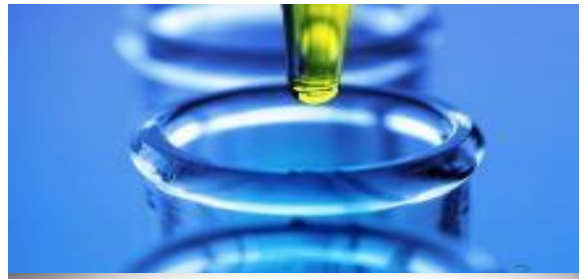
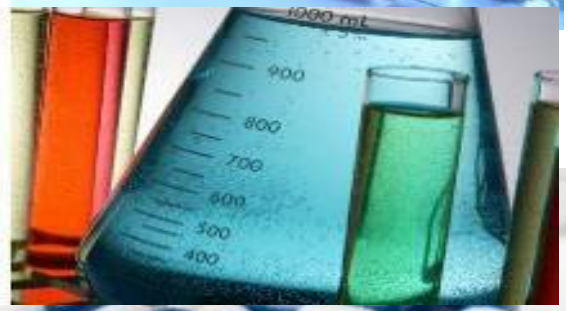
AUROBINDO

AUROBINDO PHARMA LTD

UNIT-11U, Pydibhimavaram

VISHAKAPATNAM-AP





23rd National Award for Excellence in Energy Management

23 - 26 August 2022

2022

AUROBINDO PHARMA LIMITED
UNIT-11U ,
PYDIBHIMAVARAM

Sr. No	Name	Designation	Mobile Number	Email address
1	M.B.Rajasekharan Nair	Sr.General Manager-EU	9912344769	MBRajasekharanNair@aurobindo.com
2	B.Srinivasa Rao	Sr.Manager-EU	9666041942	SrinivasaRao.Balivada@aurobindo.com
3	G.Ramana Rao	Asst.Manager-EU	9000595190	RamanaRao.Gollangi@aurobindo.com
4	D. Ravikumar Yadav	Dy.Manager-EU	8985152788	RavikumarYadav.Dukka@aurobindo.com

Brief Introduction on Company/Unit

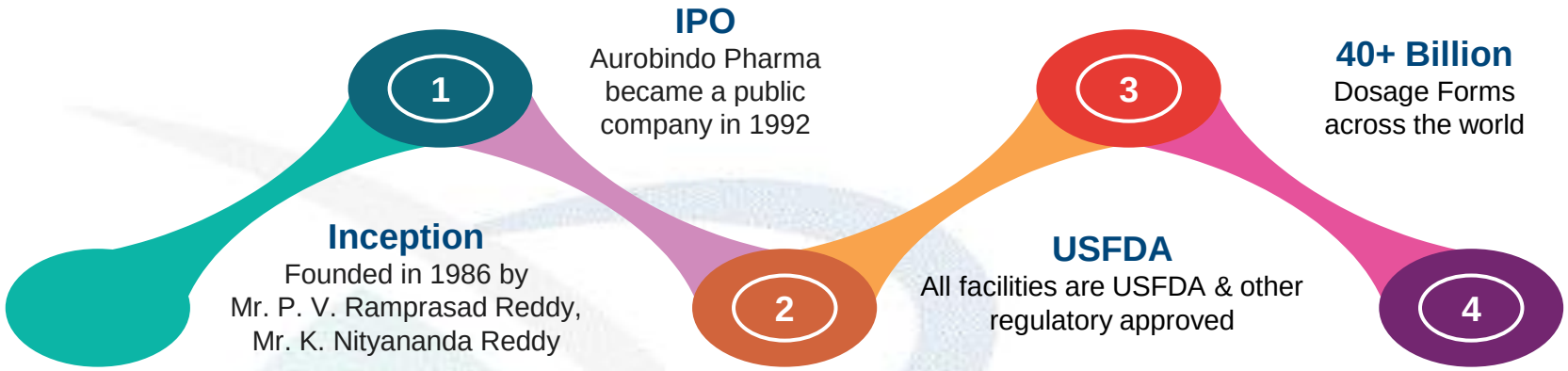
AUROBINDO

$2.9 B
Global Revenue

Employees 24k+

Market presence 155+

Mfg. Facilities 29



01 **#1**
Largest generics company in the US (by Rx dispensed)

02 **#2**
2nd Largest pharma by revenue (India)

03 **#10**
Generics companies in six out of nine countries in Europe@

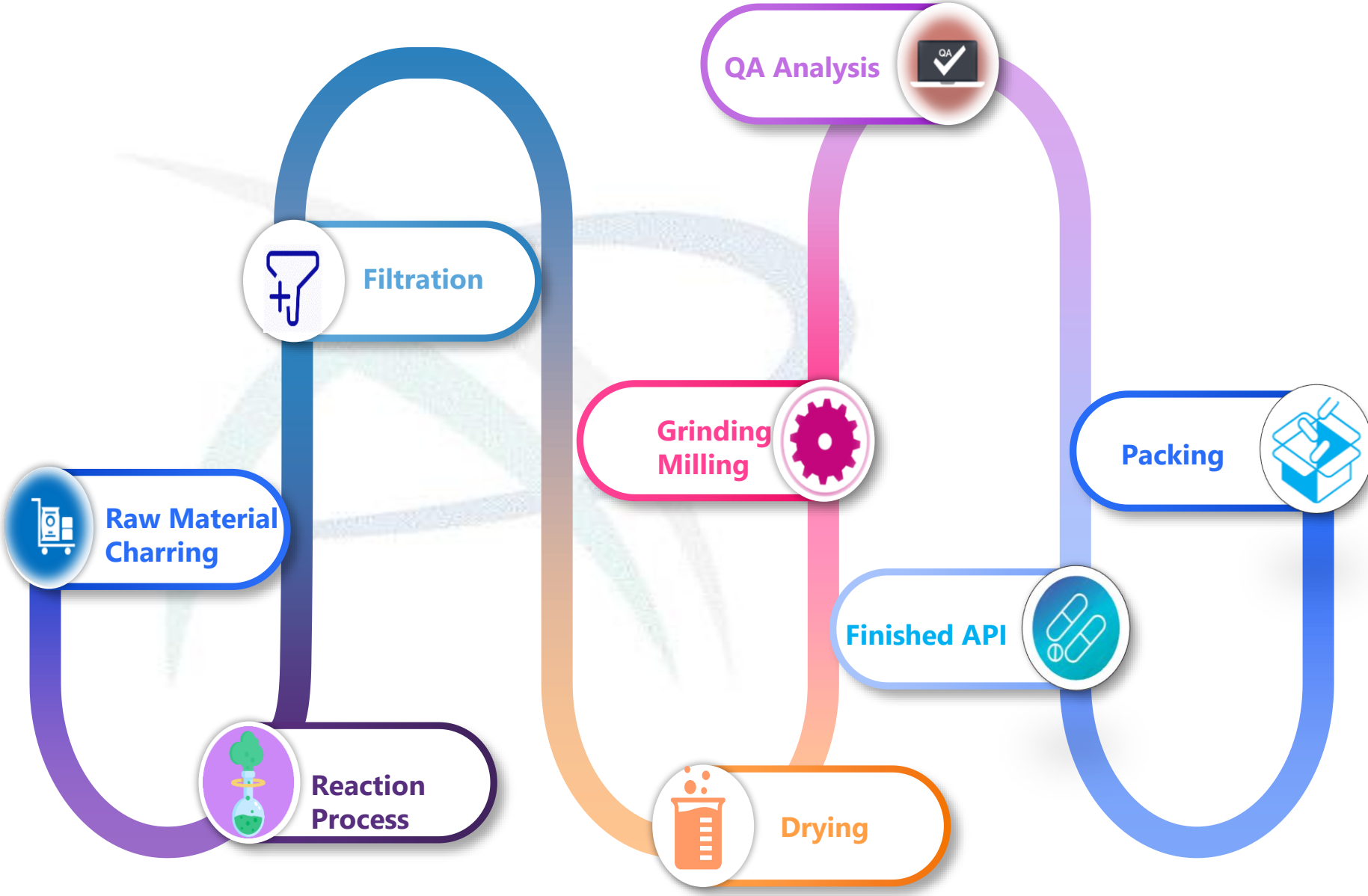
8.64 Lakhs
Lives impacted through CSR interventions

