

APITORIA PHARMA PRIVATE LIMITED

UNIT-4U Pydibhimavaram, Srikakulam (Dist.)-AP.





















25th National Award for

Excellence in Energy Management

10-12 September 2024 HICC, Hyderabad

2024



APITORIA PHARMA PRIVATE LIMITED UNIT-4U,

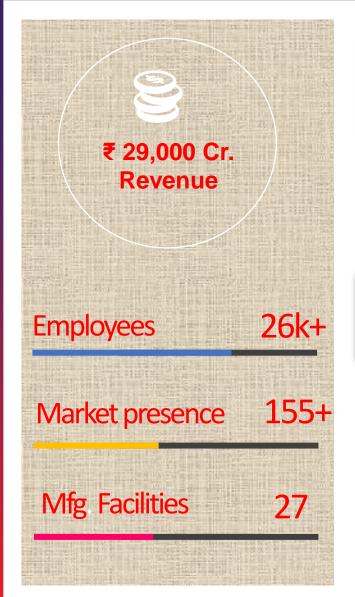
Reg No: 4475 **TEAM MEMBERS**

Sr. No	Name	Designation	Mobile Number	Email address
1	Mr. B. Srinivasa Rao	Asst. General Manager-EU	9666041942	SrinivasaRao.Balivada@aurobindo.com
2	Mr. G. Ramana Rao	Dy. Manager-EU	9000595190	RamanaRao.Gollangi@aurobindo.com
3	Mr. A. Janardhana Chetty	Manager-EU	9948665781	Janardhana Chetty. Annam@apitoria.com
4	Mr. B.V.S.S.N Raju	Sr. Executive-EU	9666372308	Unit4.maintenancepencillins@apitoria.com

Brief Introduction on Company















Inception

Founded in 1986 by Mr. P. V. Ramprasad Reddy, Mr. K. Nityananda Reddy



Aurobindo Pharma became a public company in 1992

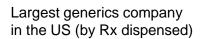
USFDA

All facilities are USFDA & other regulatory approved

41 Billion

Dosage Forms across the world

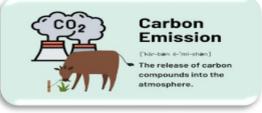






43,000 MWh

Solar Power Generation



17%

Reduction in carbon emissions from baseline year FY20 (Achieved more than 80% of 2025 target)



₹ 66.3 Cr In CSR Spends

7. 38 Lakh Beneficiaries



R&D Capabilities

5 in India and 4 in the US 1,500+ Scientists and analysts globally

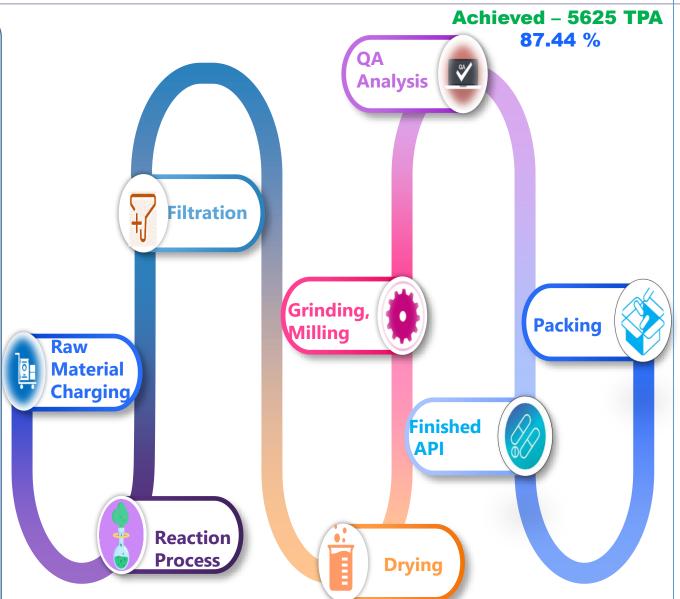
Details of the Products / Processes

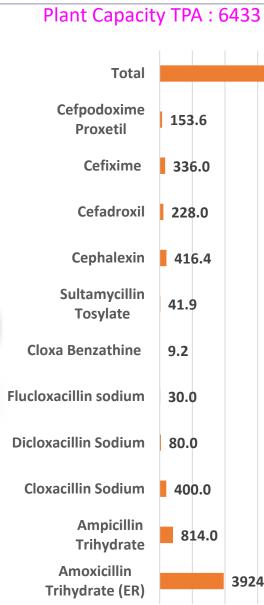
apitoria

- Cefadroxil
- Cefixime
- Proxetil
- Cephalexin
- Sultamycillin Tosylate
- Cloxacillin Derivatives
- Amoxicillin Trihydrate
- Ampicillin Trihydrate

Major products:



