

23nd National Award for 2022

Excellence in Energy Management
23 - 26 August 2022



AUROBINDO PHARMA LIMITED
UNIT XIV ,
VISAKHAPATNAM,AP.

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Brief Introduction on APL Unit-XIV

Facility

Facility Details

Total Factory area	86036 m ² (21 Acrs)	
Build up Area	33466 m ²	38 %
Roads	16607 m ²	20%
Green Belt area	27854 m ²	33%
Future Expansion	8108 m ²	9%

Utility Equipment

- ❖ FBC boiler : 12 TPH
- ❖ Air Compressors : 2314CFM
- ❖ Chillers(+5°C) : 2170 TR
- ❖ Chillers (-20°C) : 360 TR
- ❖ Chillers (-30°C) : 300 TR
- ❖ Nitrogen plant : 500 Nm³/hr
- ❖ Cooling towers : 9800 TR

Process Equipment

- ❖ Rectors : 92 No's
- ❖ Centrifuges : 29 No's
- ❖ ANFD : 18 No's
- ❖ Tray driers : 22 no's

Installed Reactor Capacity 1132 KL

Electrical

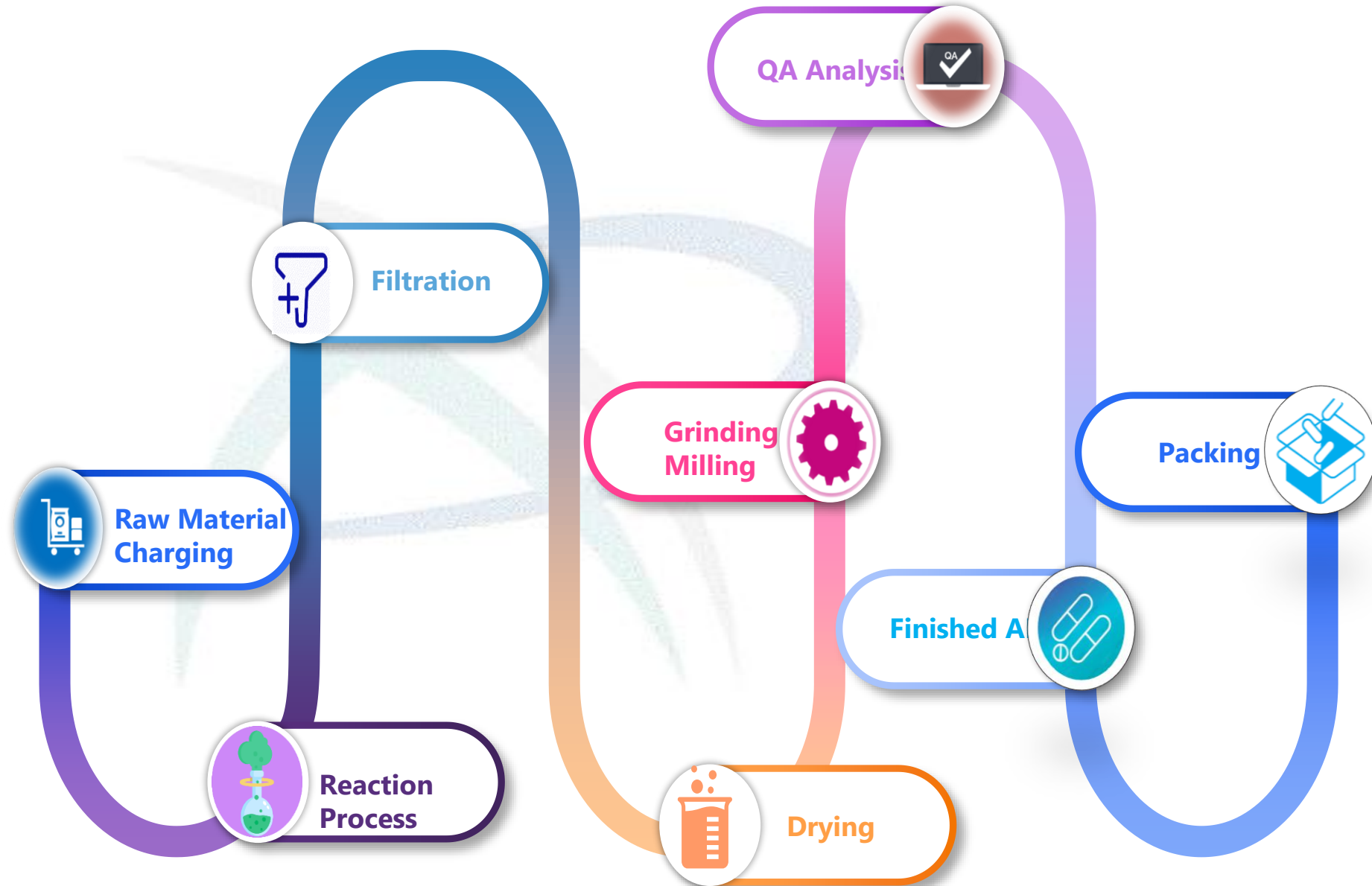
- ❖ HT Connected : 33 KV
- ❖ Transformer: 3 No's X 2500KVA
- ❖ DG system : 2 No's X 3000KVA



Details of the Products / Processes

- Clopidogrel Bisulfate Form-II API
- Ertapenem
- Raltegravir potassium
- Paracetamol API
- Molnupiravir API

Major products :