R&D Capabilities
5 in India and 4 in the US
1,500+ Scientists and analysts globally

Details of the Products / Processes

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

Major products :



3.Energy Consumption Overview – Last 4 Years

PRODUCTION

YEAR	VALUE (MT)
FY 2018-19	6051
FY 2019-20	6428
FY 2020-21	3866
FY 2021-22	**3860**

SPECIFIC ENERGY

YEAR	VALUE (m kcal/MT)
FY 2018-19	55377
FY 2019-20	51987
FY 2020-21	49746
FY 2021-22	47825

Production

0.15%

YEAR	VALUE (m kcal)
FY 2018-19	23878
FY 2019-20	19971
FY 2020-21	22987
FY 2021-22	21916

THERMAL ENERGY

YEAR	VALUE (m kWh)
FY 2018-19	36.61
FY 2019-20	37.21
FY 2020-21	31.10
FY 2021-22	30.11

ELECTRICAL ENERGY

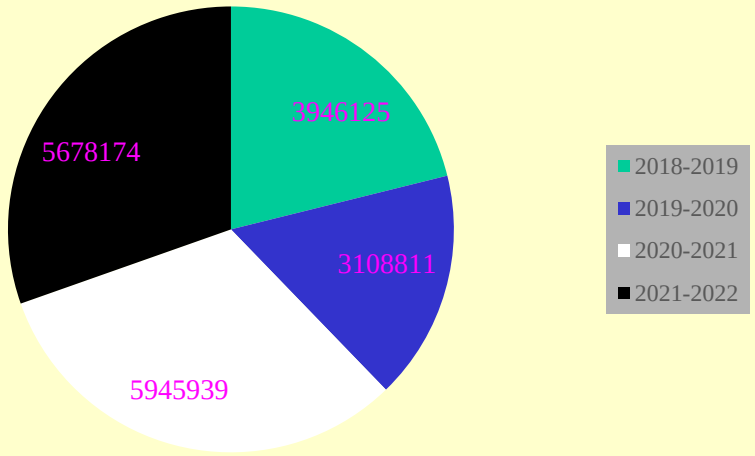
Specific Energy

3.86%

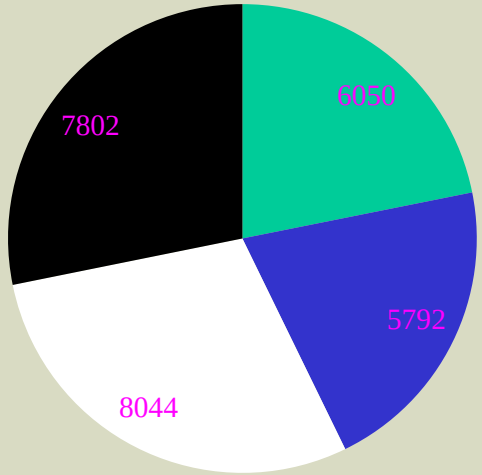
Specific Energy Consumption Overview – Last 4 Years

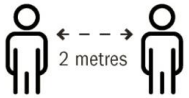
AUROBINDO

Specific Thermal Energy Consumption kcal/ Ton of Production



Specific Electrical Energy Consumption KWH/ Ton of Production





Social Distancing

Masking

Hand Wash

Sanitization

Implementation of various energy conservation activities contributed reduction of 3.86 % in overall SEC of the Plant

4. Information on Internal benchmark - Utility

AUROBINDO

❖ **Internal Bench mark : Chilling plant & Air Compressor**

Description	Design Temp (oC)	Design SEC (kW/TR)	Operating SEC (kW/TR)	Target SEC (kW/TR)
Reciprocating Chillers (Water Cooled)	+5	0.83	0.85 - 0.88	0.84
	-20	1.58	1.58 -1.61	1.58
	-30	1.84	1.86 -1.90	1.84
	-35	1.95	1.97- 2.00	1.95
Screw Chillers	+5	0.63	0.63 – 0.66	0.63