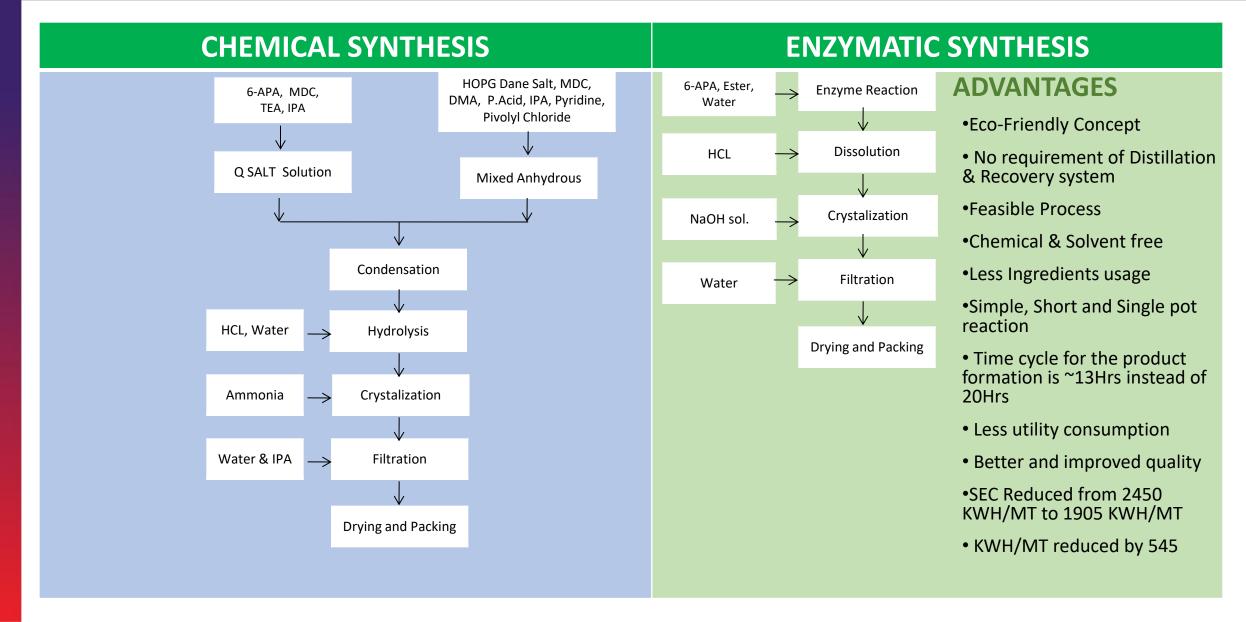




2. Manufacturing Processes:

New Technology of Major Process: Chemical Synthesis to Enzymatic Synthesis



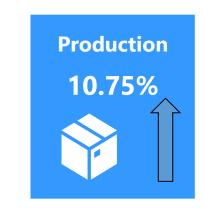


3. Sp. Energy Consumption Overview – Last 3 Years



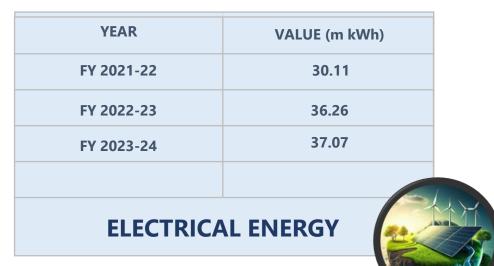


SPECIFIC E	NERGY	
YEAR	VALUE (m kcal/KG)	
FY 2021-22	12391	
FY 2022-23	11303	
FY 2023-24	10235	



YEAR	VALUE (m kcal)
FY 2021-22	21916
FY 2022-23	25543
FY 2023-24	25672

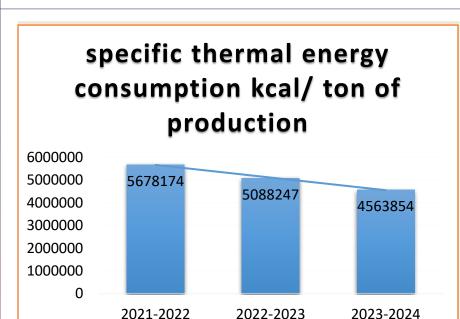
THERMAL ENERGY



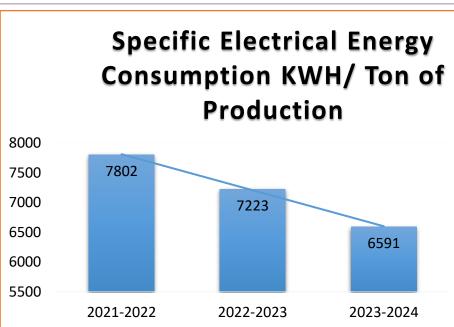
9.45%

3. Specific Energy Consumption Overview – Last 3 Years









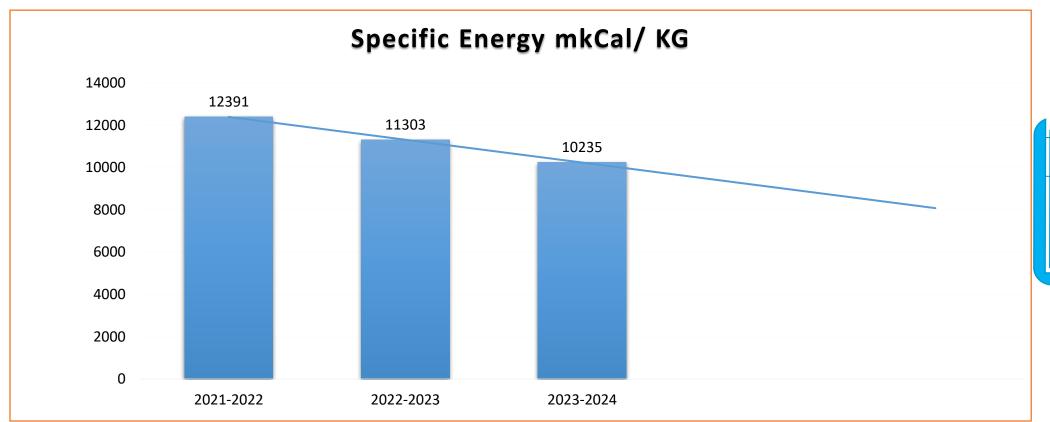


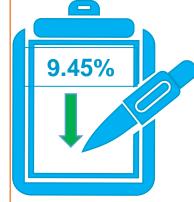
Implementation of various energy conservation activities contributed reduction of 9.45 % in overall SEC of the Plant :-

- > Reduction in power consumption by providing VFDs to Utility secondary Pumps . **Yearly Saved : 1431296 kwh.**
- > Energy saving by interlocking of Compressors RT & primary pumps, **Yearly Saved : 109829 kwh.**
- > Optimization of -20° C Chilling Plant operations during less Production By providing Inter Connection. **Yearly Saved : 348033 kwh.**
- > By increasing chiller set point in winter season , Yearly Saved: 77563 KW
- > Cooling tower fan motor running hours optimization by providing temp. controller/feed back and VFD. Yearly Saved: 63750 KW
- > Automatic level controller and sensor arranged for HTDS & LTDS pumps, Yearly Saved: 21718 KW
- >Cooling tower fan blade replaced with FRP fan blades in place of aluminum in Utility & SRS (Qty: 04 No's), Yearly Saved: 100744 KW
- >Maintained Zero steam leakages and re insulating the steam lines to avoid losses
