UNILEVER INDIA EXPORT LIMITED,KANDLA

Team:

- **Vineet Tiwari- Factory Engineer**
- **Sakshi Paswan-Process Engineer**

B&W

UIEL Kandla Site Demographics

Site Facts

- Operation: 6-Day X 3-shifts
- Plot area: 20 acres, (27% built up area)
- Asset Base: GBV: 1209.3 million INR; NBV: 870.0 million INR
- TO: 3219 million INR

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Category, Formats

- BPC (Skin)
  - Jars: Cream, 2 lines
  - Bottles: Lotions, BW, HW, (3 lines)
  - Gallon pack: 2L to 5L Line
- BPC (Hair)
  - Bottles: Shampoo, Cond
  - Gallon: Shampoo, Cond

Logistics

- FG SKUs: 300 +
- Suppliers: 100+
- Raw Materials: 250+
- Packaging Materials: 750+
- Vehicles per day: ~33
  - FG: 17+
  - RPM/SFG: 16+

People

- Workforce
  - 27 WC(white collar) (8.44%)
  - 289 BCE(Blue collar employee) (90.31%)
  - 4 OAS(office administrative staff) (1.25%)
- Gender Ratio: 7.5% (Inc CL+ App)
- Avg. Age: 48 Years

Site Product Portfolio

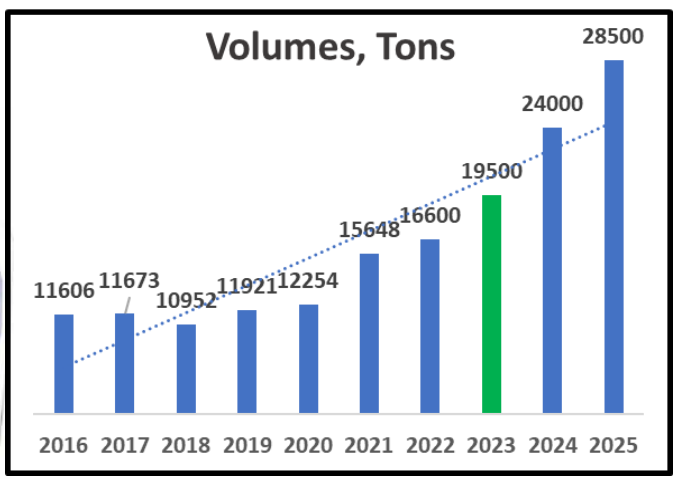
- **FG product :SKU'S : > 250**
- **SIZE :** 30 ml To 5 LTR
- **COUNTRIES : > 80**

IHG portfolio

500 & 235ml | 240 ML | 5 Litre

Our Wide Portfolio

Shampoo | Bodywash | Handwash | Lotions | Conditioner | Creams | Oils



Dedicated site for UI with 100% contribution from 2022

KANDLA Energy Mix Flow Diagram

Source-1

Grid Power
11KV PGVCL

86%

HT Room
630A

Transformer
1500kva

LT panel
3200A

Plant

Source-2

DG – 1010KVA

6%

A.C (11KV)

Source-3

Solar- 160kwp

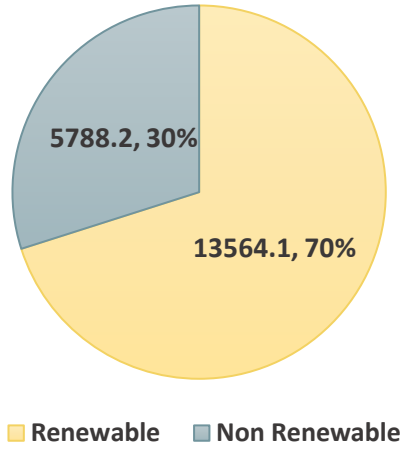
DC

8%

Inventor

Breaker -1

TOTAL ENERGY (GJ)

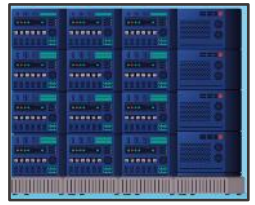


DG – 02 No's
1010kva & 500kva

HT – 01 No's
11kv

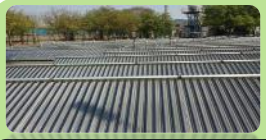
Transformer
11kv

LT – 15 No's
415v 50Hz Each



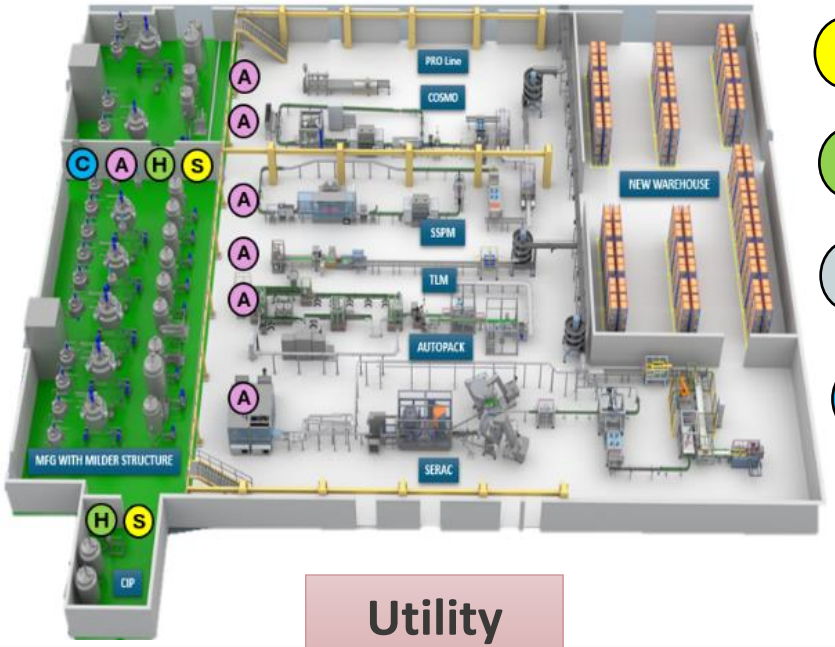
UPS – 03 No's
15kva& 20kva

KANDLA Energy Mapping

External Supply	Type	Transmission	Location
 Grid	Electrical Energy 38.1%	Electrical Energy – 26% Total Hot water – 13.5% Steam – 22.3%	Plant
 Onsite+Offsite Solar	Solar Electrical 20%	Electrical Energy – 7%	ETP
 Onsite Solar Thermal	Electrical Hot Water 8.3% Solar Hot Water 5.2%	Electrical Energy – 64.7% Diesel – 22.3% Electrical Energy – 0.8%	Utility Admin Block
 Bio-Diesel Tanker	Steam 22.3%	Electrical Energy – 1.3%	Welfare Block
 Diesel Tanker	DG Diesel 6.1%	Electrical Energy – 0.2%	Fire Hydrant