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

4. Major Encon Projects Planned in FY 2022-23

Replacement of Standard efficiency motors with Energy Efficiency Motors

Investment	:	₹ 1.70 million
Savings	:	₹ 0.1 million
Payback	:	17 Months

Installation of VFD's to Secondary Pumps and Variable load Pumps

Investment	:	₹ 2.70 million
Savings	:	₹ 0.9 million
Payback	:	3 Months

Replacement of Old High SEC Air Compressors with new efficient Air Compressors

Investment	:	₹ 3.21 million
Savings	:	₹ 0.38 million
Payback	:	8.4 Months

Vertical Inline Energy Efficiency Pumps by Replacing Energy Intensive Pumps

Investment	:	₹ 12.78 million
Savings	:	₹ 2.01 million
Payback	:	6.30 Months

4. Major Encon Projects Planned in FY 2022-23

Replacement of SV lamps with LED lights

Investment : ₹ 3.14 million
Savings : ₹ 1.4 million
Payback : 28 Months

E Glass Epoxy FRP Blades for Cooling Towers

Investment : ₹ 4.26 million
Savings : ₹ 4.21 million
Payback : 12 Months

300 TR WC Screw Chiller by Replacing Reciprocating Chiller

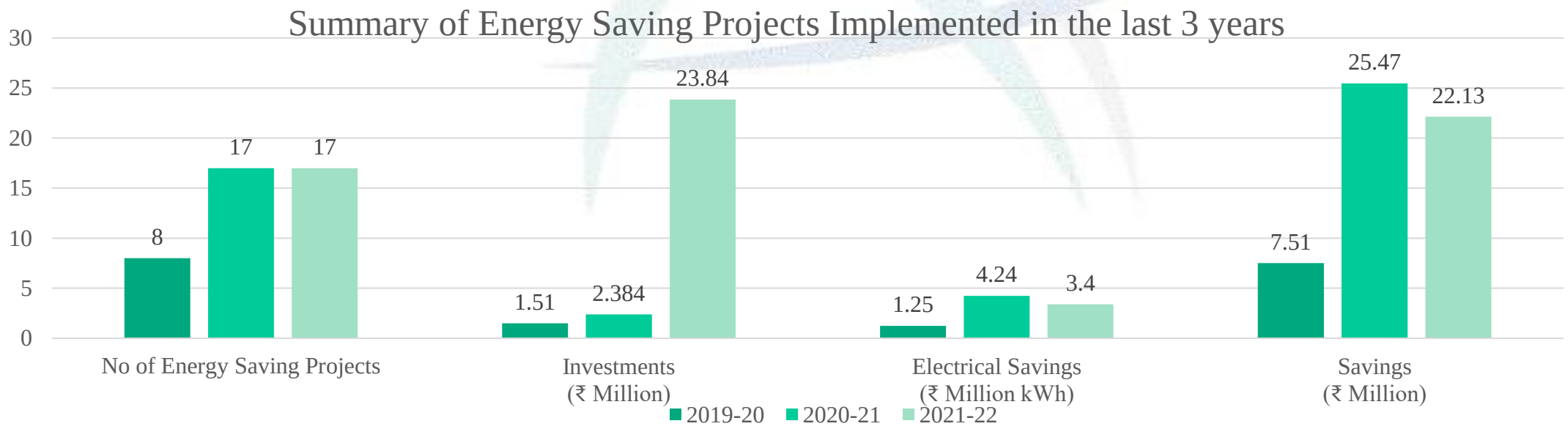
Investment : ₹ 7.20 million
Savings : ₹ 1.42 million
Payback : 05 Months

Introducing the dry run protectors for solvent transfer pumps to avoid unnecessary consumption

Investment : ₹ 0.16 million
Savings : ₹ 0.04 million
Payback : 4 Months

5. Energy Saving Projects Implemented in the last 3 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)**
2019-20	**8**	**1.51**	**1.25**	**0**	**7.51**
2020-21	**17**	**2.384**	**4.24**	**0**	**25.47**
2021-22	**17**	**23.84**	**3.40**	**0**	**22.13**



Major Encon Projects – Medium / Low Investment - FY 21-22

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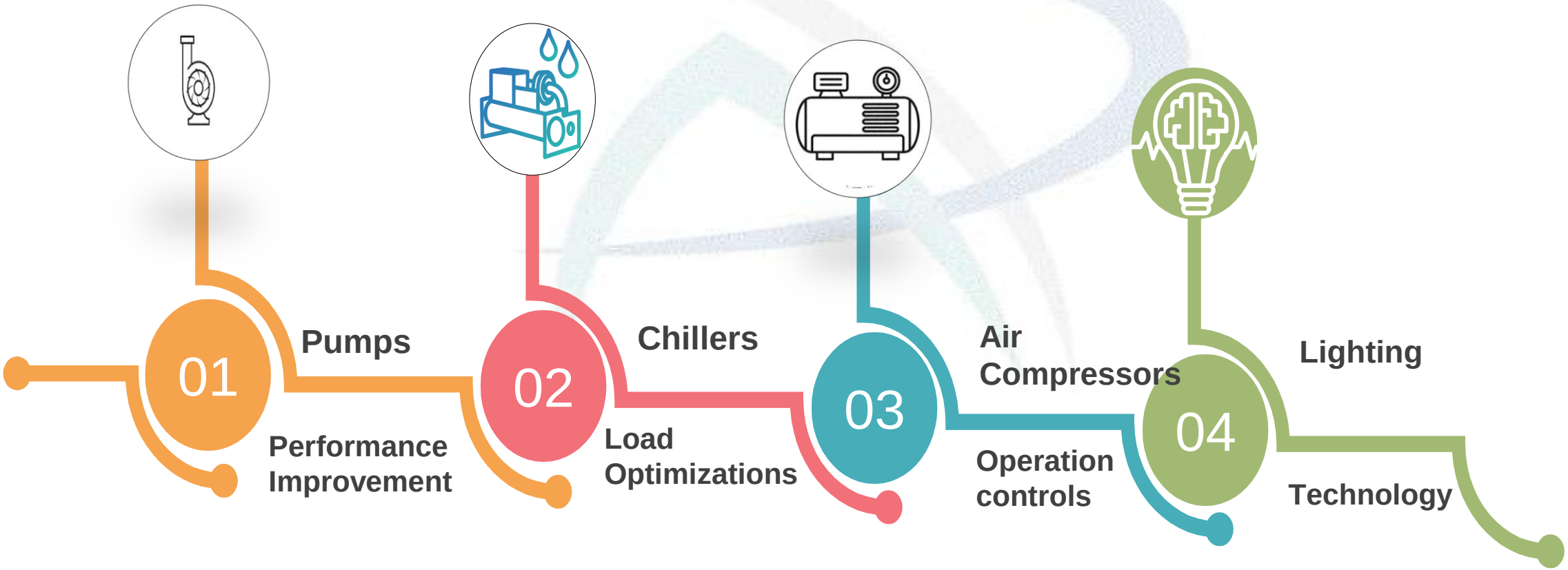
- Impeller Trimming
- VFD with PID
- Auto Level Cutoff
- Swapping of pumps

- Shifting of load from low efficient chillers to highly efficient Chillers.
- Regular assessments and monitoring & replacements

- No Air Loss Drain Valves
- Reducing the Pressure Settings
- Arresting Air Leakages

- LED lamps
- Sensor control
- Voltage stabilizer



6. Innovation Project Implementation

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Start
10/01/22

❖ Optimization of Cooling Tower Operations

Finish
25/01/22

Cooling Tower Optimization

- We are having two cooling towers in one plant, one for Reactor jacket and other one for Condensers. Both Cooling tower are operating continuously. By proper monitoring and process study we found that one cooling tower is sufficient for both application. With small pipe line modification we stopped one Cooling tower with pump.

