Confederation of Indian Industry

23rd National Award for Excellence in Energy Management 2022

23 – 26 August 2022

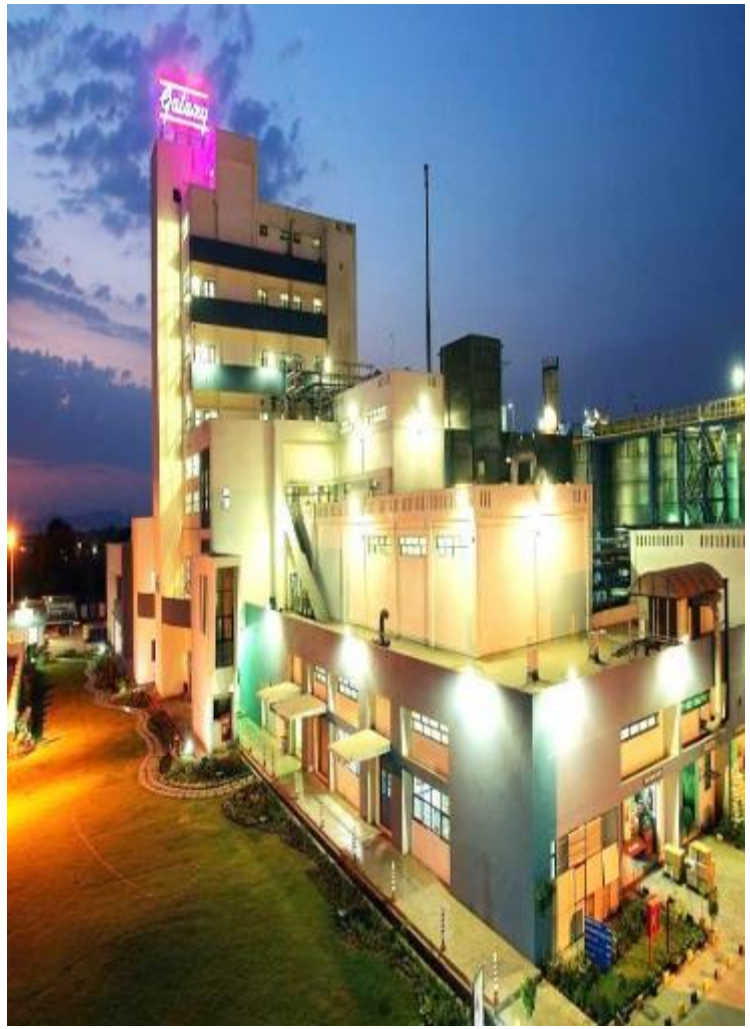
Galaxy Surfactants limited.

V/23 Industrial Area, Taloja, Navi Mumbai, Maharashtra, 410208

- **Mr. Amit Kakkar (General Manager)** amit.kakkar@galaxysurfactants.com
- **Mr. Kunal Waghmare (Senior Executive)** kunal.waghmare@galaxysurfactants.com
- **Mr. Ashish Chaudhari (Senior Officer)** ashish.chaudhari@galaxysurfactants.com
- **Ms. Pragati Kumbhar (GET)** pragati.kumbhar@galaxysurfactants.com

About The Organization

- Based in India, Galaxy is one of the leading manufacturers of surfactants and specialty care products with an advanced portfolio of innovative products and solutions
- Preferred supplier to leading Multinational, Regional and Local FMCG brands
- Established track record of providing a wide range of innovative and high-quality ingredients
- One of India's leading manufacturers with global presence
- Strategically located plants in India, Egypt and US



Taloja Plant :- An Overview

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- Established in 1997
- Manufacturing Units – 7 Across the world
- **Continuous Process Plants**
  Sulphonation Units-3
  Dryer Units - 7
- **Batch Process Plants**
  Amides and betaines, Ethoxylation and Syndet Soap Noodles
- **Production Quantity**
  Production of Surfactants and Specialty Chemicals like SLES, SLS, CAPB, Syndent etc. is **1,96,150** Metric Tonnes

❑ Patents Granted Since 2000 - **79**

Silver Jubilee Year -2022

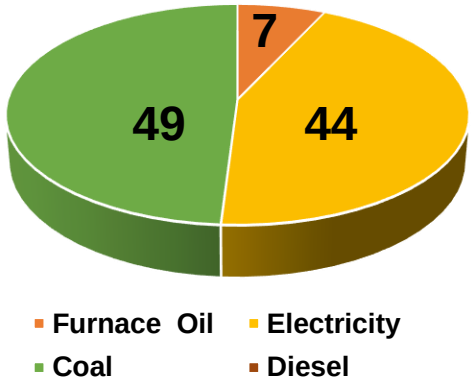
GREEN COMPANY RATING SYSTEM – Greenco – SILVER 2020 - 2025

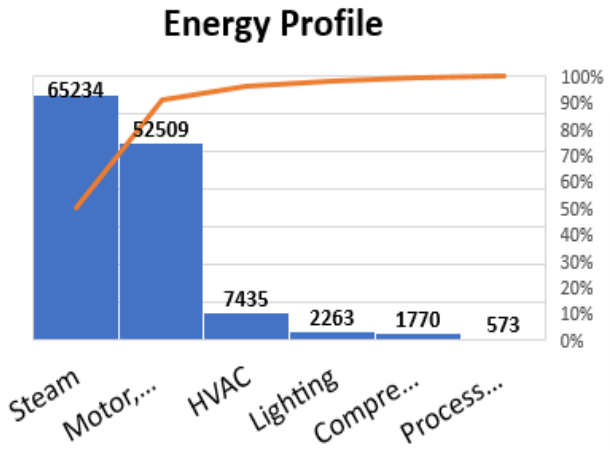
GOLD 2020 ecovadis Sustainability Rating

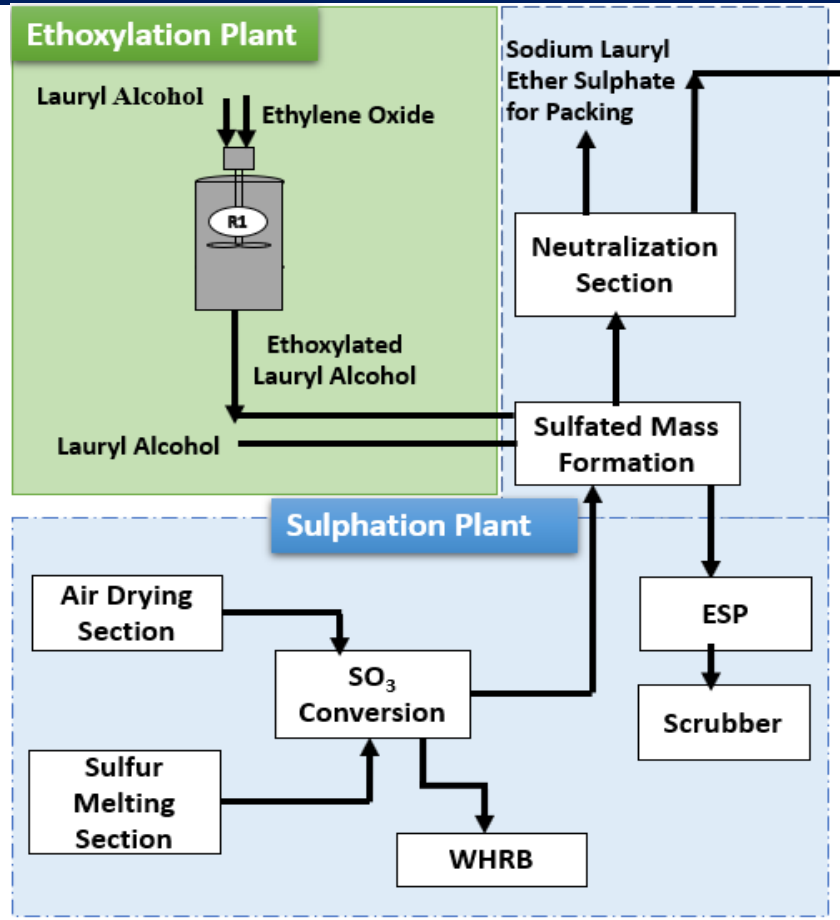
Responsible Care®

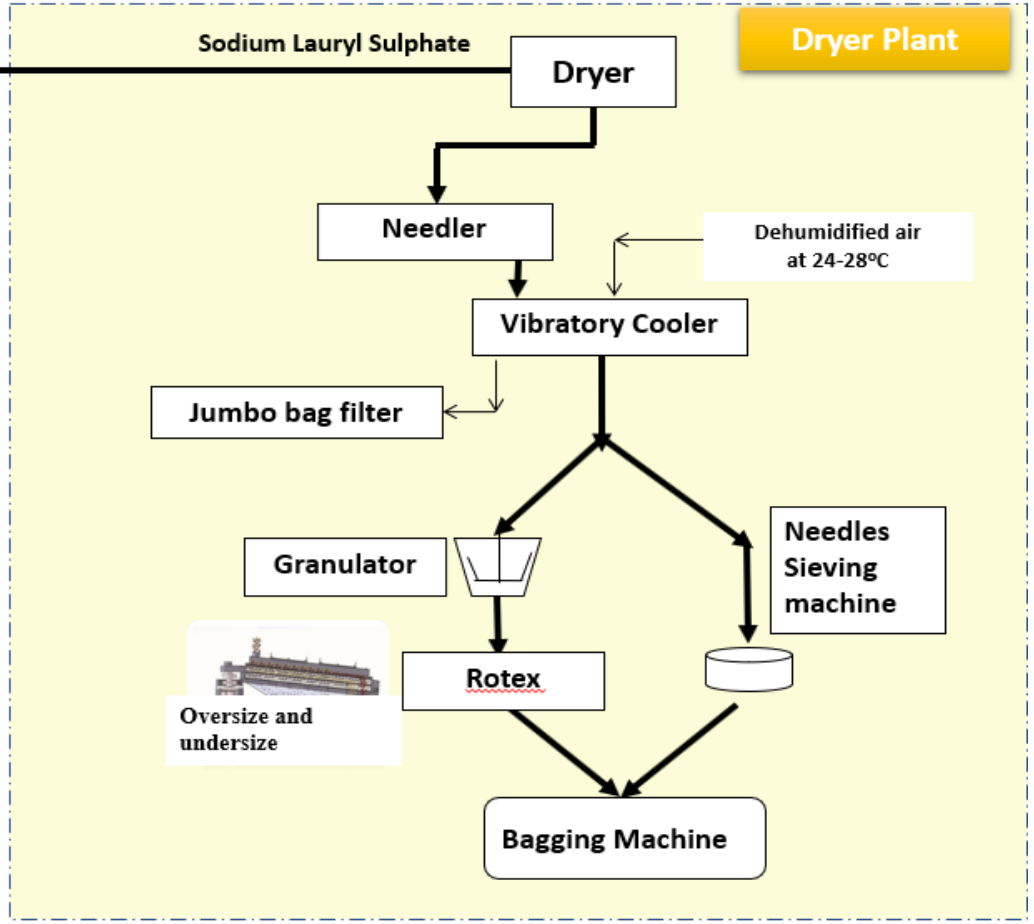
ISO STANDARDS
ISO 9001
ISO 14001
ISO 14064
ISO 50001:2018
ISO 45001

Energy Mapping & Plant Overview









Transformers:2 x 2500 KVA,1 X 1600 KVA
Coal Boiler : 5 TPH
Utility Chillers : 1 x 250 TR , 1 x 210 TR
Air Compressor : 2 x 293 CFM with VFD
Thermopac Boiler : 600000 Kcal

Max Demand : 3500 KVA
Load factor : 70-75 %
Power factor : >0.995
(APFC + Harmonic filters)

IOT Based Monitoring System

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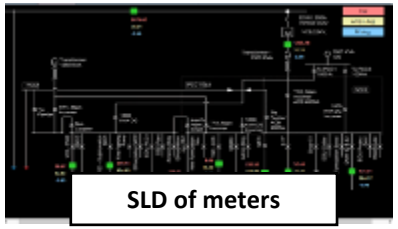
Equipment Status