MFG

Packing Hall



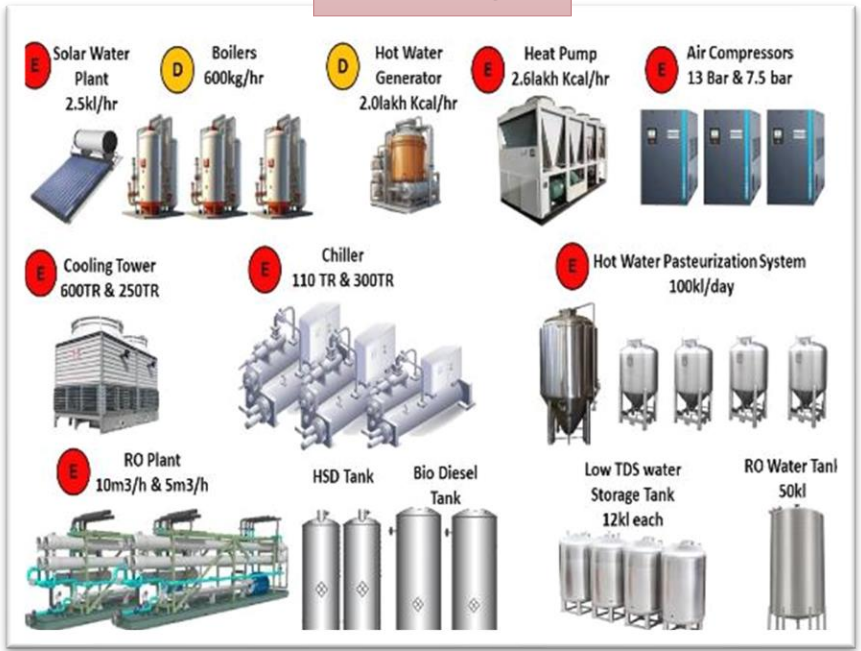
S Steam

H Hot Water

A Compressed Air

C Chilled Water

Utility



E Electrical Energy

D Diesel

MANUFACTURING PROCESS FLOW

RM/PM entry + Weighment

- RM/PM Storage

- Sampling By sampler for QA

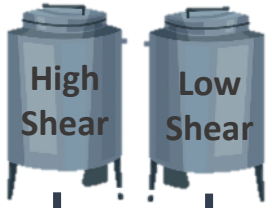
- Transportation of RM/PM from stores to Shopfloor

- Weighing materials as per batch sheet

- Materials move to MFG

Manufacturing + Packing

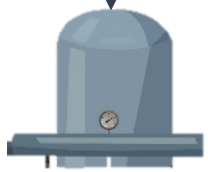
- Addition of RM's as per batch sheets in side-pots