SAVINGS: 0.68 L KWH ₹ 1.81 *L/Y*

INVESTMENT: ₹ 0.64 *Lakh*

MOTNHS
3

6. Innovation Project Implementation

Start
05/12/21

❖ Optimization of Chilling Plant operations

Finish
10/01/22

Chilling plant Optimization

- We have observed the load conditions of chilling plants to understand the loading pattern and explore the opportunities to operate these chillers on optimum load conditions. Two nos -20, 200 TR chilling plant is running at 50% load for different blocks. By providing inter connections, stopped one plant completely for 6 months.

SAVINGS: 1.62 L Kwh ₹ 10.54 *Lakh/6 months*

INVESTMENT: ₹ 1.0 *Lakh*

MOTNHS
3

6. Innovation Project Implementation

AUROBINDO

Start
20/04/21

PUMP SWAPPING

Finish
05/05/19

- 300 TR water cooled chiller two nos in use for HVAC system of P1-Block,P2-Block,P3-Block and QC Labs and Ware house CRT room. Three 3 nos Secondary pump, 200M3/ hr with 50 Hp motor is continuously running to catering the requirement.

  By increasing the Pump capacity 200 to 250 m3/hr, stopped one 200 m3 pump.

SAVINGS: 1.54 L kwh: ₹ 9.64 *Lakh/Y*

INVESTMENT: ₹ 1.2 *Lakh*

MOTNHS
12

6.Innovation Project Implementation

AUROBINDO

Start
05/04/19

❖ Utilization of waste heat recovery

Finish
10/04/19

Utilization of waste heat recovery

- Use of low temp MLs (+5 deg c) coming out from Process is being utilized to pre-cool the chilling plant RT circulating water by using heat exchanger.

SAVINGS: 24480 Tr/y ₹ 12.9 *Lakh/Y*

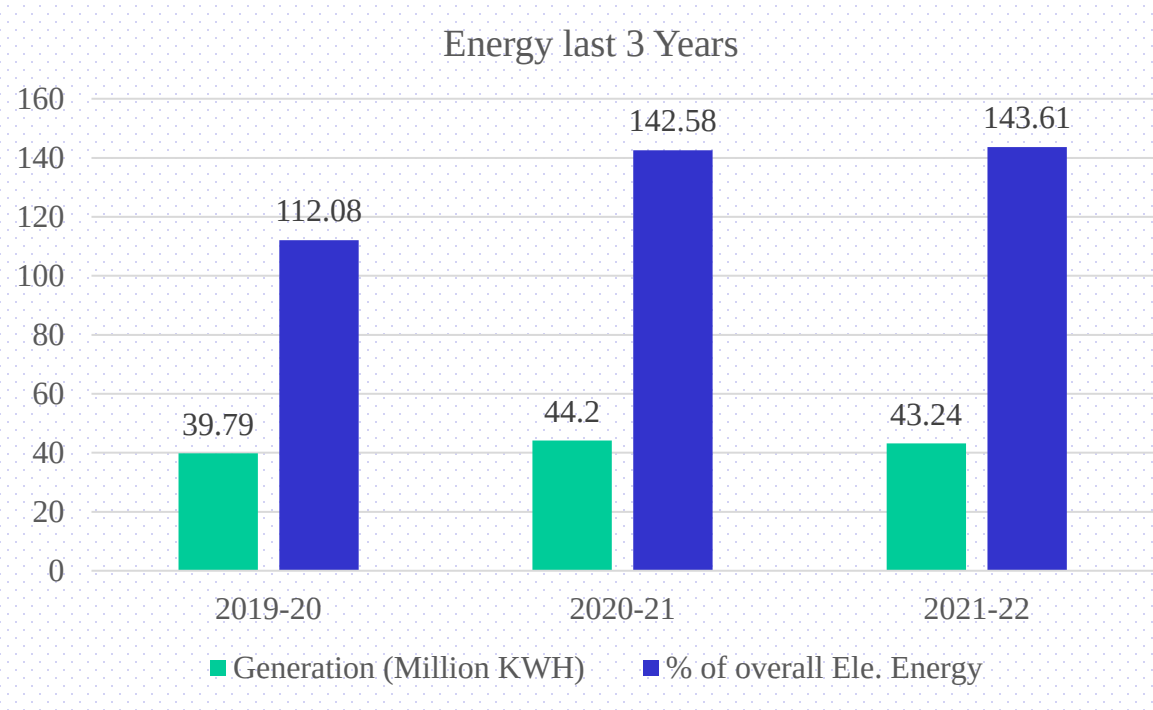
INVESTMENT: ₹ 0.12 *Lakh*

MOTNHS
12

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)	% of overall Ele. Energy
2019-20	Renewable	Solar System	Offsite	30 MW	39.79	112.08
2020-21	Renewable	Solar system	Offsite	30 MW	44.2	142.58
2021-22	Renewable	Solar System	Offsite	30 MW	43.24	143.61



Waste utilization and management

Waste Management

Value

Waste having heat value
(FY 21-22, 639.7 MT)

