



CII 25th National Award for
Excellence in Energy Management
10 - 12 September 2024 HICC, Hyderabad

2024



| Name | Designation |
|--------------------------|-----------------------|
| <i>Ashish Zitshi</i> | <i>Vice President</i> |
| <i>Vishal Kulkarni</i> | <i>Director</i> |
| <i>Ganesh Kumawat</i> | <i>Manager</i> |
| <i>Indranil Kanawade</i> | <i>Asst. Manager</i> |

UNIT I : FFS and Liquid Plant

UNIT II : Aerosol (Inhaler) Plant

UNIT III : Sterile Plant

UNIT IV : Tablets, Capsule and Effervescent Plant

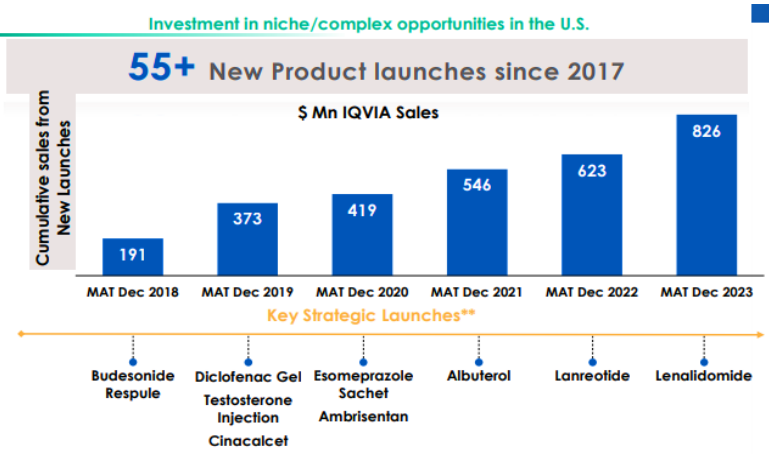


Cipla
Caring for Life

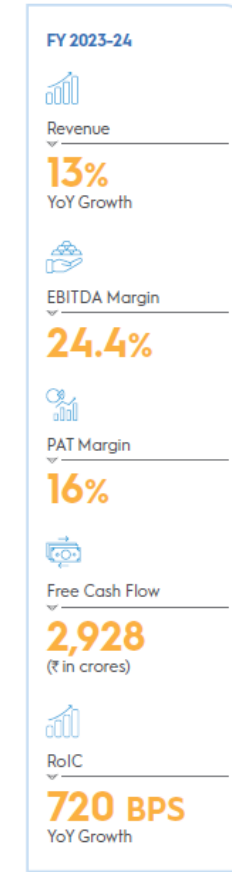
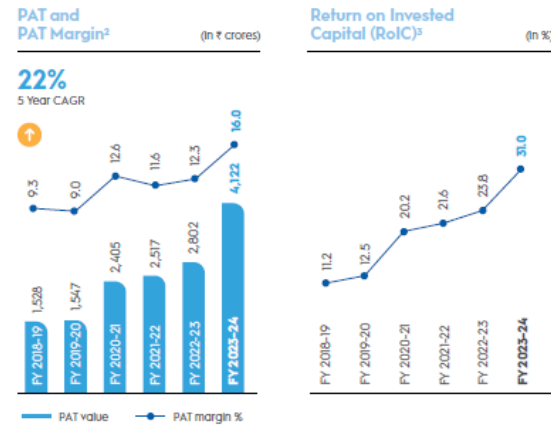
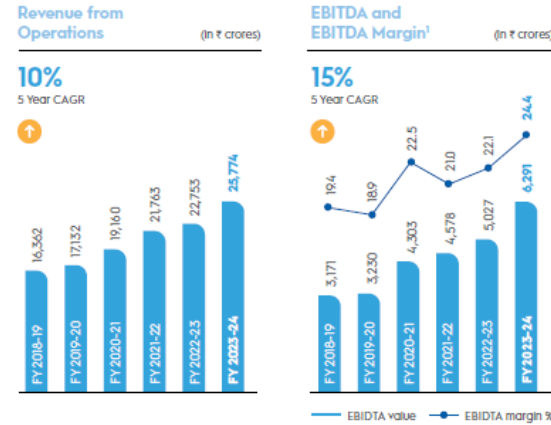
Brief Introduction of Company



Established in 1935, Cipla is a global pharmaceutical company with a strong commitment to make medicines accessible and affordable to those in need.



Financial Highlights



Major Sections and Manufacturing Process



Unit 01

Products :-

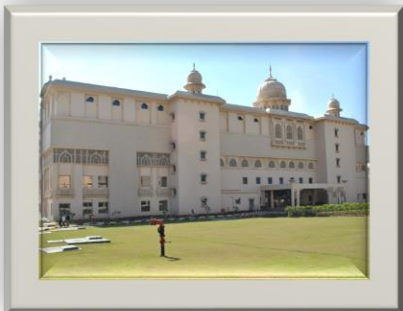
FFS/BFS Eye drops,
Liquid Orals, Respules



Unit 02

Products :-

Aerosol (HFA) Hydro
Floro Alkane - Inhalers



Unit 03

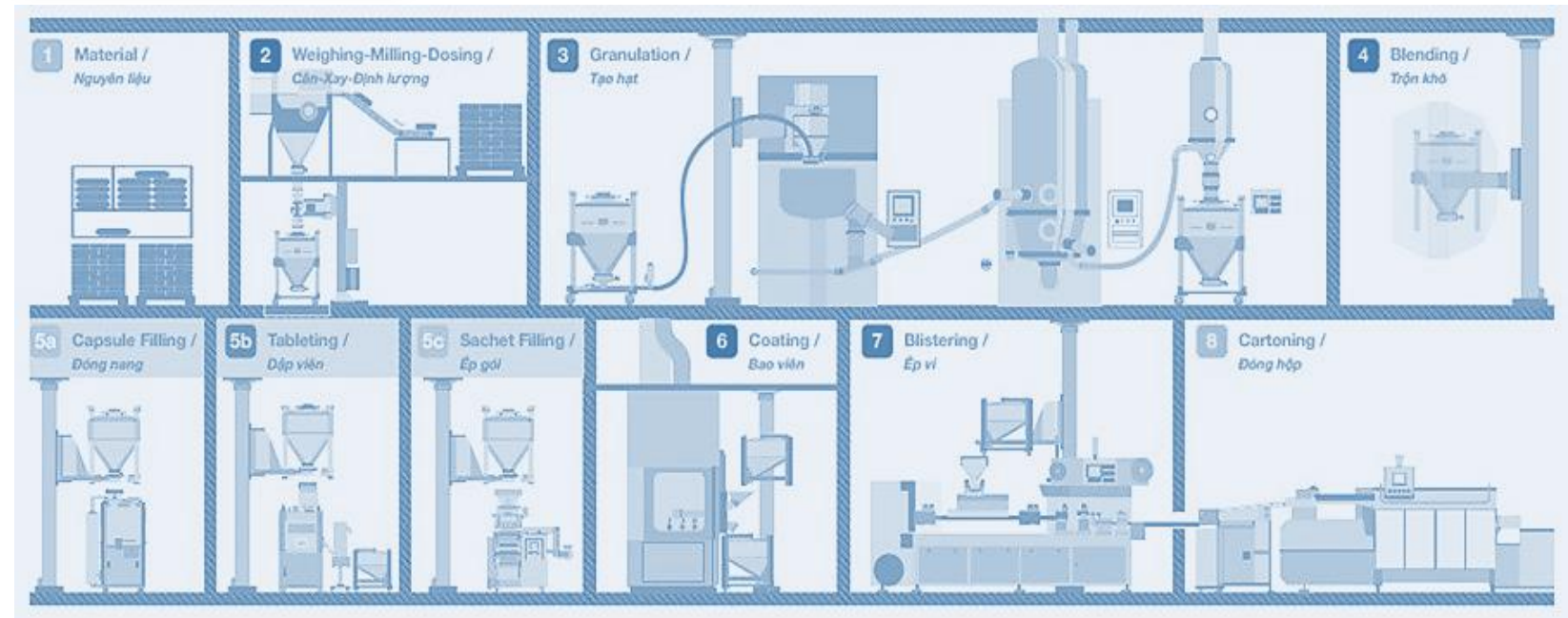
Products :- Nasal Spray,
Eye Drops & Prefilled
Syringes



Unit 04

Products :-

General Tablets, Effervescent Tablets,
Multi-Halers, Hard Gelatin Capsules,
Powder & Pellets

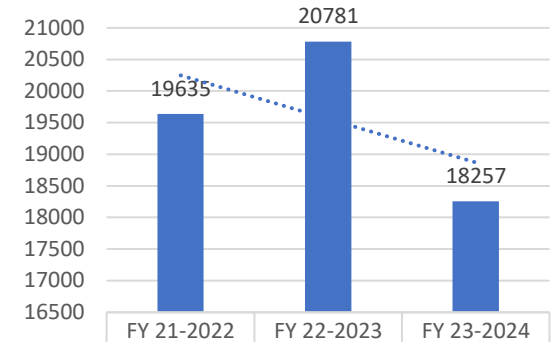


The 40% area covered for Green belt

Energy Consumption in last 3 years

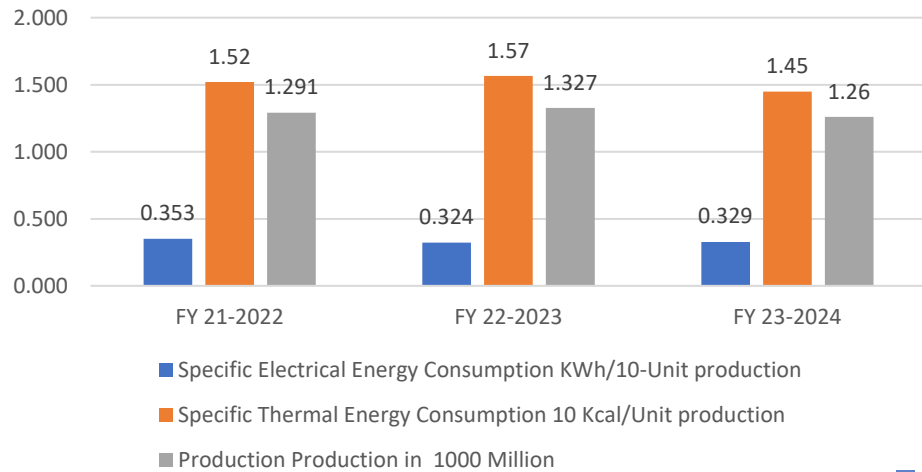
| Sr No | Parameters | Unit of Measurements | FY 21-2022 | FY 22-2023 | FY 23-2024 |
|-------|--|-----------------------|------------|------------|------------|
| 1 | Annual Electrical Energy Consumption | million kWh | 45.56 | 42.97 | 41.45 |
| 2 | Annual Cost of Electricity Consumed | million INR | 196 | 175 | 170 |
| 3 | Annual Thermal Energy Consumption | million kcal | 19635 | 20781 | 18257 |
| 4 | Annual Cost of Thermal Energy Consumed | million INR | 83 | 152 | 90 |
| 5 | Specific Electrical Energy Consumption | kWh/kg Product | 22.65 | 18.12 | 19.18 |
| 6 | Specific Thermal Energy Consumption | Kcal/Kg Product | 9760 | 8764 | 8449 |
| 7 | Specific Electrical Energy Consumption | KWh/Unit production | 0.035 | 0.032 | 0.033 |
| 8 | Specific Thermal Energy Consumption | Kcal/Unit production | 15.21 | 15.66 | 14.49 |
| 9 | Production | Production in Million | 1291 | 1327 | 1260 |
| 10 | Production | Production in Ton | 2012 | 2371 | 2161 |