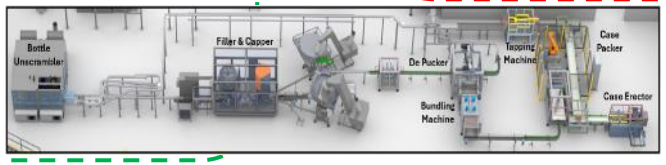
- Batching in mixer as per Batch sheet

- Transfer of product into Holding Tank

- Pumping to hopper of Bottle line



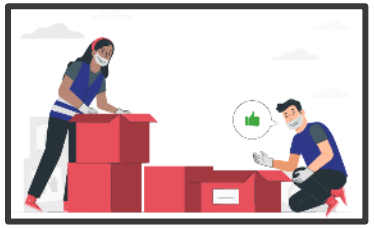
- Packing Process



Palletization + Dispatch

- Arrangement of CLDs on pallets

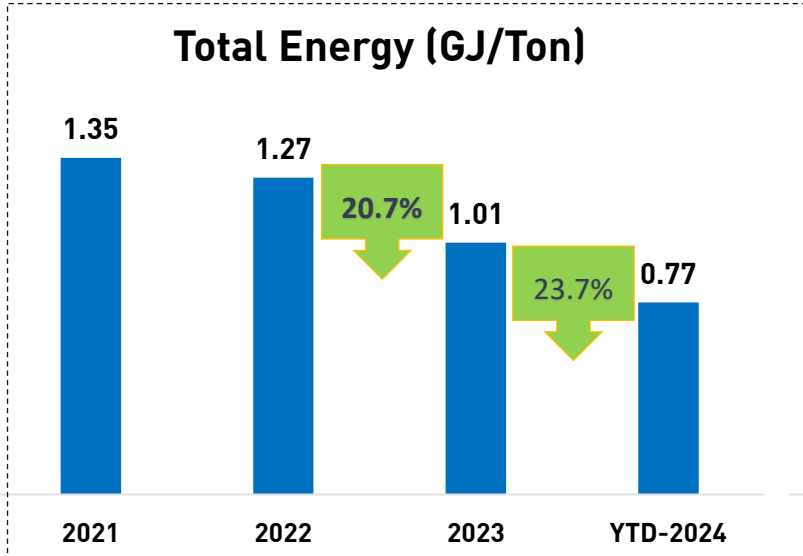
- QC Check

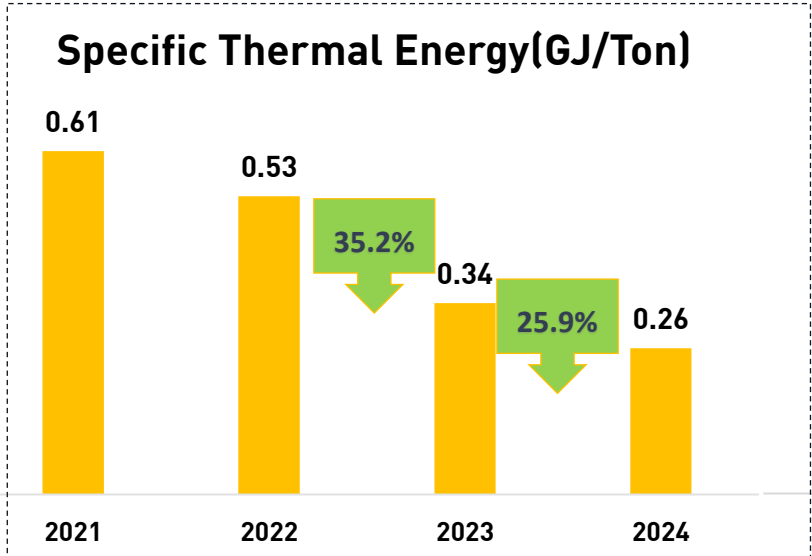


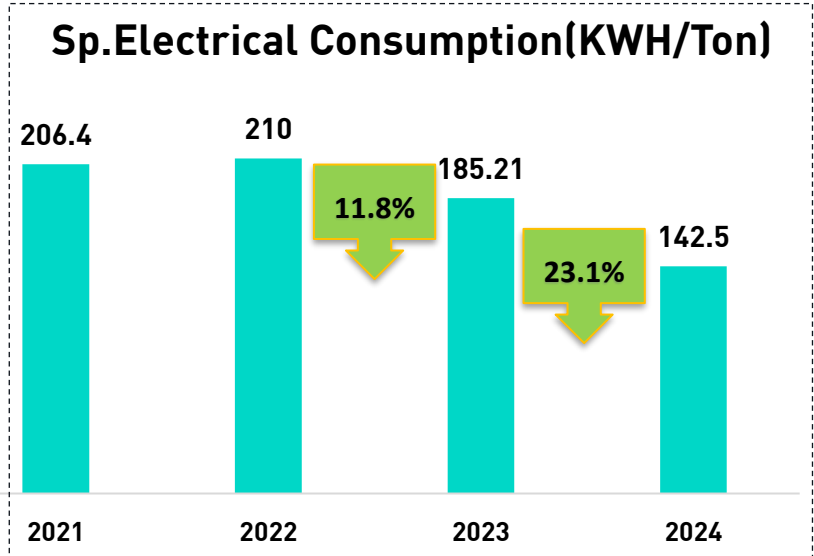
- Storage at FG warehouse

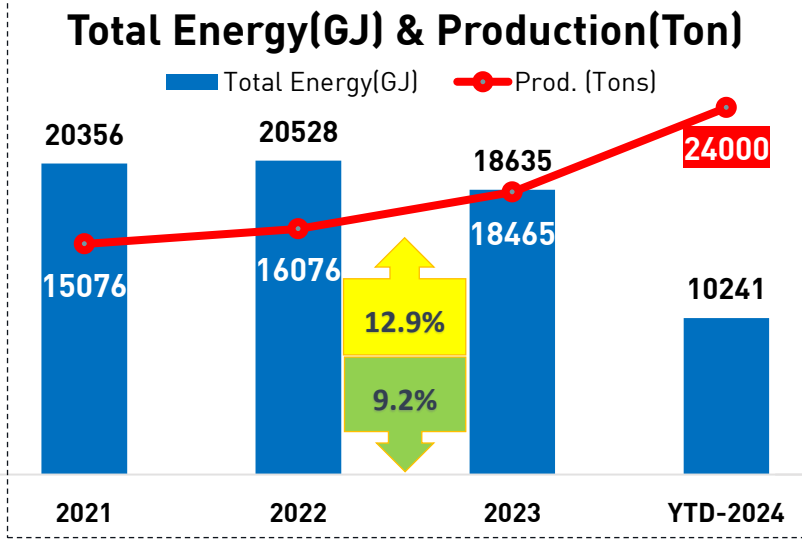
- Loading into Vehicle & Dispatch of Material

