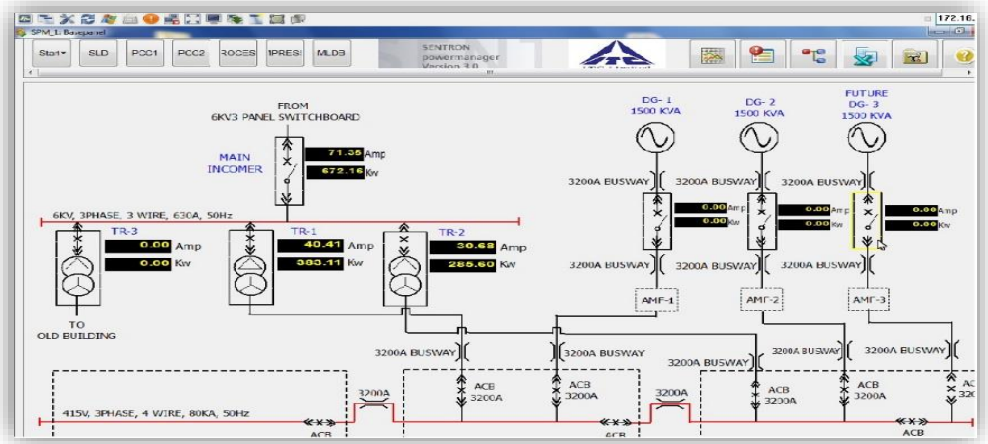
- Reduction in Specific energy Consumption by 5.1 %
- Sustenance of Specific Water Consumption despite Covid impact
- Onsite Solar Capacity Augmented by 96% to 1.03 MW
- Renewable Energy share increased by 67% YOY
- Wheeling of Green Energy through ISOA
- Total investment of Rs 3.74 Crores for RE and Energy Conservation Initiatives

Energy Management & Review Mechanism

Energy Management & Review Mechanism

Energy Management committee

- Branch Manager — Arnab Kumar Deb
- Branch Engineer — Ramesh Kumar Himanshu
- Central Management Committee
  - Energy Manager — Arun Chauhan
  - **Engineering** — N M Prasad, Sourish Chakroborty, Geetashree Moitra, Anup Kumar Mondal
  - **Safety & Security** — Jaideep Mukherjee
  - **MFG** — Rajeev Kumar Singh Gola, Balbir Singh Bhabani Mitra, Gopal Prasad, Subhash Dutta, Jamil Ahmed
  - **HR** — Rishi Satish
  - **EHS** — Nirjhar Bandyopadhyay
  - **Service Provider** — Dilbahadur Paresh Choudhury, Dinesh Asish Bhattacharya
  - **Commercial** — Tusher Kanti Das



Online Energy Management system

DAILY ENERGY REPORT - MARCH, 2019

	Target Units/mnc	1/Mar	2/Mar	3/Mar	4/Mar	5/Mar	6/Mar	7/Mar	8/Mar	9/Mar
Production (mnc)	30	44	42	40	41	36	35	40	44	43
Total Unit Consumed	514414	20479	18422	17807	21420	19416	18746	20668	22360	22774
Total UNIT/MNC	680	469	441	451	526	534	538	511	513	533
Machines - Unit/mnc	188	184	166	168	173	180	181	172	183	182
Compressor Units/mnc	85	61	81	89	77	90	92	71	68	84
SMD PDRF Units/mnc	25	22	20	20	20	21	22	21	21	20
SMD CDRF Units/mnc	18	21	18	19	18	20	21	19	25	25
Laser Fan Units/mnc	5	4	4	4	4	4	4	3	3	3
Lighting Units/mnc	74	44	43	47	52	57	58	49	45	46
AHU Units/mnc	18	18	19	20	19	21	21	20	22	21
HVAC Units/mnc	97	22	20	26	56	60	55	35	32	38
Others Units/mnc	48	37	19	3	39	5	5	59	56	56
Others Utility Units/mnc	44	34	30	37	43	47	50	36	33	33
Filter Making Units/mnc	77	21	21	19	25	28	29	26	23	24
Machine efficiency (%)	70	65	79	80	77	74	71	77	67	66

ABSOLUTE CONSUMPTION

		1/Mar	2/Mar	3/Mar	4/Mar	5/Mar	6/Mar	7/Mar	8/Mar	9/Mar
Machines		8012	6928	6655	7037	6543	6314	6965	7998	7796
Compressor		2684	3389	3524	3130	3283	3203	2879	2970	3590
SMD PDRF		952	828	780	818	780	753	833	923	867
SMD CDRF		915	752	738	747	731	734	774	1097	1060
Laser Fan		154	155	156	153	141	133	123	127	148
Lighting		1939	1816	1868	2120	2081	2009	1986	1983	1981
AHU		801	800	772	785	758	729	813	962	903
HVAC + VRV & Ventilation		961	817	1008	2268	2190	1925	1432	1415	1645
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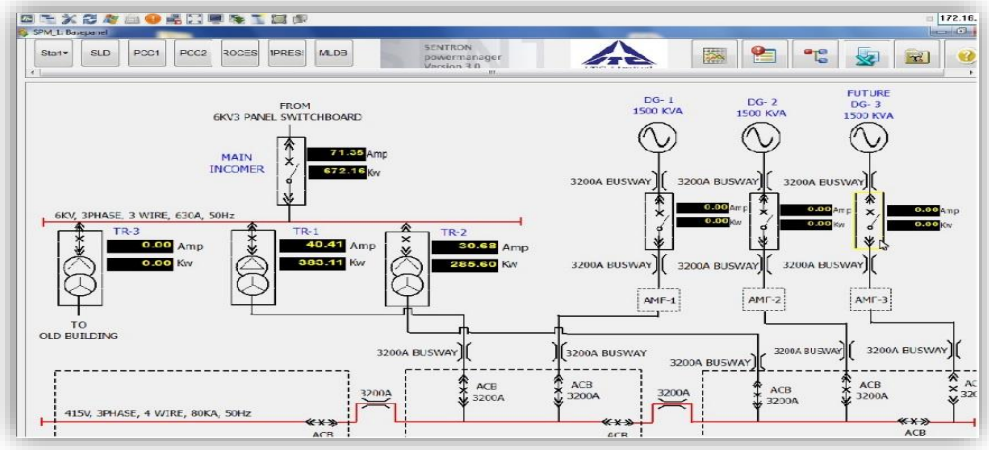
	TOTAL	20479	18422	17807	21420	19416	18746	20668	22360	22774