Annual Thermal Energy Consumption million kcal

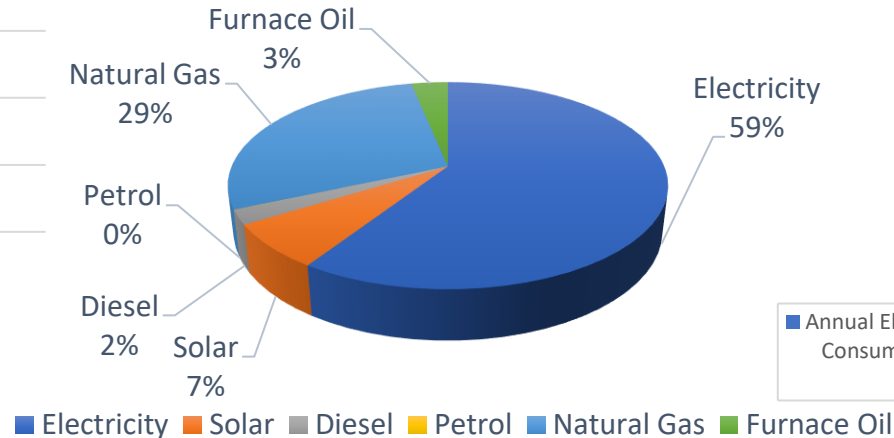


| Fiscal Year | Annual Thermal Energy Consumption (million kcal) |
|-------------|--|
| FY 21-2022 | 19635 |
| FY 22-2023 | 20781 |
| FY 23-2024 | 18257 |

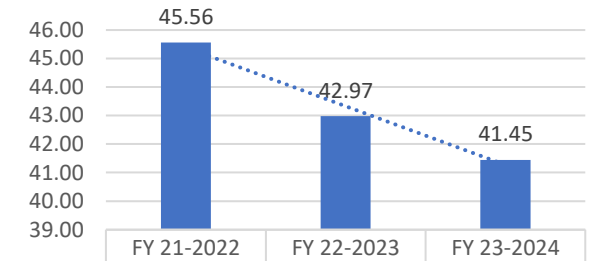
Sp. Energy Consumption & Production



Indore FY2023-24

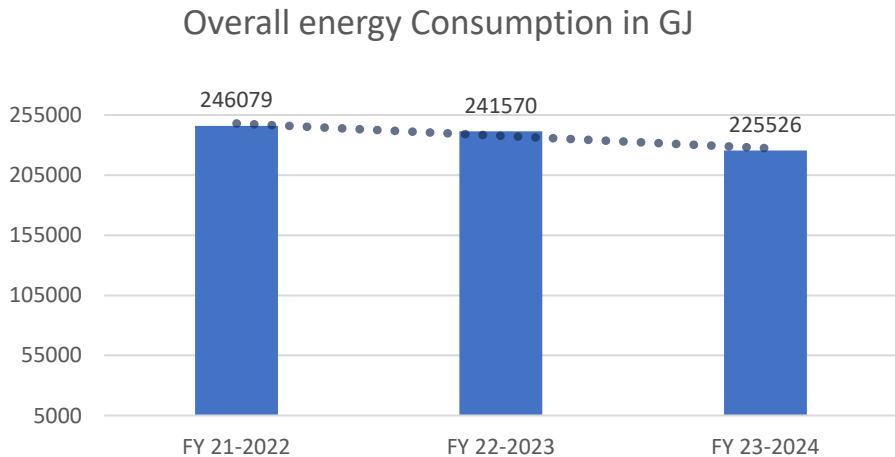
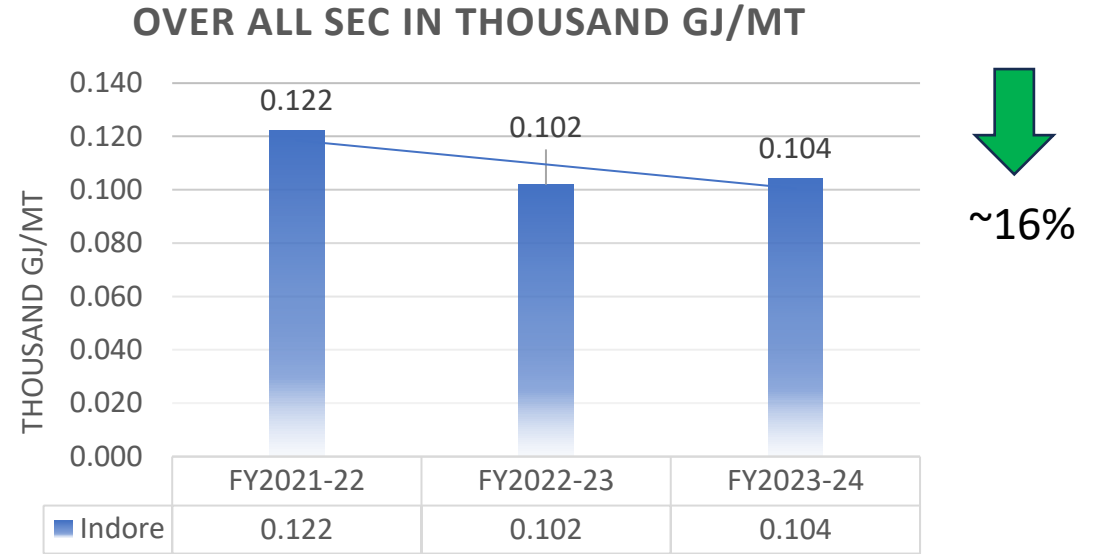
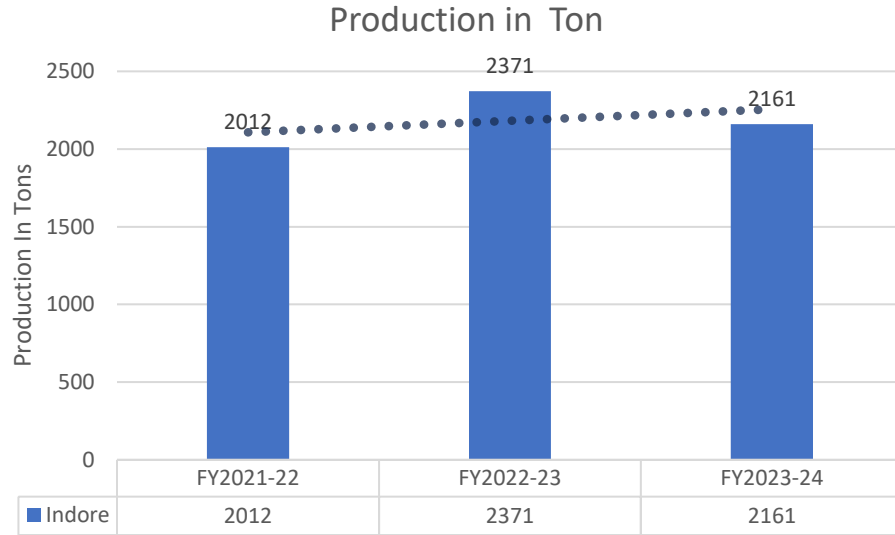


Annual Electrical Energy Consumption million kWh



| Fiscal Year | Annual Electrical Energy Consumption (million kWh) |
|-------------|--|
| FY 21-2022 | 45.56 |
| FY 22-2023 | 42.97 |
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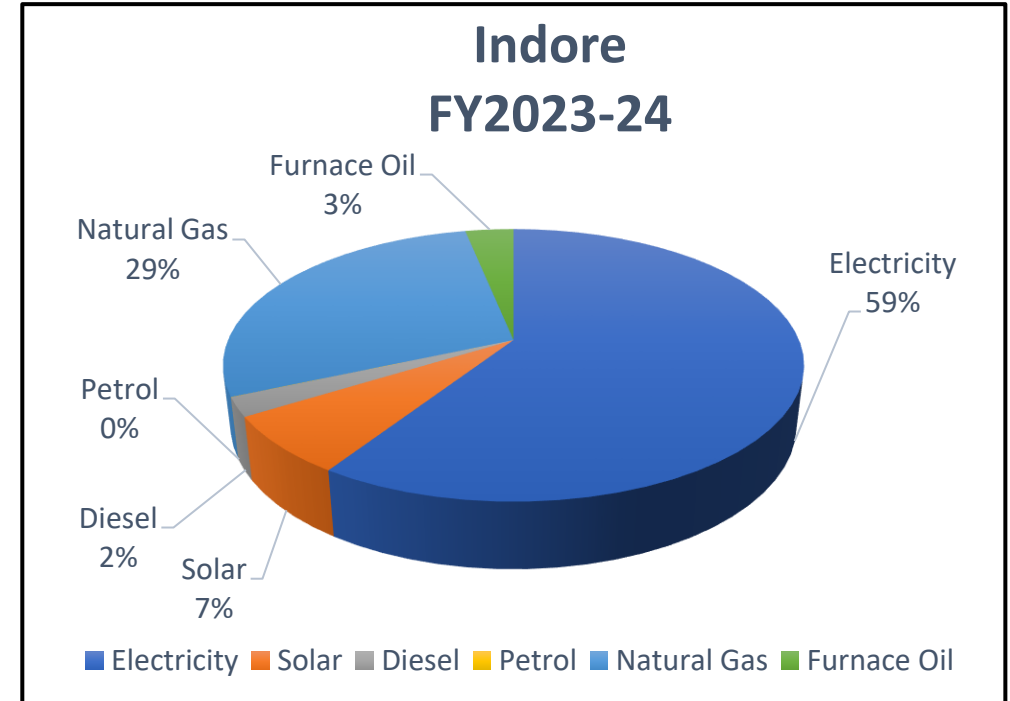
Production & Energy Consumption in last 3 years



- ↑ Production increased in subsequent financial years compared to FY 2021-22.
- ↓ SEC reduced by ~16% in FY 2022-23 & 2023-24 compared to FY 2021-22 by implementing the Energy audit
- ↓ Overall Energy Consumption reduced by 6% from FY 22-2023 to FY 23-2024

Energy Distribution

| Sr NO | Energy source | UoM | Indore | | |
|-------|-------------------|-----|-----------|-----------|-----------|
| | | | FY2021-22 | FY2022-23 | FY2023-24 |
| 1 | Electricity | GJ | 164004 | 149791 | 133561 |
| 2 | Solar | GJ | 0 | 4912 | 15650 |
| 3 | Wind Energy | GJ | 0 | 0 | 0 |
| 4 | Diesel | GJ | 5012 | 10384 | 5097 |
| 5 | Petrol | GJ | 0 | 21 | 35 |
| 6 | Lpg | GJ | 0 | 0 | 0 |
| 7 | NaturalGas | GJ | 77065 | 71560 | 63962 |
| 8 | Biomass | GJ | 0 | 0 | 0 |
| 9 | Furnace Oil | GJ | 0 | 4902 | 7221 |
| 10 | LSHS | GJ | 0 | 0 | 0 |
| 11 | BioDiesel | GJ | 0 | 0 | 0 |
| 12 | Hydro Electricity | GJ | 0 | 0 | 0 |