Energy Consumption Overview – Last 3 Years

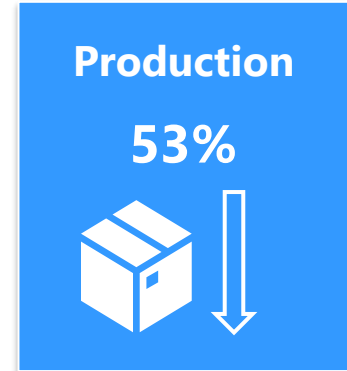


PRODUCTION

YEAR	VALUE (MT)
FY 2019-20	86.5
FY 2020-21	380.3
FY 2021-22	179

SPECIFIC ENERGY

YEAR	VALUE (MTOE)
FY 2019-20	19.58
FY 2020-21	8.59
FY 2021-22	11.66



YEAR VALUE (m kcal)

FY 2019-20	7944
FY 2020-21	17561
FY 2021-22	11789

THERMAL ENERGY



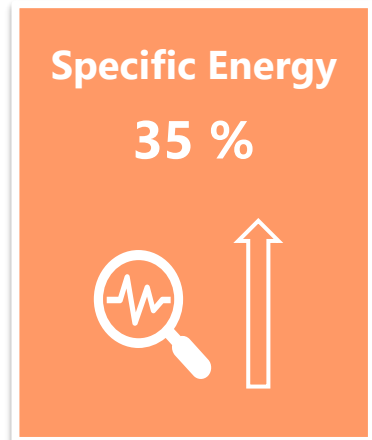
YEAR VALUE (m kWh)

FY 2019-20	10.47
FY 2020-21	17.61
FY 2021-22	10.58

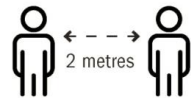
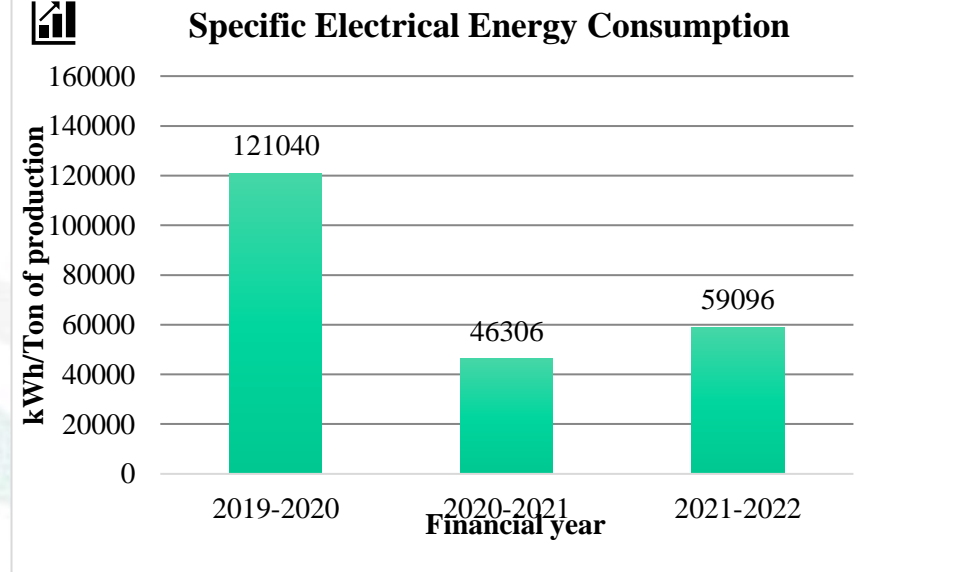
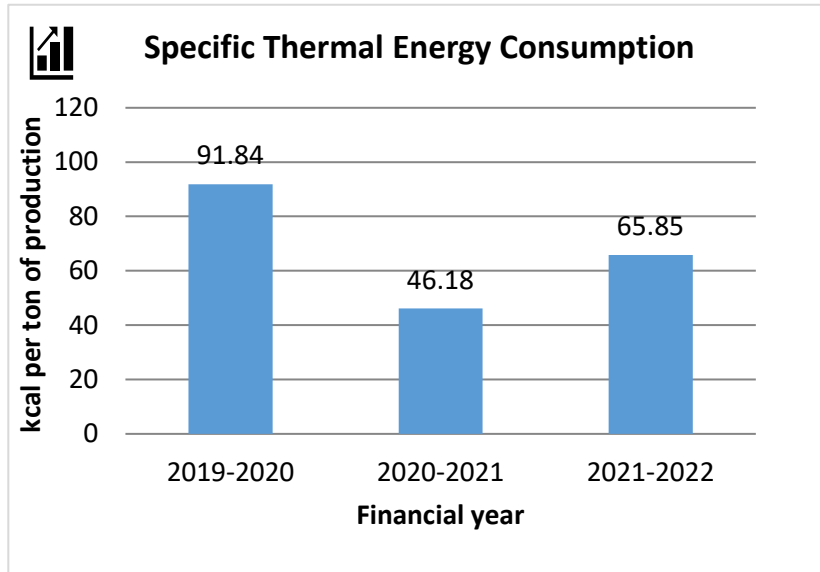
ELECTRICAL ENERGY



Specific Energy
35 %



Specific Energy Consumption Overview – Last 4 Years



Social Distancing



Masking



Hand Wash



Sanitization

An increase in SEC in the FY 2021-22 was observed due to low production and non-linear nature of consumptions

Information on Internal benchmark - Utility

Refrigeration Plants :

Description	Design Temp (oC)	Design SEC (kW/TR)	Operating SEC (kW/TR)	Target SEC (kW/TR)
Reciprocating Chillers (Water Cooled)	-30	2.5	2.80 - 2.90	2.7
Screw Chillers (Water Cooled)	+5	0.65	0.75 - 0.85	0.7
	-20	1.97	2.1 - 2.3	2.0

Description	Design SEC (kW/CFM)	Operating SEC (kW/CFM)	Target SEC (kW/CFM)
Screw Compressor	0.16	0.18 - 0.20	0.18