Legend: Holiday, Shut Down, Sunday — Greater than Target, Lower than Target

Daily Energy Analysis & Reporting

Energy Management & Review Mechanism



Online Energy Management system

Energy Demand 2018 - 19

MWH

		2017-18	Todate	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Electricity															
Secondary															
Machines	Units	1785399	1899801	104973	131933	170898	204174	152201	127830	154204	163092	166648	163159	180474	180214
	Units/ mnc (cig)	197	196	206	207	189	196	194	232	200	186	194	207	187	184
Compressors+Laser Suction fan	Units	1056222	999283	63774	79606	97490	113240	82295	71187	75490	80047	85708	85118	78227	87102
	Units/ mnc (cig)	117	103	125	125	108	108	105	129	98	91	100	108	81	89
CDRF	Units	163192	185130	9434	10468	14382	17268	12813	13030	13182	14523	17851	17723	22503	21955
	Units/ mnc (Making cig)	18	19	18	16	16	17	16	24	17	17	21	22	23	22
Vaccum Blower	Units	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Units/ mnc (MK8 cig)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pneumatic feed	Units	286831	259637	17334	21166	25417	28362	21368	18860	22269	23593	20105	19051	20493	21620
	Units/ mnc (Making cig)	32	27	34	33	28	27	27	34	29	27	23	24	21	22
Lighting	Units	738049	659052	47781	51449	58365	62576	57398	53823	53524	52306	53960	56022	53023	59126
	Units/ mnc (cig)	82	68	81	84	64	60	73	88	70	60	62	71	55	61
Subtotal		4029693	4002903	243296	294622	366553	425619	326075	284730	318669	333562	343971	341072	354719	370017
Production(mnc)		9055	9670.57	510	636	906	1044	784	551	770	876	861	788	966	977
units/ mnc (cig.)		445	414	477	463	404	408	416	517	414	381	399	433	367	379
units/mnc (conv.)		445	414	477	463	404	408	416	517	414	381	399	433	367	379
Filter Making	**Units**	0	197649	0	0	0	11287	15680	21285	26118	25582	24616	22630	24326	26129
	Units/mnc		20	0	0	0	11	20	39	34	29	29	29	25	27
HVAC															
Chillers 1		833340	832362	69174	96926	109875	126648	98854	82085	66226	51271	21518	9175	38480	62130
Chillers 2		0	0												
Sub total - Chillers	86.07163927	833340	832362	69174	96926	109875	126648	98854	82085	66226	51271	21518	9175	38480	62130
No of Chiller working days		0	0												
HVAC utility(Chiller & cond pumps, CT)		233057	217601	16142	23577	22575	23777	19260	16710	17005	14390	12296	10307	17181	24383
AHU 2		0	0												
Subtotal AHU (SMD+Roulette)	22.50140535	233057	217601	16142	23577	22575	23777	19260	16710	17005	14390	12296	10307	17181	24383
Subtotal		1066397	1049963	85316	120503	132451	150426	118114	98795	83230	65660	33813	19481	55661	86513
No. of AC working days		285	292	19	22	26	28	24	23	22	24	26	25	26	27
No. of AHU working days		290	292	19	22	26	28	24	23	22	24	26	25	26	27
units/AC working days		3742	3596	4490	5477	5094	5372	4921	4298	3783	2736	1301	779	2141	3204
units/mnc(conv.)		118	109	167	189	146	144	151	179	108	75	39	25	58	89
Others (UPS, Delphi, Roulette, Lift, Vehicle section charging, RO Plant, Innerframe slitter machine, etc.)	87.03324583	826841	841661	62388	62655	80354	70173	80919	64160	73160	72716	59990	61099	66687	87359
Subtotal		826841	841661	62388	62655	80354	70173	80919	64160	73160	72716	59990	61099	66687	87359
units/production day		6296	6409	4159	2238	3494	2924	2890	2291	3048	2693	2307	2656	3176	3494
units/mnc(conv.)		91	87	122	98	89	67	103	116	95	83	70	78	69	89
Grand Total	**Units**	5922931	6092177	391000	477780	579357	657504	540789	468970	501172	497520	462390	444283	501393	570019
Total Units Supplied	**Units**	5922931	6092177	391000	477780	579357	657504	540789	468970	501172	497520	462390	444283	501393	570019
units/mnc(conv.)		654	630	766	751	639	630	690	851	651	568	537	564	519	583

Monthly Dashboard System sharing with HO

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Legend		
	Holiday	Greater than Target
	Shut Down	Lower than Target
	Sunday	

Daily Energy Analysis & Reporting

S.No.	Activity	Replicability	Status	Responsibility	Impact in Unit/MNC	Timeline
1	Auto Heater on/off post 30 minutes	All wrapper and parcellors	Completed on 28 wrappers + Parcellors	Pending to be completed by Sanjoy Biswas and Kuntal	1	30th March
2	PDRF call based system	Only for cell 4 and cell 5	Under Observation	Krishnendu	5	Running with issues - 30th Aug.
3	CDRF suction valve close post 2 min	Only for Maker 40 and 50	Completed	Completed	0.4	
4	LED replacement on pending area	Across building wherever possible	Completed	Sagar	2	Jun-18
5	Chiller setpoint optimization for machine chillers.	GD121 and P2C Chiller	Completed	Ravinder and Arghya	0.3	Jun-18
6	Motion sensor installation in project Office, Conference room	Pending areas	Sensor Ordered	Ravinder and Arun		Feb-19
7	51 kwp solar	All roofs covered	30 Kwp installed, 21 kwp will be installed post roof sheet change on two wheeler parking	Ravinder and Shyama	61 Mwh /year	Jan-19
8	Solar tree expansion	ETP	Modules and Inverter received	Ravinder and Krishnenedu	50 Mwh /year	Jan-19
9	GD121 Vacumm fan close if mc not running		Completed	Completed by krishnendu	1	
12	Lift weight control arrangement	Lifts	Discussed with Vendor, Access control can work.	Need to finalise by Ravinder and Arun		Not feasible
14	Air leakage in machines	All Machines	Done post compressed air audit	Subir/Abhijit		On going
15	Solenoid Valves At main line of Machines to cut Compressed air	All Makers and packers	Valve received - Mounting Issue New valve ordered with compatible connectors	Rajeev/Subir and Krishnendu		Nov-19
16	CDRF frequency variation based on machine booking	CDRF and PDRF	Need to explore	tapas		Dec-18
17	Auxillaries motors off in P2C	Cell 2 and cell 3	Done	Krishnendu		Apr-18
18	PDRF frequency decrease during no load	All cells	Done	Sanjoy biswas		Jun-18
19	PDRF Bypassing logic for individual machines	All cells	Pending	Shyama Prasad		Sep-18
20	Max suction fan off in makers, design mechanism to avoid PCT with glue contact	GD121 and Loga	Checked with making team but filter droppping is there. Need to check if particularly suction can be given in two drums	Rajeev/Subir and Krishnendu		Aug-18
21	Chiller replacment 180 TR	Chiller	PS uploaded	Arun	16	Dec-18
22	EC motor change in pending AHU	AHU	Done	Arun	2	
23	Case packer area light Automation	Case Packer	Done	Krishnenedu		Jun-18
24	Rapid Action shutter for Roullet and delphi area	Roullet and delphi	Installation under progress	Abhilash		Sep-18
25	Timer based lighting in Sec 1 and II and Case packer area.	Case packer	Under progress	Ravinder/Krishnenedu		Sep-18
26	Bioactive coating on AHU 1 and 3	AHU	Planned in KOTPA Shutdown.	Arun	2	Sep-18
27	Compressor energy audit	Compressors	Done	Sujoy/Subir/Rajeev	7	Sep-18
28	High Efficiency Fills replacmenet in Cooling Tower	Cooling Tower	Completed	Arun	2	May-18
29	Chilled Water setpoint reset	Chiller	Completed	Arun	1	May-18
30	Conversion of 240 w T5 tube lights with 72 W LED lights.	Pending area.	Under progress - Completed for 10 numbers	Ravinder/Krishnendu		Jan-19
31	Cleaning of Filters in PDRF and CDRF as captured by MR. Kanan during suction values audit.	PDRF and CDRF	Pending	Subir		

Encon Projects Tracker

Covid Impact

Covid Impact on SEC

Lower volume has increased the Specific Energy Consumption.