- >Steam Operated Pump trap" arranged for distillation column condensate to reduce the steam loss. Yearly saved: 122.10 m Kcal/8 Columns

3. Specific Energy Consumption Overview – Last 3 Years







Specific Energy Consumption reduced by 9.45 % comparatively last year.

4. Information on Internal benchmark - Utility



❖ Internal Bench mark : Chilling plant & Air Compressor

Description	Design Temp (oC)	Design SEC (kW/TR)	Operating SEC (kW/TR)	Target SEC (kW/TR)
Designation	+5	0.83	0.84 - 0.87	0.84
Reciprocating Chillers (Water	-20	1.58	1.59 -1.60	1.59
Cooled)	-30	1.84	1.86 -1.89	1.85
Cooled)	-35	1.95	1.97- 2.00	1.96
Screw Chillers	+5	0.63	0.65 – 0.66	0.65

Description	Design SEC (kW/CFM)	Operating SEC (kW/CFM)	Target SEC (kW/CFM)
Air Compressors	0.19	0.21-0.22	0.20

> Chillers (+5°C,-20°C, -30°C & -35°C), Air compressors and Nitrogen Plants Performance evaluation done by CED Team, Based on evaluation data set as a target. Every month plant team did chiller assessment, Air compressor and Nitrogen plant performance to reach the target.

Energy Audit Instruments



S No	Instruments	Make
1	Power Quality Analysers (2 Nos)	Krykard
2	Thermal Imager	Testo
3	Ultrasonic Flow Meter	Eesiflo
4	Ultra Sonic Thickness Gauge	Eqinox
5	Pitot tube	Nevco
6	Digital Manometer / Pressure meter	Comark
7	Hotwire Anemometer	Testo
8	TDS / pH Meter	Aquisol
9	Stroboscope / Tachometer	Extech
10	Humidity, DBT & WBT Meter	Testo
11	Digital Pressure Gauge	Testo
12	Lux Meter	Extech
13	Stop watch	Extech
14	Psling Psychrometric	Dimple







4. Major Encon Projects Planned in FY 2024-25





FBD Cap-300 Kg/Hr. In Place of 120 KG FBD 3 No's

Investment : ₹9 million

Savings : ₹ 0.532 million

Payback : 24 Months



Higher efficient Sifter (make Russell)