Description	Design SFR (KG/KG)	Operating SFR (KG/KG)	Target SFR (KG/KG)
Boiler	5.5	4.2 - 4.6	5.0

Major Encon Projects Planned in FY 2022-23

VFD's for utility pumps (Phase-II)
 Investment: ₹ 0.45 Million
 Saving : 0.31 Million kwh

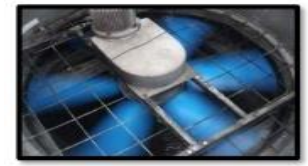


Auto tube cleaning
 Investment: ₹ 1.29 Million
 Saving : 0.12 Million kwh



EnCon projects:
 08 No's
 Investment:
 ₹ 4.42 Million

Energy efficient CT fan blades
 Investment: ₹ 0.56 Million
 Saving : 0.08 Million kwh



Steam operated traps (SOPT)
 Investment: ₹ 0.8 Million
 Saving : 1.34 Million Kcal



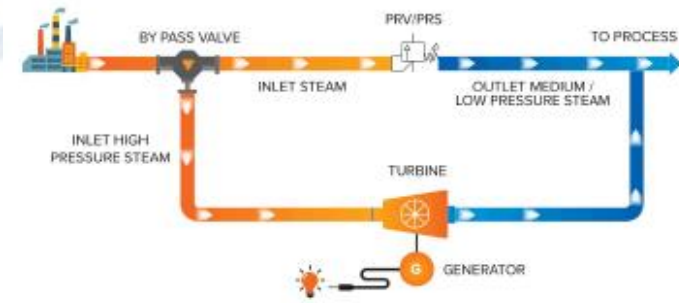
Energy Resources



Solar power
 Investment: ₹ 0.3 Million
 Savings : ₹ 4.8 lac

Equipment Efficiency Enhancement

Enrepower System



Enrepower system for High Pressure steam to electricity generation.
 Investment: ₹ 0.3 Million
 Savings : 0.06 Million Kwh

Automation

Process time cycle reduction

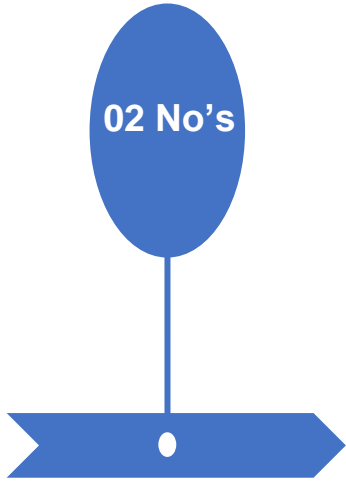


Air compressor loading hrs reduction by installation of Intelligent Flow Controller
 Investment: ₹ 0.725 Million
 Saving : 0.7 Million kwh

Energy Saving projects implemented in last 3 Years

2019-20

02 No's



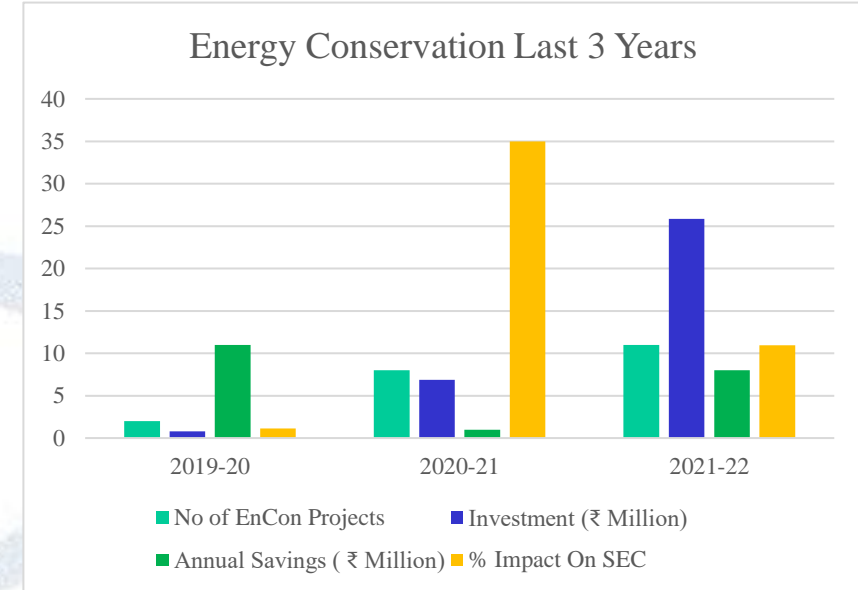
2020-21

08 No's



2021-22

11 No's

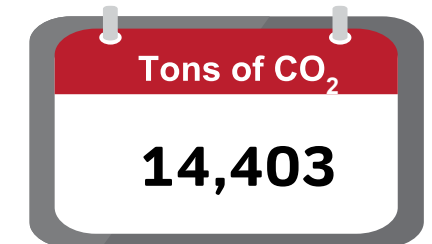


Investments(₹ Million)	: 0.81
Electrical (Million kWh)	: 0.008
Thermal (Million kcal)	: 167
Monetary Savings (₹ Million)	: 0.92
Impact on SEC (%)	: 1.15%

Investments(₹ Million)	: 6.89
Electrical (Million kWh)	: 4.02
Thermal (Million kcal)	: 680.16
Monetary Savings (₹ Million)	: 25.87
Impact on SEC (%)	: 35%

Investments(₹ Million)	: 1.0
Electrical (Million kWh)	: 0.706
Thermal (Million kcal)	: 0.672
Monetary Savings (₹ Million)	: 8.0
Impact on SEC (%)	: 10.97%