High Absenteeism due to Covid (Primary contacts quarantine etc) has lead to problems in machine booking causing lower productivity during initial days.

Energy consumption during lockdown months (Onsite stay of Essential services workmen)

Increased intake of fresh air in AHUs to increase dilution of air.

Blast freezers had to be hired to protect Cut tobacco degradation due to prolonged lockdown .

Continuous running of Fresh air fans in offices and Canteen.

Key Interventions

1.Interlocking of Flap barrier with Automatic Sanitiser Dispenser:

We have interlocked the flap barrier installed before Shop floor entry with Automatic sanitizer dispenser. The barriers open only when the sanitizer dispenser is used. This ensures 100% hands sanitization before entry on shop floor

2. Automatic Head counter and Automatic Entry control for Canteen:

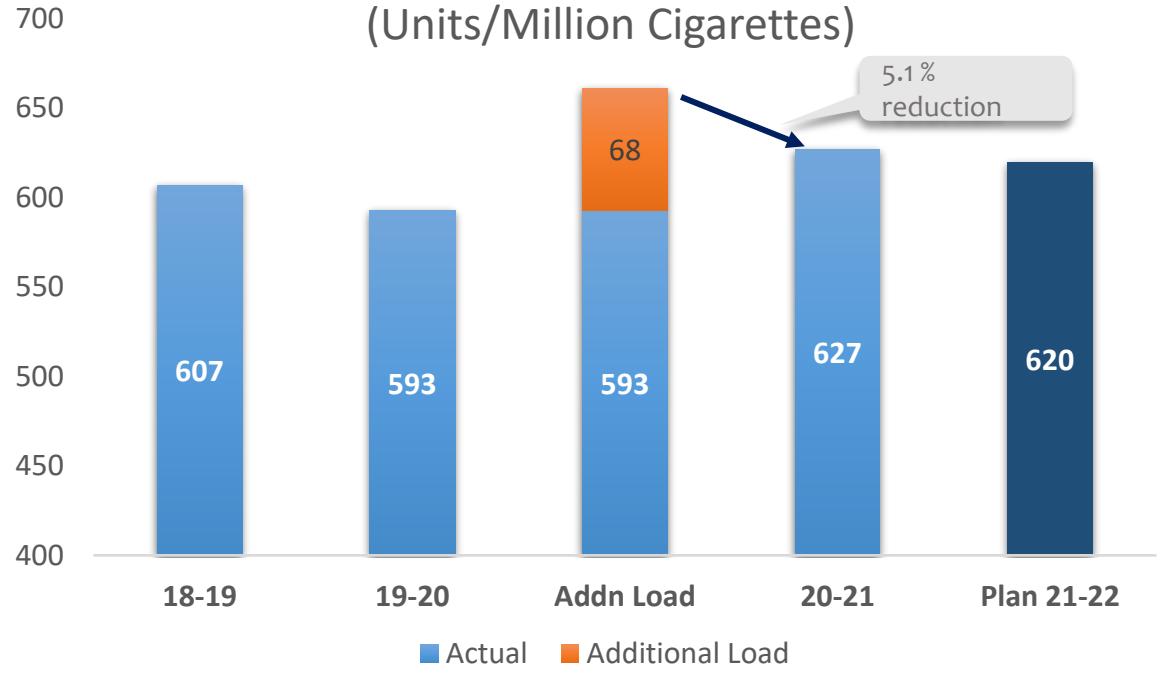
we have developed an Auto counter at Canteen entry, which counts the number of people entering and leaving the Canteen and displays the occupant count at the entry in a display.

Energy Performance

Performance 2020-21

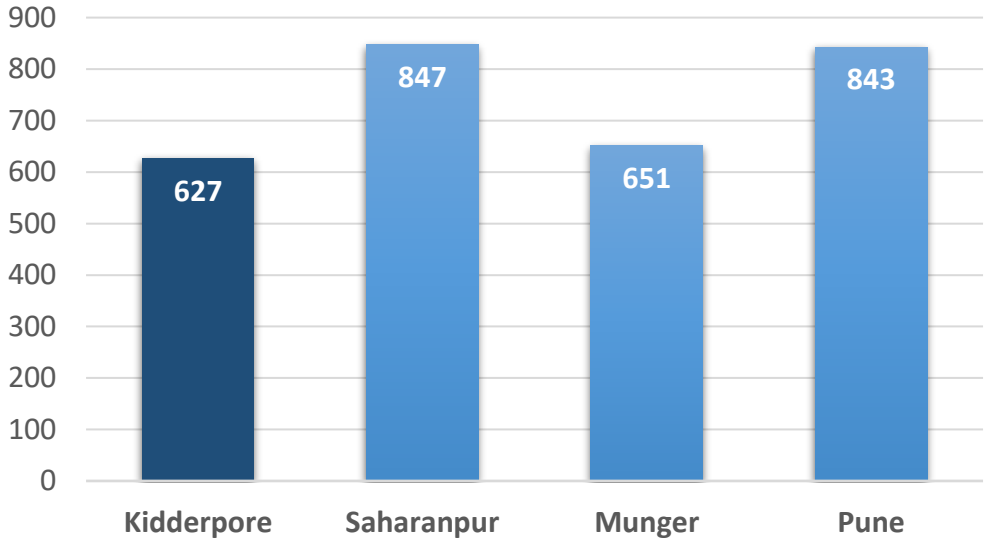
SPECIFIC ENERGY CONSUMPTION

(Units/Million Cigarettes)



NATIONAL BENCHMARKING

(Units/Million Cigarettes)



Additional Load

- Covid Impact – 21 Units/MNC
- Reduced Volume – 20 Units/MNC
- Cut Tobacco Automation- 15 Units/MNC
- Blast Freezer Hiring – 12 Units/MNC

Initiatives – 29 Units/MNC

Major Encon Projects Implemented (20-21)

Total Investment:

₹ 3.74 Crores

Total Energy Saving:

458 MWh

- Onsite Solar Capacity Augmentation - 504 Kwp
- LC R Industry 4.0 based Chiller Parameter monitoring
- R Intelligent Flow Controller for compressed air
- LC R CDRF – PDRF sand bag replacement
- R Auto Tube Cleaning System in Chillers
- R Upgradation of HVAC pumps with high efficiency Smart pumps
- R Energy efficient lights in conference rooms and corridors

R: Replicable
LC: Low cost

Encon Initiatives 20-21

Onsite Solar Augmentation

Augmentation of Onsite Solar capacity with addition of 504 KWp plant. Increasing onsite generation capacity by 96%.