Investment : ₹ 5.7 million

Savings : ₹ 0.77 million

Payback : 19.28 Months



Automatic Dry Granulator in place of Roll compactors 2 No's

Investment : ₹ 8.00 million

Savings : ₹ 1.25 million

Payback : 79 Months



Energy Saving by providing Efficient Air Compressors,

Investment : ₹ 1.6 million

Savings : ₹ 1.05 million

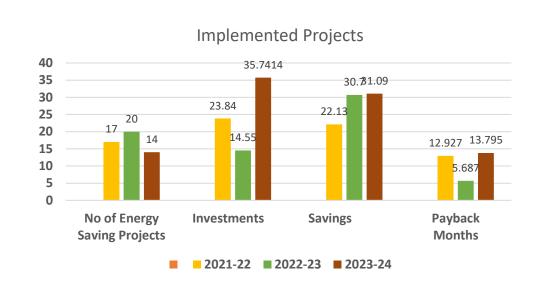
Payback : 9 Months

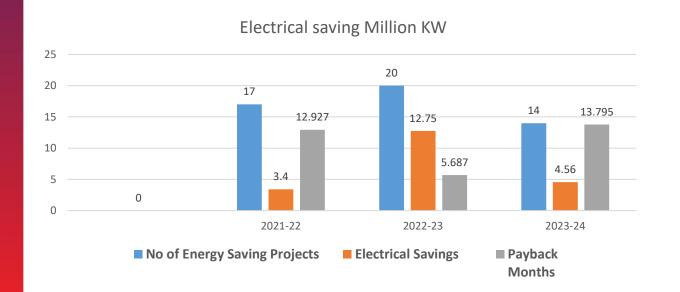
5. Energy Saving Projects Implemented in the last Three years

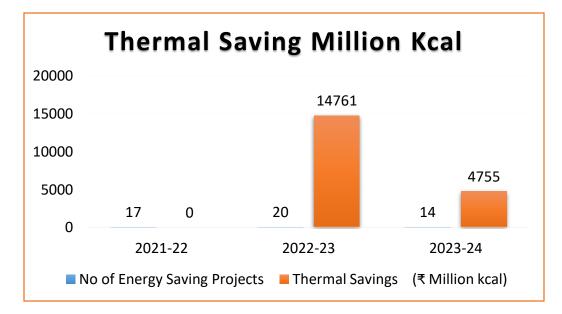


Summary of Energy Saving Projects Implemented in the last 3 years

Year	No of Energy Saving Projects	Investments (₹ Million)	Electrical Savings (Million kWh)	Thermal Savings (Million kcal)	Savings (₹ Million)
2021-22	17	23.84	3.40	0	22.13
2022-23	20	14.55	12.75	14761	30.70
2023-24	14	35.75	4.56	4755	31.09







5. Major Energy Saving Projects Implemented in the year 2023-2024



2023- 2024	Name of Energy Saving Projects	Investments (INR Million)	Electrical Savings (Million kWh)	Thermal Savings (Million kcal)	Total Savings (INR Million)	Payback Period (Months)
1	Advanced equipment introduced (AVPF) for filtration	16.00	0.43	4755	3.37	56.97
2	Advanced new roll Compactor for Amoxicillin product	8.00	0.16	0.00	1.22	79.01
3	Advanced new roll Compactor for cloxacillin products	8.00	0.40		3.11	30.87
4	Reduction in power consumption by providing VFDs to Utility secondary Pumps	2.30	1.43	0.00	11.16	2.47
5	IR Reciprocating compressor Capacity 220cfm (two no's) replaced with 210CFM	0.80	0.06	0.00	0.49	19.55
6	Optimization of chilling plant (+5°C chilling plant for HVAC)	0.21	0.67	0.00	5.23	0.47
7	Replacement of CFL Lamps with LED lamps:	0.18	0.09	0.00	0.72	2.93
■I X	Cooling tower fan motor running hours optimization by providing temp. controller/feed back and VFD	0.12	0.64	0.00	0.50	2.90
9	Energy saving by interlocking of Compressors RT & primary pumps	0.07	0.11	0.00	0.86	1.01
1 10	Optimization of -20° C Chilling Plant operations during less Production	0.05	0.35	0.00	2.71	0.22
11	Cooling tower fan blade replaced	0.01	0.10	0.00	0.79	0.16
12	Automatically Switching OFF by providing timer	0.01	0.02	0.00	0.17	0.35
13	Automatic level controller and sensor arranged for HTDS & LTDS pumps	0.00	0.02	0.00	0.17	0.28
14	Power saving by increasing chiller set point in winter season	0.00	0.08	0.00	0.61	0.00
	Total	35.75	4.56	4755	31.09	13.79