Shiftwise power consumption - Dashboard


SLD of meters

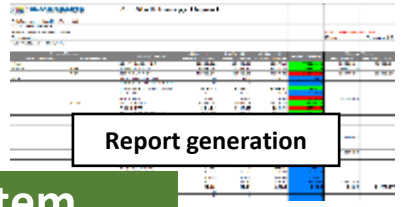

OVERVIEW


BASIC PARAMETERS


FLUCTUATIONS


Alarm Generation


Limits


Report generation

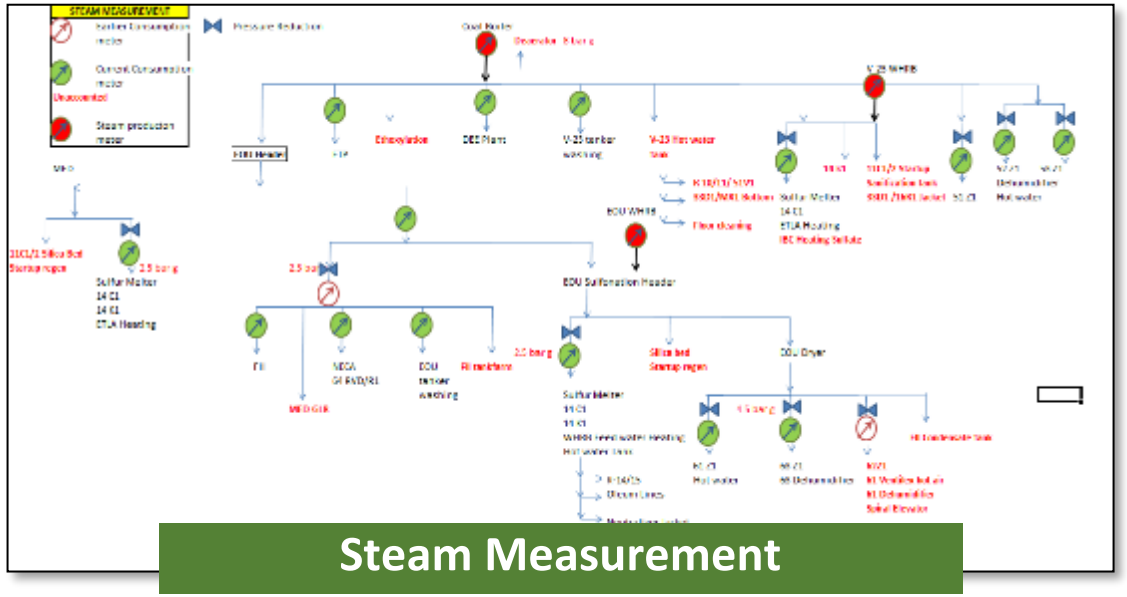
Energy Management System

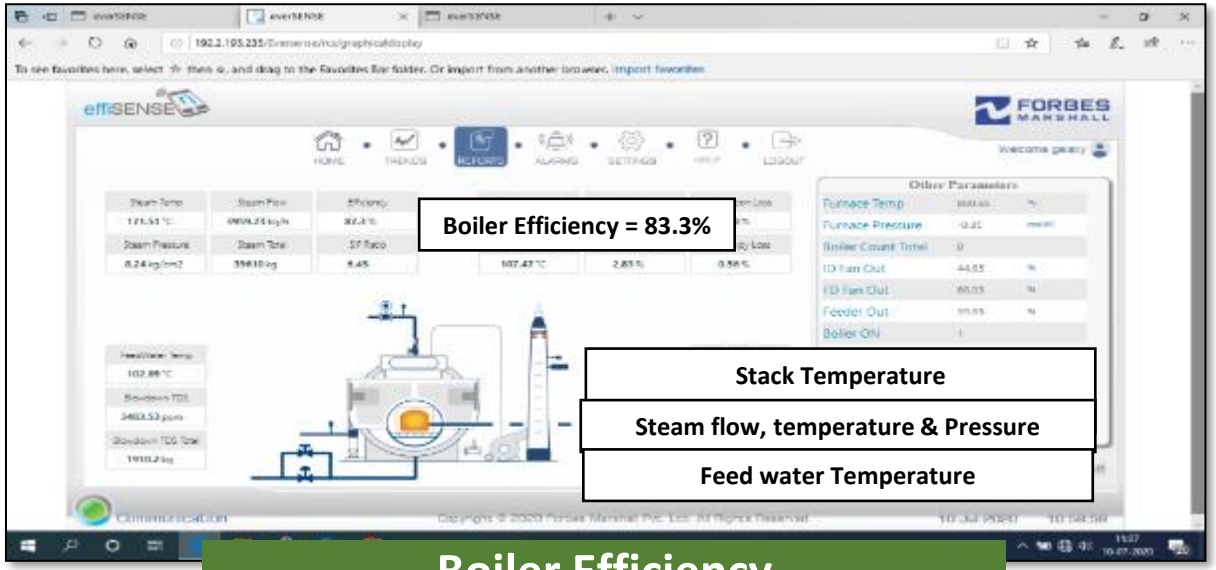

UNBALANCE


FLICKERING


EVENT MEASUREMENT

Power - Quality Software


Steam Measurement



Boiler Efficiency

IOT Based Monitoring System

-Continual Improvement is the way of life

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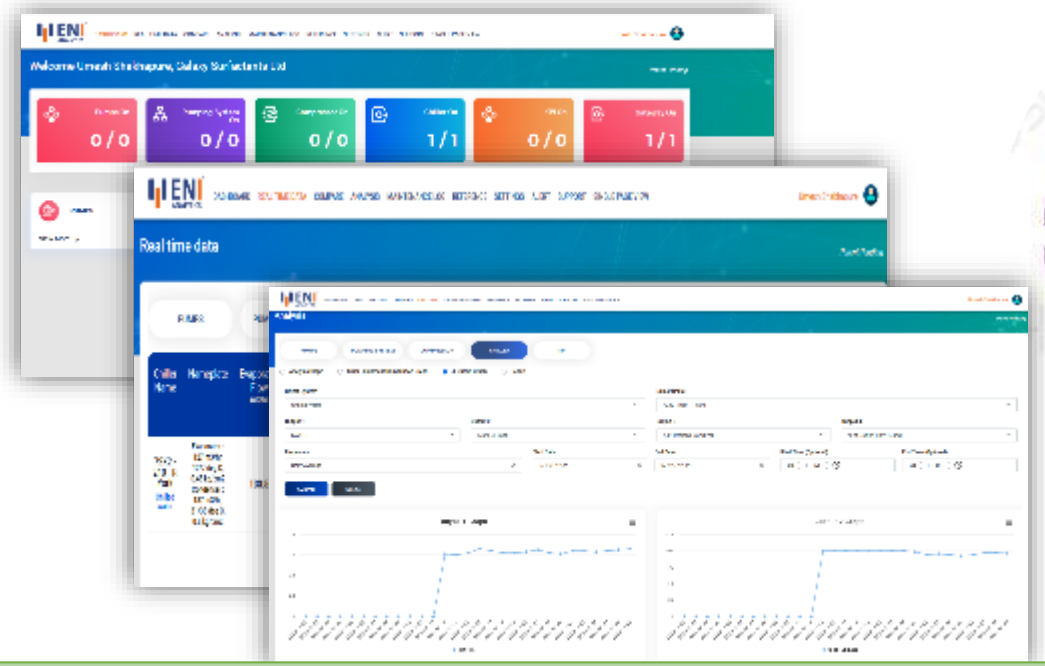

Additional
Implemented Modern Software's

Cloud based Monitoring System- Chiller

Sigma Air Manager - Compressor

Features

- Real Time monitoring
- Interactive Dashboard
- History Trends/ Graphs
- Alarm Generation
- Daily Report Generation

Extent of Energy Monitoring & Target setting

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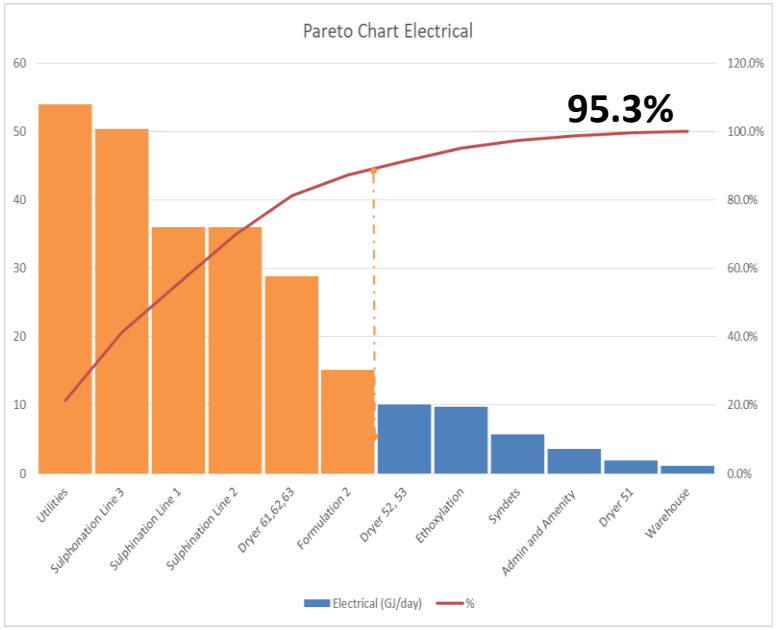

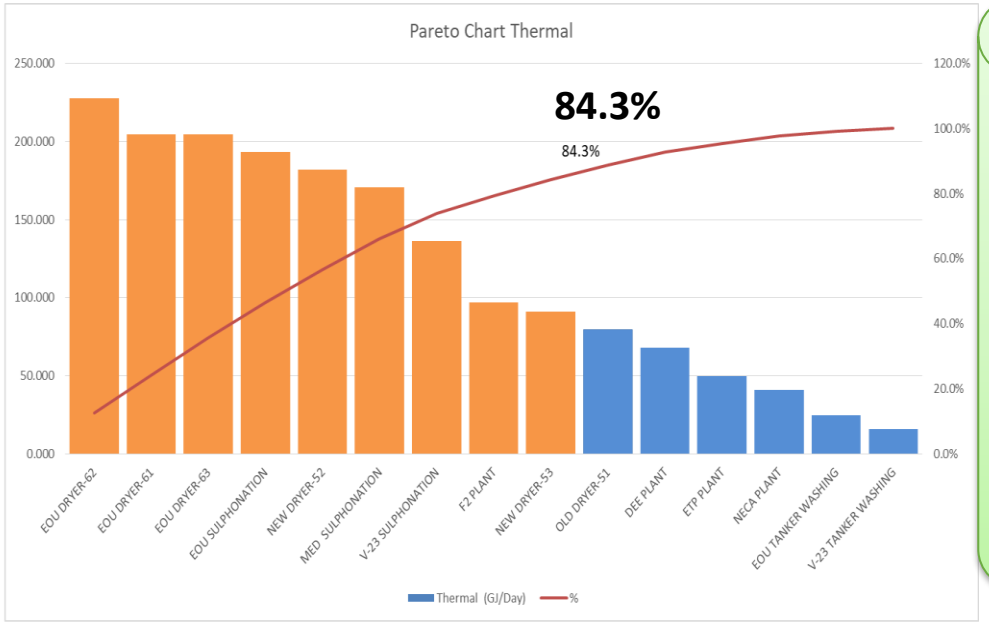

*Target Setting- Plants Level (with **2 sigma** approach)*

*Based of above Analysis Utilities, Sulphonation, dryers and F 2 plants are SEUs in Utility which covers more than **95.3 %** of Electrical Energy and **84.3 %** of Thermal Energy.*