- Electricity consumption reduced in subsequent years
- Renewable energy use increased in subsequent years
- *66% Electricity energy Consumption in FY24

** Includes solar and state electricity board*

Information on Internal benchmark (Utility)



Centrifugal Chillers

| | | | | | | | | | |
|------------------------------|------|------|------|------|------|------|------|------|------|
| Chiller Capacity (TR) | 1000 | 800 | 800 | 600 | 600 | 600 | 400 | 400 | 400 |
| Set Temp (°C) | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Design (KW/TR) | 0.55 | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 |
| Operating SEC (KW/TR) | 0.57 | 0.68 | 0.69 | 0.68 | 0.68 | 0.69 | 0.67 | 0.68 | 0.66 |
| TARGET SEC (KW/TR) | 0.56 | 0.67 | 0.67 | 0.67 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 |

- Monthly assessments of utility equipments by Engineering Team and Audits by Energy Cell, the target values are being set thereby achieving the targets with continuous monitoring and eliminating losses.
- Efficiency benchmarking :- ±5% of design Efficiency

Air Compressors

@RLNG, NCV 9500 Kcal/SCM
** With Economizer

Boilers

| | | | | | | | | |
|----------------------------|------|------|------|------|------------------------------|-------|-------|-------|
| Capacity (CFM) | 250 | 800 | 799 | 800 | Capacity Ton/Hr. | 5** | 3.5 | 2 |
| Design (IKW/CFM) | 0.20 | 0.20 | 0.18 | 0.20 | Design * @FW T:100 °C | 14.55 | 13.80 | 13.80 |
| Operating (KW/CFM) | 0.21 | 0.22 | 0.19 | 0.21 | Operating Ev Ratio | 13.5 | 12.80 | 12.5 |
| TARGET SEC (KW/CFM) | 0.21 | 0.21 | 0.18 | 0.21 | TARGET SEC (KW/CFM) | 14.0 | 13 | 13 |

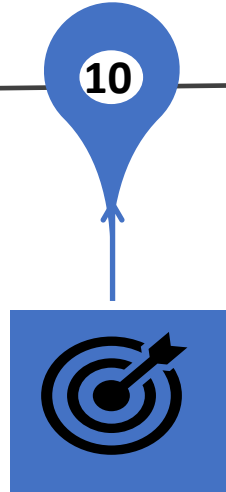
* Equipment is identified and is near to retirement.

Energy Saving Projects implemented in last 3 years

FY2021-22



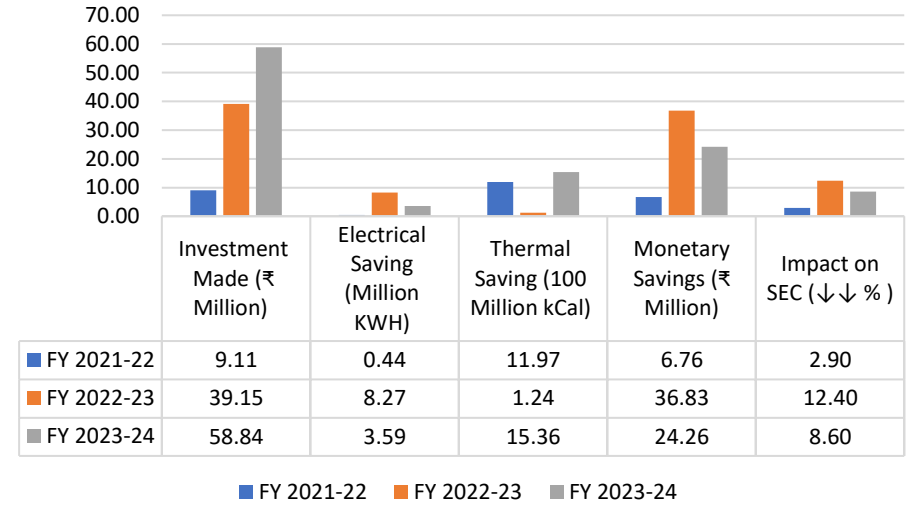
FY2022-23



FY2023-24



Energy Conservation Projects last 3 years

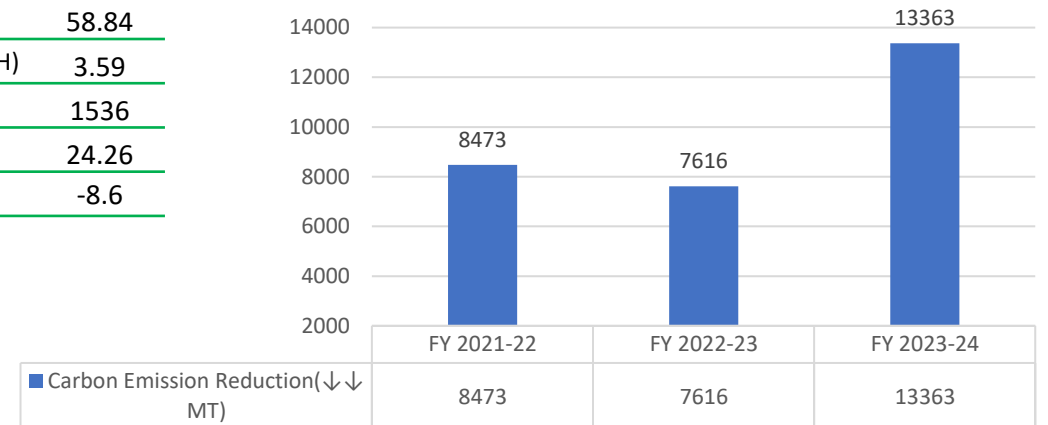


| | |
|---------------------------------|-------|
| Investment Made (₹ Million) | 9.11 |
| Electrical Saving (Million KWH) | 0.44 |
| Thermal Saving (Million kCal) | 11.97 |
| Monetary Savings (₹ Million) | 6.76 |
| Impact on SEC (%) | -2.90 |

| | |
|---------------------------------|-------|
| Investment Made (₹ Million) | 39.15 |
| Electrical Saving (Million KWH) | 8.26 |
| Thermal Saving (Million kCal) | 123.5 |
| Monetary Savings (₹ Million) | 36.83 |
| Impact on SEC (%) | -12.4 |

| | |
|---------------------------------|-------|
| Investment Made (₹ Million) | 58.84 |
| Electrical Saving (Million KWH) | 3.59 |
| Thermal Saving (Million kCal) | 1536 |
| Monetary Savings (₹ Million) | 24.26 |
| Impact on SEC (%) | -8.6 |

Carbon Emission Reduction(↓ ↓ MT)



Major Energy Saving projects implemented in last 3 years



| SN | Major Project Installed in Last three Years | Savings of- | Investment (₹ Mn) | Savings (₹ Mn) | Payback (Months) |
|----|--|-------------|-------------------|----------------|------------------|
| 1 | Installation of Roof Top Solar Power Plant | Electricity | 0 | 4.1 | 0 |
| 2 | Installation of Encon make energy efficient FRP light weight cooling tower fan | Electricity | 0.85 | 0.96 | 11 |
| 3 | Installation of Automatic Condenser Cleaning System | Electricity | 1.8 | 1.12 | 20 |
| 4 | Replacement of 5 Nos. of Old Higher Sized Pumps with New Suitable Size Energy Efficient Pumps (Phase-I) | Electricity | 2.1 | 2.93 | 8 |
| 5 | Replacement of 5 Nos. of Old Higher Sized Pumps with New Suitable Size Energy Efficient Pumps (Phase-II) | Electricity | 2.0 | 1.12 | 21 |
| 6 | Installation of Installation of Condensate Recovery System at Unit-III | Steam | 0.8 | 3.0 | 3.4 |
| 7 | Installation of Installation of Condensate Recovery System at Unit-I | Steam | 0.54 | 1.04 | 6.2 |
| 8 | Installation of Zero Air Loss Electronically Level Controlled Auto Drain Valve | Comp. Air | 0.2 | 0.087 | 28 |
| 9 | Installation of 1000 TR Magnetic Chiller at Plot-10 Utility | Electricity | 3.7 | 0.42 | \$ |
| 10 | Installation of Aristi Venturi Nozzle Steam Traps | Steam | 0.42 | 1.19 | 4.2 |
| 11 | Installation of Louvers type Mist Cooling Tower at Plot-09 | Electricity | 35 | 6.12 | 68 |
| 12 | BacComber System Installation | Chemical | 3.56 | 5.65 | 7.5 |
| 13 | Zero Liquid Discharge System at Indore Site | Water | 78.5 | 4.5 | # |
| 14 | Rainwater Recovery System | Water | 0.98 | 0.065 | # |

Sustainability projects, Hence payback not applicable.

\$ Its an innovative and technology upgradation project, hence payback not applicable.

Rainwater Recovery System

Purpose : To utilize the rainwater from the roof top of Plot-09 Utility and Boiler House building in Cooling Tower during Rainy Season

| SN | Description of Project | Total Area (m ²) | Estimated Water Harvesting Potential per Year (m ³) | Investment (Lakh) |
|----|---|-------------------------------|---|-------------------|
| 1. | Rainwater recovery from roof top area of Utility Building and Boiler House of Plot-09 | 1752 | 1,240 | 9.81 |

Detail of the Project :

- The rainwater is recovered from the roof top of Utility Building and Boiler House of Plot-09.
- Flush valve is installed to drain the rainwater for first time to clear out the mud.
- GRD filters are used to filter the rainwater collected from roof tops.
- After filtration rainwater is collected in Cooling Tower sump.