FY 2021-22



CO₂
EMISSION
REDUCTIONS

Major Encon Projects Implemented – FY 21-22



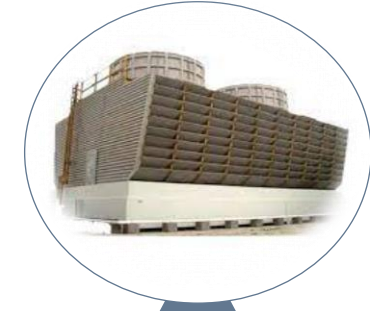
Process & HVAC Chillers Isolation

- Process and HVAC chillers Isolation & Installation of Secondary pumps for HVAC chiller (405 TR)
- Energy Savings : 0.38 Million Kwh,
Investment : ₹ 0.2 million
Payback : 0.9 months



E Glass Epoxy FRP Blades for Cooling Towers

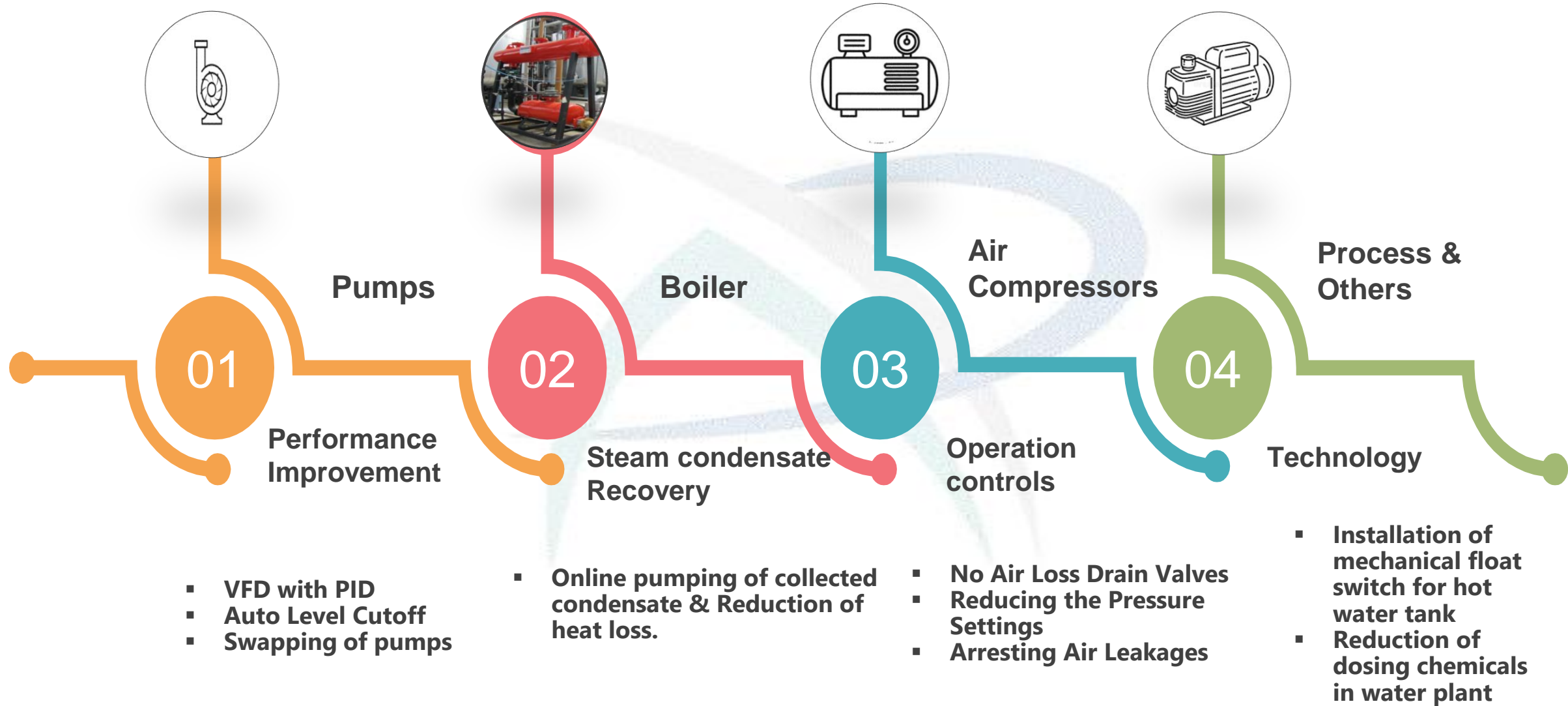
- Performance evaluation done and identified the opportunity
- Energy Savings : 0.14 Million Kwh,
Investment : ₹ 0.14 million
Payback : 16 months
- Low maintenance & Space
- Challenges : Expert for maintenance
- Secondary pumps under process of implementation