5. Major Energy Saving Projects Implemented in the year 2022-2023



2022- 2023	Name of Energy Saving Projects	Investments (INR Million)	Electrical Savings (Million kWh)	Thermal Savings (Million kcal)	Total Savings (INR Million)	Payback Period (Months)
	Power saving by increasing chiller operation set point: 6° C to 9°C	0.01	0.77	0.00	5.41	0.02
2	Interlocking of Compressors RT & primary pumps	0.20	0.21	0.00	1.49	1.61
3	Reduction in power consumption by providing VFDs to Utility secondary Pumps	0.56	0.13	0.00	0.89	7.55
4	Cooling tower CT fan blade replaced with FRP blades	0.05	0.02	0.00	0.16	3.38
5	Implementation of higher cap. RT pump and replacement of its impellers	2.00	0.23	0.00	1.64	14.63
6	Cleaning of chilling plant condenser tubes with high pressure jet pump	0.02	11.41	0.00	0.80	0.30
7	Controlling the Cooling tower fan motors running hours by providing VFD and temp. controller	0.60	0.05	0.00	0.35	20.57
	Blue star Chiller and its related RT pumps and Primary pump completely stopped by modification pipe line and energy pumps	1.75	0.29	0.00	2.01	10.45
	Total (20 Projects)	14.55	12.75	14761	30.70	5.68

5. Major Energy Saving Projects Implemented in the year 2021-2022



2021- 2022	Name of Energy Saving Projects	Investments (INR Million)	Electrical Savings (Million kWh)	Thermal Savings (Million kcal)	Total Savings (INR Million)	Payback Period (Months)
1	Procure higher efficiency screw compressors to reduce the operational	37.70	0.56	0.00	36.71	12.32
	Optimization of chillers assessment : During operations All chillers assessment evaluation completed	0.10	0.11	0.00	7.39	0.16
≺	Optimization of all chilling plants operations: Descaling of all chiller related condensers	1.20	0.09	0.00	5.94	2.42
1 4	SRS-I and SRS-II distillation columns 18 no's primary condensers (RT water) descaling with high pressure Jet pump :	1.80	0.05	0.00	0.34	63.53
5	Optimization of Air compressor(ACPU01=100cfm) Services for P4,P5 FBD's, centrifuges pneumatic Interlocking systems and steam condensate Pump while in operations:	0.20	0.02	0.00	0.11	21.82
l h	Optimization of -20° C Chilling Plant operations during less Production By providing Inter Connection of chilling plants	1.00	0.21	0.00	1.39	8.63
/	Optimization of +5°C Chilling Plant operations during less Production By providing Inter Connection of chilling plants	0.20	0.44	0.00	2.86	0.84
II X	No air loss Auto drain valves arranged instead of timer based auto drain valve :	0.10	0.10	0.00	0.67	1.79
9	IR Reciprocating compressor replaced with Screw compressor	1.00	0.11	0.00	7.20	1.67
10	Semi Nitrogen Blanketing System provided for Centrifuges	6.50	0.42	0.00	27.58	2.83
11	ML Lamp replacement with LED	1.80	0.61	0.00	39.50	0.55
	Total (17 Projects)	23.84	3.40	0.00	22.13	12.927



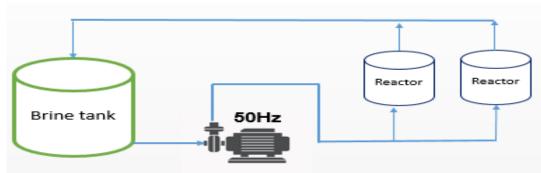
6.Innovation Project Implementation





Reduced the running frequency of Secondary & Process RT pumps, by providing VFD & Pressure Controller WRT line pressure which results in Energy conservation/saving.

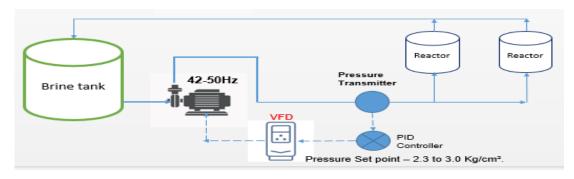
BEFORE IMPLEMENTATION



Earlier Process RT & -20°C secondary pumps were running with 50Hz frequency without any feedback with output pressure 3 Kg/cm2. Qty.: 23 no's.

Avg. running KWH for 23no's pumps 461.89 KWH

AFTER IMPLEMENTATION



By installing VFD & Pressure controller with TX, now Process RT & - 20°C Secondary pumps were running with pressure feedback and Motor frequency varies from 42Hz to 50 Hz as per process usage which results in Energy conservation/saving.