Sp. Energy Performance

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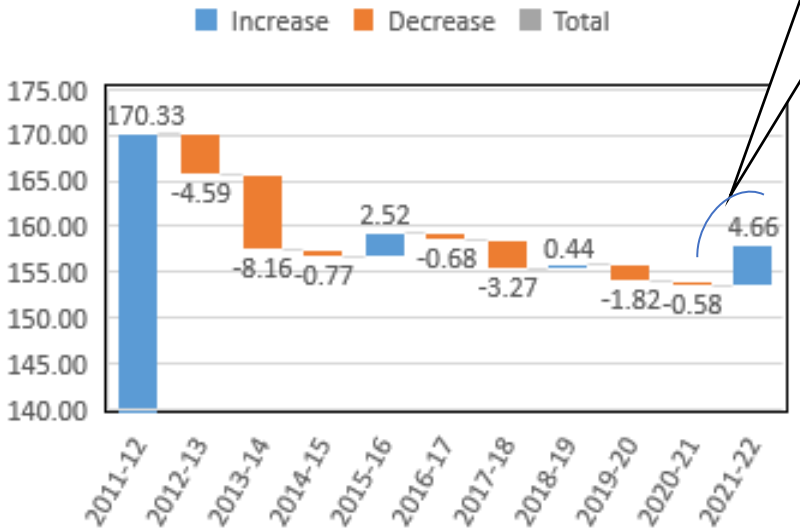
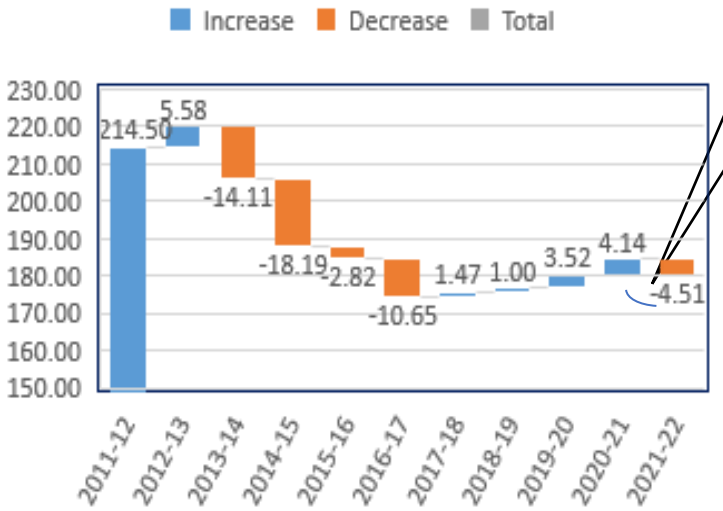
4.6 % Increase

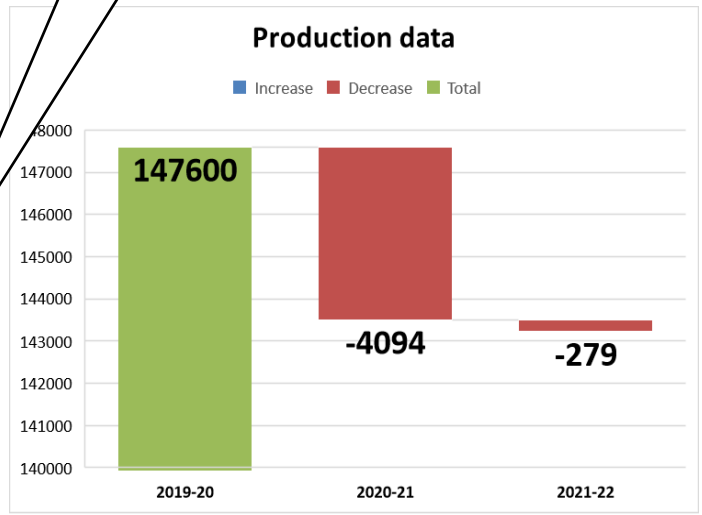
Performance- SEC- (Electrical) KWh/MT



4.49 % Reduction

Performance- SEC –(Thermal) KWh/MT

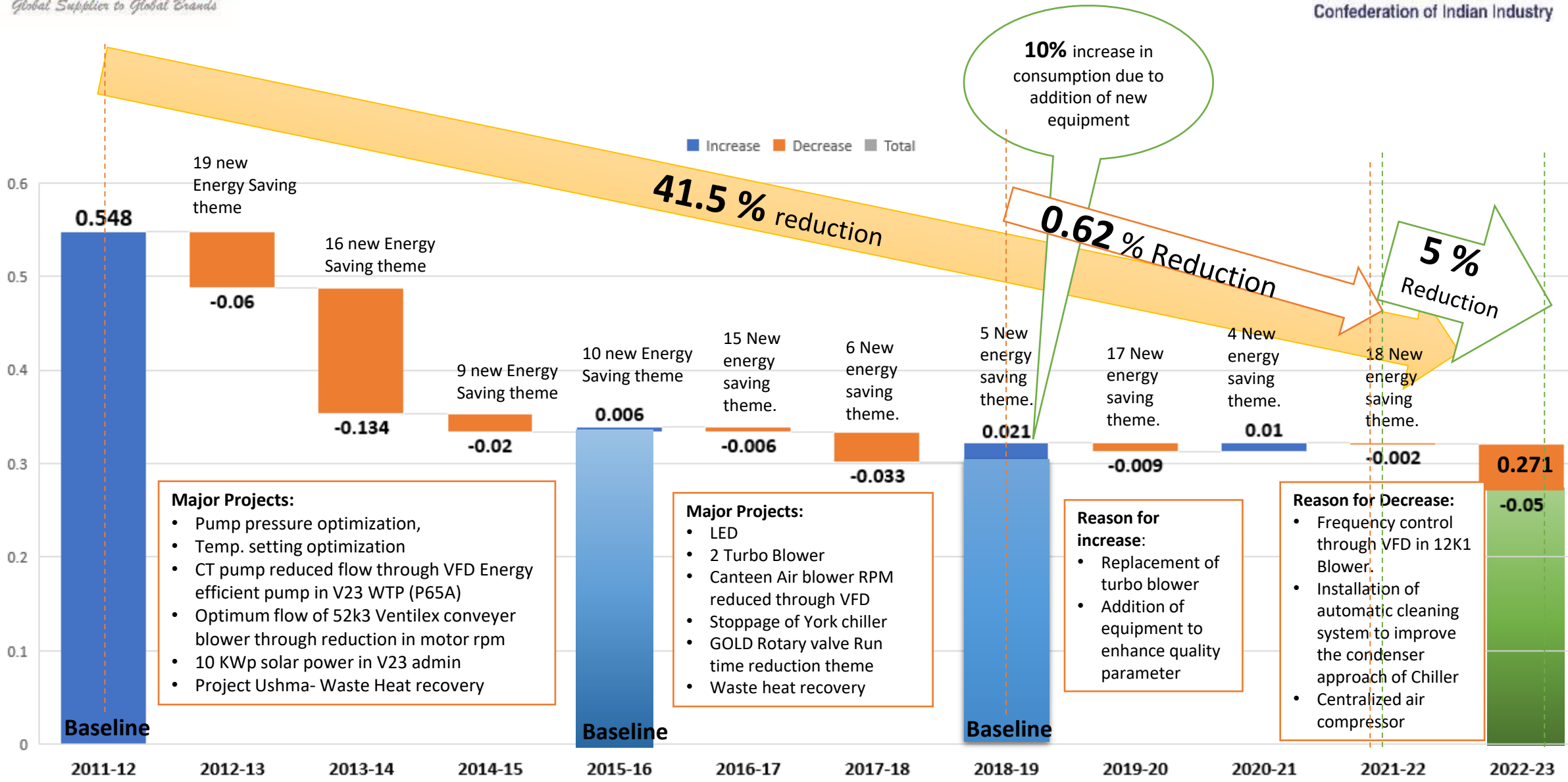




- **Load additions** in Energy intensive plants for improvement in Quality , safety and Yield.

- For steam , **Monitoring** improved.
- Consumption decreased due to **Encon themes** implemented (Especially in Dryers).

Sp. Energy Performance



Internal benchmark

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- Internal Benchmarking was carried out among different factories of Galaxy:

	OEM	GALAXY
Feed Rate (Lauryl Ether 1 EO)	X Kg/Hr	1.16X Kg/Hr

Location	Year of Commissioning	Sp. Consumption
Taloja (L1)	1997	X
Taloja (L2)	2004	0.85 X
Taloja (L3)	2010	0.94 X
Jhagadia (Gujarat)	2018	0.79 X
Egypt	2011	0.78 X

EnCon Projects Implemented

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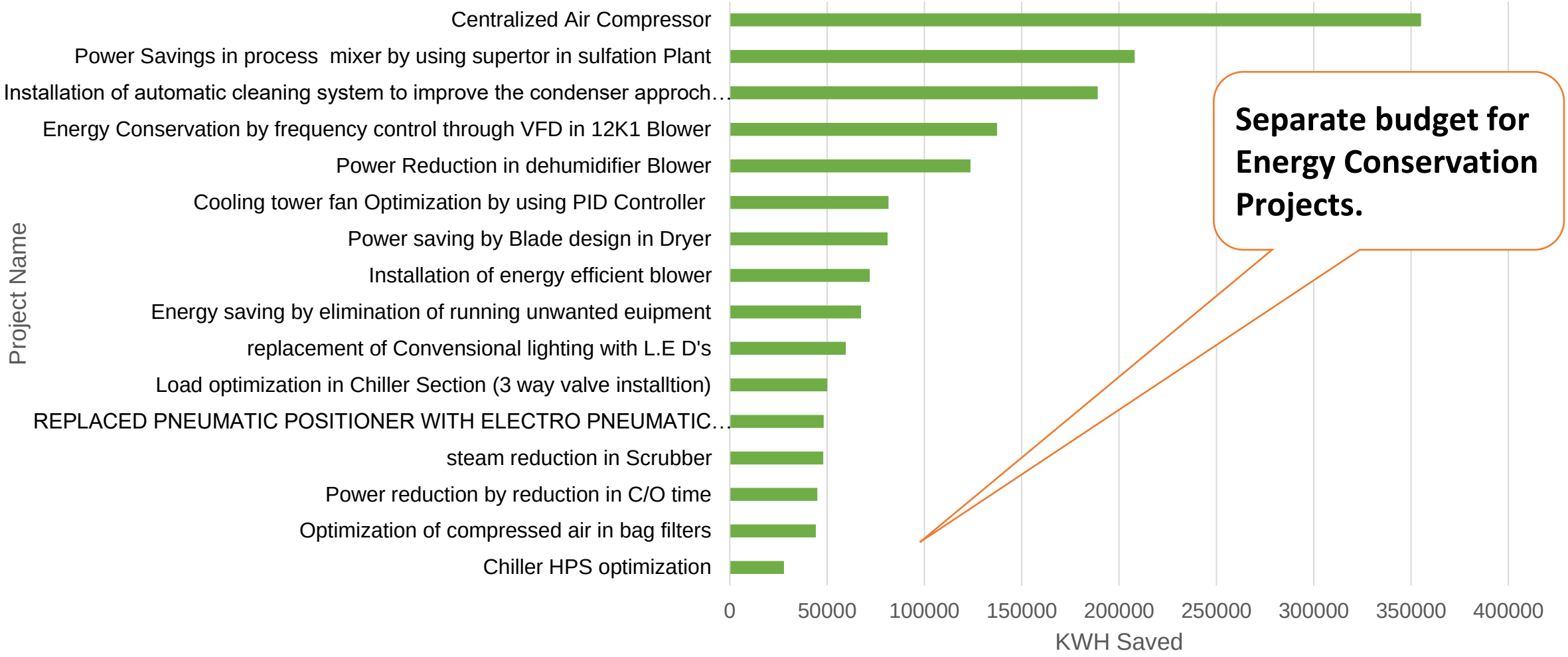
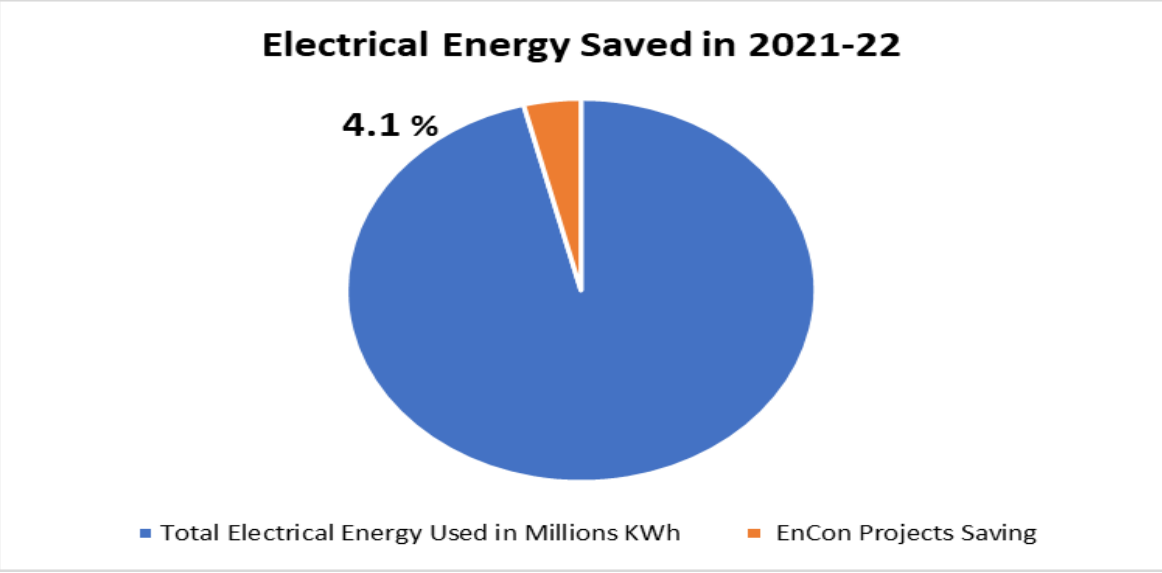
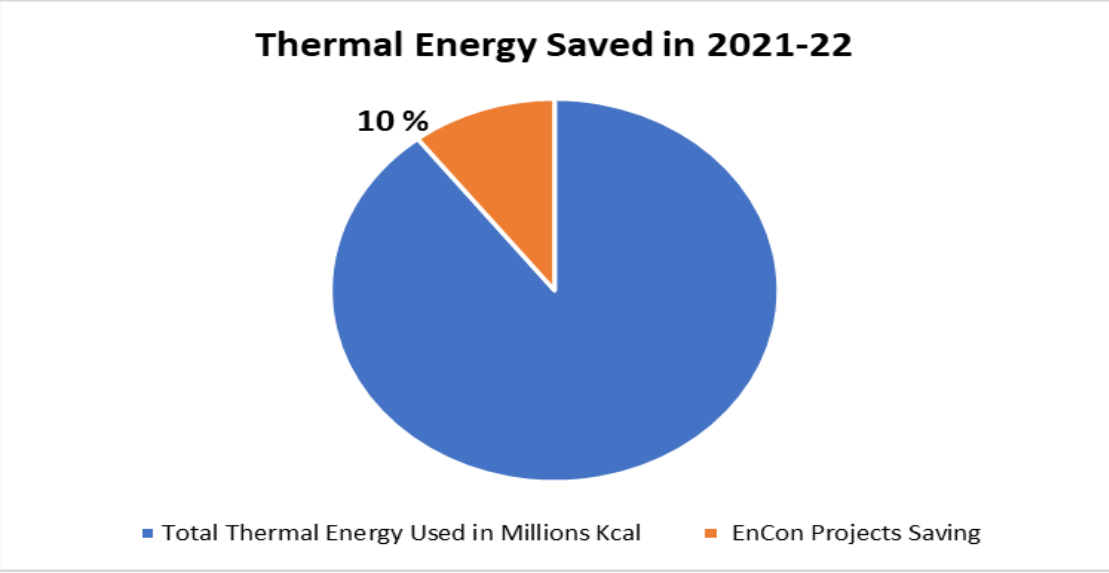
Top 15 EnCon Projects Implemented (2019-22)