Investment:
- Rs. 293 Lacs
- IRR > 13%

Benefits:
- Generation of 653 MWh

I4.0 for Chiller Parameters

Industry 4.0 compatible chiller components parameters monitoring and trigger alarms for low efficiency/ inefficient operation

Investment:
- Rs. 1.2 Lacs

Benefits:
- Savings of 40 MWh

Intelligent Flow Controller

Intelligent flow controller for compressed air to help reduce compressor set point for energy savings

Investment:
- Rs. 7.6 Lacs

Benefits:
- Savings of 120 MWh

Dust Bag Replacement

Replacement of old dust bags to reduce pressure drop and help reduce fan drive frequency.

Investment:
- Rs. 20 Lacs

Benefits:
- Savings of 44 MWh

Encon Initiatives 20-21

Auto Tube Cleaning

Automatic and continuous tube cleaning in chiller to prevent scaling and get better thermal efficiency

Investment:
- Rs. 15 Lacs
- IRR > 26%

Benefits:
- Generation of 74.53 MWh

Smart HVAC Pumps

Auto modulating pumps as per the requirement without any external sensor

Investment:
- Rs. 1.2 Lacs
- IRR>16%

Benefits:
- Savings of 40 MWh

Smart Energy Saver - AC

Smart Energy saver for room ACs to auto cut off the compressor in case the required room conditions are met and thus save energy.

Investment:
- Rs. 1 Lacs

Benefits:
- Savings of 39 MWh

Occupancy Sensors

Occupancy sensors in corridors and meeting rooms

Investment:
- Rs. 1 Lacs

Benefits:
- Savings of 18 MWh

Encon Projects Planned in 2021-22

Total Investment:

₹ 1.74 Crores

Potential Energy Saving:

540 MWh

- R 300 TR Energy efficient cooling Tower
- R Replacement of 700CFM Compressor
- R Implementation of I4.0 using AI & Data analytics in HVAC
- R Replacement of Traditional motors with IE3 motors
- R Replacement of conventional lights with LED Lights
- R Replacement of diaphragm valves with spool valves in DRF

R: Replicable

Energy Management – Plan 2021-22

Energy Efficient Compressor

Replacement of existing compressor with new 700 CFM high efficiency Variable speed Screw Compressor

Investment:
- Rs. 55 Lacs
- IRR > 19%

Envisaged Benefits:
- Saving of 180 MWh

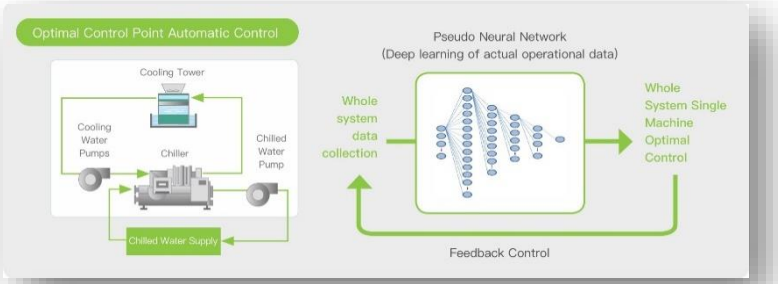
Auto Cut-off valves in SMD Machines

The valves of non booked cells shall be automatically closed to reduce air consumption.

Envisaged Benefits:
- 0.5% reduction in Compressor energy consumption.
- Savings- 7.5 Units/MNC

Industry 4.0 in Utilities Phase-II

Utilisation of Artificial intelligence and Machine learning tools for predictive control of chiller setpoint



Investment: Rs. 65 Lacs

Envisaged Benefits:
- 5% reduction in Chiller energy consumption.

Energy Management – Plan 2021-22

Energy Efficient Compressor

Replacement of existing compressor with new 700 CFM high efficiency Variable speed Screw Compressor

Investment:
- Rs. 55 Lacs
- IRR > 19%

Envisaged Benefits:
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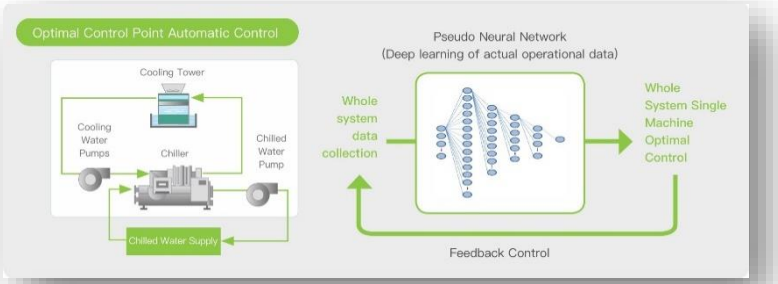
Industry 4.0 in Utilities Phase-II

Utilisation of Artificial intelligence and Machine learning tools for predictive control of chiller setpoint



Investment: Rs. 65 Lacs

Envisaged Benefits:
- 5% reduction in Chiller energy consumption.

Major Encon Projects (19-20)

S. No.	Title of Initiative	Annual Electrical Savings (kWh)	Annual Electrical Cost Savings (Rs. Millions)	Investment Made (Rs. Millions)	Payback (Months)
1	Induction of IE3/IE4 motors in PDRF& CDRF	14150	0.11	0.53	58
2	Developed PLC based system to optimize VFD runtime	34793	0.27	0.00	0
3	Replacement of existing CDRF fan with high efficiency Fan	24293	0.19	0.57	36
4	Energy Efficient backward curved Blowers in Kitchen area to replace old inefficient blowers	23490	0.18	0.80	52
5	Inverter based electrical panel cooling Ac's	28800	0.23	1.40	73
6	Internal audit to benchmark consumption	8500	0.07	0.00	0
7	Energy efficient LED Lights	48800	0.38	1.20	38
8	Occupancy Sensors for Lights and VRVs in offices	30000	0.23	0.08	4
9	Optimized ventilation fan run hours in filter plant area	12000	0.09	0.01	1

Major Encon Projects (19-20)

S. No.	Title of Initiative	Annual Electrical Savings (kWh)	Annual Electrical Cost Savings (Rs. Millions)	Investment Made (Rs. Millions)	Payback (Months)
10	PLC based switching off machine ancillaries in case of idle machine	10800	0.08	0.00	0
11	Heat resistant film on windows to reduce heat load	4635	0.08	0.02	2
12	PLC based automation at spider suction in maker & case packer to switch off in case of idle machine	14347	0.08	0.00	0
13	Timer based damper operation to control AHU run hours	450	0.08	0.00	0
	Total	**255058**	**2.07**	**4.61**	**27**

Major Encon Projects (18-19)