Way Forward :

- ❖ Remaining buildings of **total area 36,498 m²** are having rainwater recovery **potential of 25,841 m³ per annum.** (Based on average rainfall of Indore)
- ❖ **Next planning is to install the rainwater harvesting system at Unit-II.**



Filtration Cassette



GRD filter inside filtration Cassette

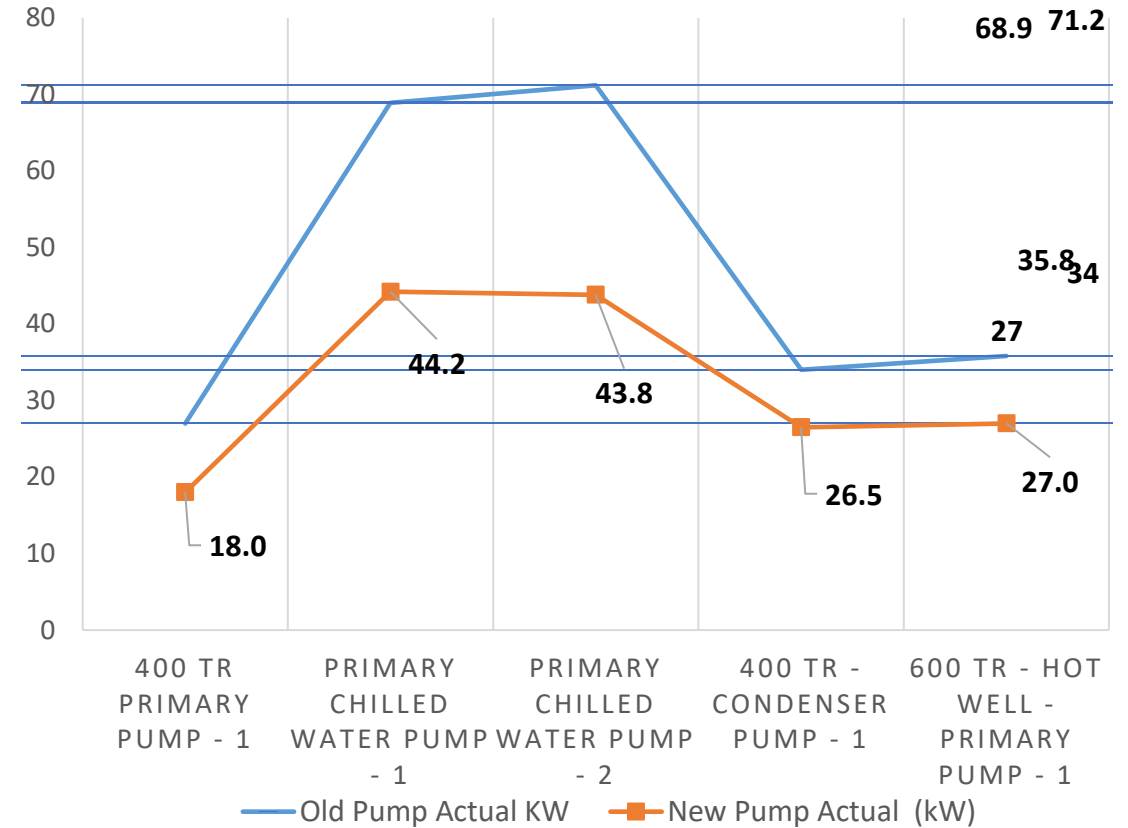
Replacement of 5 Nos. of Old Higher Sized Pumps with New Suitable Size Energy Efficient Pumps Phase-I



Miwave Idea No.: 22412 (Submitted for IL4)

| SN | Pump Name / Application / Location | Old Pump Actual KW | New Pump Actual (kW) | Annual Estimated Power Savings (kWH/Annum) | Annual Potential Monetary Savings (INR) |
|----|--------------------------------------|--------------------|----------------------|--|---|
| 1 | 400 TR PRIMARY PUMP - 1 | 27 | 18.0 | 75,600 | ₹ 3,40,200.00 |
| 2 | PRIMARY CHILLED WATER PUMP - 1 | 68.9 | 44.2 | 2,07,480 | ₹ 9,33,660.00 |
| 3 | PRIMARY CHILLED WATER PUMP - 2 | 71.2 | 43.8 | 2,30,160 | ₹ 10,35,720.00 |
| 4 | 400 TR - CONDENSER PUMP - 1 | 34 | 26.5 | 63,000 | ₹ 2,83,500.00 |
| 5 | 600 TR - Hot Well - PRIMARY PUMP - 1 | 35.8 | 27.0 | 73,920 | ₹ 3,32,640.00 |

POWER CONSUMPTION OF OLD PUMP VS NEW PUMP



**Total Power saving
6.5 LKWH per year**

**Total Saving in INR
29.25 Lac per year**

Investment = 21 Lac, ROI = 8 Months, Project Completion Date : 30.11.2022

Replacement of 6 Nos. of Old Higher Sized Pumps with New Suitable Size Energy Efficient Pumps- Phase-II

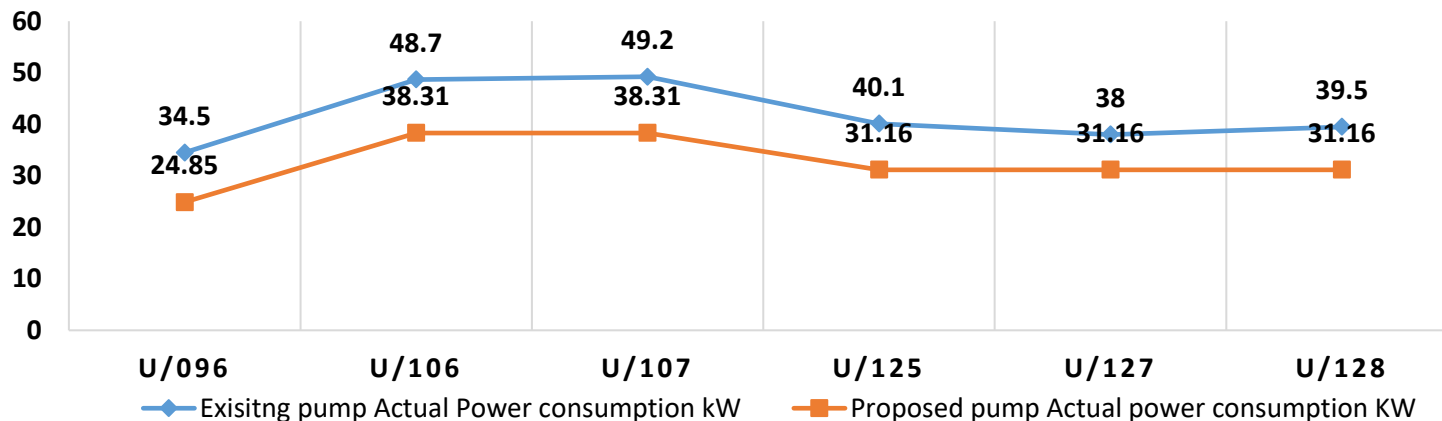


Project Completion Date : 30.06.2023

Miwave Idea No. : CS10003738

| SN | Pump Name / Application / Location | Previous pump Average power consumption in KWH/day | New pump Average power consumption in KWH/day | % Reduction in power consumption | Saving in KWH/day | Saving in Rs per day |
|--------------|--|--|---|----------------------------------|-------------------|----------------------|
| 1 | 600 TR HOT WELL PRIMARY PUMP-1 (U/096) | 1250 | 1060 | 15% | 190 | 855 |
| 2 | AEROSOL SECONDARY PUMP (U/106) | 830 | 690 | 17% | 140 | 630 |
| 3 | FFS - SECONDARY PUMP - 1 (U/107) | 830 | 710 | 14% | 120 | 540 |
| 4 | COOLING WATER - CONDENSER PUMP - 1 (U/125) | 546 | 460 | 16% | 86 | 387 |
| 5 | COOLING WATER - CONDENSER PUMP - 3 (U/127) | 480 | 390 | 19% | 90 | 405 |
| 6 | COOLING WATER - CONDENSER PUMP - 4 (U/128) | 346 | 290 | 16% | 56 | 252 |
| Total | | | | | 682 | 3069 |

POWER CONSUMPTION OF PREVIOUS VS NEW PUMP



- ❖ Overall Reduction in power consumption of pump by 16 %.
- ❖ IL4 approved.
- ❖ Project Completion Date : 30.06.2023

Total Estimated Power saving 2.5 LKWH per year

Total Estimated Saving in INR 11.2 Lac per year

Installation of Intermittent Tank along with Deflasher at Unit-III

| Previous Scenario | Current Scenario (After Installation of system) |
|--|---|
| Steam condensate of MCDP-I, MCDP-II, PSG-I, PSG-II, WFI storage and distribution system and PW storage & distribution system was being used as warm water makeup and fresh ambient temperature AKVN water is used as a feed in boiler. | Flash steam from deflasher is used to heat the reject water from RO / EDI unit and that heated water along with high temperature steam condensate from deflasher unit are used as feed in boiler to decrease the use of AKVN fresh water. |

Deflasher Specification:

| | |
|----------|--------------|
| Make | Spirax Sarco |
| Capacity | 2200 Kg/Hr. |

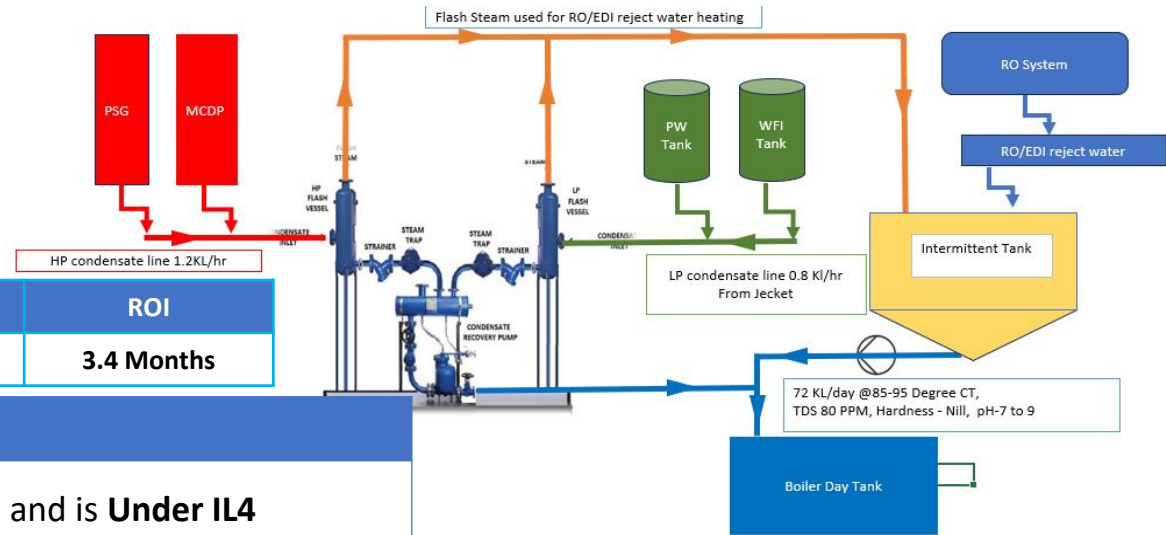
Current Status

**INSTALLED and is
IN-USE from Nov. 2023**

| Investment | Savings in Lakh per year | ROI |
|-----------------|--------------------------|-------------------|
| 8.47 lac | 30 lac | 3.4 Months |

Detail of the Project :

- The saving is logged in Miwave and is **Under IL4 Approval (MI wave No. : CS10003698)**.
- Pressure Powered Pump Packaging Unit is installed with flash steam recovery vessel. The PPPU is a positive displacement pump unit operated by compressed air to pump hot condensate to the boiler.



Benefit for Condensate Recovery System:

1. Decrease in consumption of AKVN water for boiler feed.
2. Reduction in fuel consumption of boiler as the Energy required to heat the cold water is decreased by feeding the Hot condensate to the boiler.
3. Decrease in the chemical dosing cost as Condensate is a distilled water and can be directly used in boiler.



Installation of Condensate Recovery System at Unit-I

Purpose : To recover the high temperature condensate of Unit-I and utilize it as feed water for boiler.

| SN | Description of Project | Investment | Savings in Lakh per year | ROI |
|----|---|------------|--------------------------|------------|
| 1. | Installation of Pressure Powered Pump Packaged Unit for recovery of High Temperature Condensate from Unit-I MCDP, PSG and transfer the high temperature condensate to boiler. | 5.4 lac | 10.37 lac | 6.2 Months |

Detail of the Project :

- Daily Condensate water saving of 9.4 KL @85 to 90°C.
- Pressure Powered Pump Packaged Unit is installed with flash steam recovery vessel. The PPPU is a positive displacement pump unit operated by compressed air to pump hot condensate to the boiler.