Avg. running KWH for 23no's pumps 298.5 KWH

SAVINGS: ₹111.64Lakh/Y

INVESTMENT: ₹

23

akh



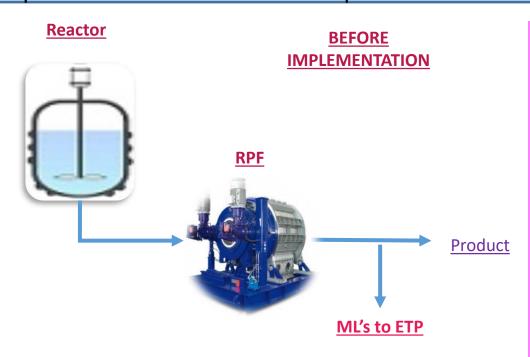


6.Innovation Project Implementation



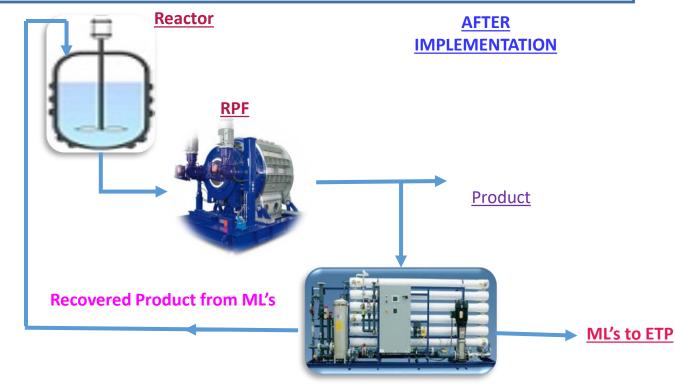


Introducing new Equipment **NANO FILTRATION SYSTEM** for recovering the products from waste mother liquor of Amoxicillin TH and Ampicillin TH.



With the Existing system some of the product escaping from Mother liquor after RPF

Specific Energy Consumption KWH 1905/MT product.



Nano Filtration system

After implementation product collected from NANO Filtration system 15-18 KG from 20 KL of waste mother liquor from each batch

- Specific Energy Consumption KWH 1825/MT product.
- Saving 80 KWH/MT, @ Production 3924 MT/Annum
- Saving KW: 313920 KWH/Annum.



6.Innovation Project Implementation





01 no. Automated Dry Granulator (Capacity 250-300 KG/Hr) instead of manual mode compactor (Introducing Capacity 80-100 KG/Hr)04 No's. for Cloxacillin derivatives.

BEFORE IMPLEMENTATION



Manual Mode Compactor

4 No's Compactor's, 2 No's Miller, 2 No's Shifter used for Cloxacillin Product (Cap: 480 MT/Annum)

- Compactor: 14.7 KWH/Each x 04 No's = 58.85 KWH
- ➤ Miller: 2.2 KWH/Each x 02 No's = 4.4 KWH
- ➤ Sifter: 0.75 KWH/Each x 02 No's = 1.5 KWH KWH consumption per Year = 419256 KWH/Annum

AFTER IMPLEMENTATION



Automated Dry Granulator

01 no. Automated Dry granulator Power consumption per annum 318512 KWH and time cycle reduced by 3 Hrs. per day

- > Benefit: 100744 KWH/Annum
 - Man hours reduced for operation
 - Multiple operations eliminated

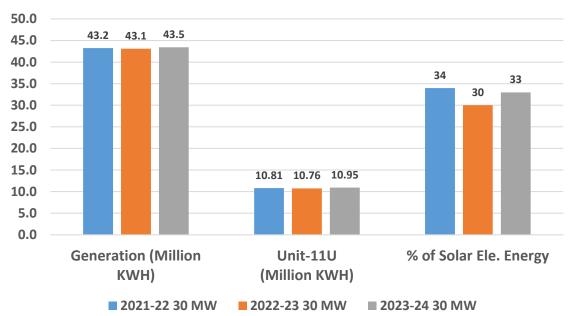
7. Utilisation Renewable Energy Sources: last 3 years

Solar 30 MW Renewable Energy



Year	Technology (Ele)	Type of Energy	On site/Off Site	Installed Cap.	Generation (Million KWH)	Unit-4U (Million KWH)	% of Ele. Energy
2021-22	Renewable	Solar System	Offsite	30 MW	43.24	10.81	34.0
2022-23	Renewable	Solar System	Offsite	30 MW	43.03	10.76	30.0
2023-24	Renewable	Solar System	Offsite	30 MW	43.45	10.86	33.0

30 MW Solar-11U





8. Sustainability / GHG Inventorisation



01Sustainability
Report



2023-24

Published maiden sustainability report for FY 2023-24

02 Margets -2025



FY 2022-24

FY	Production (MT)	Total kgCO ₂ / Ton of Product	Scope 1	Scope 2
2021-22	3860	56318	31326	24993
2022-23	5020	62,025	31929	30096
2023-24	5625	64,415	32145	30156