S.No.	Title of Initiative	Annual Electrical Savings (kWh)	Annual Electrical Cost Savings (Rs. Millions)	Investment Made (Rs. Millions)	Payback (Months)
1	BLDC Fans	0	0.00	0.00	0.00
2	Isolation Valves for compressed air isolation based on cell booking	0	0.00	0.00	0.00
3	Automation of venturi valves used In wrapper machines for Bopp splicing	1220	0.01	0.00	0.00
4	Implemented Compressed air audit recommendation	101706	0.79	0.13	1.90
5	PDRF Speed optimisation	32772	0.26	0.01	0.38
6	Setpoint optimization of machine cooling ACs	1800	0.01	0.00	0.00
7	Timer based lighting	28344	0.22	0.01	0.27
8	Case packer and roullet area lighting load conversion into variable load.	45000	0.35	0.00	0.00
9	Energy Efficient Electro Commutating pumps in AHUs	9031	0.07	0.55	94.29
10	180 TR chiller replacment with high efficiency Variable speed chiller	8542	0.07	3.50	600.00
	Total	**228415**	**1.78**	**4.19**	**28**

Design Innovation Process

Innovation is an Integral Part of our Culture

Key Drivers towards Fostering the Culture of Innovation

1 Technology Absorption

2 Automation

3 Industry 4.0

4 Industry Scan

Amaze Innovate Re-create

Design Innovation Process

Employee Motivation

'Samiksha' Meetings (Energy conservation ideas and Gap analysis)

Industry 4.0

- EMS and BMS system data connectivity with central data base

Integrated AIR Platform for collaboration

- Usage of AIR platform and LED screens to post challenges w.r.t. energy conservation

Adaptability towards New technology

- Industry 4.0 Seminar on energy saving technology

Technology Absorption

- Stepless WC Screw Chillers
- LED Lighting

Skill Development Innovation

- Hands on demonstration of usability

Innovative Project

HVAC 4.0 (Industry 4.0 in HVAC)

Objective

- Reduction in HVAC energy consumption which comprises 35 % of total energy consumption. -33Mwh

Ideation and Evaluation

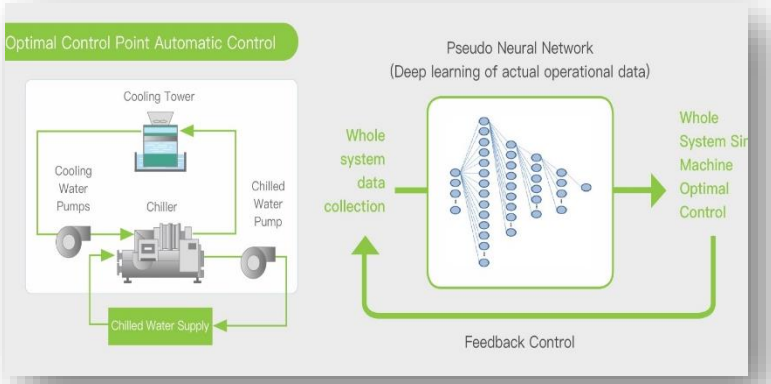
Application of Industry 4.0 tools like Data analytics and Artificial Intelligence in the field of HVAC to ensure most efficient operation

Phase – 1

- Monitoring of chiller operating parameter
- Monitoring of ambient and air conditioned area conditions
- Dashboard and trigger alarms for low efficiency/ inefficient operation

Phase – 2

- AI based predictive control to optimized chiller set points
- Input parameters – Ambient temperature and RH and shop floor temperature and RH requirement.
- Control parameters - Chiller pumps flow rates and chilled water temperature set points



Implementation and Benefits

- Potential Savings (With phase -2) - 140 MWH/year
- Replicable across AC system using chilled water
- Phase -1 completed

Sustainability – RE Portfolio

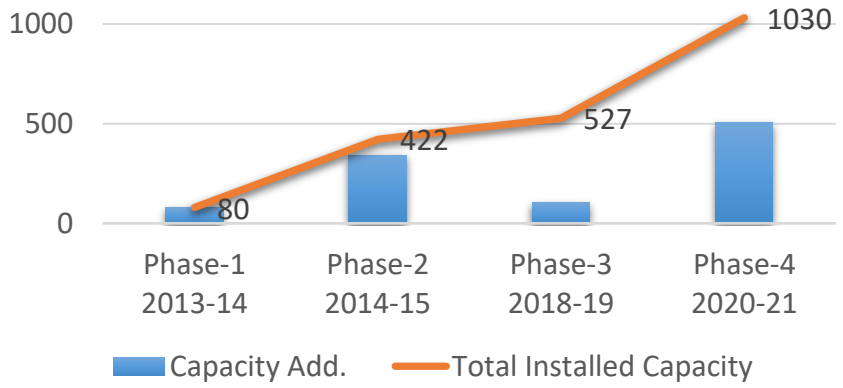
Initiatives towards Sustainability

2013-2019
Phase-1,2 & 3

2020-21
Augmentation by 0.5Mwp

Phase-4

Solar Capacity



Key Challenges

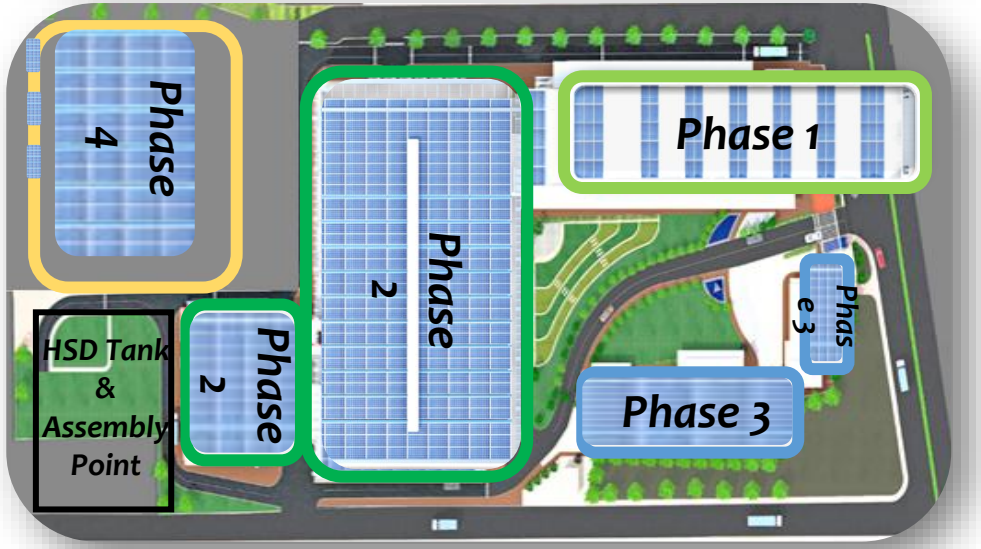
- Man Material Movement Due to Covid Pandemic
- CEHS Revised entire design post Amphan cyclone and ensuring the same with zero escalation in cost by renegotiating with vendor.
- Poor support from Vendor compensated with deployment of local vendor to meet timelines.