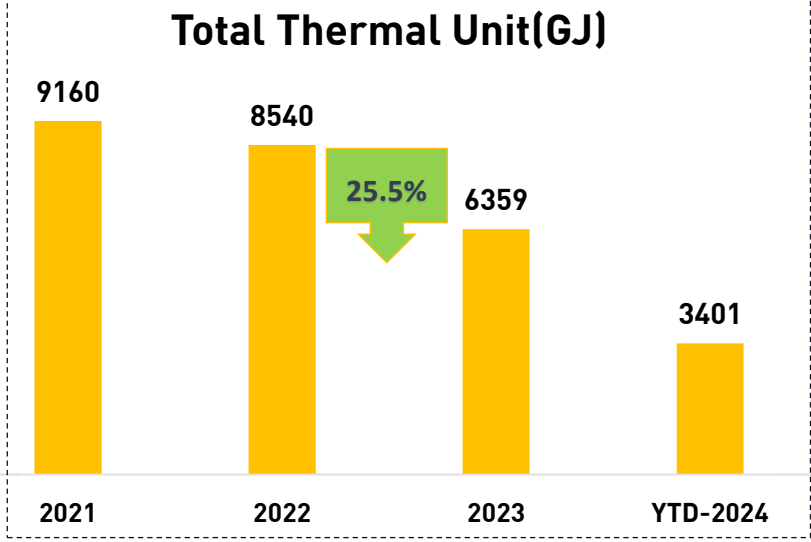
ENERGY WITH SPECIFIC CONSUMPTION & PRODUCTION-LAST 3 YEARS

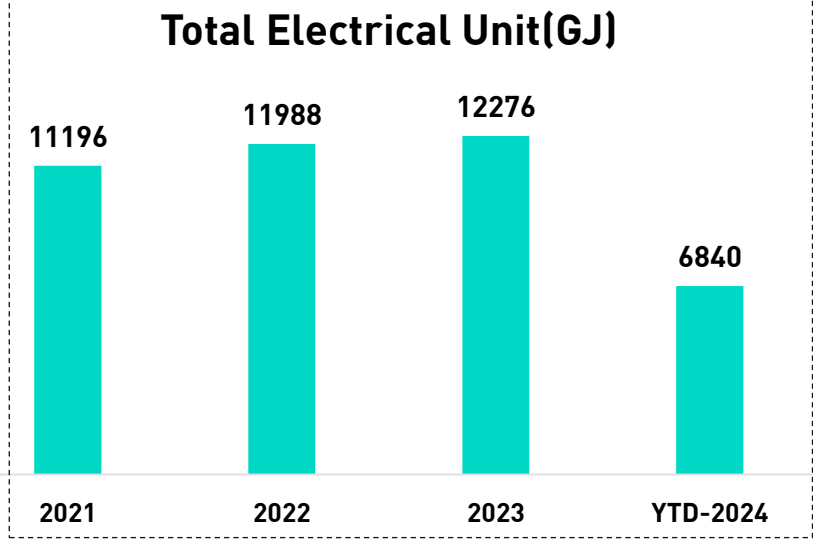












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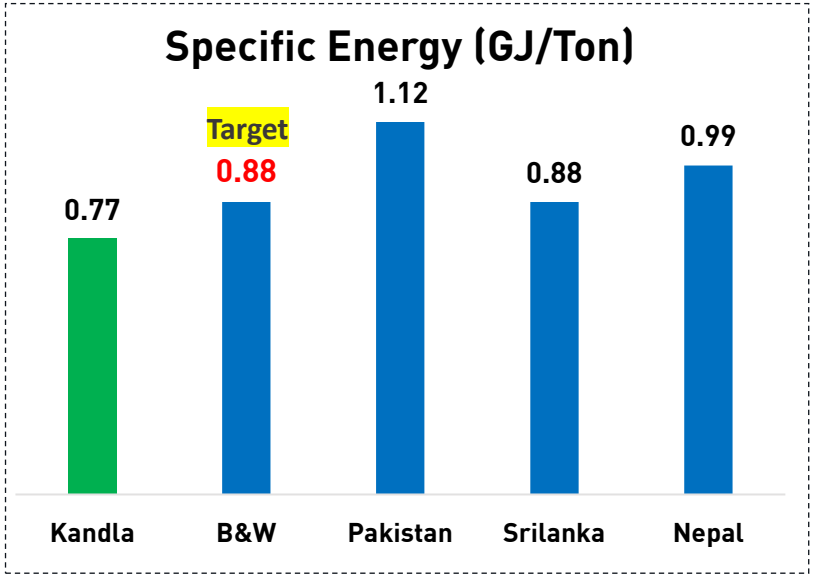
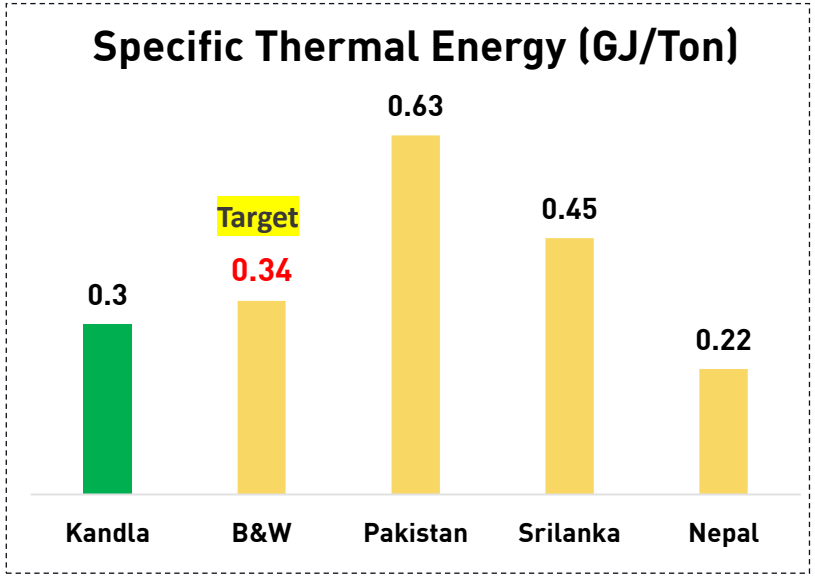
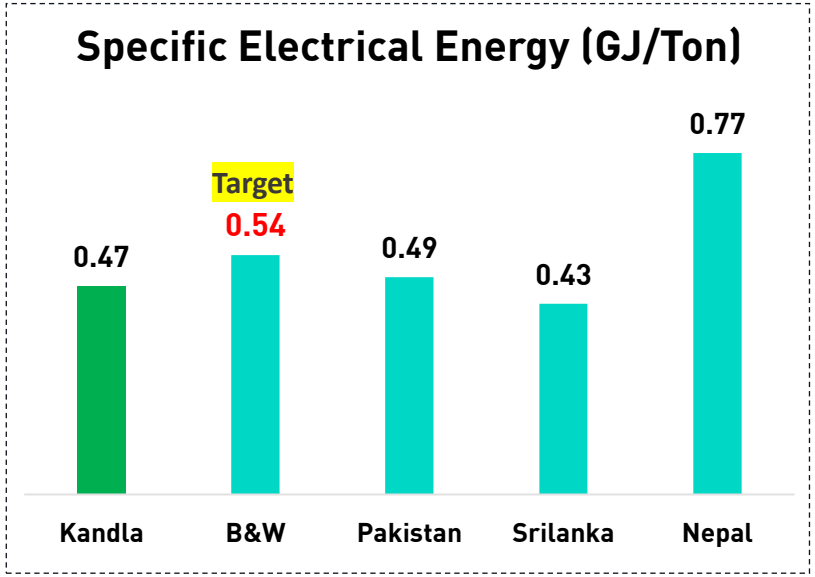
ENERGY BENCHMARKING-B&W India & Other SA Sites







SUMMARY OF THE PROJECTS

YEAR	No of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal Savings (Million Kcal)	Total Savings (INR Million)	Payback period (in months)
FY 2021-22	5	.225	.2	86.7	3.02	7
FY 2022-23	4	.22	.45	102.8	3.19	10.2
FY 2023-24	6	27.45	1.03	1530	14.8	28

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KANDLA ENERGY ROADMAP

LED FACTORY LIGHTING

HVLS FAN IN PACKING HALL

VFD based HE CT

HRS IN COMPRESSOR

TURBOCOR MAGLEV CHILLER

- Oil free, magnetic bearing compressor
- **300 TR Kw** cap., **8.5 COP**

- EMS
- Control tower
- Dark cascade

DIGITALISATION

ELECTRIC BOILER

- **1 TPH** capacity,**99% Eff.**
- **99.5%** Dryness fraction

BIO-DIESEL IN BOILER & HWG

SOLAR WATER HEATER PLANT

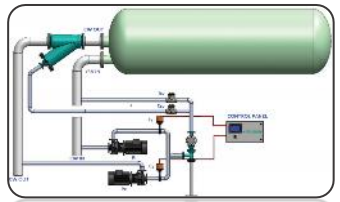
- **20 Kl** Per day capacity
- **150 Kw** capacity

VFD BASED AIR COMPRESSOR

AIR SOURCE HEAT PUMP

- **100 Kl** Per day capacity
- **350 Kw** capacity,**2.5 COP**

ATCS IN CHILLER



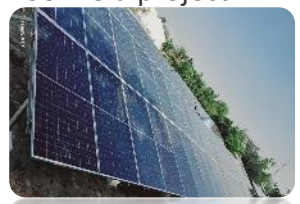
EC+ AXIAL FAN RETROFIT

- **1.35 Lakh units** saving/Annum

IE5 MOTOR SMART PUMPS

OFFSITE/ONSITE SOLAR PV PLANT

- **165 Kw** onsite plant
- **12.85 Mw** offsite Brookfield project



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MAJOR ENCON PROJECT PLANNED IN FY-2024-25

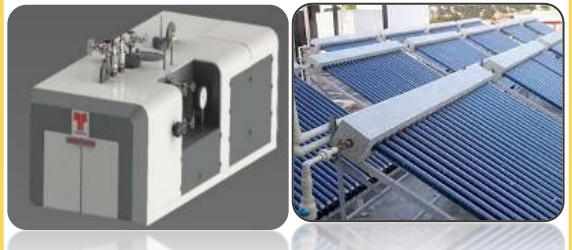
ENERGY + SUSATAINABILITY

- Brookfield offsite inter state Solar Project **12.85 MW** with peak 4 hours
- Proposed savings for Kandla-**11.3 lakhs Unit/Annum** Total savings **3.5 Million INR**
- Introduction of Wind PPA with total savings of- **5.5 Million INR**

EFFICIENCY IMPROVEMENT

- EEM-2.0, IE4,5 motors in Mfg- **1.2 Million INR**
- **E-FRP** fan in cooling tower- **.25 Million INR**
- **EMS-2.0-** with real time data and alarming for over energy consumption

TECHNOLOGY INTERVENTIONS



- **1 TPH** Electric boiler instead of diesel fired - **775 Ton CO2/Year, 8.8 Million INR**
- Solar water heater expansion**– 5.04 Million INR**
- **Hydromix-Nano technology** fluid in Heat pump condenser circuit- **.9 Million INR**

INNOVATIVE AND WASTE REDUCTION

- Using cold water in shampoo instead of hot water-BCT reduction + Power saving- **2.02 Million INR**
- Heat recovery from Dry Vacuum pumps- **.8 Million INR**
- Centralized vacuum pump for packing and mfg. by removing individual pumps- **.6 Million INR**