Value

Cooling Tower Fills
Mixed spent carbon & Ash

Lq. Organic waste
Used filter pads
Thermocol

CONTINUE

Co-fuel for cement units

Value

Recycling
(FY 21-22, 4.15 MT

Value

Used oil
LED bulbs
Batteries

Power cables, Wires, Contactors, Relays

CONTINUE

Through authorized scrap agencies

9.Sustainability / GHG Inventorisation

01 Sustainability Report

2020-21

Published maiden sustainability report for FY 2020-21

02 Goals & Targets -2025

2025

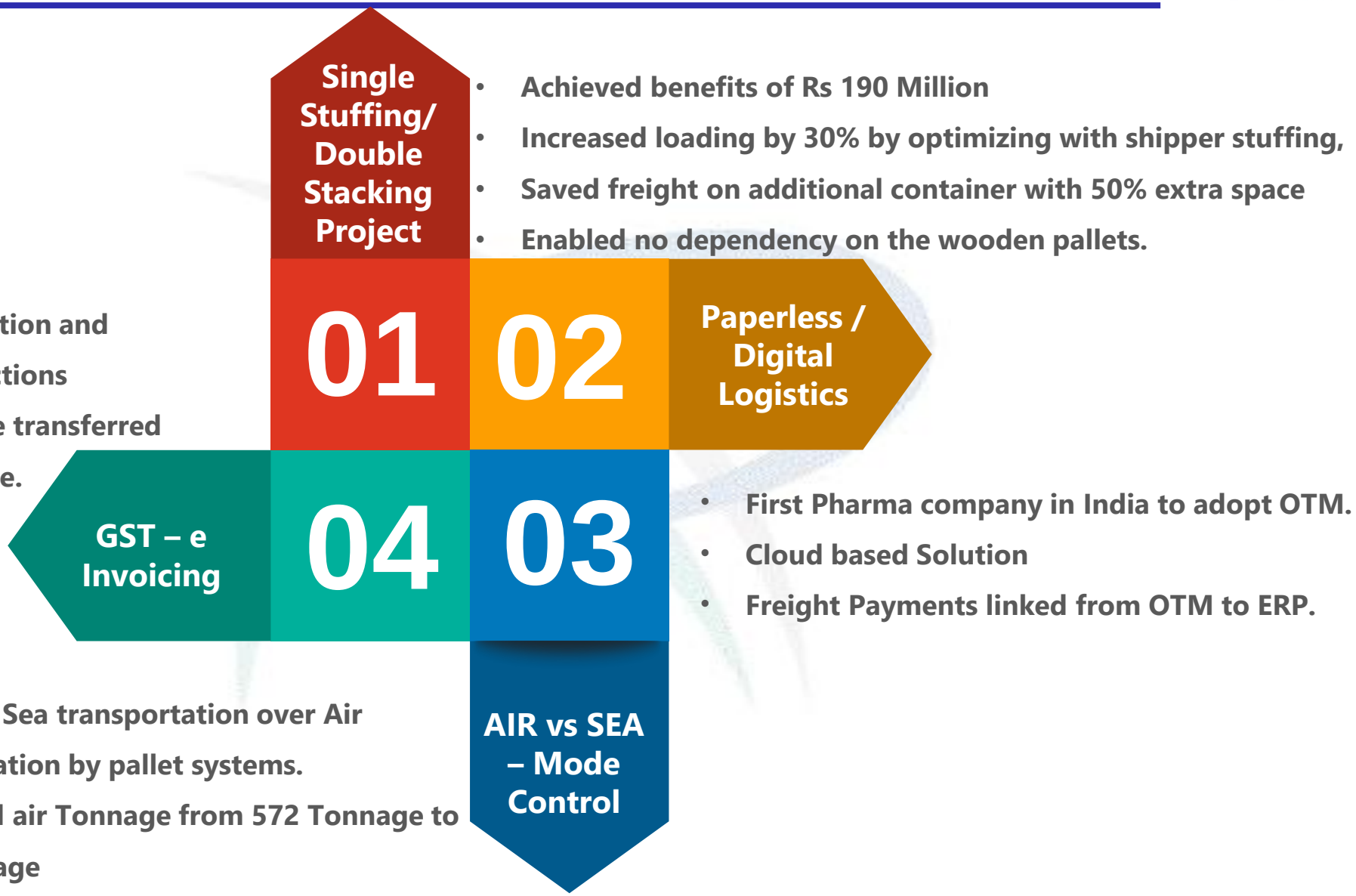
- 20% Renewable Energy Share (Power to Power)
- 12.5 % Reduction in Emissions
- 35% water conservation / restoration
- 60% coprocessing of hazardous waste
- 100% reuse & recycling nonhazardous waste
- 25% hours of learning per employee

03 GHG Emissions

FY 2020- 22

FY	Total $kgCO_2$ / Ton of Product	Scope 1	Scope 2
2019-20	60502	31868	28634
2020-21	53041	29189	23852
2021-22	56318	31326	24993

10. Green Supply Chain Management



- 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.

- Decreased Paper consumption and paper less / Digital transactions
- Invoice information will be transferred from the portal in real-time.

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

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

Energy Management System : ISO 50001 - Procedures

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Strategies for energy management :

- Identify Sources of Energy Consumption
- Collect Utility Data
- Analyse Meter Data
- Identify Opportunities to Save on Costs
- Track Your Progress

Energy management techniques :

- Actively manage real-time energy use
- Actively manage what is measureable
- Actively manage energy consumption
- Have a holistic/full plan
- Secure leadership buy-in and support
- Negotiate

Components of an Effective Energy Management Strategy

- Risk Management
- Efficiency
- Environmental Sustainability.

Main elements of energy management

- Consumption monitors
- Smart panel
- Smart circuits
- Monitoring & control

Effective energy management

- Energy management is the practice of using energy more efficiently and effectively in an organization's operations. Energy is a valuable resource and a cost which can be controlled when managed efficiently and effectively.

Establish an energy management system

- Leadership and responsibility – Role of senior management.
- Develop an energy policy that includes energy performance.
- Align the scope with existing processes.
- Appoint an energy manager and an energy team.
- Conduct energy efficiency assessments.
- Communication and reporting

11. 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.