Benefits:

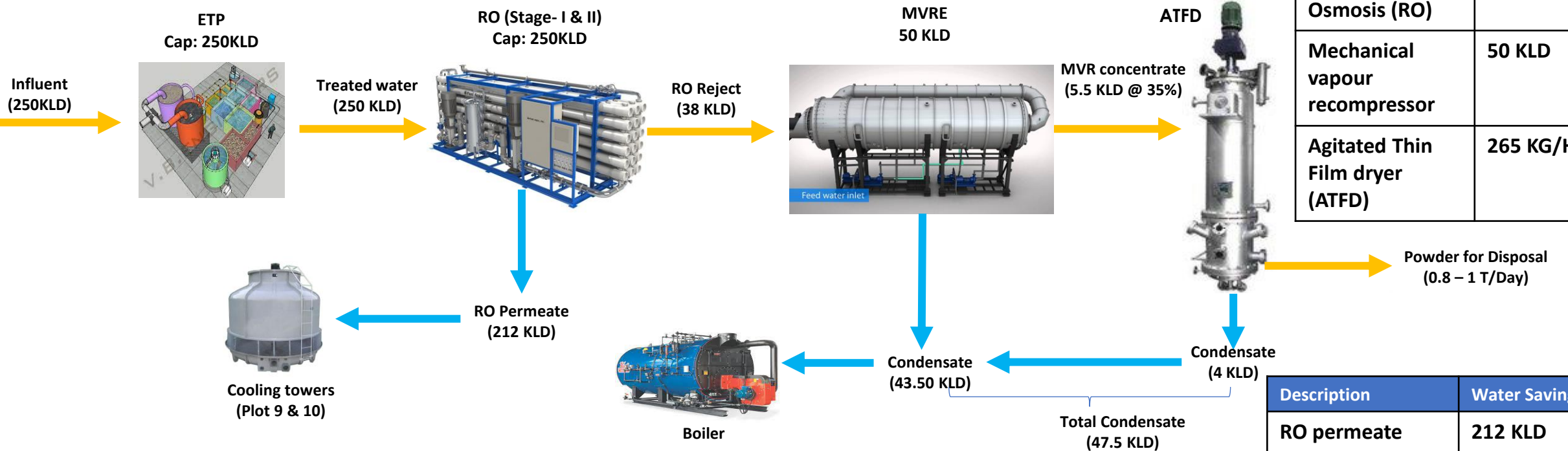
- ❖ Decrease in consumption of Boiler feed water.
- ❖ Reduction in Fuel consumption of boiler as the Energy required to heat the cold water is decreased by feeding the Hot condensate to the boiler.
- ❖ Decrease in the chemical dosing cost as Condensate is a distilled water and can be directly used in boiler.



Zero Liquid Discharge Operationalized at Indore

| SN | Budgetary CER No | PROJECT DETAILS | COST OF PROJECT RS. | Commissioned Date |
|----|------------------|-------------------------|---------------------|-------------------|
| 01 | IUTLB17C | ZLD (RO, MVRE and ATFD) | 7.85 Cr. | 15.12.2022 |

| ZLD units | Capacity |
|---------------------------------|------------|
| Reverse Osmosis (RO) | 250 KLD |
| Mechanical vapour recompressor | 50 KLD |
| Agitated Thin Film dryer (ATFD) | 265 KG/Hr. |



| Description | Water Savings |
|-----------------|------------------|
| RO permeate | 212 KLD |
| MVRE condensate | 43.50 KLD |
| ATFD condensate | 4 KLD |
| Total | 259.5 KLD |

MVRE Benefits (New Technology in Cipla) :-

- Less Steam Consumption in MVRE (250Kg/Hr only for two hours) with compared to conventional MEE (780 kg/hr)
- No Cooling water required .
- Operates at low temperature around 60 °C.
- Low Operational Cost

Zero Air Loss Electronically Level Controlled Auto Drain Valve

Timer Based Solenoid Valve



- Earlier we were using timer base solenoid valve for removing the moisture from air receiver tank that was opening in every 5 minutes interval.
- Along with the moisture compressed air was also being released to the atmosphere resulting in loss.

SAVING CALCULATION:

Specific Energy consumption of compressor = 0.2 KW/cfm (Design value)

Air through a 1/4 "hose = 50 cfm (arrived from moss chart)

Annual saving potential = 1980 KWh per annum (assuming 15 secs operation every 5 mins & 50% wastage)

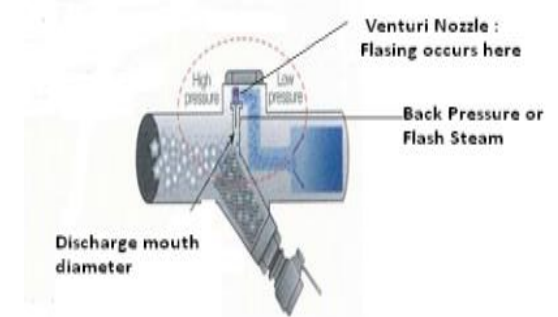
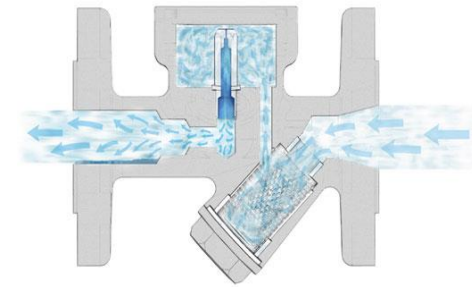
Zero Air Loss Drain Valve



- Now we are using Zero Air loss electronically level controlled auto drain valve which gets opened based on water level available in valve chambers without any loss of compressed air.
- Replaced the existing time-based sensor with zero air loss auto drain valve in Air receiver. This replacement will result in the saving of 1.5 Lac/year considering the half inch size of the drain line. **Total 10 valves were replaced for 10 Air Receivers installed at Cipla Indore site.**

Installation of Aristi Venturi Nozzle Steam Traps - 05 Nos.

- The operation of the trap is based on the difference in density between water and steam.
- At low pressures, the density of condensate is about 1,000 times greater than that of steam. When both media are present, the much denser condensate will be preferentially discharged and stop the steam from passing through the orifice.
- The size of the orifice of each trap is determined by the specific pressure and condensate flow through that trap.
- Each trap is engineered to ensure a small plug of condensate is present at the orifice at all times. This means that no live steam can leak through the trap and it protects the orifice from any erosion by live steam.



| SN | Location | Estimated Benefit | | | | Operation Hour/Year |
|--------------|--|------------------------|---------------------------|----------------------------------|-----------------------------|---------------------|
| | | Saving of Steam (kg/h) | Saving of Steam (kg/Year) | Saving Amount of Steam (Rs/Year) | Saving of CO2 Emission (kg) | |
| 1 | Main Steam Header In boiler House | 2.54 | 20427 | 102137 | 2655 | 8040 (335*24) |
| 2 | Unit-I Main Steam line | 4.16 | 33462 | 167314 | 4350 | 8040 (335*24) |
| 3 | Unit-III Main steam line | 3.17 | 25517 | 127588 | 3317 | 8040 (335*24) |
| 4 | Unit-IV main steam line after PRV | 9.67 | 69532 | 348162 | 9052 | 7200 (300*24) |
| 5 | Unit-IV PPPPU (Pressure Powered Pumping Packaged Unit) | 12.47 | 89810 | 449050 | 11675 | 7200 (300*24) |
| Total | | | 238851 | 1194254 | 31051 | |

Steam saving of 238 ton per year

12 Lac. Rs of Opex saving per year

CO2 emission reduction by 31 Ton

BacComber System Installation

Objective: To Eliminate chemical dosing and to align cooling tower operations as per sustainability Model.

Brief Overview of System: System consist of three components. a) Inductor Coil, b) Emitter, c) Panel with PCB card.

- Inductor and Emitter are installed in Cooling tower sump which converts permanent hardness into temporary hardness including microbiological treatment.
- Based on Cooling tower capacity and surface area number of pairs are decided.

Benefits:

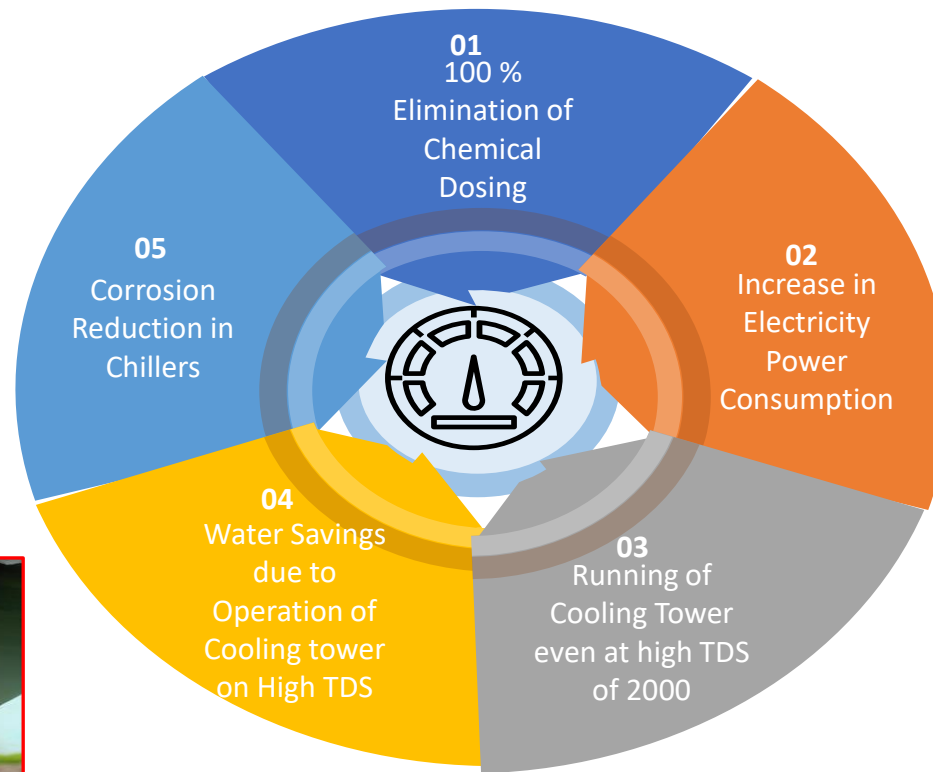
- Eliminate the chemical dosing in cooling tower.
- Water saving by Reduction in blow down water and possibility to use water for further usage.