- 25% Renewable Energy Share (Power to Power)
- 12.5 % Reduction in Emissions
- 35% water conservation / restoration
- 60% coprocessing of hazardous waste
- 100% reuse & recycling nonhazardous waste
- 25% hours of learning per employee

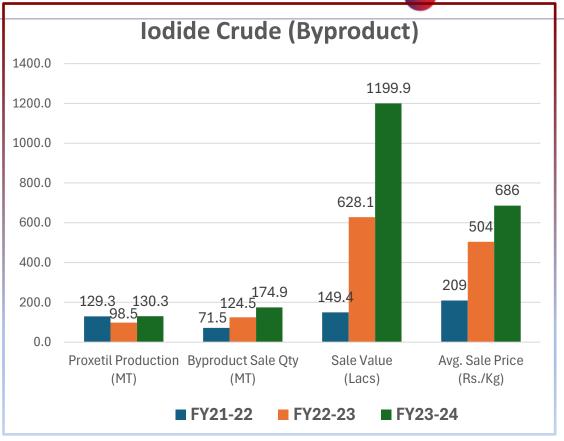
03 GHG Emissions

Iodine Recovery from Proxetil (By-product)



YoY	Proxetil Production (MT)	Byproduct Sale Qty (MT)	Sale Value (Lacs)	Avg. Sale Price (Rs./Kg)	Byproduct Recovery Kg/Kg
FY21-22	129.3	71.5	149.4	209	0.55
FY22-23	98.5	124.5	628.1	504	1.26
FY23-24	130.3	174.9	1199.9	686	1.34

- > Byproduct generation increased from 1.26 to 1.34 Kg/Kg of API
- Overall, Iodine Recovery Improved from 66% (FY23) to 96% (FY24)
- Recovery Increased 33%
- Waste generation from Proxetil product decreased



Road map to achieve target for Recovery improvement:

pH of spent (EA+DMAc+Water +lodide salt))adjusted 12.0 to 12.5 after complete removal of Ethyl acetate to avoid formation of ethanol & Acetic acid at basic condition which is impacting on quality of recovered DMAc) as mostly iodine is stable & non-volatile at pH 10.5 to 12.5 to get maximum iodine recovery.



9. Green Supply Chain Management



Single Stuffing/ Double Stacking Project

- Achieved benefits of Rs 190 Million
- Increased loading by 30% by optimizing with shipper stuffing,
- Saved freight on additional container with 50% extra space
- **Enabled no dependency on the wooden pallets.**
- Bar code printer introduced : Fulfill the govt. guidelines and reduced paper less transection and men hour time

- First Pharma company in India to adopt OTM.
- Cloud based Solution
- Freight Payments linked from OTM to ERP.

01 02

Paperless /
Digital
Logistics



04 03

Decreased Paper consumption and paper less /Digital transactions

 Invoice information will be transferred from the portal in real-time.

- Increased Sea transportation over Air transportation by pallet systems.
- Decreased air Tonnage from 572 Tonnage to 456 Tonnage
- Shredding machine introduced: Fulfill the govt. Hazardous & Other Waste Rules, 2016. * reduction of Environment pollution

AIR vs SEA
- Mode
Control

10. Energy Management System - Procedures



REQUIREMENT & COMMITMENT

- Establishing, implementing & improving the EMS.
- Providing necessary support
- Ensure compliance requirement.
- Commitment to continuous improvement
- Purchase of energy efficient equipment's.
- Documentation & communication to all levels within the organisation.

ENERGY PLANNING

- Day by day record & update the daily energy data.
- Evolution by identifying areas with significant energy use with the help of measurements & identifications.
- Energy performance indicator.
- Define strategic & operational energy goals.

IMPLEMENTATION & OPERATION

- Creating awareness and training for employees.
- Control of process in critical energy areas.
- Consideration in purchase of energy efficient systems & devices.

CHECKING

- Regular monitoring, measurements & analysis.
- CED Internal auditing.
- Initiation of corrective action & preventive actions.

REVIEW

- Regular review of energy management system.
- It must fulfil the purpose for which it indented.
- Strategic & operational goal to be fulfilled.