Learnings from CII - last 4 Years

Energy efficient motors
Replaced motors of utility with energy efficient motors

Motors

Refrigeration

Chillers
Phased manner replacement of Chillers with Energy Efficient Chillers

Air Compressors
Installed No Air Loss Drain (NAD) valves form M/s Godrej

Utility Systems

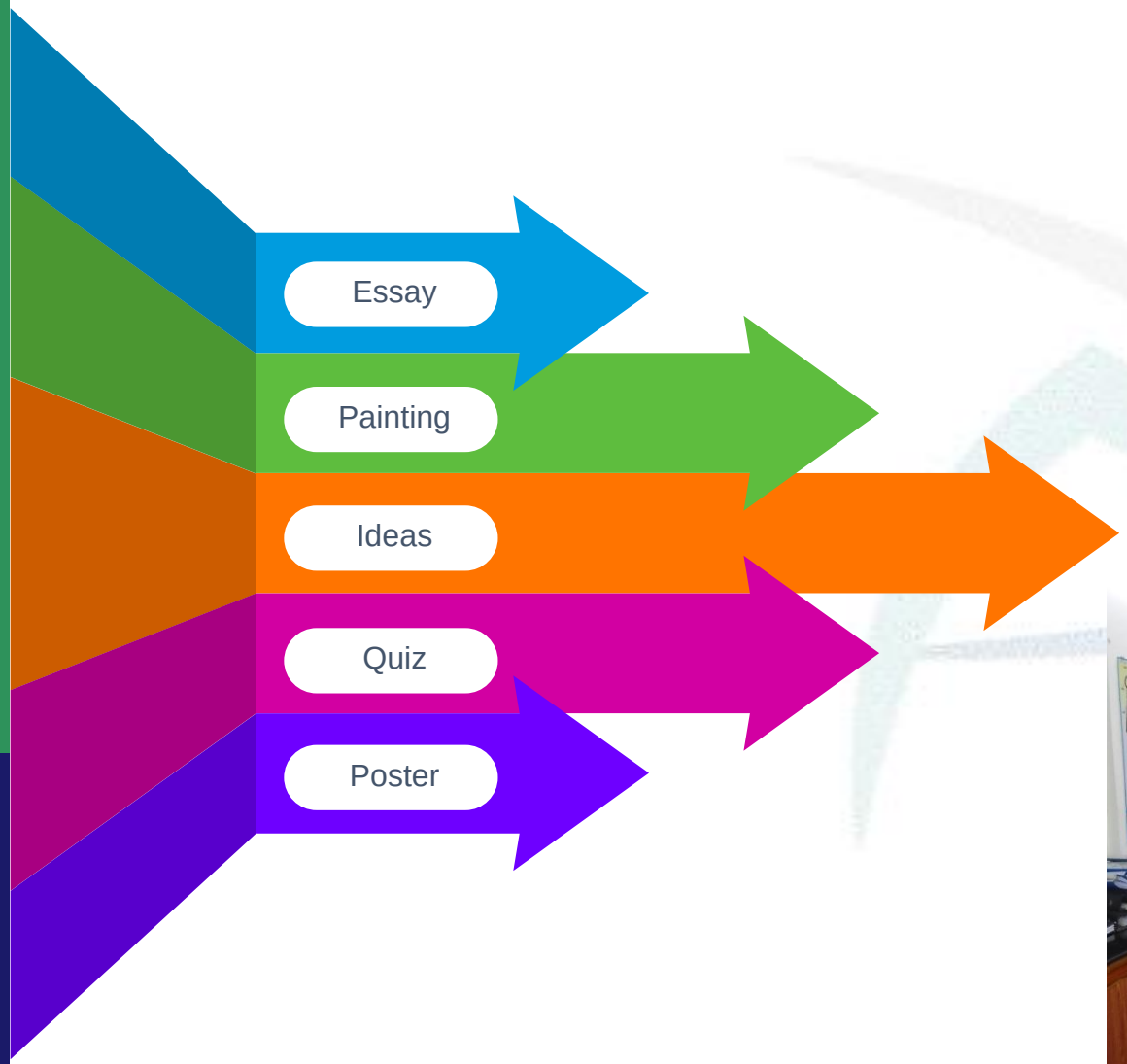
Green Energy

30MW Solar Power
Varisam village, Pydibhimavaram, Ranasthalam, Srikakulam.
M/s Aurobindo Ltd
Investment : ₹ 120 Cr.

Online Monitoring
This is a sample text, place your own text here

EMS

Energy Week / Energy Conservation Day Celebrations



Awareness

Participation from all departments like QA,QC Production, HR Engineering, EHS, SRS and TSD in energy week celebration

Winner

Received Award for best idea implementation and involvement among all API units. Organized by Corporate Energy cell and L&D team

11. Teamwork, Employee Involvement & Monitoring

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

Awards & Recognitions

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CII
Confederation of Indian Industry

22nd National Award for Excellence in Energy Management 2021

This is to certify that

Aurobindo Pharma Limited, Unit 9, Hyderabad

has been recognized as

"Excellent Energy Efficient Unit"

This acknowledgement is based on the evaluation by panel of judges at the "National Award for Excellence in Energy Management" held during 24 - 27 August 2021.

K S Venkatagiri
Executive Director
CII - Godrej GBC

Ravichandran Purushothaman
Chairman, Energy Efficiency Council
CII - Godrej GBC

CII
Confederation of Indian Industry

22nd National Award for Excellence in Energy Management 2021

This is to certify that

Aurobindo Pharma Limited, Unit 1, Hyderabad

has been recognized as

"Energy Efficient Unit"

This acknowledgement is based on the evaluation by panel of judges at the "National Award for Excellence in Energy Management" held during 24 - 27 August 2021.

K S Venkatagiri
Executive Director
CII - Godrej GBC

Ravichandran Purushothaman
Chairman, Energy Efficiency Council
CII - Godrej GBC

CII
Confederation of Indian Industry

22nd National Award for Excellence in Energy Management 2021

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Aurobindo Pharma Limited, Unit XI, Vizag

has been recognized as

"Energy Efficient Unit"

This acknowledgement is based on the evaluation by panel of judges at the "National Award for Excellence in Energy Management" held during 24 - 27 August 2021.

K S Venkatagiri
Executive Director
CII - Godrej GBC

Ravichandran Purushothaman
Chairman, Energy Efficiency Council
CII - Godrej GBC

CII
Confederation of Indian Industry

22nd National Award for Excellence in Energy Management 2021

This is to certify that

Aurobindo Pharma Ltd., Unit XIV, Vizag

has been recognized as

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This acknowledgement is based on the evaluation by panel of judges at the "National Award for Excellence in Energy Management" held during 24 - 27 August 2021.

K S Venkatagiri
Executive Director
CII - Godrej GBC

Ravichandran Purushothaman
Chairman, Energy Efficiency Council
CII - Godrej GBC

CSR Activities

- Akshaya Patra Foundation Rs.: 6.5 Cr.
- 38 Water Drinking Plants
- 350 + Healthcare Programme
- Drinking water in village through tanker
- Canteen for junior college Echrla Village

Start 5S Implementation

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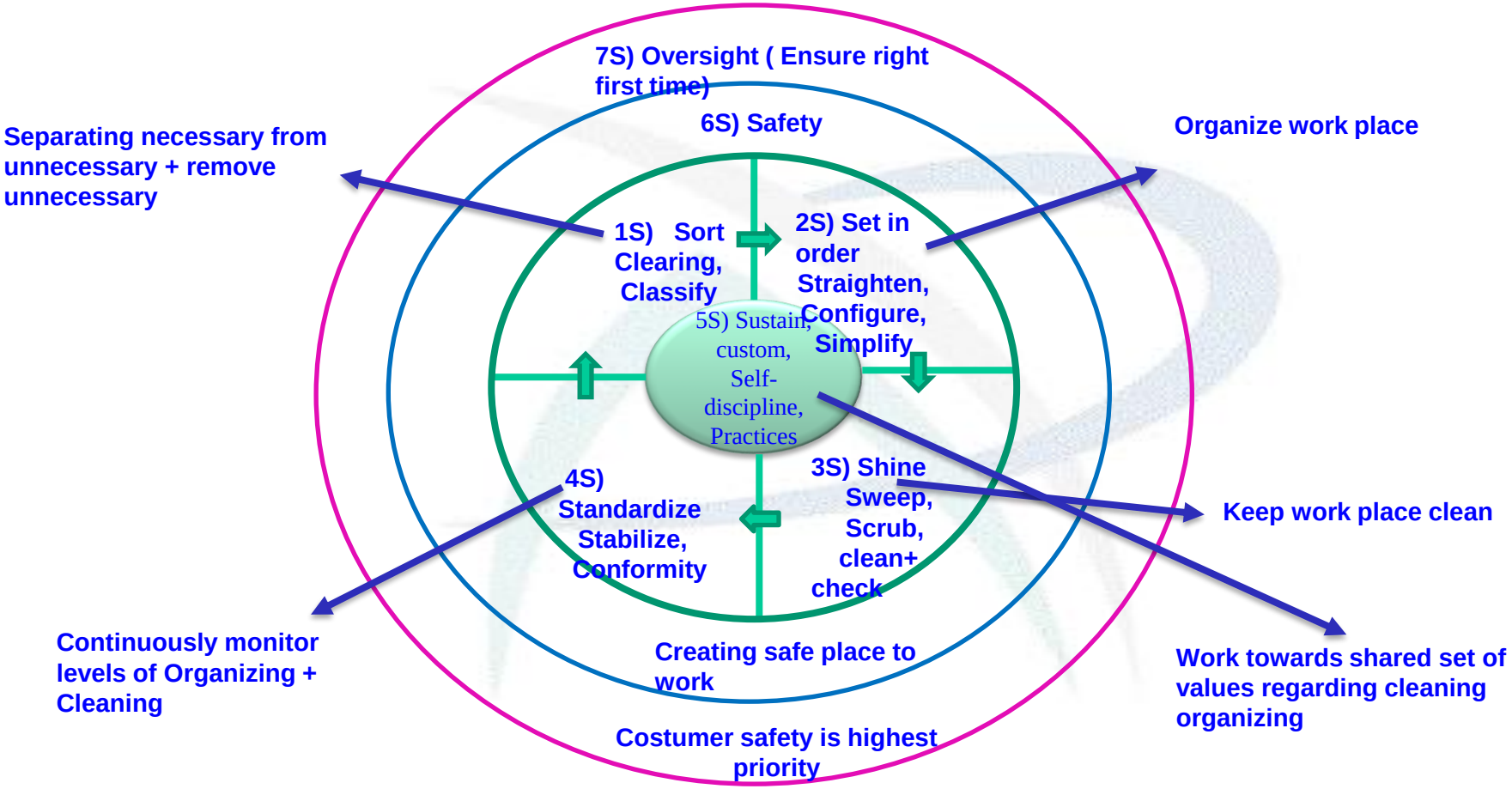
5S Concept.