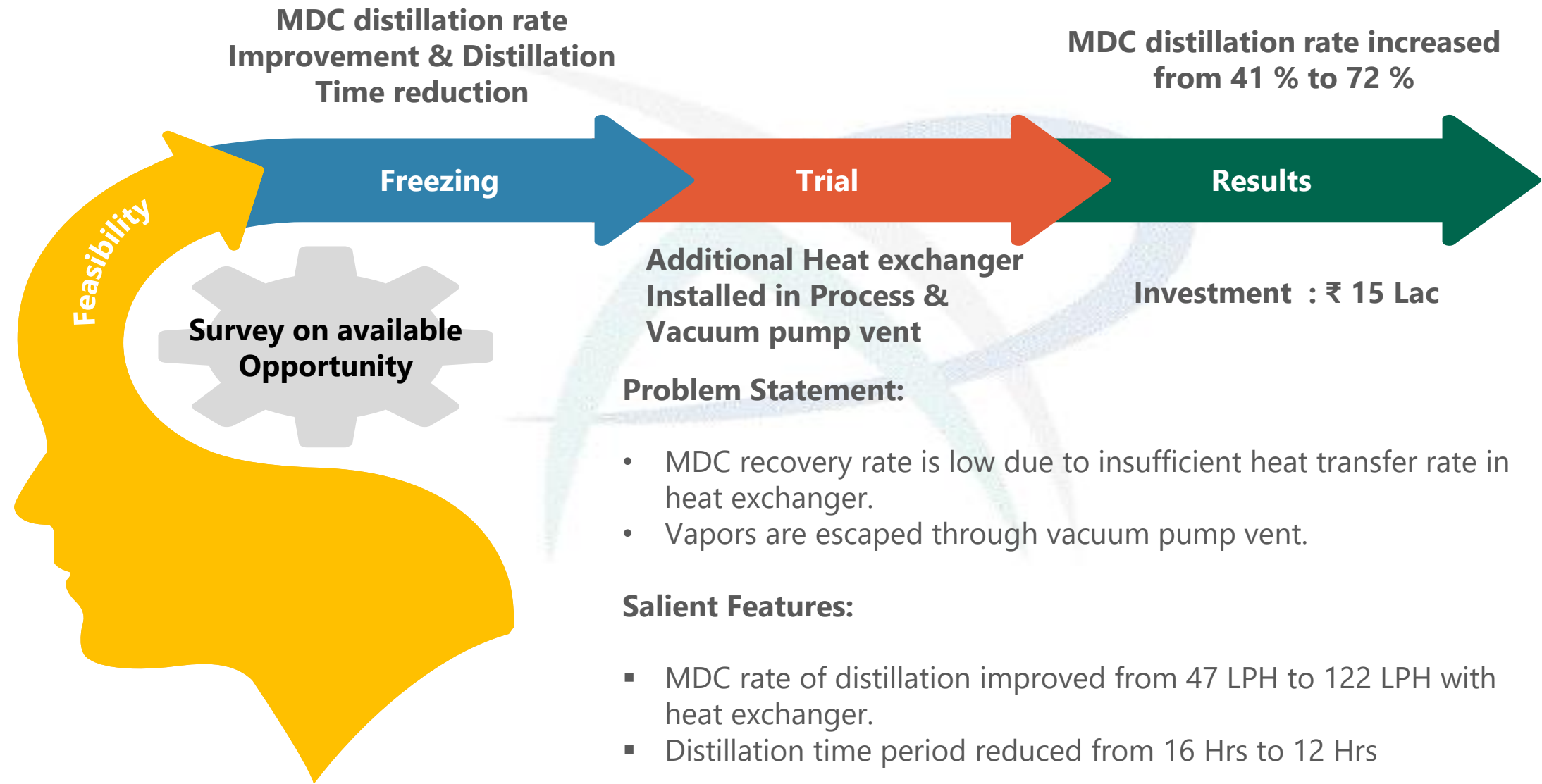
700 TR Wooden Cooling Tower

- Synchronization of cooling towers Header
- Energy Savings : 0.05 Million Kwh,
Investment : ₹ 0.1 million
Payback : 3 months