EnCon Projects (2019-2021)

Year	No. of Energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Savings (INR Million)
FY 2019-20	17	26.9	0.714	159.574	8.662
FY 2020-21	4	0.175	0.093	85.391	2.74
FY 2021-22	18	11.71	0.8797	2188.23	20.31





Innovative Project Implemented-

ENERGY OPTIMISATION IN 12K1 BLOWER IN ALL SULPHONATION PLANTS IN TALOJA

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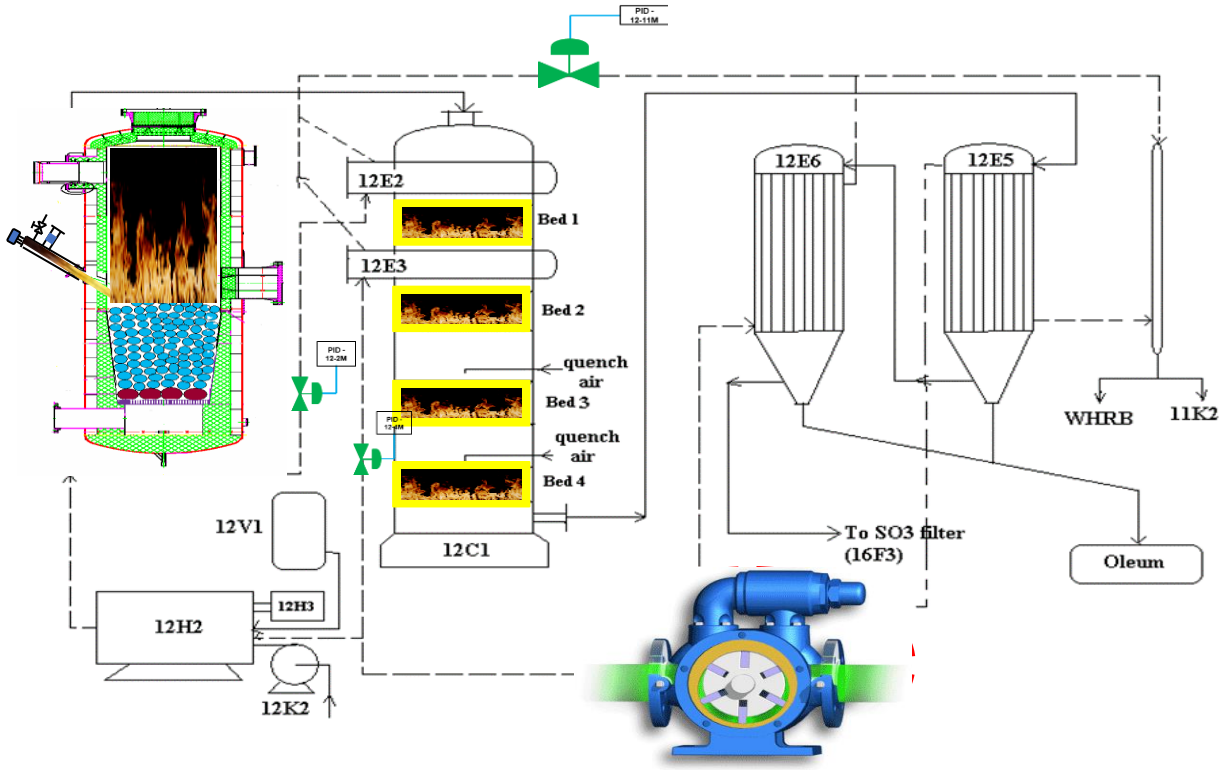
Project Details:

Implementation of Innovative logic for air Flow regulation instead of manual valve throttling with the help of VFD & 4 different Temperature PID Loop



Benefits-

- ✓ Energy savings Rs **18.3** Lacs YTD
- ✓ Reduction in GHG to **170.1** tonnes of CO2
- ✓ Increased the equipment Availability to 100 %.
- ✓ Reduced EnPI of the sulphonation plant by 2 %.
- ✓ Increased the production from 7536 MT/Month to 8950 MT/Month.
- ✓ Annual KWH Savings - **206641** KWH

Project Implemented through Kaizens

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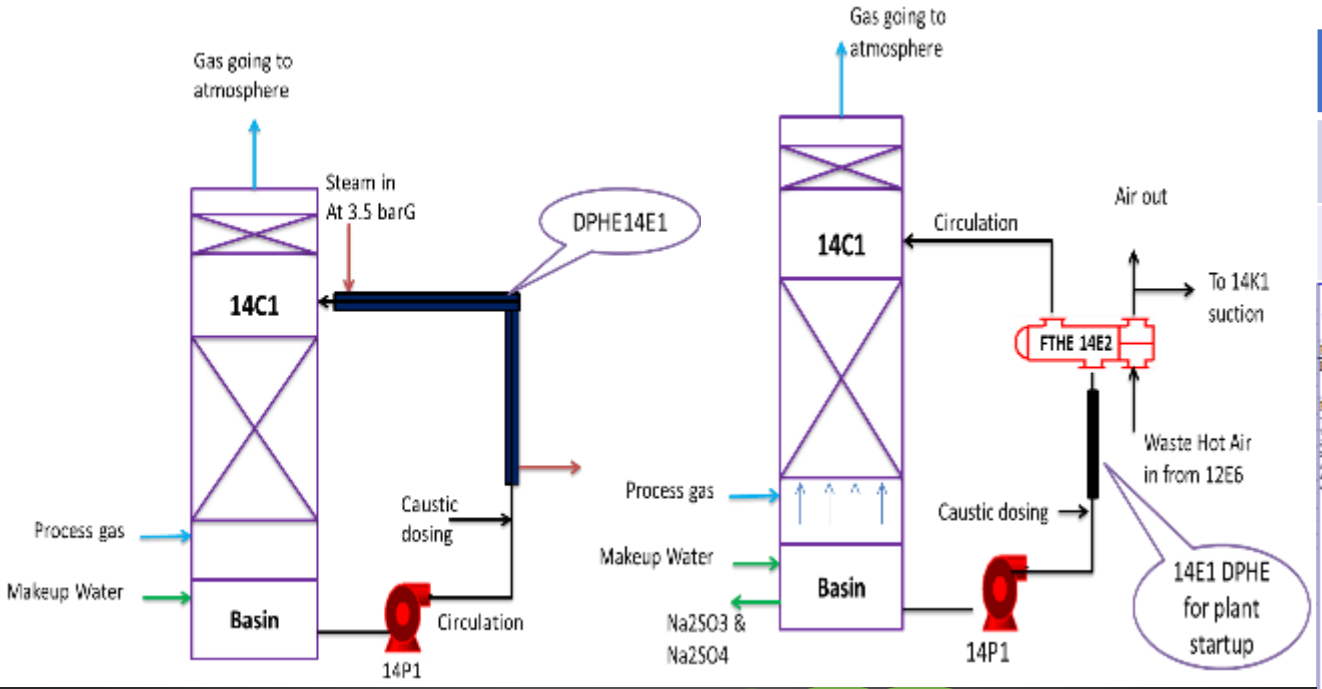
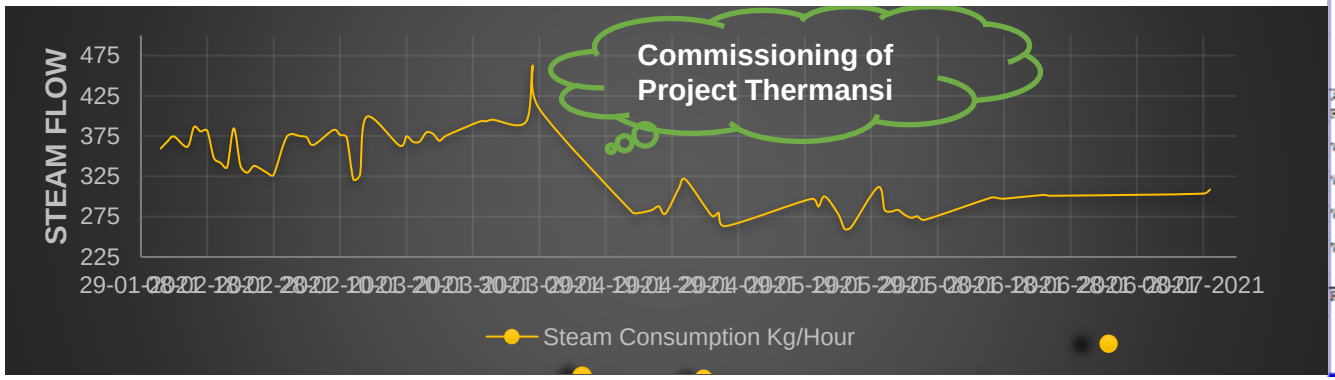
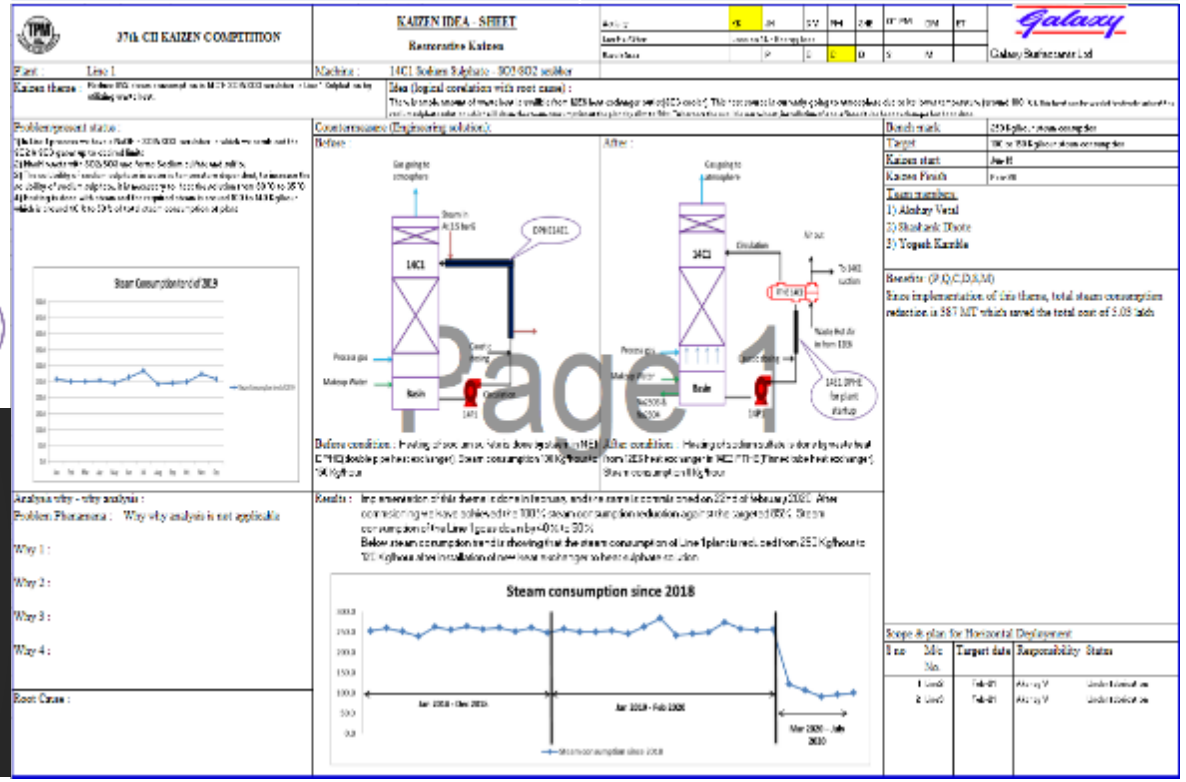
Utilization of process waste heat from heat exchanger (100 deg.) as a replacement for steam used for heating process product to achieve desired temperature (35 deg)