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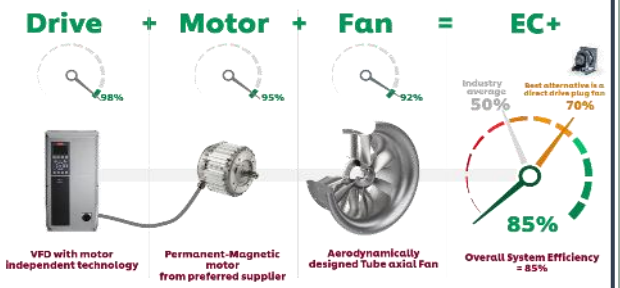
ENERGY SAVING PROJECTS IMPLEMENTED IN LAST 3 YEARS-2023-24

RETROFITTING EC+ FAN IN AHUs



Efficiency Gains over Centrifugal & Plug Fans:

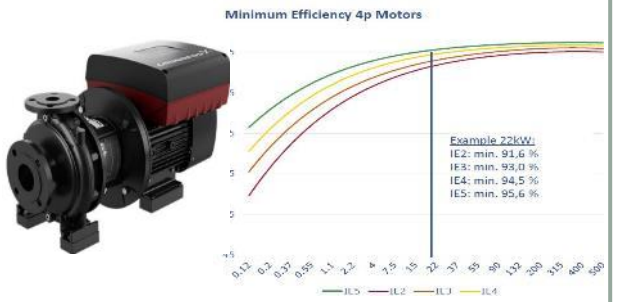
- 15-35% efficiency gain in the fan
- 5-10% gain by eliminating belt losses.
- 2-4% gain by switching from IE2 to IE4 / IE5 motors

~20-45% overall efficiency gain

- **Saving-452 GJ/1.11 Million INR**

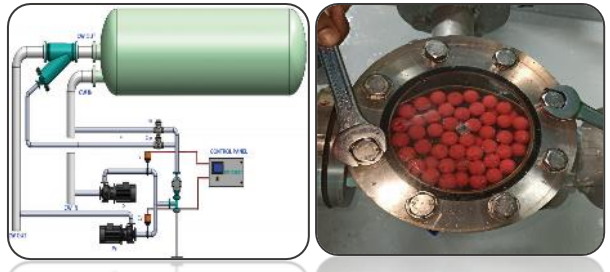
Replicable in all AHUs, already replicated at 12 sites in HUL

IE5 MOTOR SMART PUMP



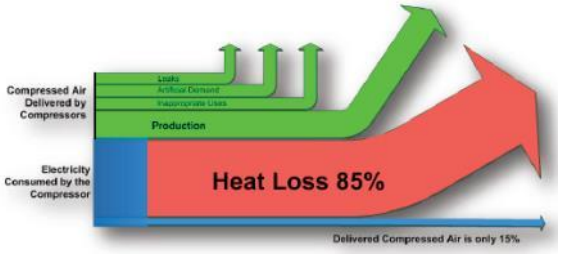
- Inbuilt VFD controlled
- Can monitored and controlled the required parameters like temp and pressure diff.
- Installed at cooling tower, hot well and cold well
- **Saving-1206 GJ/3.01 Million INR**
- **Easily replicable**

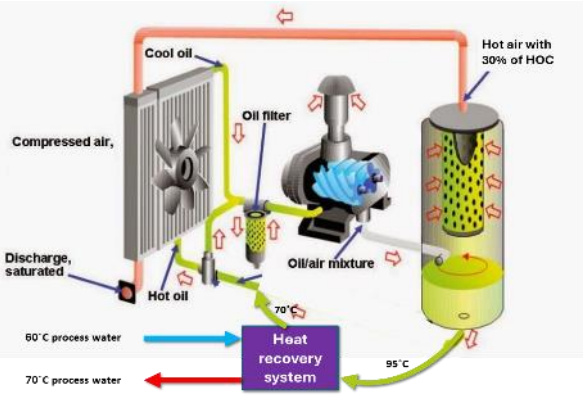
ATCS IN CHILLER



- Used for cleaning condenser tube in auto mode
- COP IMPROVEMENT BY **0.5**
- **Saving-216 GJ/.43 Million INR**
- **Easily replicable at all chillers anywhere with low cost**

HRS IN COMPRESSOR





- **Saving-266 GJ/.66 Million INR**
- **Can be done in any compressor**

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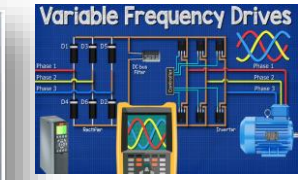
ENERGY SAVING PROJECTS IMPLEMENTED IN LAST 3 YEARS-2022-23

VFD BASED HE AIR COMPRESSOR



Comnpressed Air cons @100KW motor for 1hr

Capacity	500	CFM
Requirement	250	CFM/hr
time	2	hrs
Motor capacity	55	KW
	Before	After
Loading Time	1	2
Unloading Time	1	0
Energy cons during loading (KWH)	55	27
Energy cons during Unloading (KWH)	18	0
Total	73	27

- **Saving-324 GJ/.08 Million INR**
- **VFD can be installed at old compressor**

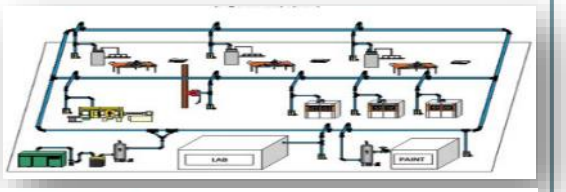
HVLS FANS IN PACKING HALL

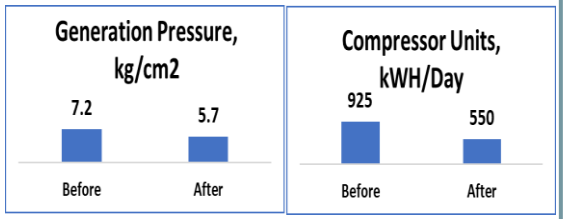
- Old wall mounted 35 industrial fans replaced by 1 high volume low speed(**HVLS**) fan
- **Saving-648 GJ/1.6 Million INR**
- **Easily replicable to anywhere**

VFD based HE CT WITH FRP FAN

- High efficient fan with VFD controlled interlocking with WBT
- **Saving-432 GJ/1.08 Million INR**
- **FRP fans can be easily retrofit to any cooling tower**

RING MAIN HEADER IN PACKING HALL





- **Saving-216 GJ/.43 Million INR**
- **Easily replicable to anywhere**

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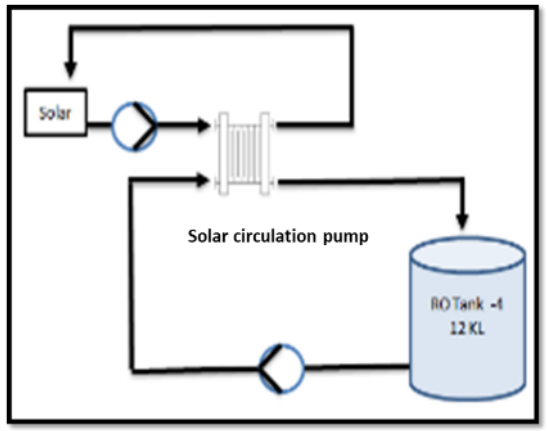
ENERGY SAVING PROJECTS IMPLEMENTED IN LAST 3 YEARS-2021-22