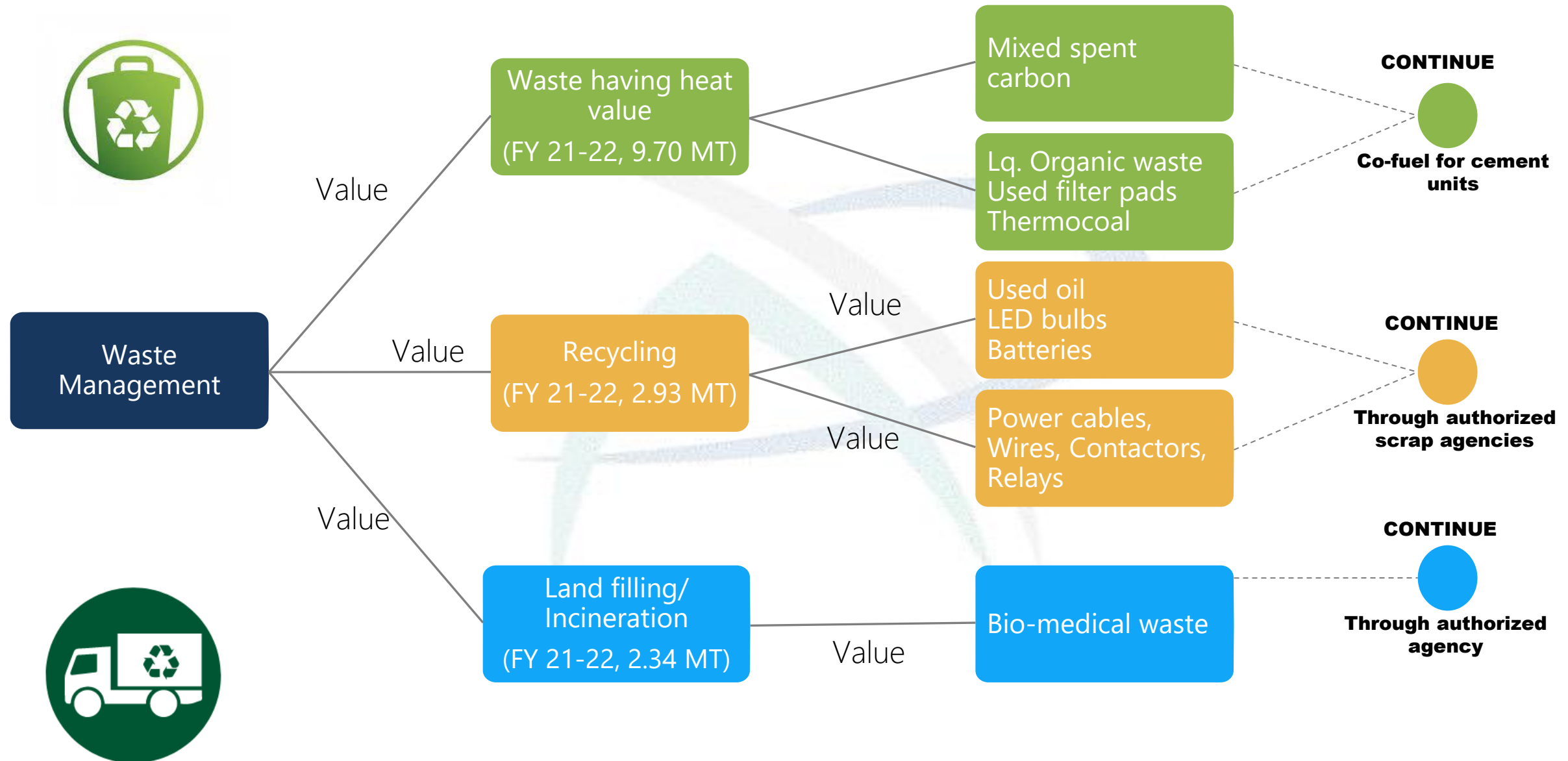
Major Encon Projects - FY 21-22



Enhancement of MDC rate of distillation in (Ertapenem side chain stage-II)



Waste utilization and management



Inventorisation

01
Sustainability
Report



2020-21

Published maiden sustainability report for FY 2020-21

2025

02 
Goals & Targets -2025

- 10 % Reduction in Emissions
- 10 % water conservation / restoration

2019- 22

FY	Total Scope 1 Emission (tCO ₂ e)	Total Scope 2 Emission (tCO ₂)	Total GHG Emission (tCO ₂ e)
2019-20	4137	8443	12,580
2020-21	6749	14021	20,770
2021-22	5208	9195	14,403

03
GHG
Emissions

Green Supply Chain Management

- Decreased Paper consumption and paper less / Digital transactions
- Invoice information will be transferred from the portal in real-time.
- Instruments E-calibration performing through portal
- Agile for QMS system

Single Stuffing/ Double Stacking Project

01

- 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.