Start 5S Implementation

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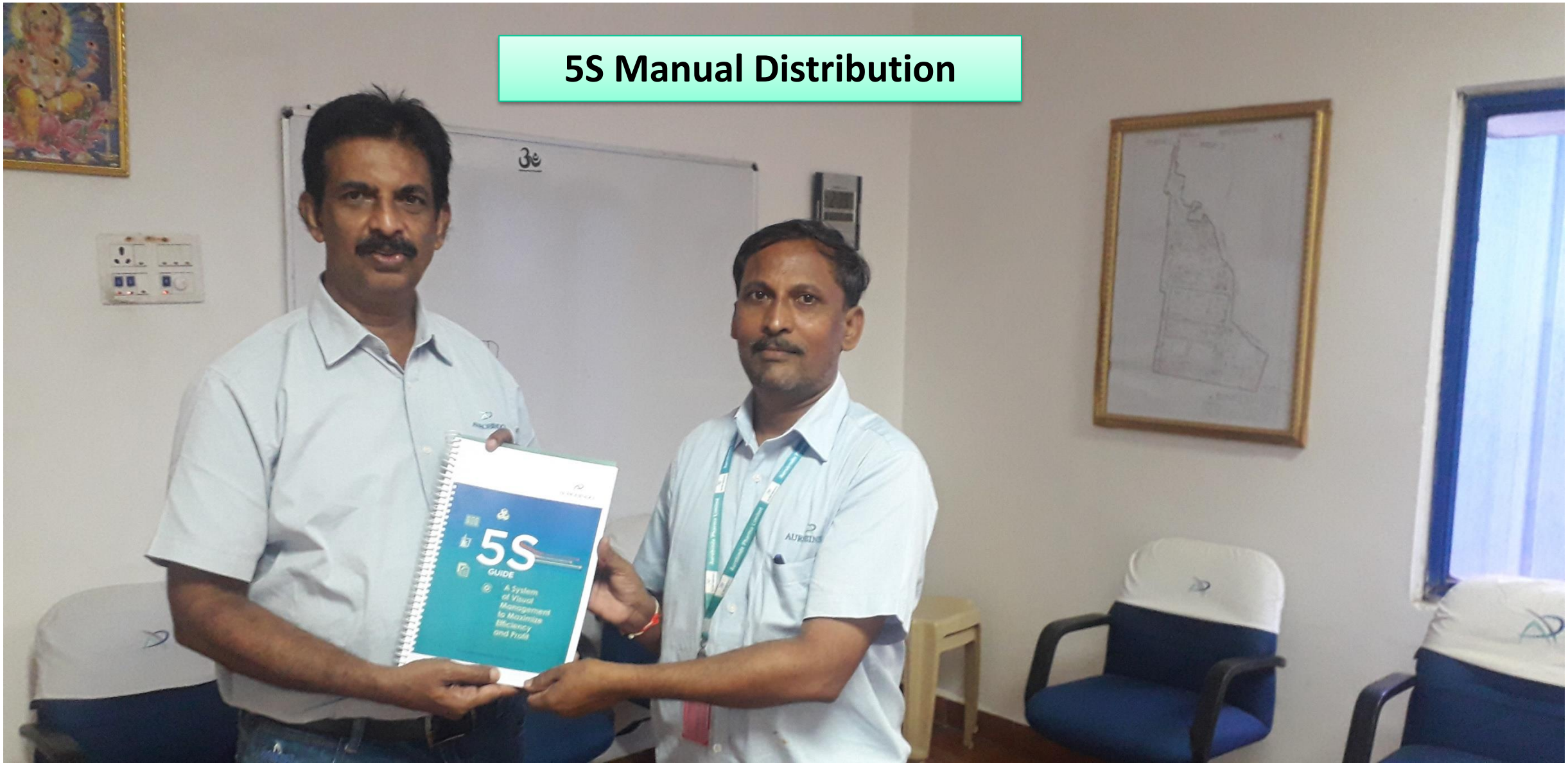
5S Manual Distribution