Key Features

- Modules Mounting Structure Designed considering Seismic Zone and Amphan Cyclone Wind Load
- Incorporated latest CEHS guidelines on Solar installations
- Contributes to 50% of Solar generation

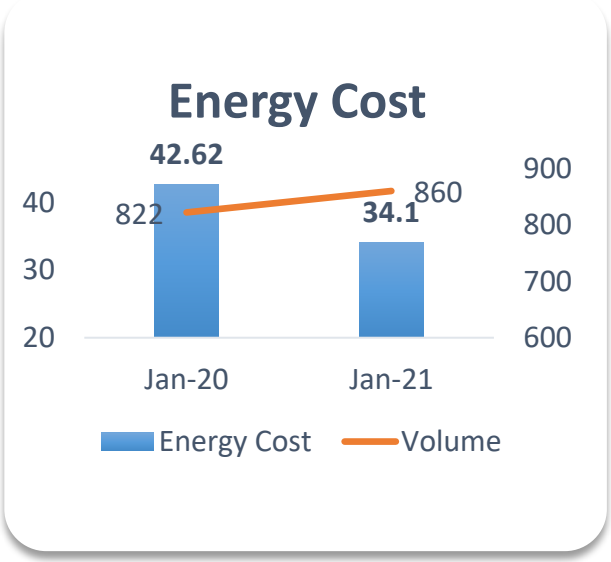
Outcomes

- Total reduction in electricity bill in Q4-2020-21 – 8.48 Lacs
- Increase in the unit RE share by 9%



Interstate Power Wheeling

First time ever ISOA Power Wheeling in West Bengal for Captive Consumption



- **Potential to reduce Energy Bill by Rs. 0.5 Cr/year**
- **Opened avenues for other ITC Units in W.B. to avail this facility**

(Aug'20)

STATUTORY APPROVALS

- ✓ Favourable decision received from WBERC after multiple representations

(Sept'20)

VENDOR EVALUATION

- ✓ Vendor Evaluation to manufacture CT/PTs in line with CESC requirements

(Dec'20)

INFRASTRUCTURE UPGRADATION

- ✓ Replacement of CT/PTS
- ✓ Fixing of ABT meters
- ✓ Laying of dedicated Communication line

(Jan'21)

AGREEMENT SIGNING

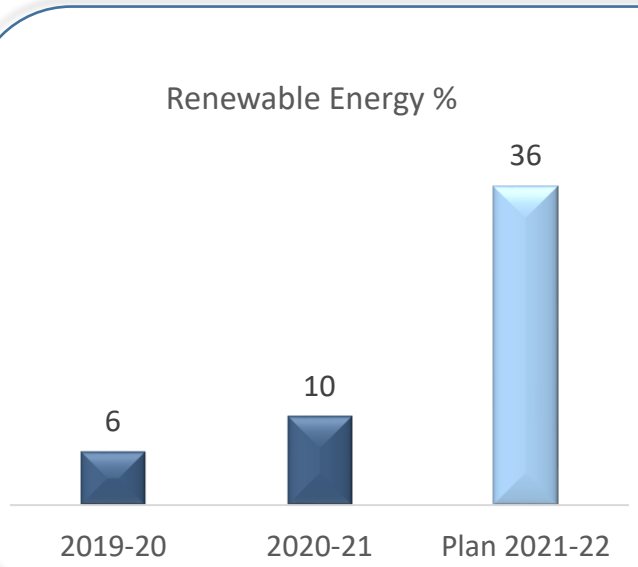
- ✓ Agreement signed with CESC for wheeling of energy through open access

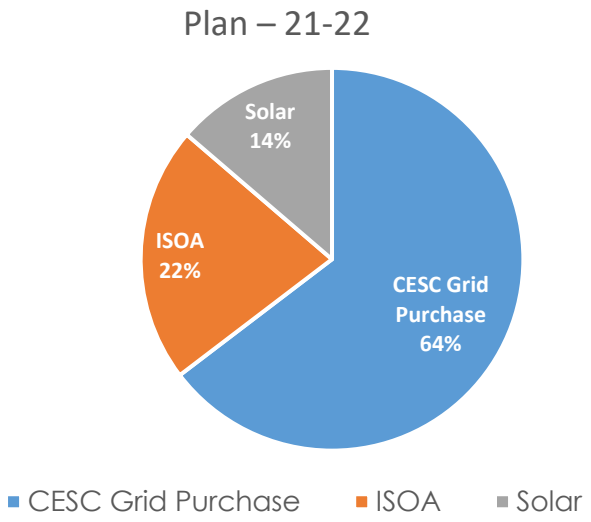
(Jan'21)

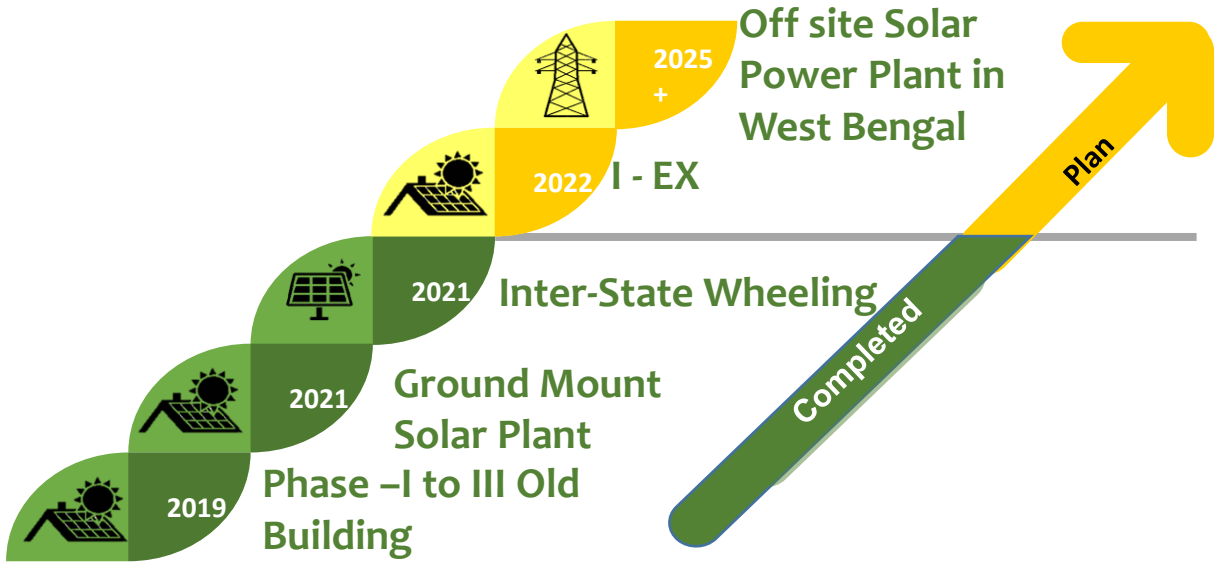
POWER WHEELING

- ✓ Total 316000 kWh wheeled through Open access

Renewable Energy Performance Plan







Major Interventions Planned:

- Wheeling of Wind Energy from Renewable sources
- Sourcing of power through IEX
- Hydrophobic coating of Solar PV panels
  - Investment- 4 Lacs
  - Envisaged Benefit – 0.4% improvement in PR