| SN | Particular | Working Principle | Remarks |
|----|-------------------|--|---------|
| 1 | Scale Control | <ul style="list-style-type: none"> ▪ The ULF waves promotes formation of <u>Aragonite carbonates</u> instead of <u>calcite carbonates</u>. ▪ Aragonite carbonates does not stick to the condenser tubes even in high TDS water unlike calcite carbonates which are vey hard and adheres strongly to the tube walls. ▪ This method convert hard scaling into soft scaling which stays in suspended form and does not get deposited onto surface. It gets removed during blowdown of cooling tower. | |
| 2 | Corrosion Control | <ul style="list-style-type: none"> ▪ The ULF waves promotes formation of the Iron oxide Fe₃O₄ which is black in colour and is called <u>Magnetite</u>. ▪ The Magnetite protects the steel surface like Aluminum oxide Al₂O₃ protecting Aluminum | |
| 3 | Algae Control | <ul style="list-style-type: none"> ▪ The ULF waves make the bacteria incapable of multiplying. Since the life is anyway short, they die naturally. ▪ If they cannot multiply, then there is no further growth of these in the recirculating water. Hence the water in basins as large as swimming pool is so clear that you can see the bottom. ▪ This is made possible by using discs of ULF Emitters which are immersed in the cooling tower basin. They emit the ULF waves and keep the water clear of bacteria and algae, without a drop of chemical. | |

5 Major Changes Post BacComber System Implementation

Current Status of Project

- BacComber system installed on 30th August 2022.
- System performance is Good
- No chemical Dosing
- Water Color changed from Dark Green to transparent.
- Idea is locked in Miwave and IL4 level approved



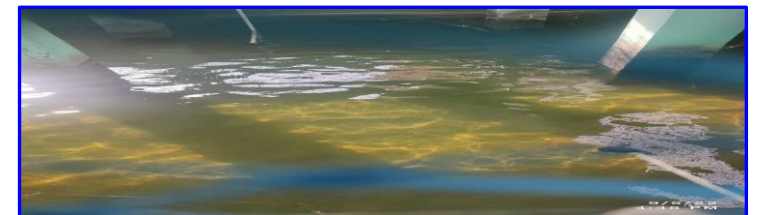
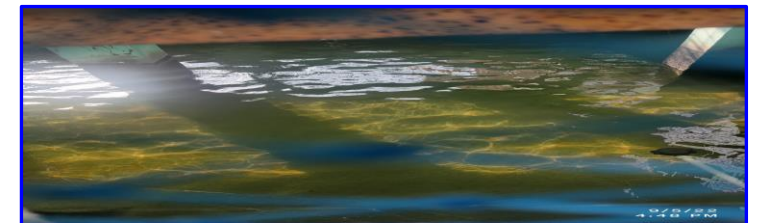
Bac Comber System is A Step Towards Sustainability
Water treatment for Cooling Tower

Savings with ULF treatment

Total estimated savings/year (Chemical cost + savings due to control of hard scale) **Rs. ₹ 56.53 Lac**

Total investment (Basic price) excluding GST **Rs. ₹ 35.75 Lac**

Payback **Years 0.63**



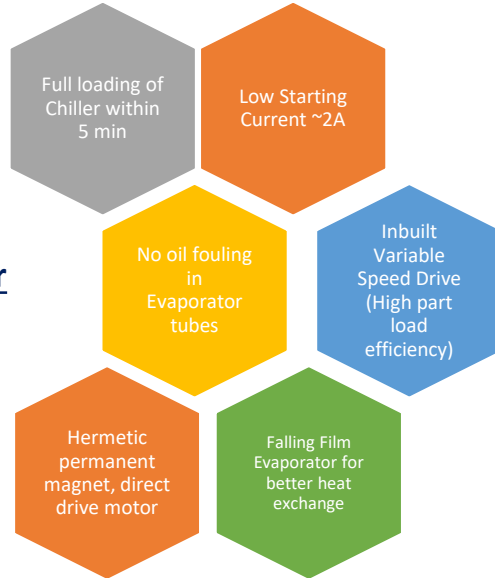
Post Bac Comber system Installation Pictures

Pre-Installation Pictures of Cooling Tower Sump

Innovative Projects Implemented

1. Installation of 1000 TR Magnetic Chiller at Plot-10 Utility

Features of Magnetic Chiller



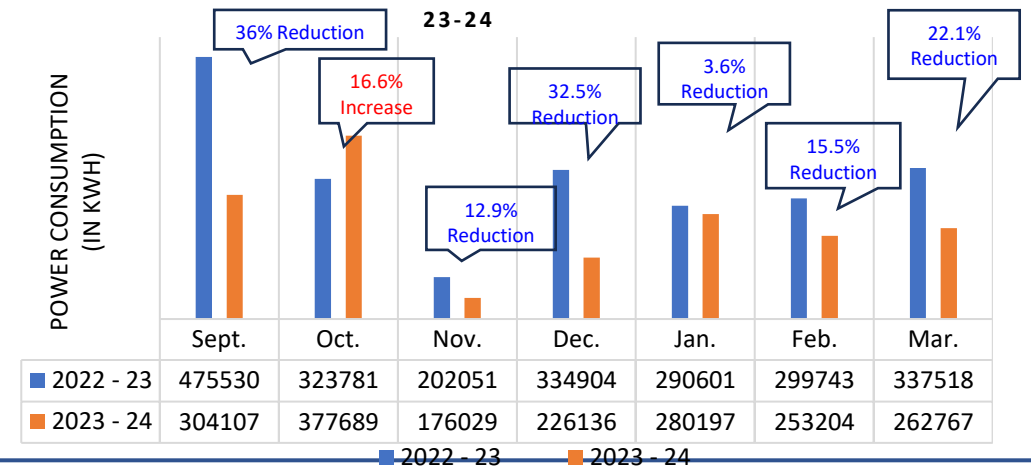
Specification of Magnetic Chiller

| Particular | Remarks |
|--------------------|-------------------------------------|
| Chiller Capacity | 1000 TR |
| Chiller Model | YMC ² |
| Power in KW | 558 |
| iKW/TR | 0.55 |
| Refrigerant | R-134A |
| Condenser approach | 0.5 Degree Celsius |
| Type of Compressor | Single stage Centrifugal compressor |

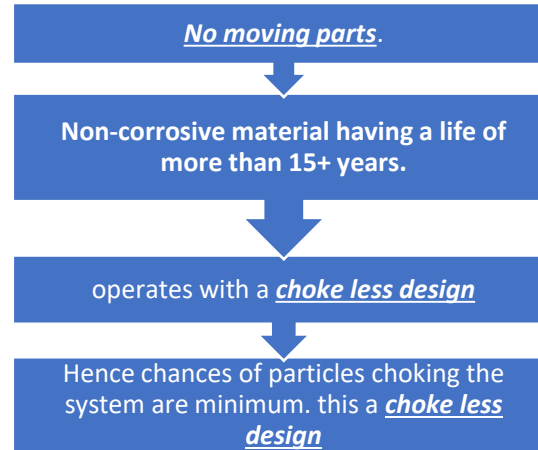
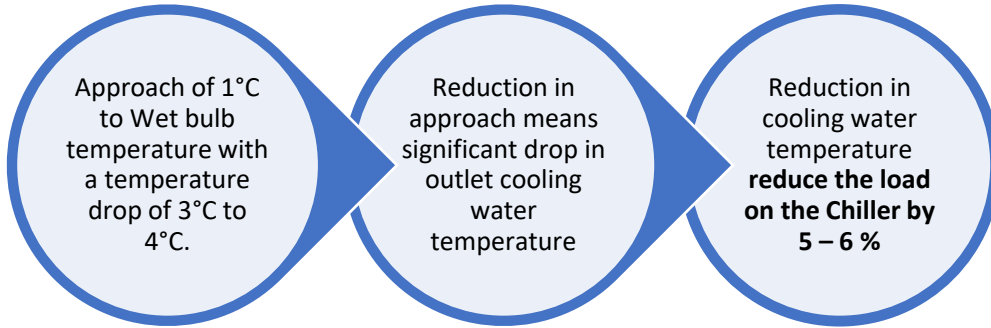


- ❖ New Magnetic Chiller is in operation from 08.09.2023.
- ❖ 7 Months data indicates the **reduction of around 17 % (3.84 LKWH) in Power consumption of Chiller.**
- ❖ In Oct. 2024, new Magnetic Chiller was under Operational Qualification, so there is increase in consumption.
- ❖ Design iKW/TR of Magnetic chiller is **0.55 as compared to 0.65** of earlier Non-magnetic Chiller.

CHILLER POWER CONSUMPTION IN KWH FOR FY 22-23 VS FY 23-24



2. Installation of Louvers type Mist Cooling Tower at Plot-09



| S. No. | Parameters | Details |
|--------|----------------------------|--|
| 1 | Circulation water quantity | 1200 m ³ /Hr. |
| 2 | Actual Working Flow | 1080 m ³ /Hr (540 m ³ /Hr x 2 Nos) |
| 3 | Recirculation Pump | Capacity: 1080 m ³ /Hr. Head: 35 M |
| 4 | Area | 30 X 14 m |
| 5 | Approach to design WBT | 1°C |
| 6 | Design WBT | 26°C |
| 7 | CWT from MCS | 27°C |
| 8 | Delta T | 5°C |
| 9 | Fan details | Fan not required |
| 10 | Maintenance | Nil |
| 11 | Mist creation assembly | 4 sets |
| 12 | Mist Creator Nozzles | 48 Nos |
| 13 | Mist Nozzle Diameter | 26 mm |

| | |
|---|----|
| No. of Mist Creation Assembly | 4 |
| No. of Nozzles in each Mist Creation Assembly | 12 |
| Total No. of Nozzles | 48 |



- Investment
3.5 Cr
- Total estimated Power saving of
13.6 LKWH per year
- Total Estimated Saving in INR
61.23 Lac per year



3. Installation of Automatic Condenser Cleaning System in Chillers (Plot-09)

Purpose :

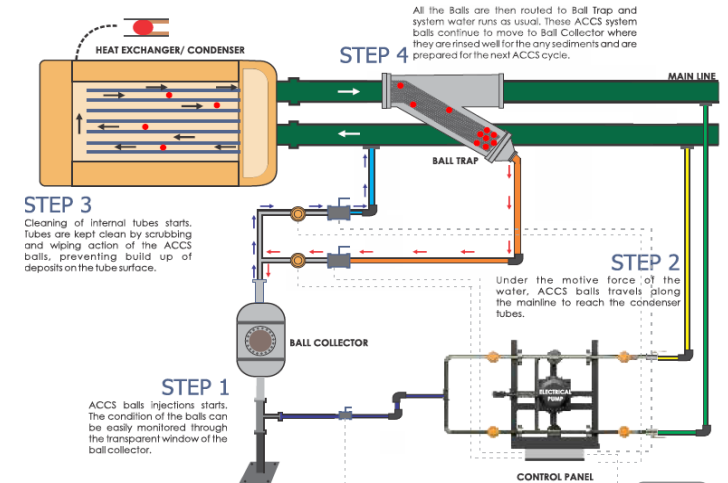
For maintaining the approach temperature of Chiller Condenser by online cleaning of the condenser tubes at Utility section (Plot-09).