Investment	10 Lakhs
Savings	387 MT (9.74 Lakhs)
ROI	12 Months



The Way Forward….! (2022-23)

EC Motor for AHU

1

EC Motors for AHU

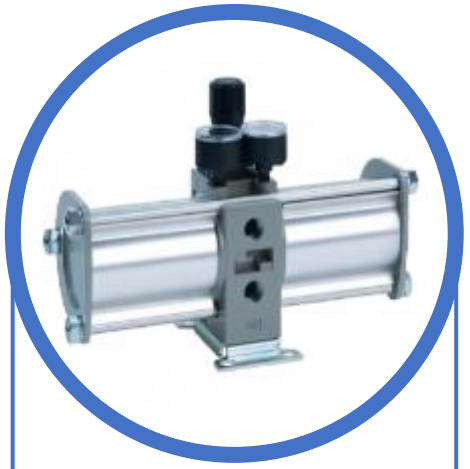
Discussion with vendor is going ON

Flowmeters Installation

2

Installation of Flow meters at equipment level to monitor Compressor losses

Installation stage



Mechanical Booster

3

33% Energy Saving by reducing Compressor set point by installation of Booster.

Done with Feasibility check

Air cooled Chiller

4

Centralised Chiller set point Optimization by Installing new chiller to Plant having less but continuous demand @ low Temp.

Installation stage

Utilisation of Renewable Energy Sources

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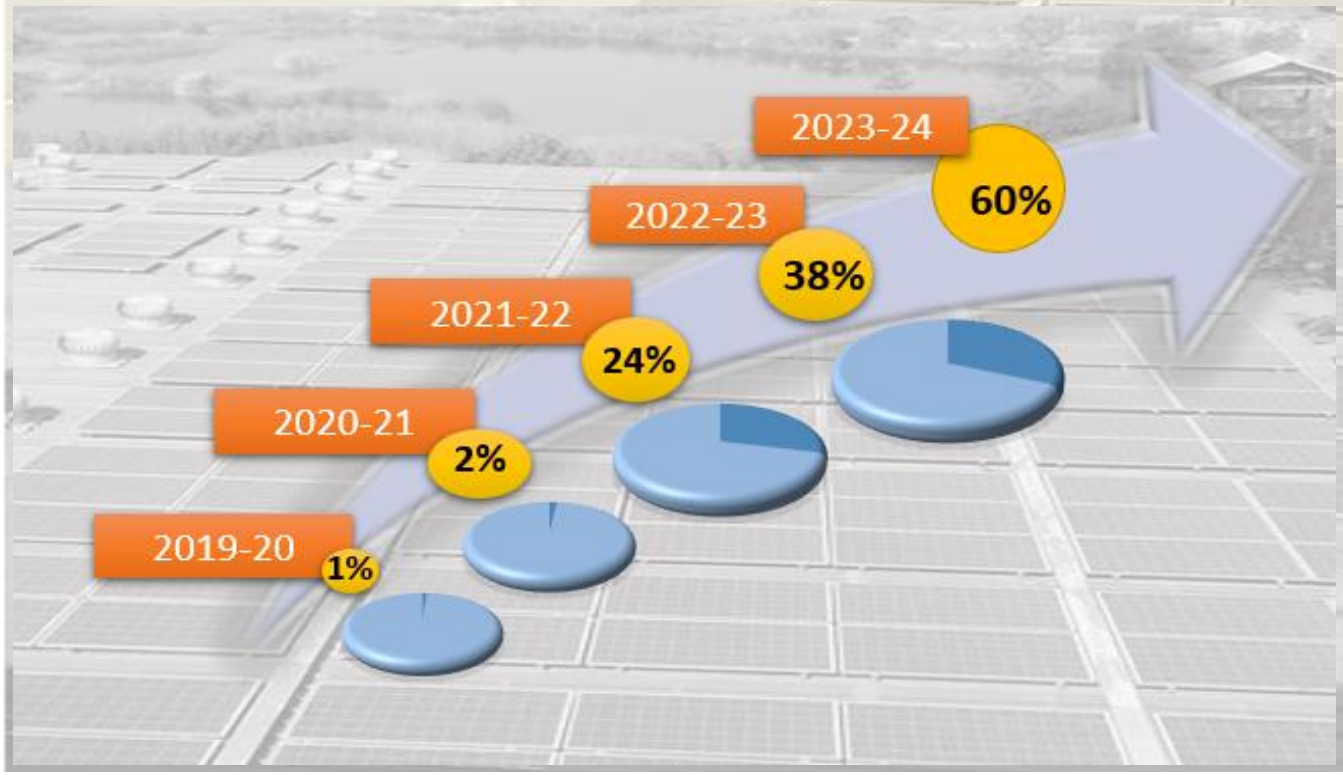
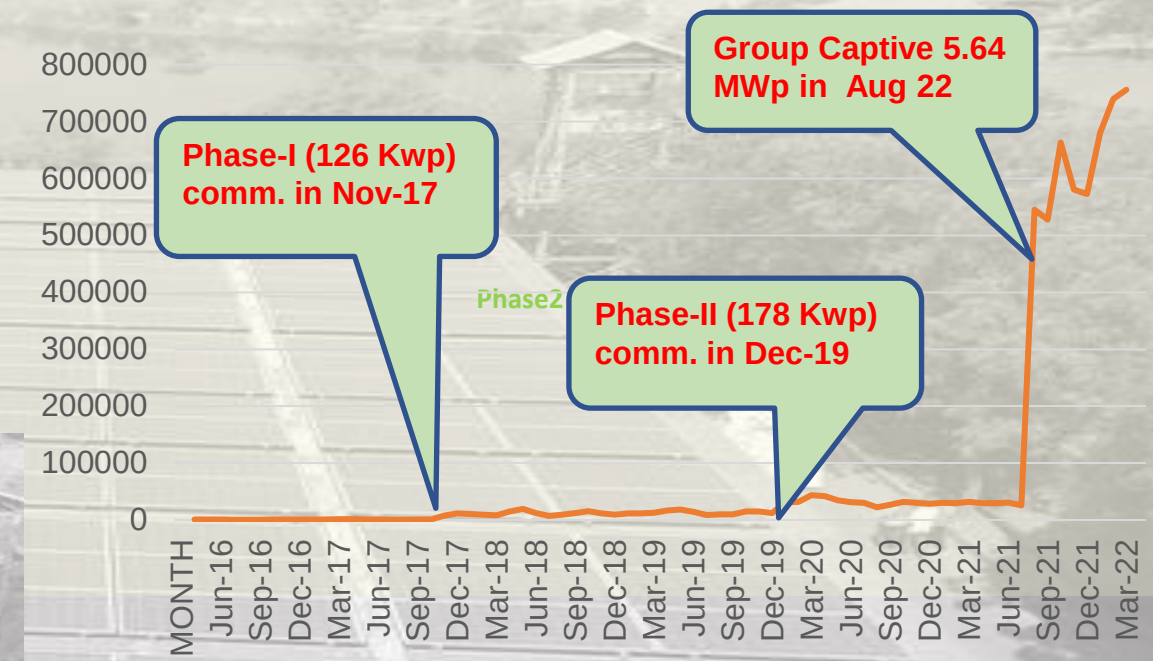
- **Total Installed Capacity (Taloja Plant)**
  - ❑ Purchased Solar -**304** KWp
  - ❑ Inhouse Solar - **10** KWp
  - ❑ Group Captive – **5.64** MWp