EC BLOWERS IN ETP

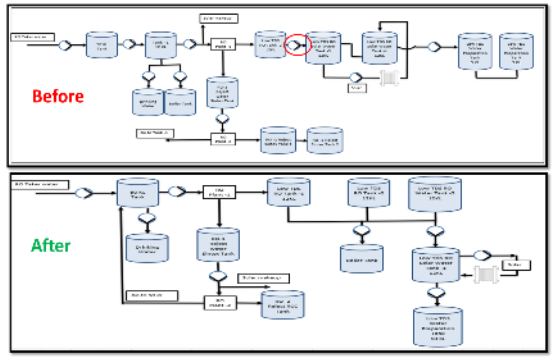
- Using high efficient EC blowers in ETP for aeration tank by replacing old conventional blower
- **Saving-216 GJ/.54 Million INR**
- **Easily replicable to anywhere**

SOLAR THERMAL OPTIMIZATION



- Automation of pump on and off to optimize running hours of solar heater pump
- **Saving-270 GJ/.67 Million INR**
- **Replicable as per design of the system**

ECRS IN RO PLANT



- Elimination of one pump by combination of tanks and making common header and using gravity for flow
- **Saving-216 GJ/.54 Million INR**
- **Replicable as per design of the system**

CONVEYORS INTEGRATION

- Integration of all the conveyors with respective machine/equipment to eliminate idle running when machine is not running
- **Saving-108 GJ/.27 Million INR**
- **Easily replicable to anywhere**

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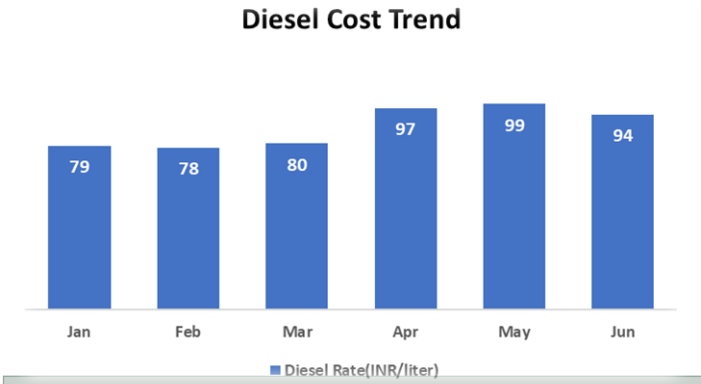
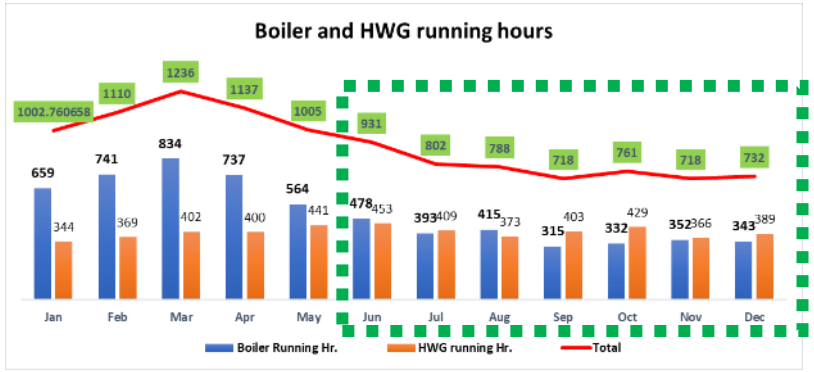
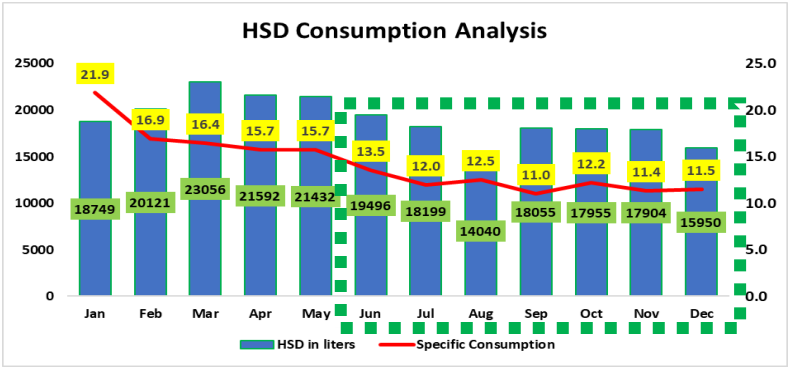
HSD saving project by HWG optimization-2022-23

Hot water is the major source of Diesel consumption 70%







- Hot water Generating source were Boiler & HWG
- Cost/KL of Heating Hot water Boiler - 629 INR/KL HWG -389 INR/KL
- HWG idle time was high
- Generating Capacity was Bottle Neck
- To Full fill peak demand Boiler is being used for Heating water - High Specific cost of Boiler

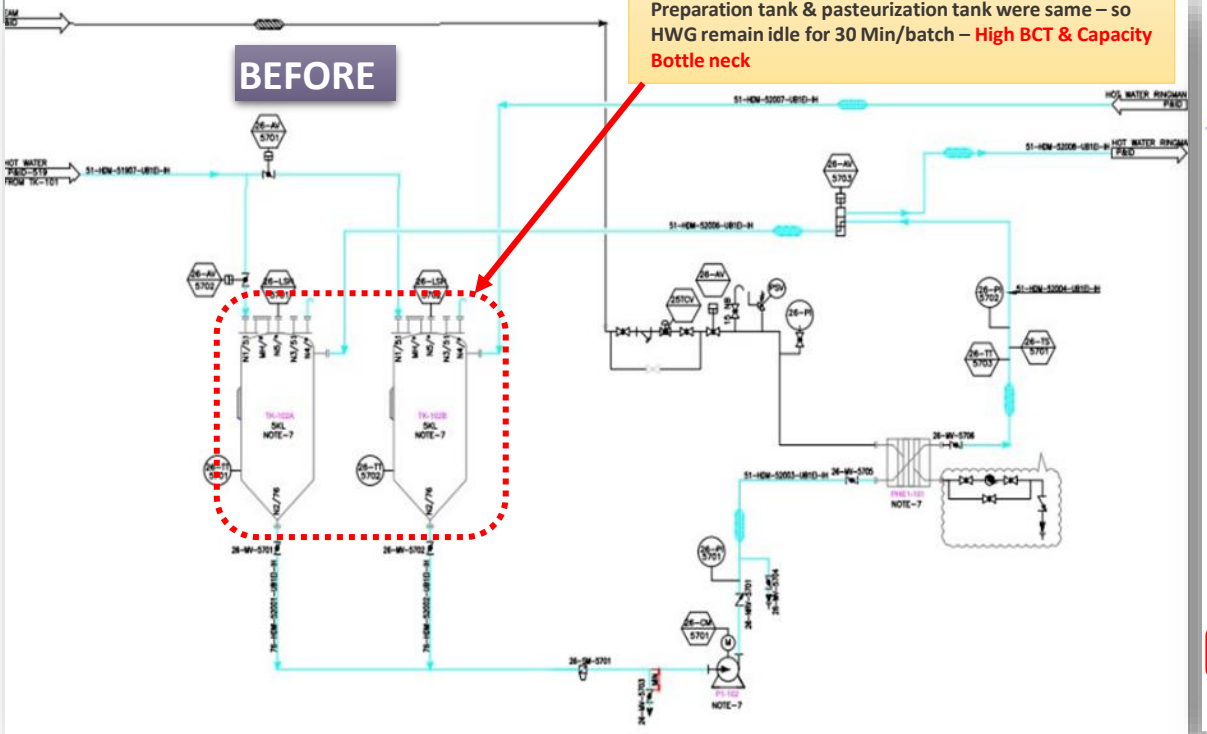
7.3% reduction in Boiler+HWG running hrs.