02

Paperless / Digital Logistics

GST – e Invoicing & E-Calibration

04

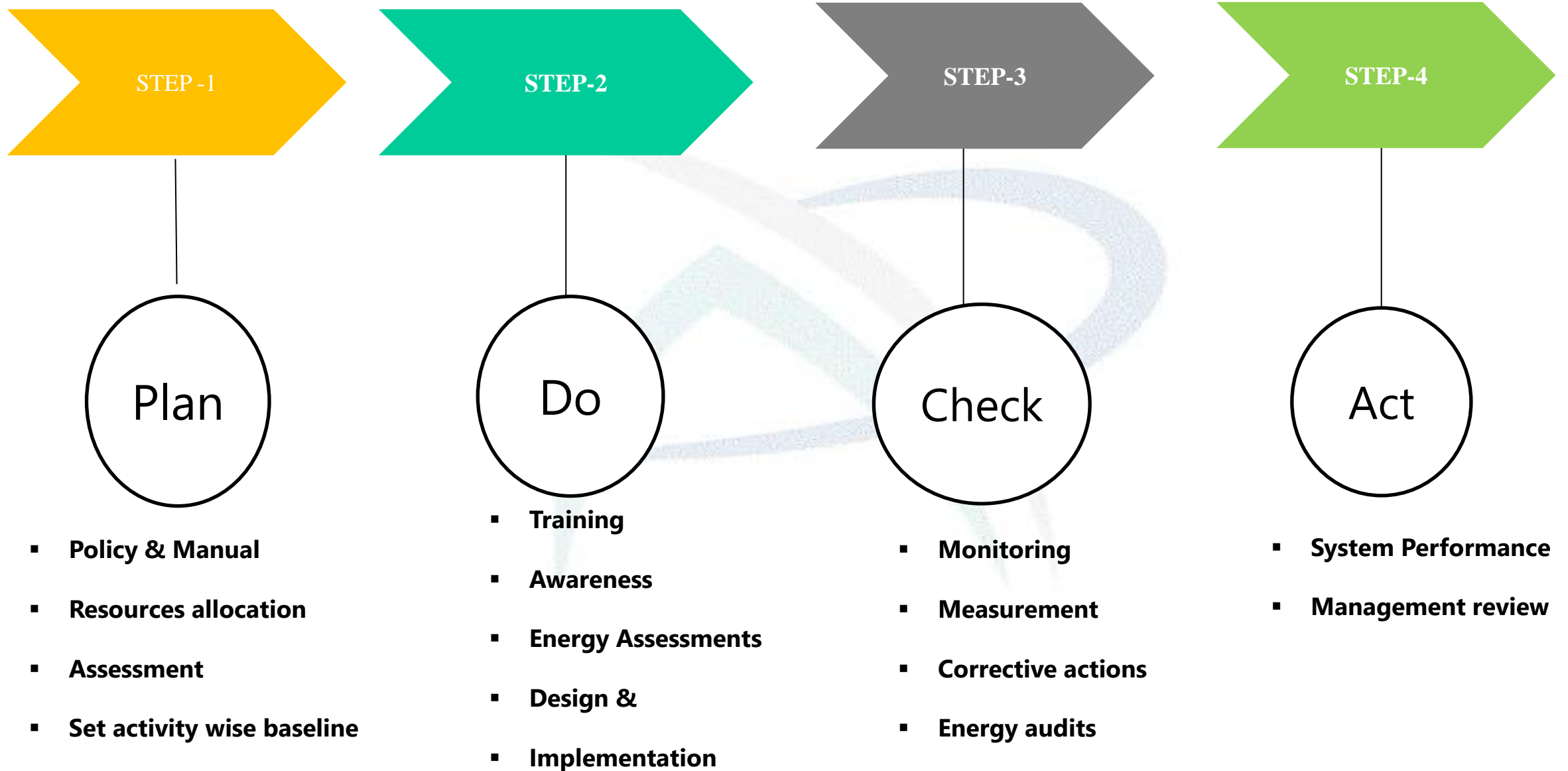
03

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

AIR vs SEA – Mode Control

- Increased Sea transportation over Air transportation by pallet systems.
- Decreased air Tonnage from 572 Tonnage to 456 Tonnage

Energy Management System - Procedures



Teamwork, Employee Involvement & Monitoring



Category	Frequency
Talent of the Month	Every Month
Rewards & Recognition	3 Months
Uttam Vyavahar Puraskar	6 Months

Teamwork

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

Aurobindo Pharma Limited
ENERGY CONSERVATION WEEK CELEBRATIONS
 14-20 DECEMBER, 2021

Save Energy Save Earth

Dear All,

We are celebrating the energy conservation week starting 14th December at all our units to enhance awareness on energy efficiency and demonstrate our achievements in saving energy and conservation. The Corporate Engineering team in collaboration with the I&D team has organized a variety of events to showcase and recognize your efforts in energy conservation.

Let us all join together and celebrate the energy conservation week by participating in the following events as per the attached program schedule.

The kick-off meeting is scheduled on 14th December where the energy cell members will brief you on the day wise celebration and present you the banner for display at your unit. The winners in these events would be announced and rewarded on December 20th through a valedictory ceremony at Gyan Auditorium from 2 PM to 3 PM.

We look forward for support from the Unit Heads and Unit HR's in driving this in your respective units as celebrated last time.

Competitions:

- Quiz
- Essay writing
- Poster making
- Idea generation
- Working models



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 energy consumption and performance by cross functional team members.



Daily Monitoring & Reporting System

EL Measures software for energy monitoring.



- ✓ Power monitoring Plant /block wise with EL Measure Software.
- ✓ Stem demand monitoring Plant /block wise.
- ✓ Reports/Trends (hourly / Daily/Monthly/Annual)
- ✓ Hourly based Real time parameters recording
- ✓ Daily report sharing & analysis (Plant/block wise)
- ✓ Monthly Energy Analysis for Area/block wise