Details :

- Water based cooling systems suffers from scaling which reduces heat transfer and lead to increased energy consumption.
- The ACCS cleans condenser by propelling a barrage of soft balls through the tubes under controlled water pressure.
- The friction of the passing balls, which are slightly larger in diameter than the tubes, removes accumulating residue, before it can adhere to the tube walls.

| Sponge Ball | Investment | Savings in Lakh per year | ROI |
|--|---------------|--------------------------|------------------|
| <ul style="list-style-type: none"> • MOC - Natural Rubber mixture containing inert filler material • Replacement Frequency - Quarterly | 18 lac | 11.2 lac | 1.6 Years |

| Comparison | Manual Cleaning System | Auto Tube Cleaning System |
|----------------------------|---|---|
| Procedure | Chemicals are used to remove the scaling which increases downtime and increased maintenance cost. | The system cleans condenser by propelling a barrage of soft balls through the tubes under controlled water pressure |
| System Performance | Performance decreases between treatments | Continuous operating at optimum performance |
| Shutdown | Requires shutdown for cleaning | Online cleaning system, so no shutdown |
| Disposal Hassle | Cleaning with chemicals | No chemical. No residues |
| Management Overhead | High due to performance monitoring & manual cleaning | Automatic system. Effortless operation. |

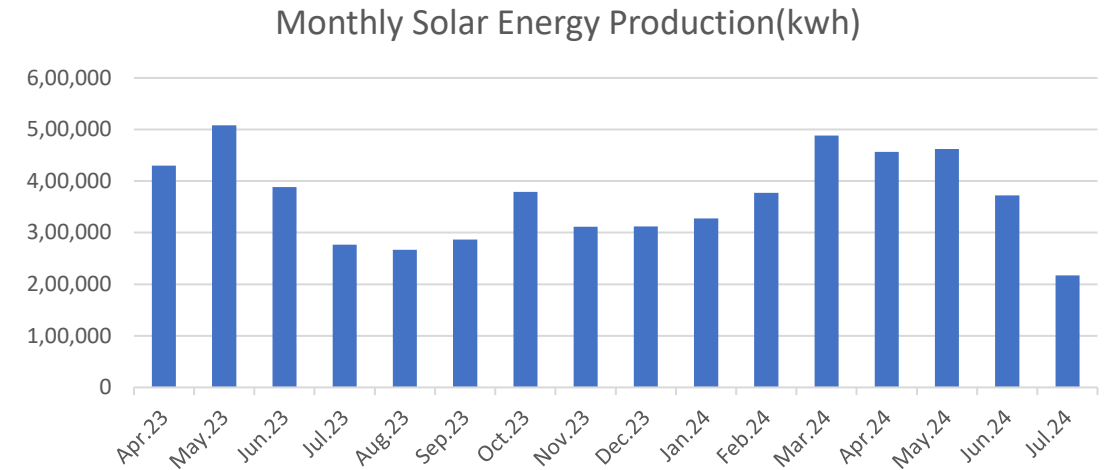


Benefits:

- ❖ Reduce Energy use by Optimizing Chiller Performance.
- ❖ Avoidance of charges for manual cleaning of condenser tubes.
- ❖ Reduction in system downtime for cleaning activity.
- ❖ Protect and Extend the life of the system by avoiding chemical usage.

Utilisation of Renewable Energy sources (Onsite)

| Sr No | Solar pant description | Detail |
|-------|---|---|
| 1 | Renewable Energy sources | Rooftop Solar |
| 2 | Year of Installation | 2022-2023 |
| 3 | Installed capacity (in MW) | 3.11 |
| 4 | Generation (in Million kWh) | 4.35 |
| 5 | Consumption from On-site RE (in Million kWh) | 4.35 |
| 6 | Rooftop panel rated efficiency | 20.90% |
| 7 | % of area covered by solar panels in the roof top | 62 |
| 8 | Share in the overall consumption (%) | 10.7 |
| 9 | Tilt of Module | 5° |
| 10 | Unit generated/kWp Installation (kWh/kWp) | 1390 |
| 11 | Performance Ratio (PR) % | 83.61% |
| 12 | Capacity Utilisation Factor (CUF) % | 15.88% |
| 13 | Latitude & Longitude of the plant location | (Latitude (°N)- 22.63054200630312, Longitude (°E)- 75.62240773833929) |
| 14 | Module type1 and power (Wp), efficiency (STC), no. of. modules, active PV area in sq. m, first year degradation of modules (%) and annual degradation after 1st year (%) | Make: TRINA SOLAR Model: TRINA-TSM-545DE19M(II) Pmax: 545Wp No. of Module: 5735no's Active PV Area: 14984.775m2 Module Efficiency η m (%): 20.9%. Degradation: a. 1st year: 2%. b. Annual Deg. After 1st Year: 0.55%. |



| Year | Source | Installed Capacity (MW) | Capacity addition (MW) after FY2021 | Total Generation (Million kWh) | Share % w.r.t to overall energy consumption |
|------------|--------|-------------------------|-------------------------------------|--------------------------------|---|
| FY 2022-23 | Solar | 3.12 | 3.12 | 0.74775 | 8.72* |
| FY 2023-24 | Solar | 3.12 | 0 | 4.34702551 | 10.7 |

* Share % is based on solar energy consumption vs total energy consumption of that duration after solar plant installation.

Roof Top Solar Power Plant at Cipla Indore

Solar Power Plant of total capacity **3.1 MWp** installed at roof top of Unit-I, Unit-II, Unit-III, Unit-IV, Plot-09 PCC Room, Plot-10 Utility & PCC room & Plot-09 Utility

| Location | Total AC capacity (KWp) | No. of Modules |
|----------------------------|-------------------------|----------------|
| Unit-I | 1195 | 2193 |
| Unit-II | 480 | 882 |
| Unit-III | 520 | 963 |
| Unit-IV | 656 | 1220 |
| Plot-09 PCC room | 68 | 126 |
| Plot-10 utility & PCC room | 90 | 163 |
| Plot-09 Utility | 102 | 188 |
| Total | 3111 | 5735 |



Green Energy Generation per day

13000 KWH

47.8 LKWH per year

Saving in Rs. 41.1 lac per year



01 Sustainability Report



2022-23

Ever year Publishing the sustainability Report

2025

Carbon Neutrality for energy based Scope 1 emissions and Scope 2 emissions

Water Neutrality

Zero Waste to Landfill

Goals 2025

Full compliance with safe discharge targets established by the Antimicrobial Resistance (AMR) Industry Alliance

Continue zero fatality in our manufacturing operations

02 Goals & Targets -2025

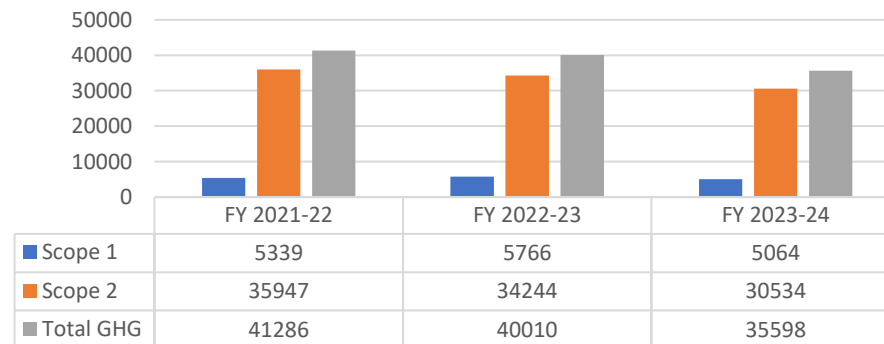


2020-24

Reduction in (tCO2e) Emission by 13.7% from FY22 to FY24

| FY | Total Scope 1 emissions (tCO2e) | Total Scope 2 Emissions (tCO2) | Total GHG Emissions (tCO2e) |
|------------|---------------------------------|--------------------------------|-----------------------------|
| FY 2021-22 | 5339 | 35947 | 41286 |
| FY 2022-23 | 5766 | 34244 | 40010 |
| FY 2023-24 | 5064 | 30534 | 35598 |

Emissions (tCO2e) in Ton



03 GHG Emissions



13.7%

Short term and long term GHG Emission Reduction Plan

Short term goal

Energy Efficiency Improvements:

Implement immediate energy efficiency measures in company facilities, such as upgrading to LED lighting, optimizing HVAC systems, and enhancing insulation to reduce energy consumption.

Renewable Energy Adoption:

Increase the use of renewable energy sources, such as solar power

Carbon Offsetting Initiatives:

Invest in carbon offset projects, including reforestation to compensate for unavoidable emissions in the short term.

Employee Engagement Programs:

Launch awareness campaigns and training programs to encourage employees to adopt energy-saving practices both at work and at home.

Supply Chain Collaboration:

Work closely with suppliers to identify and reduce GHG emissions throughout the supply chain.

Long term goal

Carbon Neutrality Goal:

Commit to achieving Carbon neutrality and water neutrality by 2030 through a combination of emission reductions, carbon capture technologies, and rainwater harvesting projects.

Long-Term Partnerships:

Establish long-term partnerships with environmental organizations and industry groups to drive systemic changes and promote industry-wide GHG reduction efforts.

Advanced Technology Integration:

Invest in and adopt advanced technologies, such as carbon capture and storage (CCS) and green hydrogen production, to minimize emissions from industrial processes.

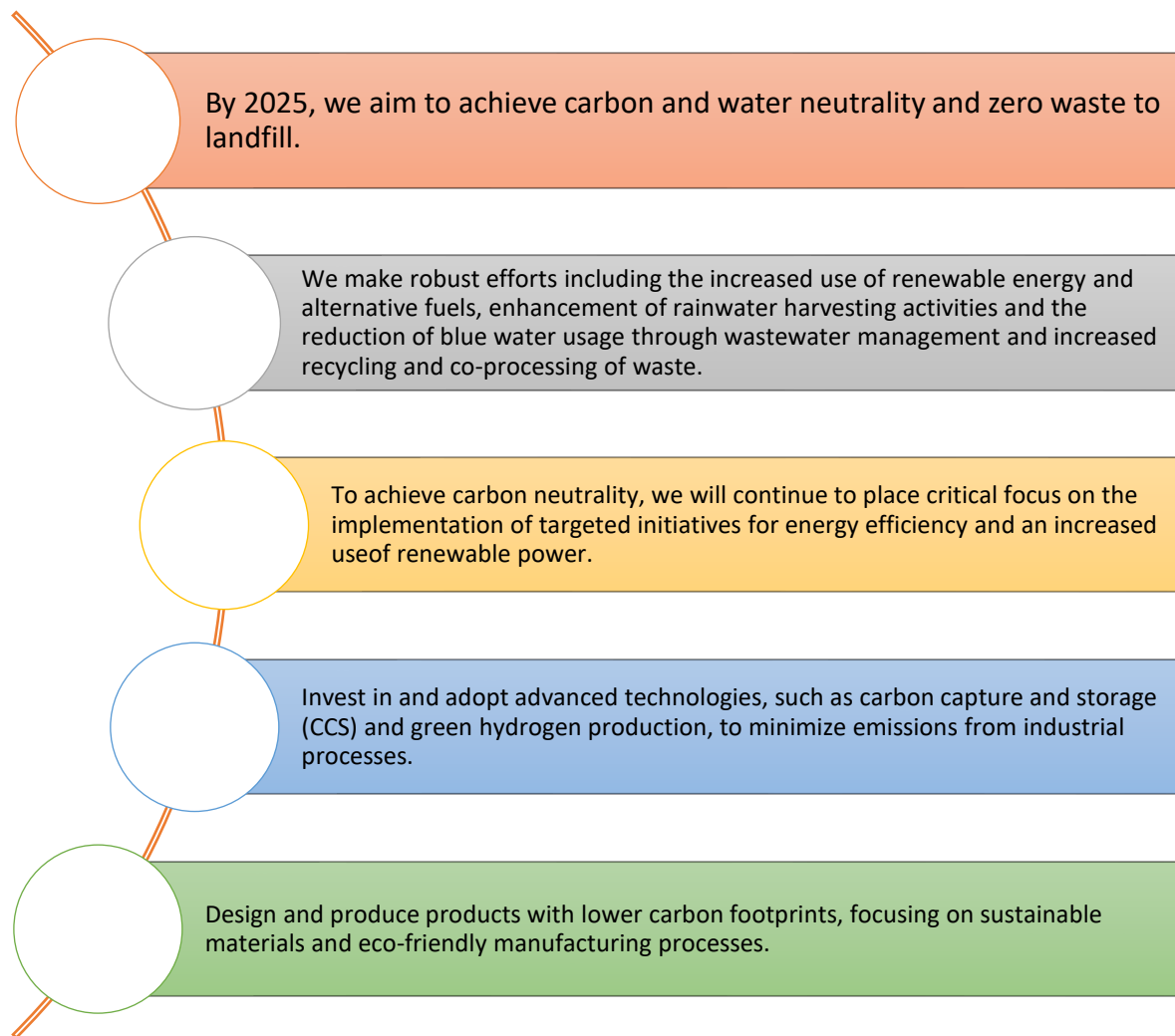
Sustainable Product Development:

Design and produce products with lower carbon footprints, focusing on sustainable materials and eco-friendly manufacturing processes.