11.Net Zero Commitment





















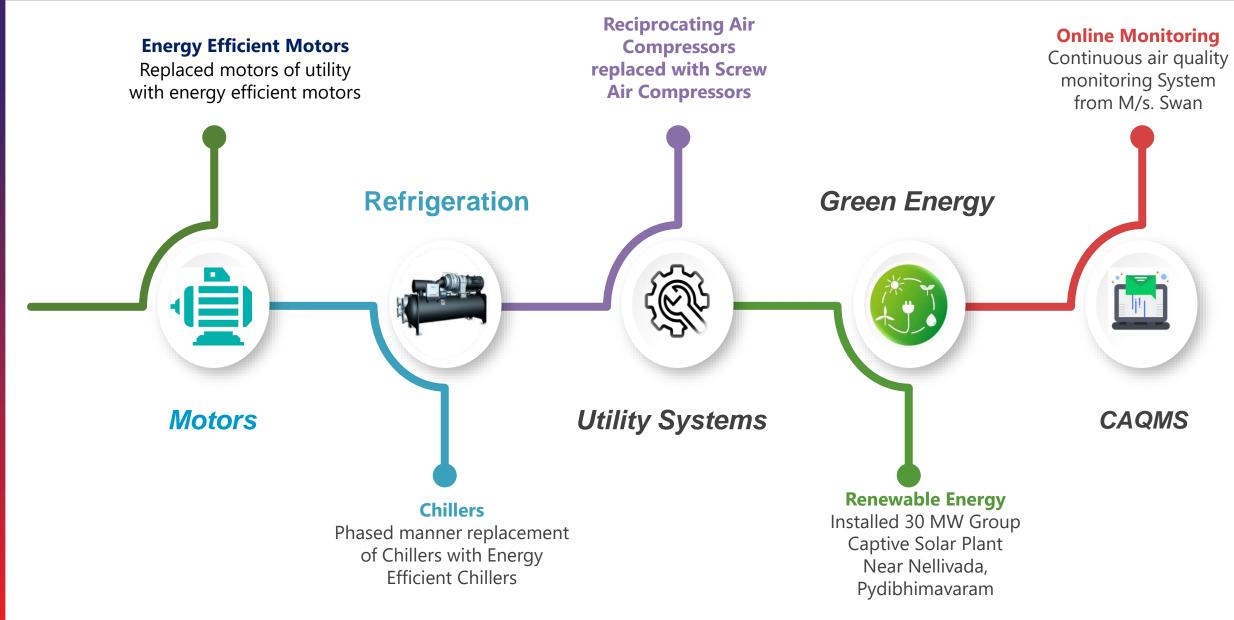


Sustainability Goals -2025

- > 20% renewable energy share (Power-to-Power)
- > 12.5% reduction in carbon footprint (as per SBTi WB2°C)
- > Towards water neutrality 35% water conservation / restoration
- **▶** 60% Co-Processing of hazardous waste
- > 100% reuse / recycle of non-hazardous waste
- > 100% of key starting material suppliers in India of finished dosage forms (Drug product) shall be assessed on supplier's code of conduct
- ➤ Promote balanced gender and equal opportunity: 12.75% women out of total workforce
- ➤ Continuous employee training & development: 25 hours of learning per employee
- > Empowering communities to build a progressive ecosystem
- > Continuous efforts to ensure ZERO reportable incidents across operations
- > Innovating and strengthening healthcare systems across

Learnings from Cll - last 3 Years





Energy Week / Energy Conservation Day Celebrations



Programs conducted during "Energy conservation week"



Essay writing

Real Time

Best Ideas

Technical Quiz

Poster Making

Total No. of Participants 96 no's

Total No. of Assessments 08 no's

Total No. of Participants 36 no's

Total No. of Participants 168 no's

Total No. of Participants 64 no's

Awareness Rally inside the Plant



Total Employees: 645

➤ Total participants : 372

➤ Overall participants: 57 %

Energy Week / Energy Conservation Day Celebrations











Teamwork, Employee Involvement & Monitoring





Teamwork

- Implemented Kaizen & 5S programmes by forming teams
- Awards & appreciations for best programmes



Employee Involvement

- Organized Energy Conservation
 Week Celebrations and involved all employees
- Energy review and monitoring



Training Programmes

- Given training programmes on Root cause analysis (RCA), and Reliability Maintenance (RM)
- Training on steam / utility systems



Monitoring

- Daily / weekly monitoring of Energy Consumption areas / major equipment.
- Review of KPIs, Performances in the presence of plant heads.

Awards & Recognitions









CSR Activities

















- 2,550 Cycles Distribution to Govt. High School Girls studying 8,9,10th class @ 1.50 Cr.
- Construction of Multi-Purpose Community Hall @ 0.90 Cr.
- Providing Solar energy System to 40 no's Sachivalayam @ 0.60 Cr.
- Red Cross Society Blood bank Building construction @ 0.55 Cr
- Total contributed amount Rs. 10.40 Cr.



Aurobindo extends support to TB patients

HANS NEWS SERVICE VIZIANAGARAM

AUROBINDO Pharma Foundation has extended support to tuberculosis patients by providing healthy food and supplements. On Tuesday, the company management met the district collector A Surya Kumari. They said that the company is in partnership with the programme initiated by the Union

government, Pradhan Mantri TB Mukth Bharat. They said that thousand patients from the three north Andhra districts are selected under the programme. Every patient will get food basket worth Rs 4,200 per month and it will be continued for six months. As part of the programme a cheque of Rs 12.60 lakh has been handed over to collector to supply food to 300 patients in the district.





Thank You



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