RE% increase to 36%
Approx. Electrical Cost Saving – 1.21 Crores

Waste Utilization

Waste Disposal Method

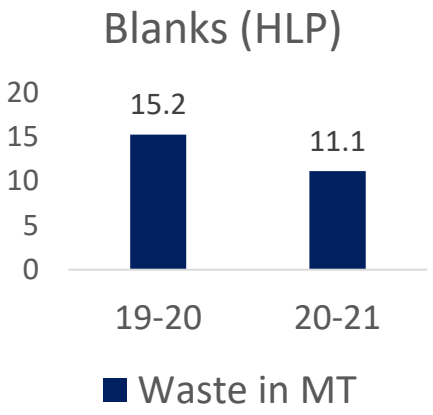
2020-21		
Major Head of Waste Generated	Quantity of waste generated (MT/year)	Disposal method
Blanks (HLP)	11.099	Sent For Recycling
CFC Waste	651.341	Sent For Recycling
Cigarette Paper	6.167	Sent For Recycling

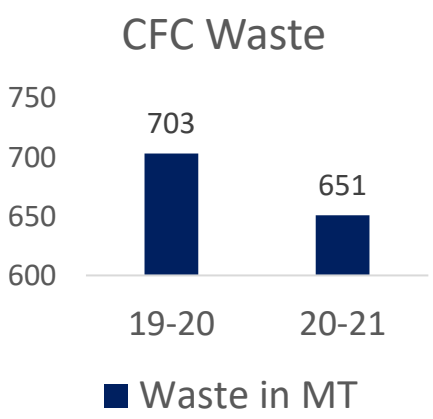
Initiative for Filter Waste Disposal

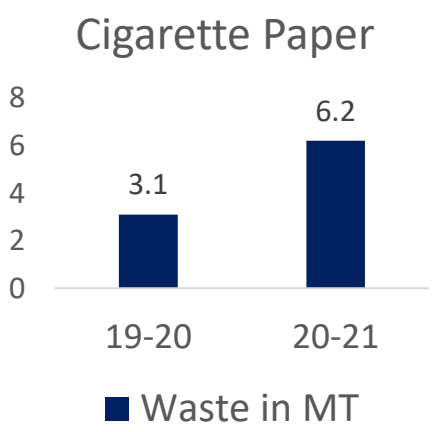
- Contract with Dalmia Cement for Filter waste Disposal
- Dalmia Cement is using Filter waste as alternate fuel in Cement Kiln
- Ccalorific value of Filter waste is 4200 Kcal/KG
- No Solid Waste Generation
- Total 55.80 Tonnes of waste sent for coprocessing in 2020-21

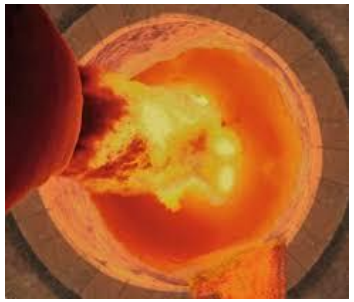
Dalmia

Waste Reduction in 20-21





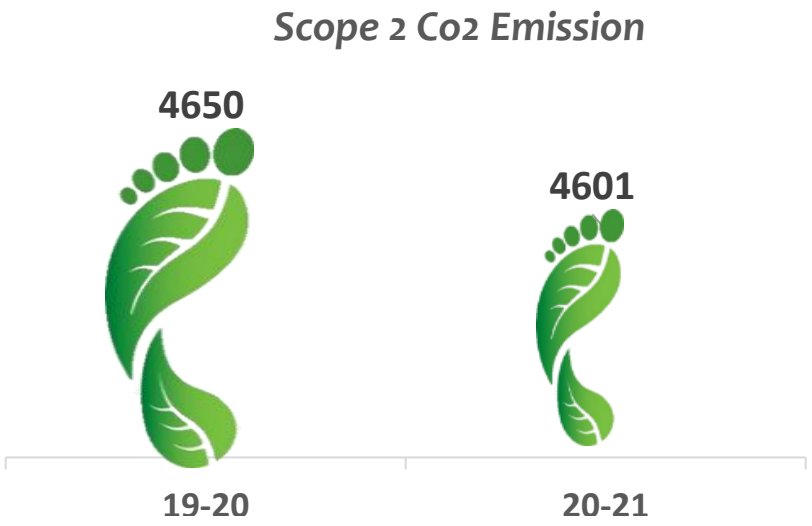


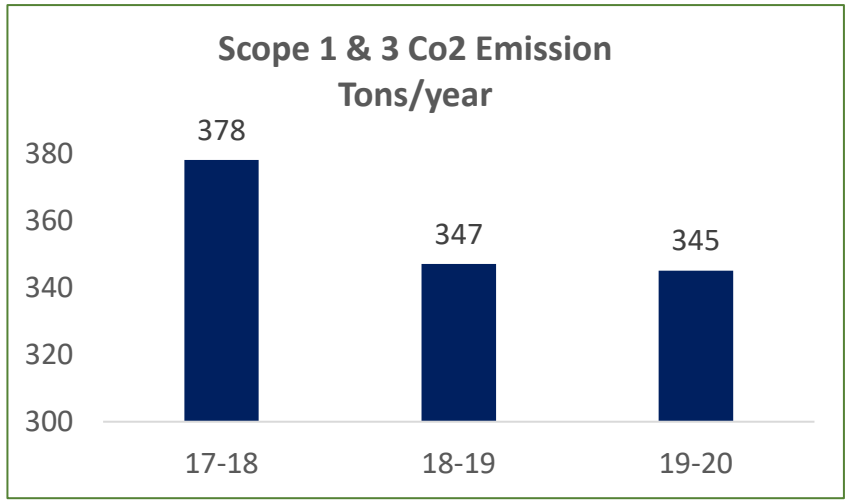


Co-processing in Cement Kiln

GHG Inventorisation

Cigarette Mfg GHG Emission





Approach & Initiatives

- Relocation of external Godown near factory (Truck Travelling distance reduced by 9000 km per annum)
- Optimization of RM sourcing Network
- Reduction of Wrapping material sourcing from multi units to Single nearest Unit – MGR Printing Unit
- Provided the Electric Vehicles Charging facility in Vehicle charging area

GHG Emission from Mfg facility – Capsule and Filter Plant

Year	2019-20	2020-21
Filter Mfg -CO2 Emission in Tons/Year	320	256
Capsule -CO2 Emission in Tons/Year	374	1063

Electric Vehicle Charging Facility

Green Supply Chain

Beyond the Boundary

Stakeholders Engagement

- Energy Auditing done in external warehouse premises and suggested 30% reduction.
- ITC Vertical integration – Paper waste sent to ITC paper division for recycling.
- Green procurement Encapsulated Flavors Project-
  - EC Motors in AHU
  - Lights Procured – LED
  - AC procured – 5 Star Inverter
  - Motors – IE3/IE4