Water Neutrality Goal:

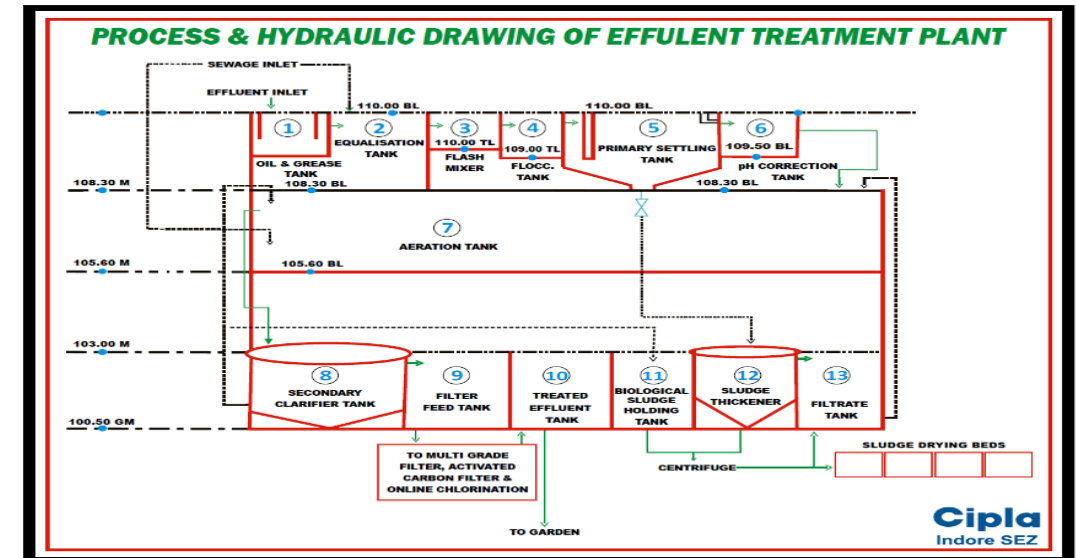
Commit to achieving water neutrality by 2030 through a combination of water conservation technologies and rainwater harvesting projects

Net Zero Commitment



Environment Management System

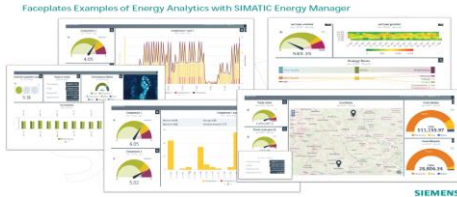
- Full fledge ETP & STP Capacity - 240 & 120 KL per Day
- Natural method known as **'PHYTORID TECHNOLOGY'** is used for Sewage treatment which is efficient, low capital and O&M cost. With this Eco-friendly technology reduction in water pollutant concentration achieved up to 75 to 80%
- 150 species of 25000 large and medium plants, 200000 shrubs and 15000 sq.mt. of lawn covering 40% of plot area.
- Electromagnetic Flow Meter provided for accurate measurements.
- Treatment cost of Effluent Treatment Plant is @ Rs. 34/KL .



EnMS (Energy Management System)

SCREEN-1
Plot-09 & 10 Utility screen

- Chiller,
- Air compressor,
- Air dryer
- KPI's monitoring



SCREEN-2
EDLMS (Electronic Data Log Management system)

- Monitoring of critical process parameter
- Monitoring and recording of critical alarm and parameter

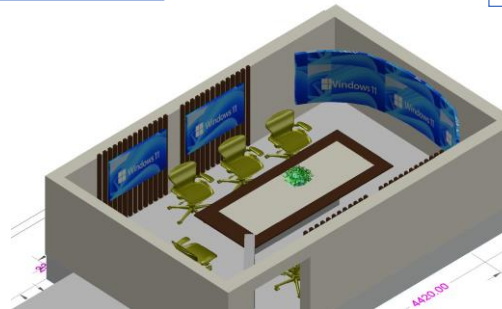


SCREEN-3 BMS
(Building management system)

- Monitoring of temperature and RH parameter
- Monitoring of alarm



Main Screen



Engineering Cockpit

Benefits:

- All Engineering data is available at same place
- Operator will act immediately.
- Operator will correlate the data with each other.

Screen -4
Monitoring of Energy Consumption data

- Power
- Fuel
- Steam
- Air
- Gas
- Furnace oil



Screen -5
Monitoring of Predictive Sensor

- Motor Vibration
- Motor Temperature
- Warning and critical alerts.
- Trends



Awards Certifications



Certificate IN23/00001231
The Energy management system of
Cipla Limited

HO & Site 1-D-7, D-8, D-22, D-27 MIDC Industrial area Kulkarni, Tel-Deund, Dist-Pune, Maharashtra, Pin-413802, India

has been assessed and certified as meeting the requirements of
ISO 50001:2018

For the following activities
Manufacturer of active pharmaceutical ingredients (Bulk Drug) and pharmaceutical formulations

This certificate is valid from 13 December 2023 until 13 December 2026 and remains valid subject to satisfactory surveillance audits.
Issue 1. Certified since 13 December 2023
Certified activities performed by additional sites are listed on subsequent pages.

Authorized by
Paola Bernabei
SGS ITALIA S.p.A.
Via Caltan, 21 20153 MILANO - Italy
t +39 02 75 93 1 - www.sgs.com



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✓ ISO Energy Management System
ISO 50001-2018, Valid till Dec 2026

Certificate IN21/818844595
The management system of
Cipla Limited

Plot 9 & 10, SEZ Phase II, Pharma Zone, Pithampur - 454 775, Dist. Dhar, Madhya Pradesh, India

has been assessed and certified as meeting the requirements of
ISO 14001:2015

For the following activities
Manufacturing of Pharmaceutical formulations

This certificate is valid from 06 April 2024 until 06 April 2027 and remains valid subject to satisfactory surveillance audits.
Issue 3. Certified since 07 April 2012

Authorized by
Jonathan Hall
Global Head - Certification Services
SGS United Kingdom Ltd
Rosemore Business Park, Ebbw Vale, South Wales, NP23 5EN, UK
t +44 (0)151 350-6666 - www.sgs.com



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✓ ISO Environmental Management System
ISO 14001-2015, Valid till April 2027

Certificate IN21/818844594
The management system of
Cipla Limited

Plot 9 & 10, SEZ Phase II, Pharma Zone, Pithampur - 454 775, Dist. Dhar, Madhya Pradesh, India

has been assessed and certified as meeting the requirements of
ISO 45001:2018

For the following activities
Manufacturing of Pharmaceutical formulations

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Global Head - Certification Services
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✓ **ISO 45001:2018** Occupational Health and Safety management system, Valid till **April 2027**

Accolades

National Energy Conservation Award



Hon.Minister for Power, Coal and New & Renewable Energy, Government of India
Mr. Piyush Goyal - handing over the First Prize to Cipla Indore SEZ in the Drugs & Pharmaceuticals Sector.

INDORE site has been Honored with the Prestigious title of the Best EHS&S performing Site FY 2023-24



"HSE Award - Seven Star Platinu " From Safety Council

Corporate Social Responsibility



Mobile Health Van

Coverage : 13 sites (8 Villages)
 Total OPD : More than 36000 (Since Nov 2014 to Till Date)
 Partner : HelpAge India



Skill Development Program

Skilling homemakers from low income households to undertake Tailoring.

No. of Participants : 40
 Duration : 2 Months
 Partner : Labournet



Hole in The Wall (Computers)

HIWL Stations at Pithampur: 04
 No. of Students Covered : More than 1200.

Caretakers at Stations : 04



Teachers Day Celebration



Computer Lab at DEF

MASS PLANTATION DRIVE AT CHORAL FOREST



इंदौर सिटी
 राष्ट्रीय दवा कंपनी ने पर्यावरण का भी किया उपाचार

20 हजार पेड़ भी लगाए... पालने-पोसने के लिए 35 लाख भी थमाए

के इंदौर। दवा की बहुआयुध पर्यावरण का भी उपाचार करने के साथ-साथ पर्यावरण का भी उपाचार करेगा। दवा कंपनी के अध्यक्ष राजेश कुमार शर्मा ने कहा कि दवा कंपनी की तरफ से पर्यावरण के संरक्षण के लिए 20 हजार पेड़ लगाए जा रहे हैं। इन पेड़ों के पालने-पोसने के लिए 35 लाख रुपये का अनुदान भी किया है। दवा कंपनी की इस पहल को प्रोत्साहित करने के लिए कलेक्टर कुलदीप शर्मा ने भी 'सोशल मिडिया' पर प्रचारित किया।

दवा कंपनी के अध्यक्ष राजेश कुमार शर्मा ने कहा कि दवा कंपनी की तरफ से पर्यावरण के संरक्षण के लिए 20 हजार पेड़ लगाए जा रहे हैं। इन पेड़ों के पालने-पोसने के लिए 35 लाख रुपये का अनुदान भी किया है। दवा कंपनी की इस पहल को प्रोत्साहित करने के लिए कलेक्टर कुलदीप शर्मा ने भी 'सोशल मिडिया' पर प्रचारित किया।

पैठम्पुर में है सिव्हा पार्क का उद्घाटन

सिव्हा पार्क का उद्घाटन एक शान्तिपूर्ण कार्यक्रम के रूप में हुआ। सिव्हा पार्क का उद्घाटन एक शान्तिपूर्ण कार्यक्रम के रूप में हुआ। सिव्हा पार्क का उद्घाटन एक शान्तिपूर्ण कार्यक्रम के रूप में हुआ।

World Environment Day Celebration 2023



Breathefree Campaign

Blood Donation Campaign

Green Initiative

Plantation Drive : Trees Planted
 Partner : Institute for Resources Conservation
 Coverage : Indore SEZ

Thank You