➢ **TOTAL : 5.954 MWp (38 % of Total Ele. Energy)**





Renewable Energy Resources –

Rooftop Solar

Solar Water Heater

Waste Utilization & Management

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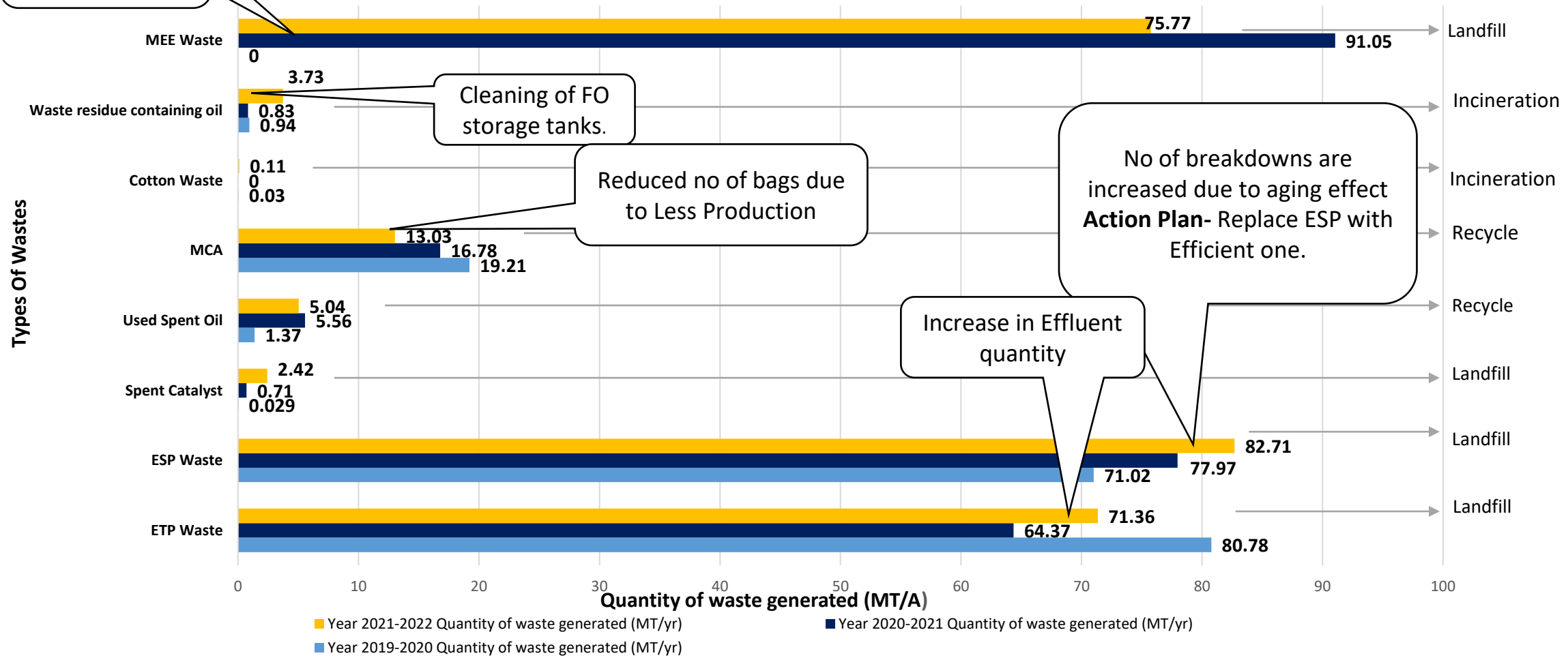
Increase in RO permeate recovery

Type of Hazardous Wastes Generated & Their Methods Of Disposal



Green Supply Chain Management

1

Stearic acid

The number of **25 kg** paper bags for stearic acid saved are **23,638**

2

Thionyl chloride

The number of **drums** saved for thionyl chloride are **5167**

3

Undecylenic acid

The number of **drums** saved for undecylenic acid are **371**

- Bags Reused - **5** Times
- Instead of **bags** for solid stearic acid, **Tankers** are used for transportation of liquid stearic acid.
- For FY 2021-22, we have avoided about 10MT of plastic by implementing Narrow mouth and open top drums without liners.

Waste Utilization & Management

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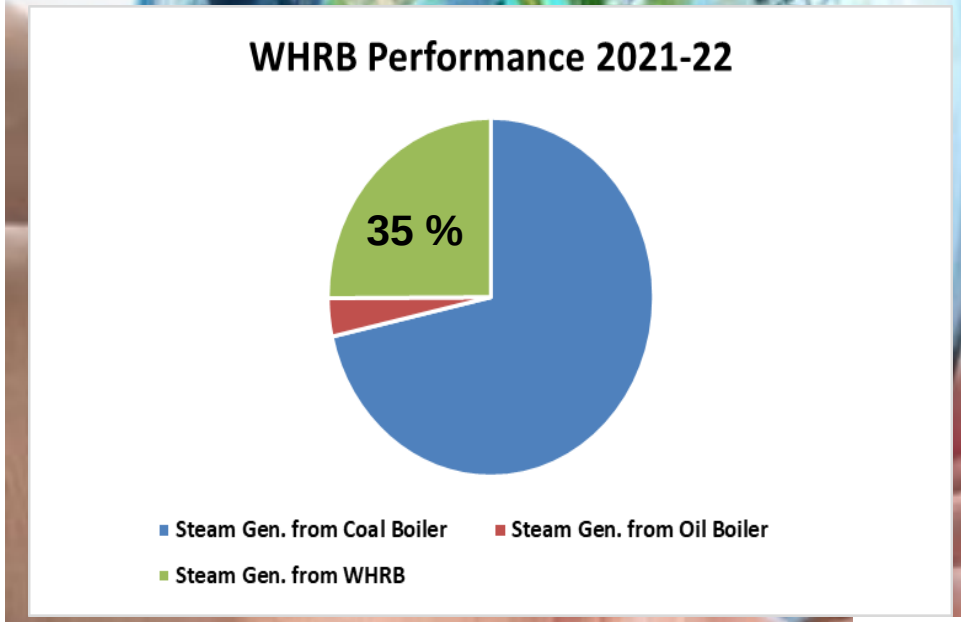
Zero Liquid Discharge Unit since May 2017

- Condensate recovery (>50 %) as condensate sent to boiler feed tank.
- 10% MEE has been installed and commissioned in Feb 2020. Various process effluent reduction themes implemented resulting 5.1% reduction effluent generation and also 5.2% reduction in domestic waste generation.
- 1.9 tons of ESP waste at V23 sulphonation unit was reduced by equipment design changes capturing efficiency improved to 50%.
- WHRB Capacity = 2* 1 TPH.



Year	Name of Fuel	Quantity of waste Fuel used (MJ)
FY 2019-20	Waste Hot Air	1,69,04,214
FY 2020-21	Waste Hot Air	1,42,95,679
FY 2021-22	Waste Hot Air	1,30,11,090

GHG Inventorization & Target

Scope 1

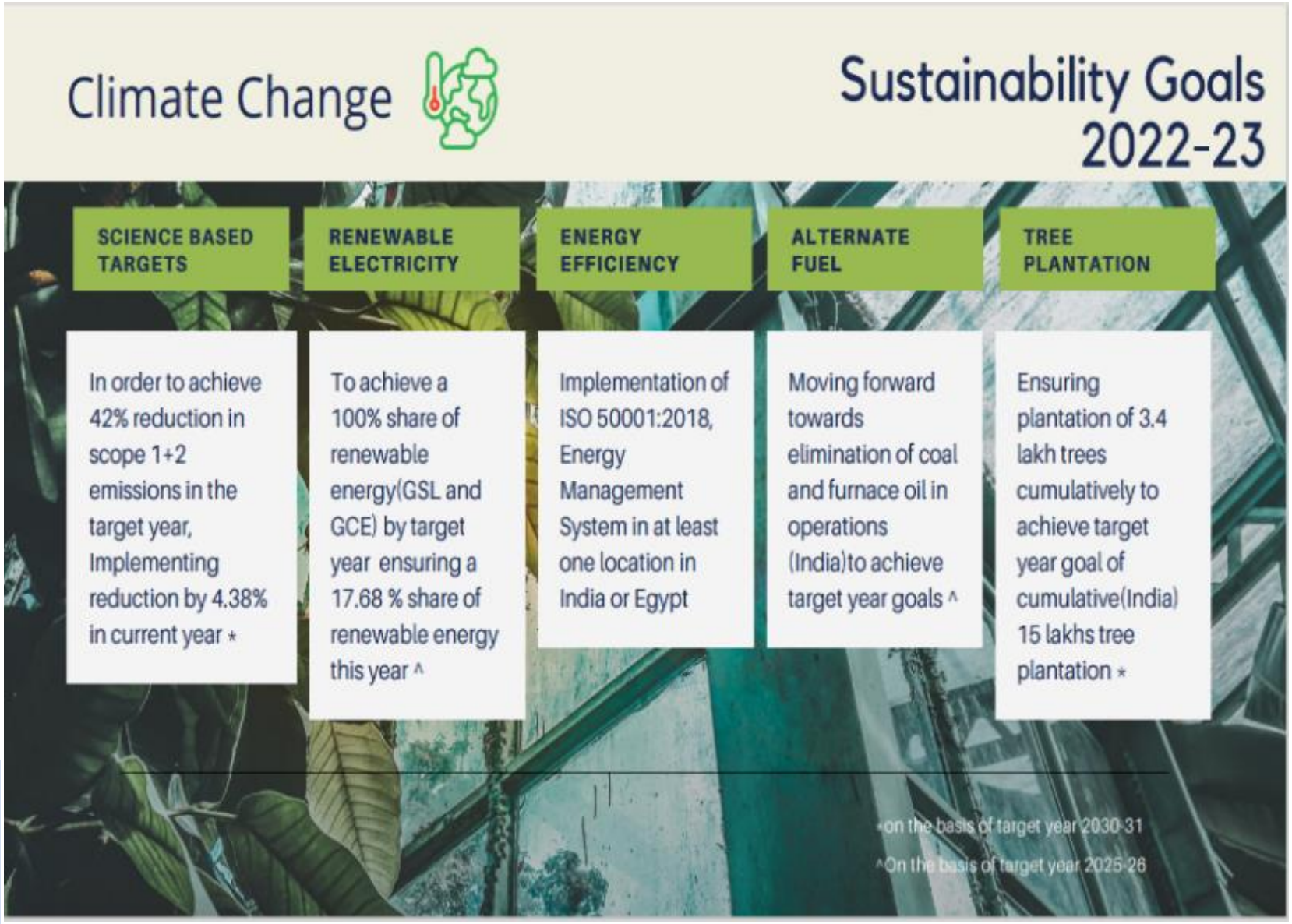
HFC Refilling, Coal, Diesel/ Petrol (Vehicle), Fire Extinguisher, FO, HSD, LDO, LPG, Natural Gas, Scrubber Emission

Scope 2

Purchased Electricity

Scope 3

RM, PM & Services, Fuel & Energy, Upstream transportation & distribution, Waste, Business Travel, Employee Commuting, Downstream transportation



GHG Inventorization

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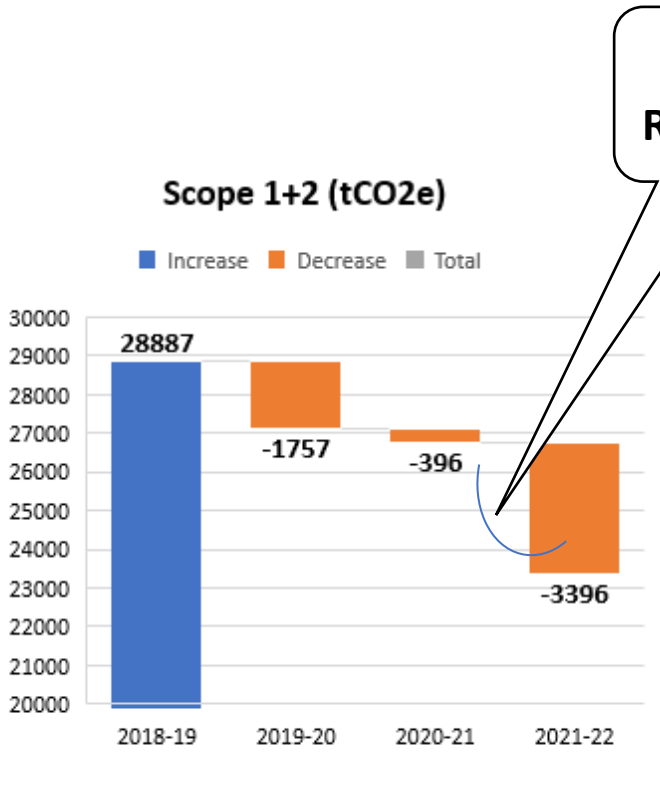
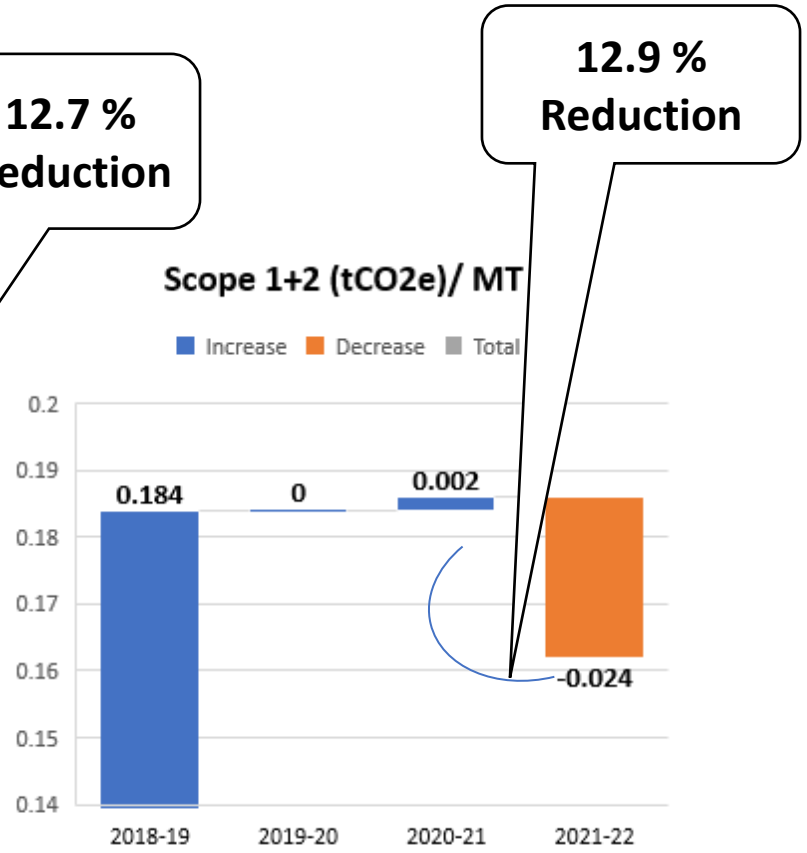
Sustainability Report-

https://www.galaxysurfactants.com/interactive-report.aspx

GHG Reduction (Intensity India)