Start 5S Implementation

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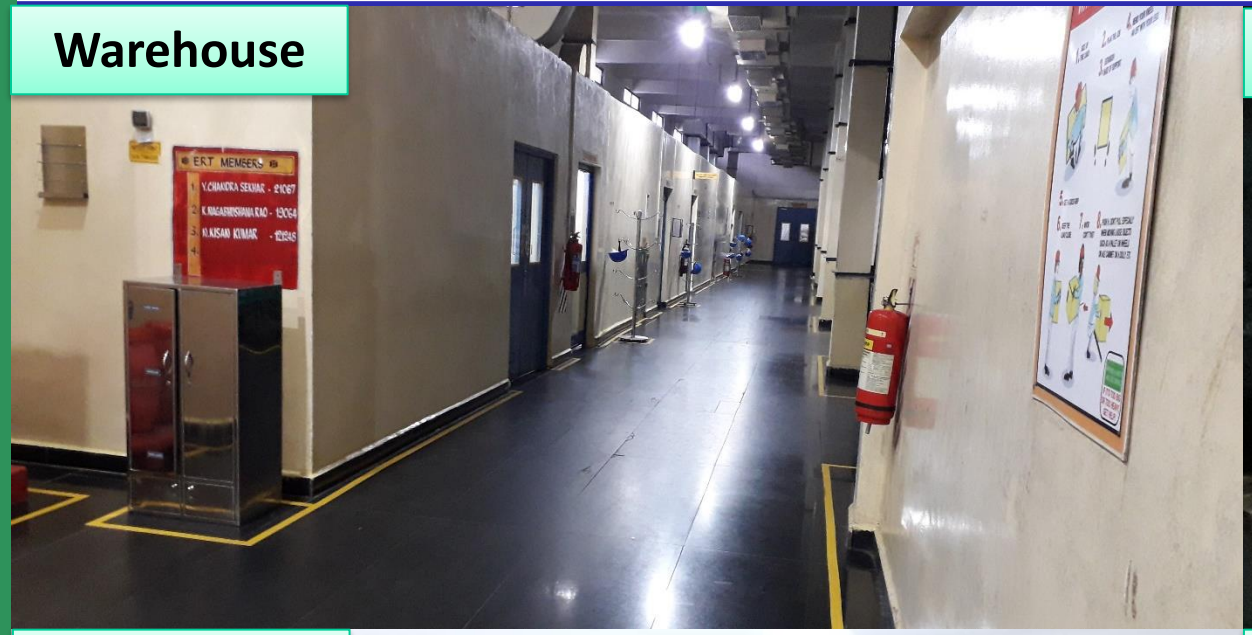
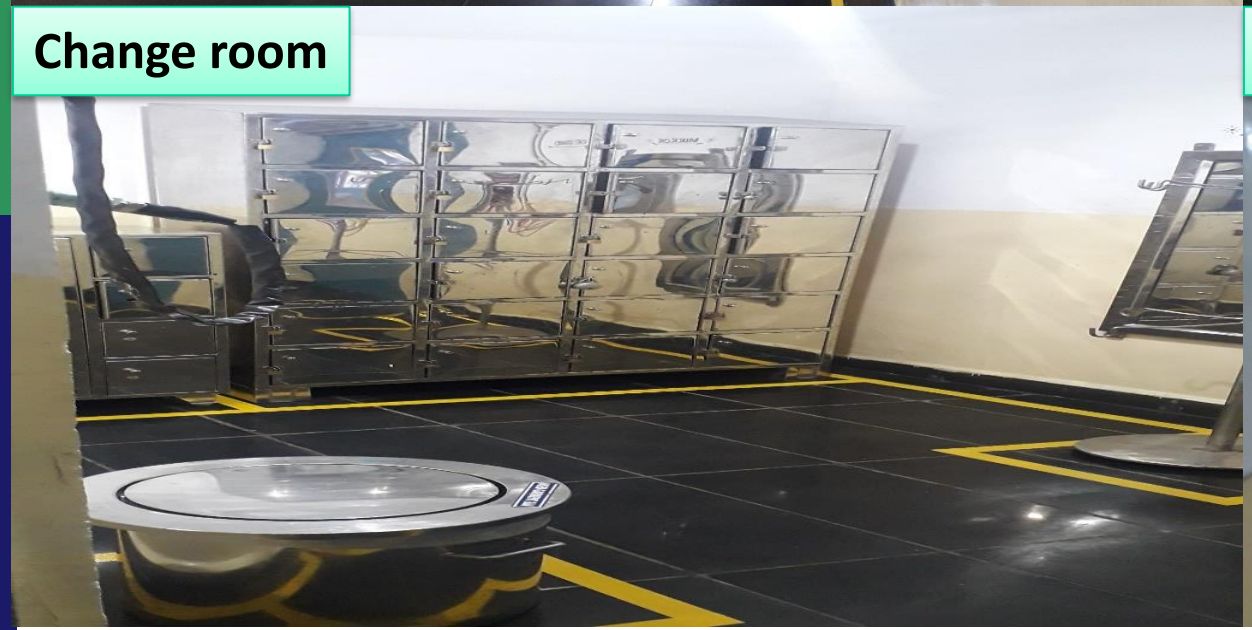
Warehouse

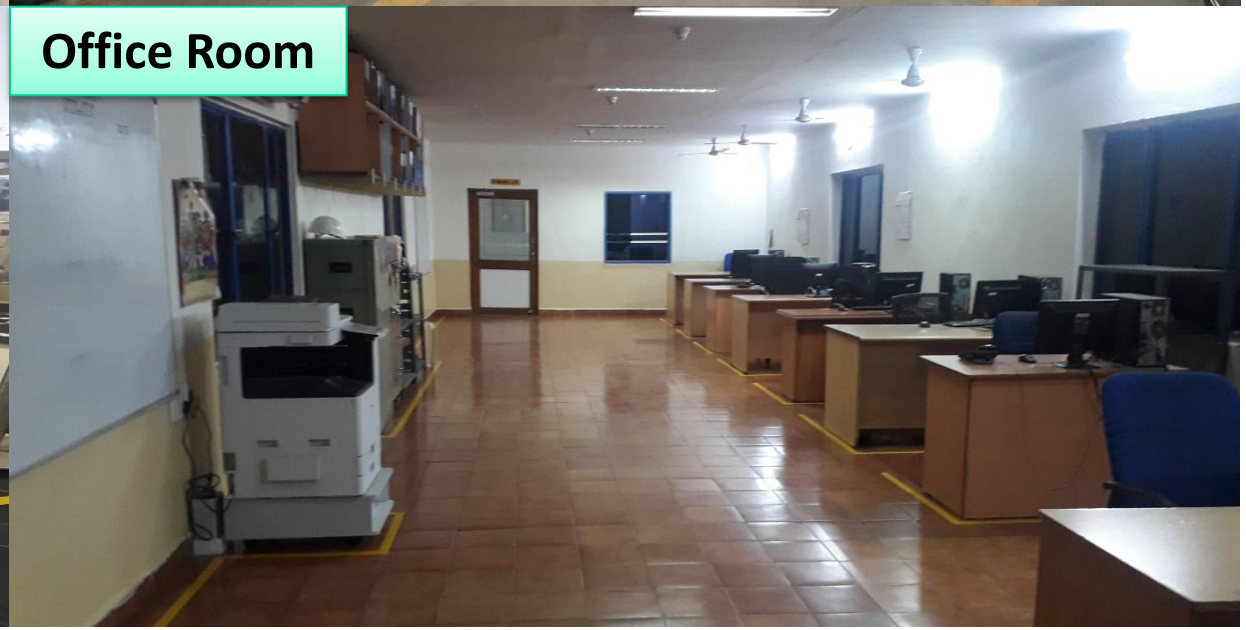


Utility

Change room



Office Room



Energy Audit Instruments

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

Thank You

AUROBINDO
Committed to healthier life!

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