Total cost saving-2.56 lakhs/month

1312 GJ/YEAR

BEFORE

Preparation tank & pasteurization tank were same – so HWG remain idle for 30 Min/batch – High BCT & Capacity Bottle neck



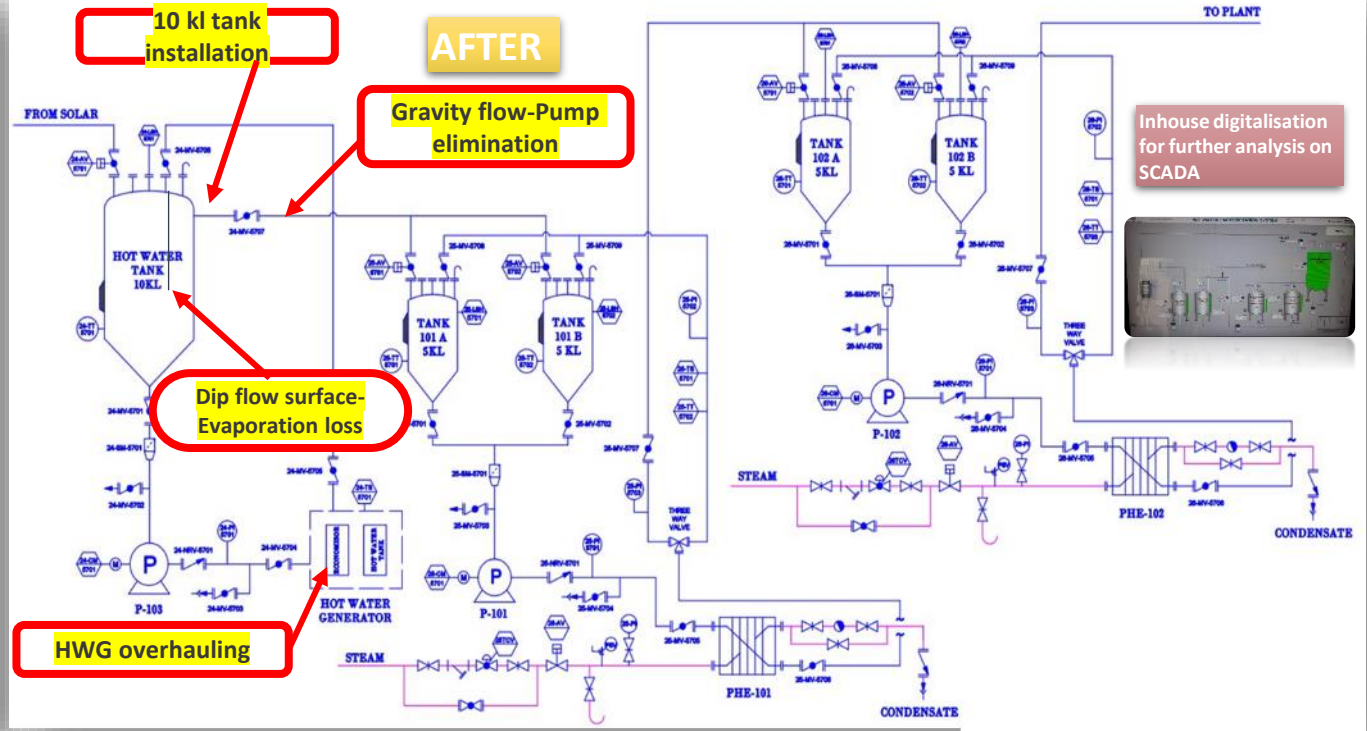
AFTER

10 kl tank installation

Gravity flow-Pump elimination

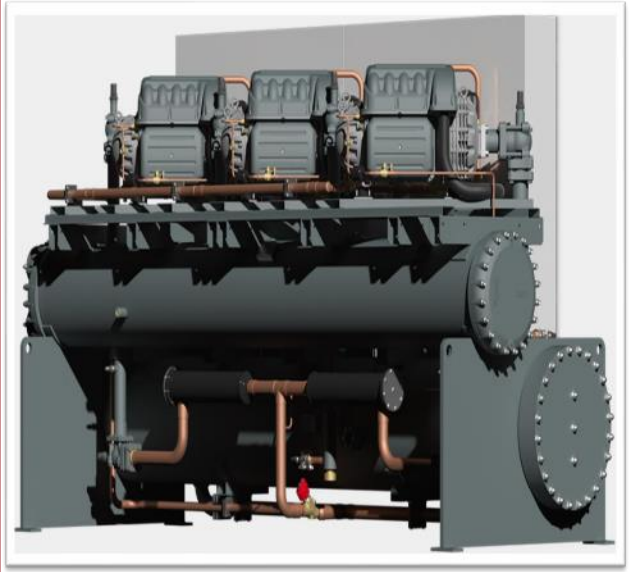
Dip flow surface-Evaporation loss

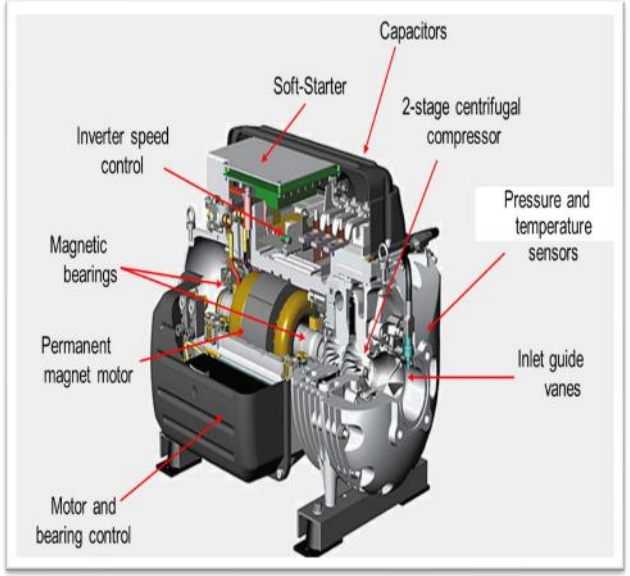
HWG overhauling

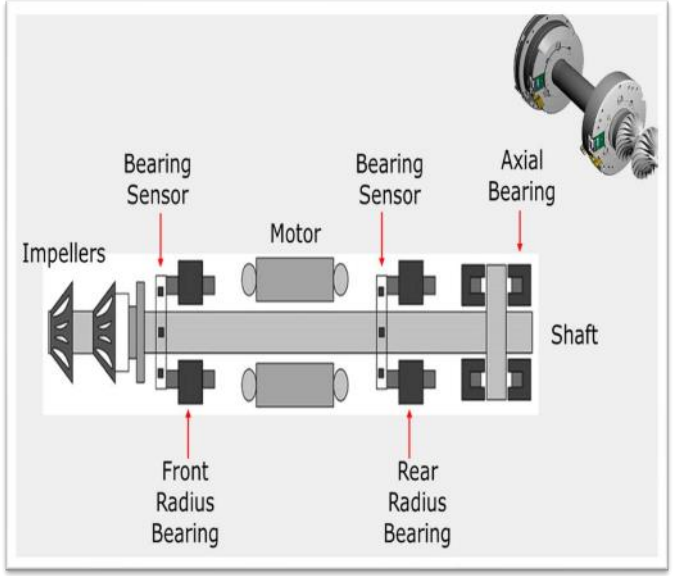


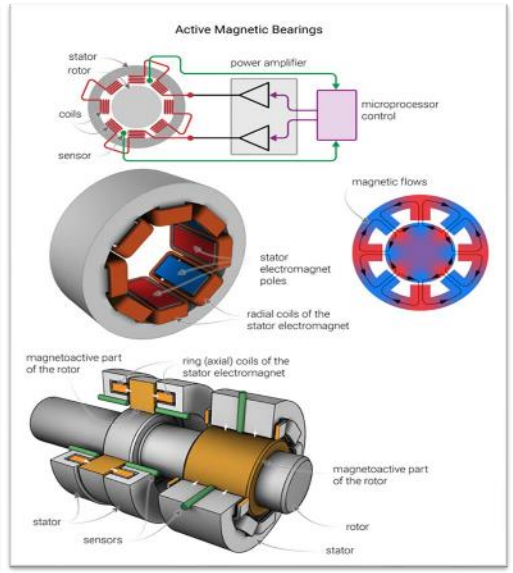
Inhouse digitalisation for further analysis on SCADA

INNOVATIVE PROJECT-1 – Magnetic Bearing Compressor Chiller (1st in HUL)







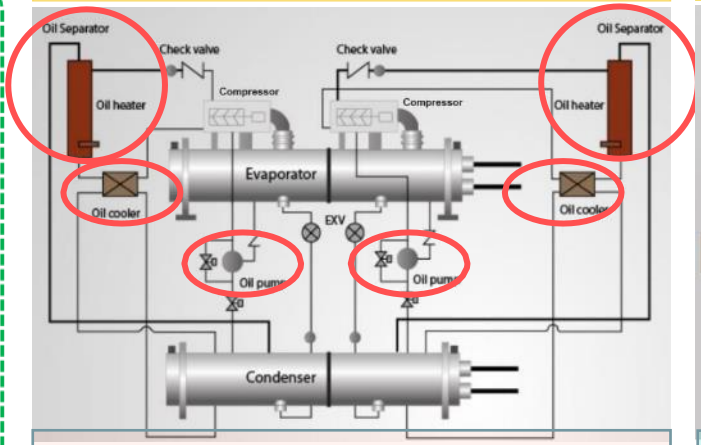


A magnetic-bearing centrifugal chiller utilizes magnetic levitation technology to achieve a frictionless and non-contact levitation state.

Advantages

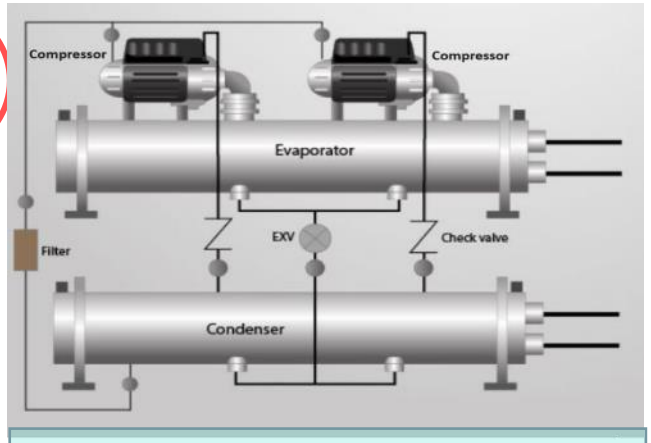
Energy Saving	20-40% Energy Saving
Compact and Light Weight	80 % Smaller
Low Noise	Friction Less Bearings
Low Vibration	Contact Free Compression