Energy measuring devices



Lux meter



Tacho Meter



pH & TDS Meter



Clamp Meter

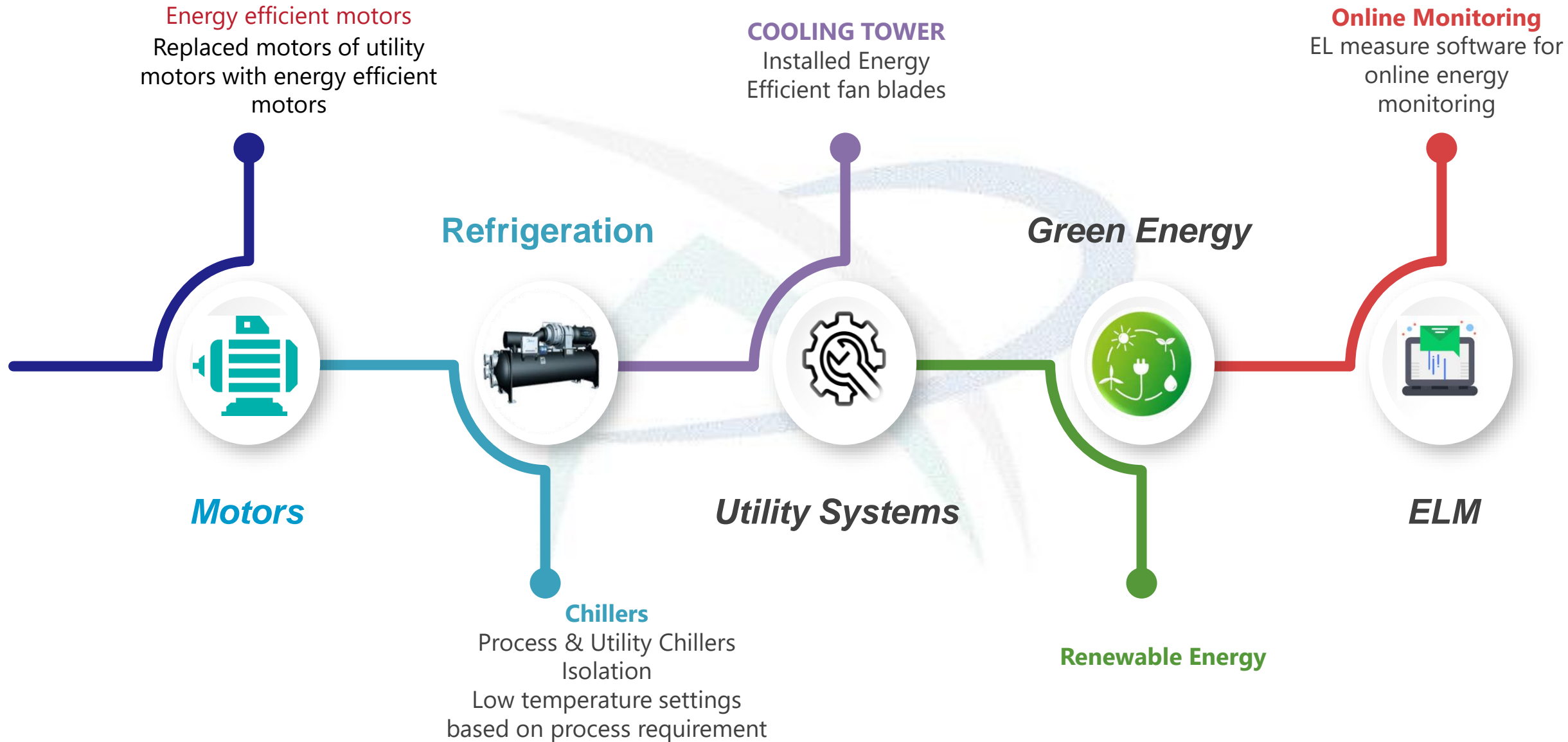


Ultra Sonic Flow Meter

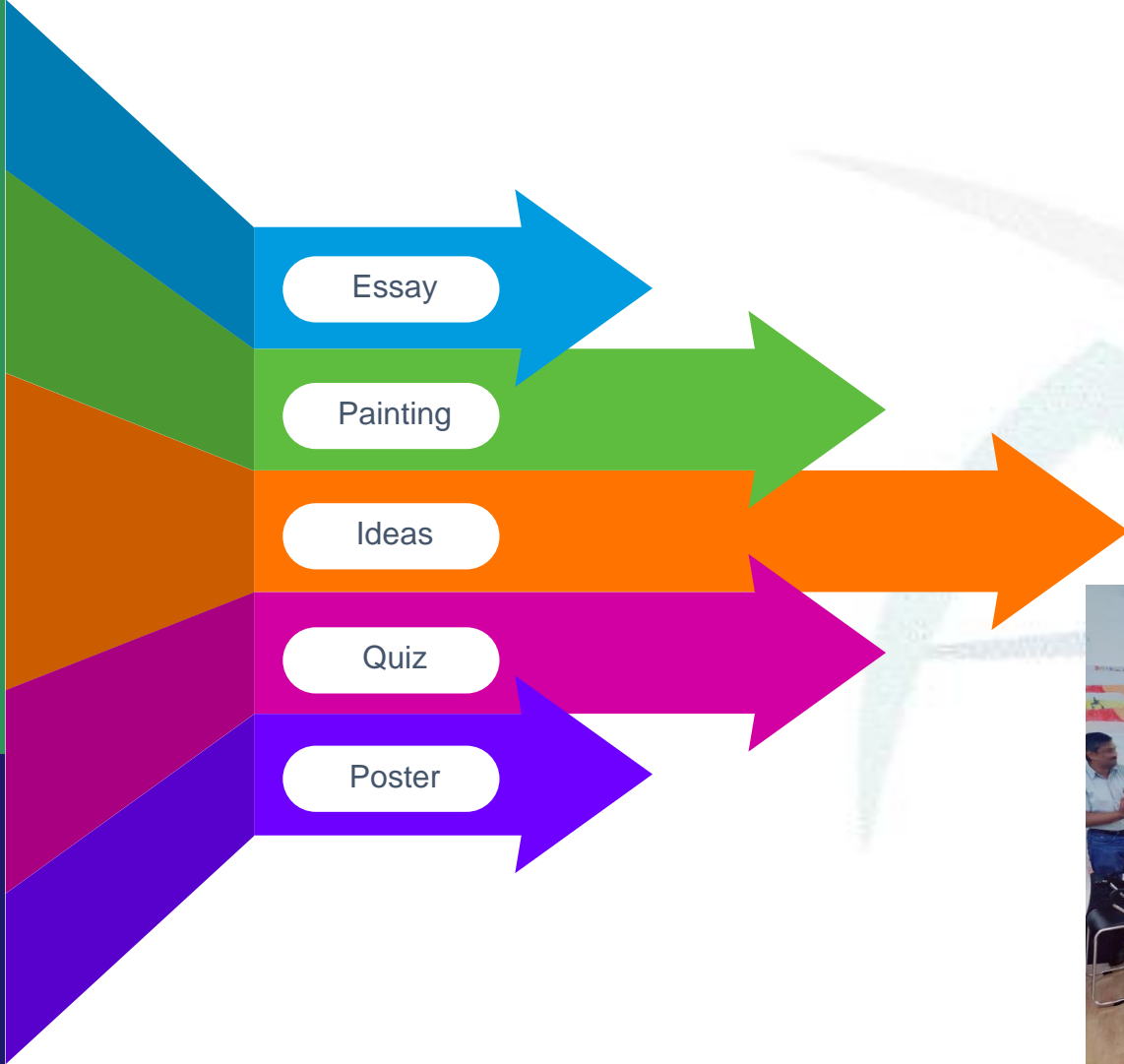


Anemometer

Learnings from CII



Energy Week / Energy Conservation Day Celebrations –



Awareness

Participated got from all departments like Production, Engineering & EHS, SRS and TSD etc



Winner

Corporate Energy cell and L&D team Awarded for

- Best opportunity assessment
- Best Energy Conservation Idea



Awards & Recognitions

1



Operational Excellence



Global Operational Excellence Company of the Year 2022
Global Healthcare Awards

2



Human Resources



HR Innovation & Techfest 2021
Most Collaborative Hiring Team
Innovation in Employee Engagement

3



Environment, Health & Safety



Winner of the Golden Peacock Occupational Health & Safety award 2021 (GPOHSA)

Awards & Recognitions

APL- Unit XIV



CSR Activities



- 14 Villages Adopted
- 48 Water Drinking Plants
- 350 + Healthcare Programme
- 21 Educational Institutions

Thank You