- ❑ Target: 35%
- ❑ Achieved: 33.9%
- ❑ Base Year: 2012-13





Company Name	2021 Supplier Engagement Rating
Galaxy Surfactants Ltd.	A

Climate Change- B
Water- B-, SER- A-

Teamwork, Employee Involvement & Monitoring

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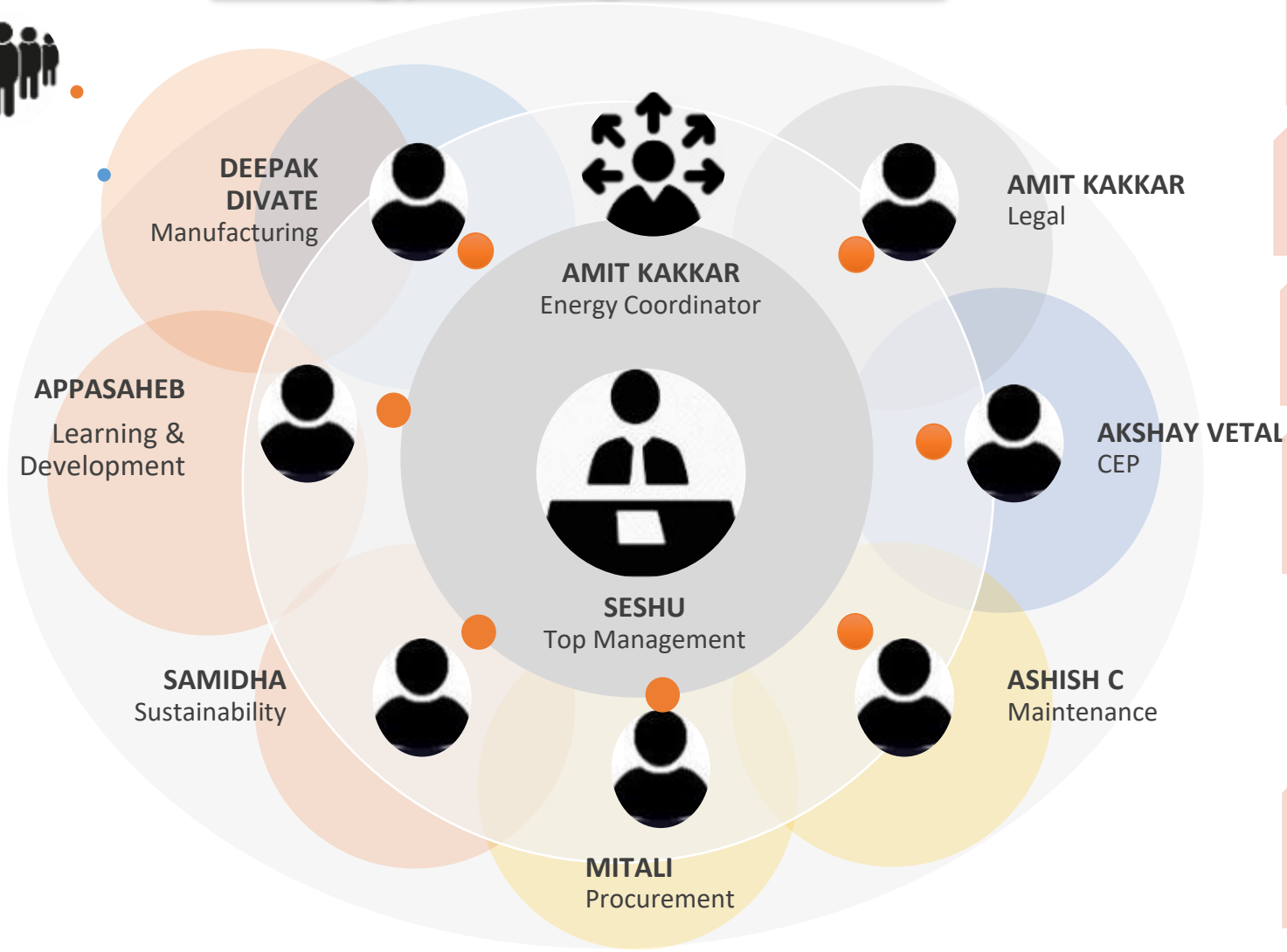
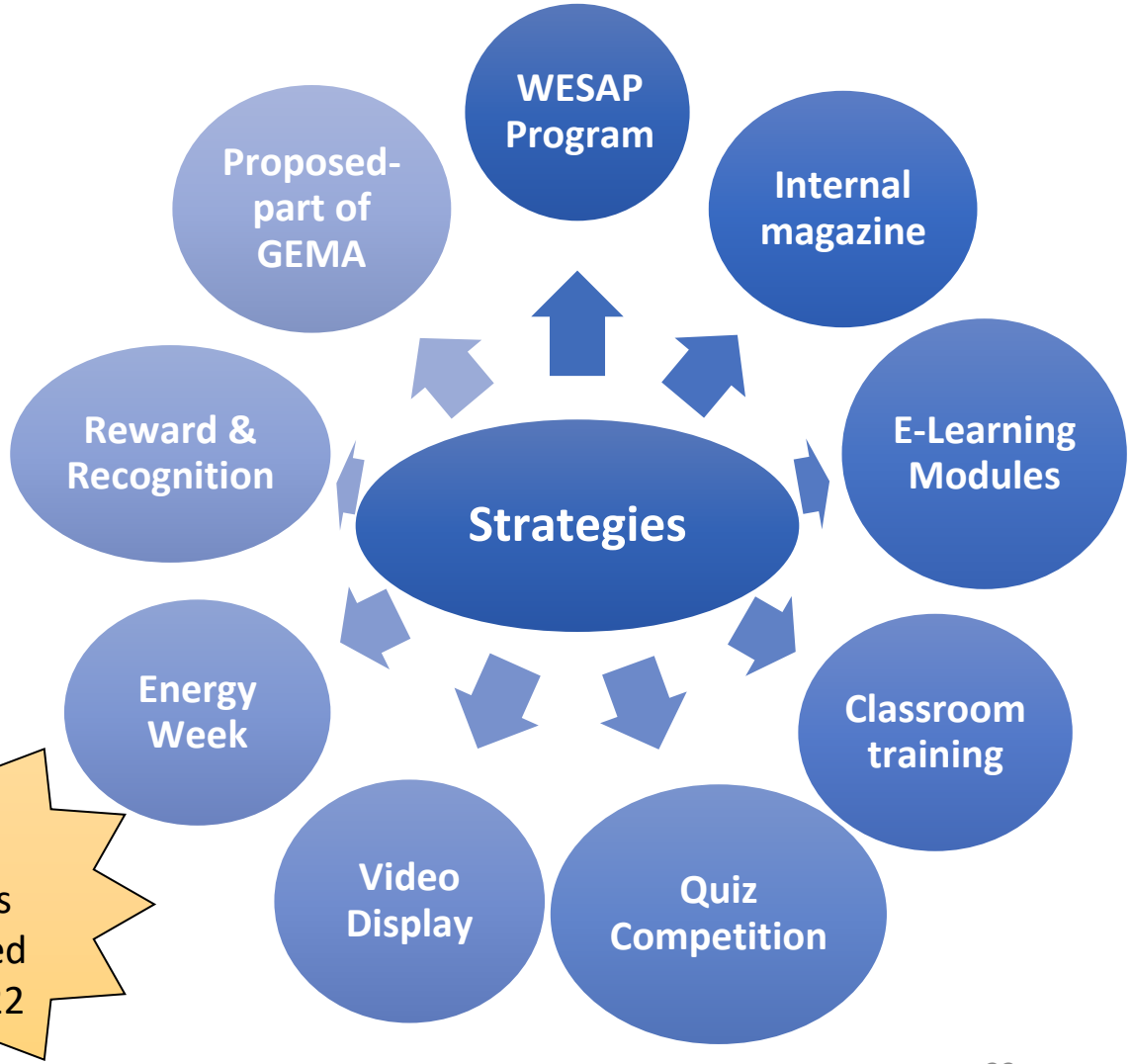
Energy Management Cell



1. MRM – Status of Energy Saving Project
2. Energy performance review- included in MIS and DPR's
3. Plant Monthly meeting
4. Sustainability Cell Meeting
5. Annual Performance Report, Sustainability Report & BRR
6. Corporate -Management Review & Quarterly meeting

Strategy Adopted for Awareness creation and Employee Involvement

- Team of 22 Internal auditors available
- 3 BEE certified Manager and 2 BEE certified Auditor.
- E-Module on energy conservation and requirements of EnMS ISO 50001
- Celebration of Energy week
- WESAP – Training
- 16 Major loss- Training
- Energy Policy & Requirements EnMS ISO 50001:2018 Video
- Reward and Recognition



14
Trainings Conducted in 2021-22

Energy Conservation Month – December 2021

Communication from Top Management and Energy Coordinator

Classroom Training

Poster Competition

Slogan Competition

WESAP Suggestion Competition

Quiz Competition

WESAP (Waste Elimination Suggestion Award Programme)