RE & Fresh Water for the Schools

- Solar Panel Installation in Schools
  - 2016-17 – 2 Schools
  - 2017-18 – 2 Schools
  - 2018-19 – 2 Schools
- Total Renewable Energy Installed – 12 KW
- More than 50 schools covered for fresh drinking water supply

Green Society

- Contribution towards Swacch Bharat Mission
- Constructed 50 number of community toilets in adjoining society benefitting households within the Kolkata region.
- Separate toilet for boys & girls with running water facility: covering over 50 schools till date
- Plan to cover more schools and society in the current FY 2021-22

Awareness building- Pre Pandemic

National Energy Conservation Day Celebration

Flag Hoisting and Oath Ceremony

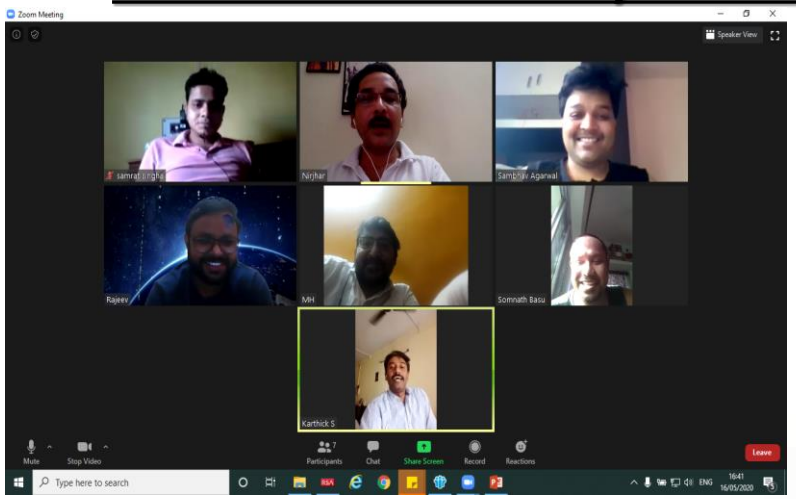
Prize Distribution

- Celebrated National Energy Conservation Day with Flag Hoisting and oath ceremony on 14th December
- Flag Hoisting and Oath ceremony is organized to motivate employees
- Events like suggestion and Poster competition conducted along with recognitions
- Interactive Knowledge sharing session to build awareness

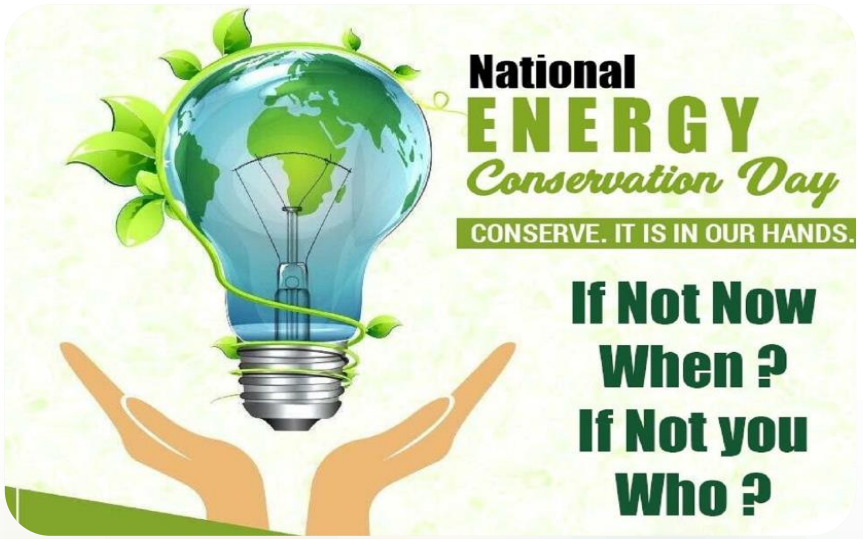
Awareness building In the Pandemic

World Environment Day Celebration

Energy Saving Awareness Session



Virtual Quiz Competition



In the new normal the celebration of energy conservation day by social distancing norms & using virtual platform for quiz competition.

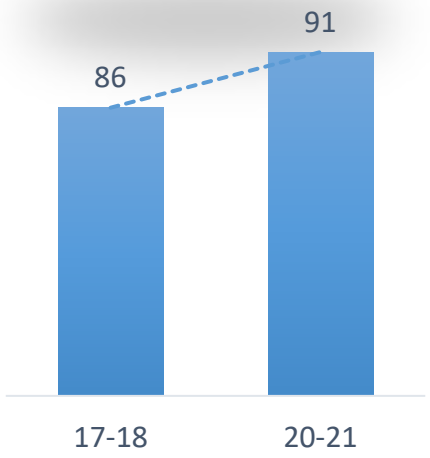
Prize Distribution

Kaizen Projects

DESCRIPTION	Project - 1	Project - 2	Project - 3	Project - 4
Source of En-Con Idea	Workman	Workman	Workmen	Engineer
Name of the Project	Corridors Lux level Optimization	Automation of Fume extractor to reduce run hours	Automation of decanter to operate only when oil is present in tank.	Optimized load of centrifugal sorter.
Idea Originated in the Year	2020	2020	2020	2020
Idea Implemented	Yes	Yes	Yes	Yes
Members in the Implementation Team	Electricians and Electrical Supervisor	Shift I/C and electrical supervisor and electrician.	Electrician	Electrical Manager and Electrician
Date of Implementation	Aug,20 Completed	Oct,20 Completed	Nov,20 Completed	Dec,20 Completed
Energy Saved	**2 Mwh**	**12.6Mwh**	**3.9 Mwh**	**1 Mwh**

Awards & Recognitions in 2020-21

Credits Scored



IGBC Green Building Certificate with Platinum rating

Winner of SHE Excellence Award by CII

Awarded Energy Efficient Unit Award by CII

Other Innovative Technologies

COBOT For HLC Loading on Focke OEM Packers

Inhouse Designed Gripper and Cutting Unit

Usage of Vision algorithms for smooth running

Critical in Nature as stack formation disturbed in Transit

Manpower Productivity and Low Energy Consumption compared to Industrial Robots

Cut Tobacco Automation

Automatic Control of CFC Conveying by Use of Industry 4.0 technology.

Brand Integrity using Barcode Readers

Manpower Productivity

Vibration Sensors on Critical Motors and Gear Boxes in machines

Online Monitoring of triaxial Vibration of Motors and alarm generation

Installed in Maker and packers Technology

Downtime Reduction and Energy Saving

CII Learnings Implemented

Intelligent Flow Controller

Capex Under Approval

BLDC fan

Capex Under Approval

AC Energy Saver

Installed in ACs

Automatic Tube Cleaning System

Installed and Commissioning under progress

Water saving Initiatives

Installed Sprinklers in garden for irrigation

Saving – 3.5 Kl/day

Reuse of HVAC Condensate in cooling tower

Savings- 0.6 kl/day

Celdek Pads in Roulette AHU to reduce requirement of RO water in Jet Spray

Savings- 1 Kl/day

Energy efficient chiller with lower heat of compression

Savings- 2 Kl/day

Thank You