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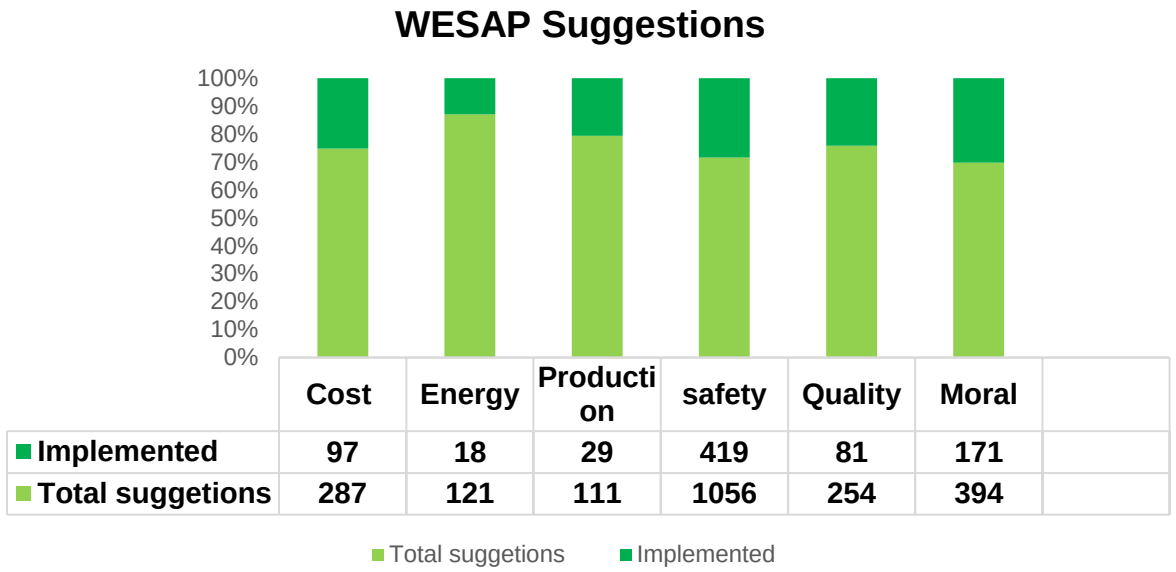
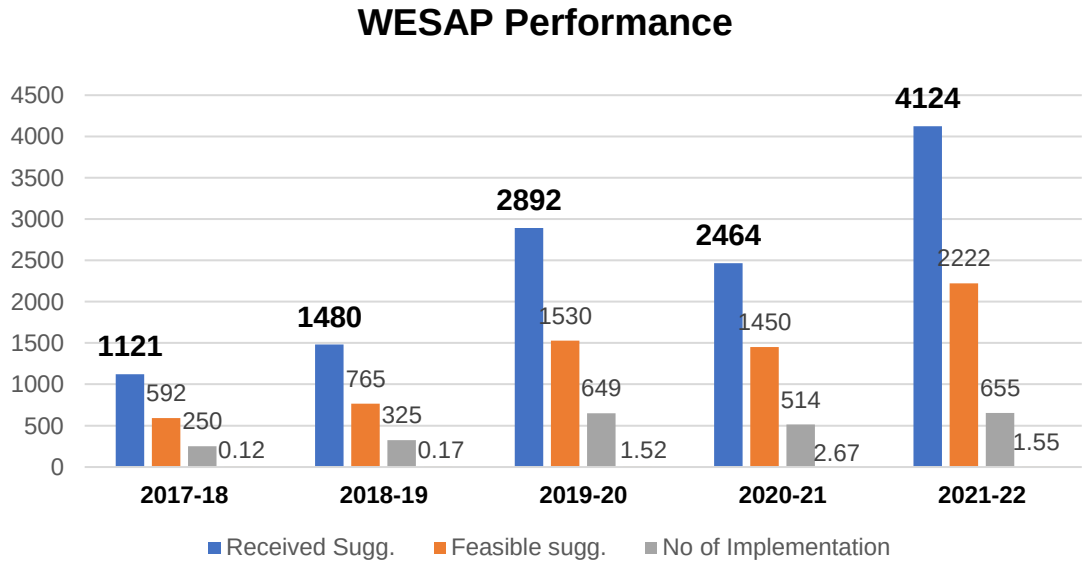
- Initiated suggestion mechanism to address losses by involving plant operators.
- Conducting awareness sessions on 16 types of losses resulted in **4124** suggestions in 2021-22
- No. of Feasible suggestions - 2223
- TOTAL WESAP Saving including CEP +carry forward to 2021-2022 (Rs. in Cr.) 2021-22 **- 4.70** Cr.

Successfully Completed **8** Years



	Cost	Energy	Production	safety	Quality	Moral
Implemented	97	18	29	419	81	171
Total suggetions	287	121	111	1056	254	394



Awareness Creation and Employee Involvement

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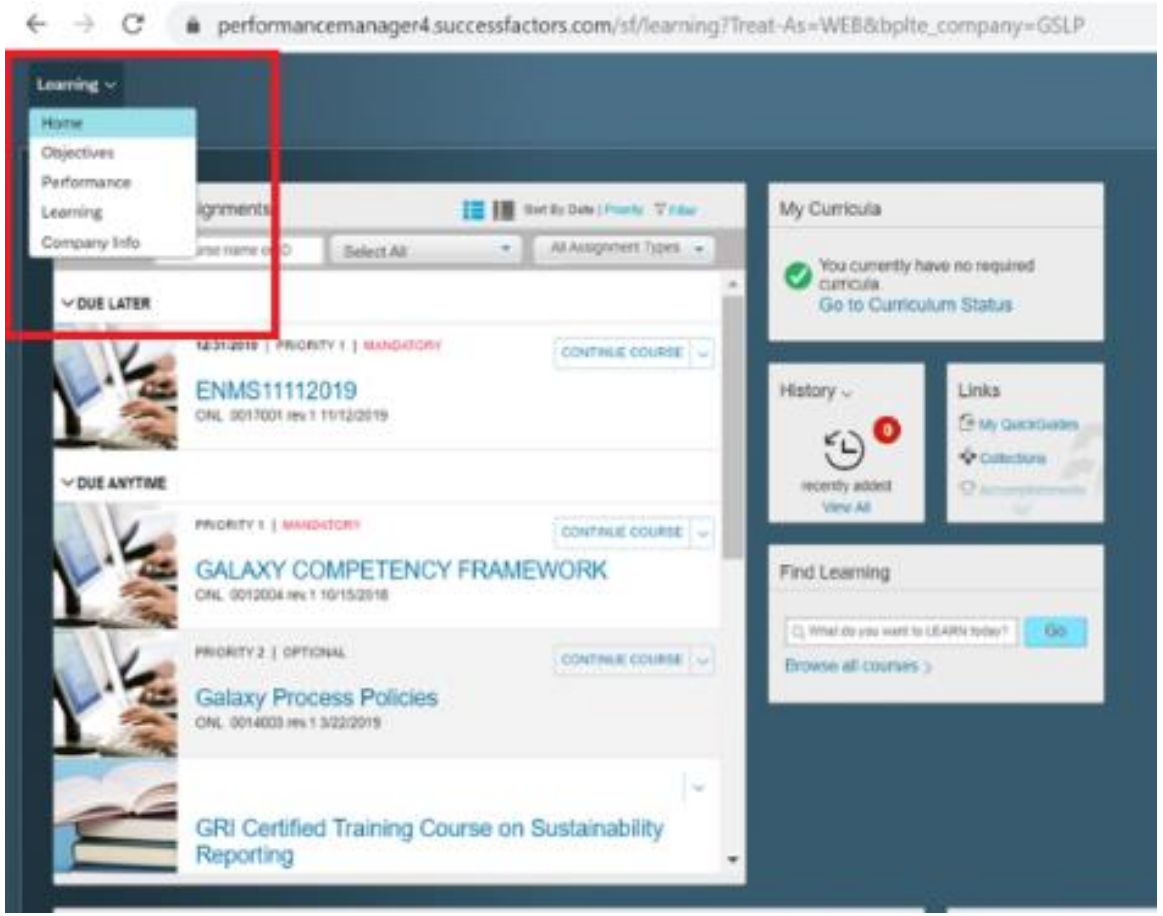
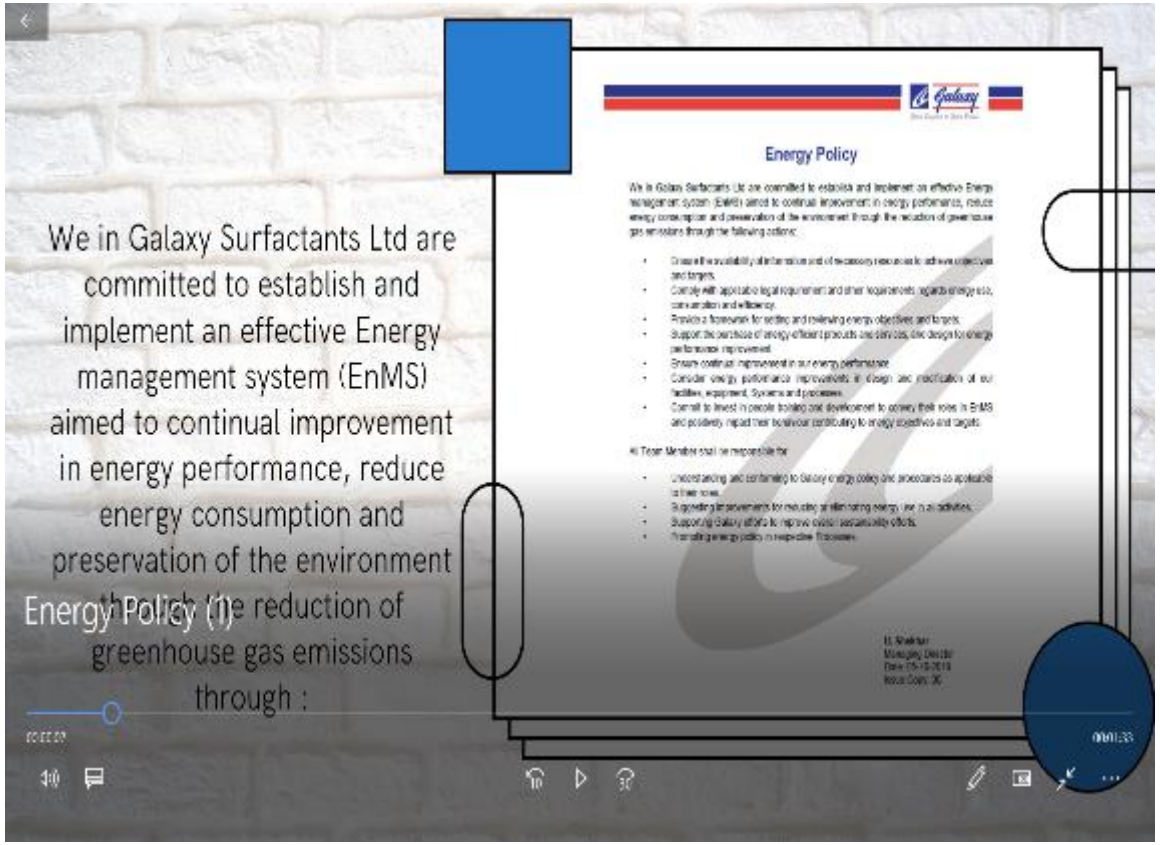


E-Learning on EnMS



Video on Energy Policy

Implementation of ISO 50001/Green Co/IGBC rating

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Energy Management System(EnMS)

Galaxy has adopted structured way of energy monitoring and control through EnMS 50001:2018. The certification was awarded to Taloja plant, India after successful audit conducted by BSI, a certification body.

CII Green Co

Galaxy has adopted the GreenCo rating system at its Taloja plant, India to assess its operations' environmental performance adopting a procedure-based approach. The plant thus became only the 2nd Surfactant unit in the country to achieve this feat.

Awards & Achievements!

CII awarded Galaxy Surfactants LTD. Taloja Unit with

‘ Excellent Energy Efficient Unit ’


Centre of Excellence for Competitiveness for SMEs

Certificate of Award

This is to certify that
Galaxy Surfactants Limited., Taloja
has been awarded as the Winner (SME Sector)
under Effective Implementation of ISO 50001:
Energy Management System Category in the
6th Edition of CII National Energy Efficiency Circle Competition
held on 14-16 July 2022.

Mr Shreekant Somany
Chairman,
CII – Centre of Excellence for Competitiveness for SMEs

Dr Sudhir Kapoor
Chief Jury,
CII National Energy Efficiency Circle Competition

Mr Pikender Pal Singh
Executive Director
Confederation of Indian Industry

Date: 16-07-2022

Confederation of Indian Industry

6th edition
CII NATIONAL ENERGY EFFICIENCY CIRCLE COMPETITION

6th Edition of CII National Energy Efficiency Circle Competition

Certificate No. EC22/A19

Effective Implementation of ISO:50001 Energy management system

(Winner)

Learnings from Award Programs

To optimize cost of operations and downtime by IoT & Artificial intelligence.

Steam Trap Monitoring

Chiller-Heater

EC Motors for HVAC

Ultrasonic water sensors

Dry Vacuum Pumps

Integrate GHG Accounting with ERP system

Galaxy
Global Supplier to Global Brands
Confederation of Indian Industry

Let's Conserve the Energy in all Way,
& Preserve the Future in Every Way!

Thank you !

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