Minimized Start Up Current	Lowest starting current from 2 Amps. Reduction in Generator, Switchgear Sizing
Reduced Maintenance Efforts and Cost	Oil Free, Field Serviceable Compressors
Compatible with Ultralow GWP Refrigerants	Compatible with R-1234ze, R 1234zd etc.

Complex Design with Oil Handling Components



Oil is required to lubricate bearings which are used to support rotational and linear movement of the rotor

Simple Design without Oil Handling Components



Oil is not required since the motor shaft levitates in a magnetic field or uses refrigerant for lubrication

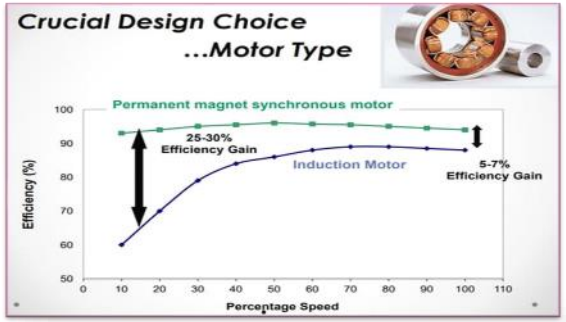
INNOVATIVE PROJECT-1 – Magnetic Bearing Compressor Chiller (1st in HUL)

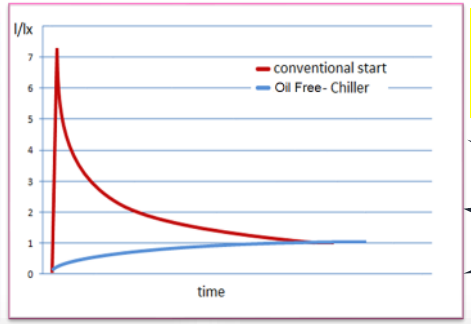
Oiled Screw Compressor

- Mechanical Wear typical maintenance needed in 5 years
- 20% Capacity loss over 10 years
- Oil needed for bearing lubrication
- Risk of refrigerant leakage is comparatively high
- Annual replacement of oil and oil filter – 2L/annum. Lifetime maintenance cost – 35 L

Oil Free, Magnetic Bearing Centrifugal Compressor

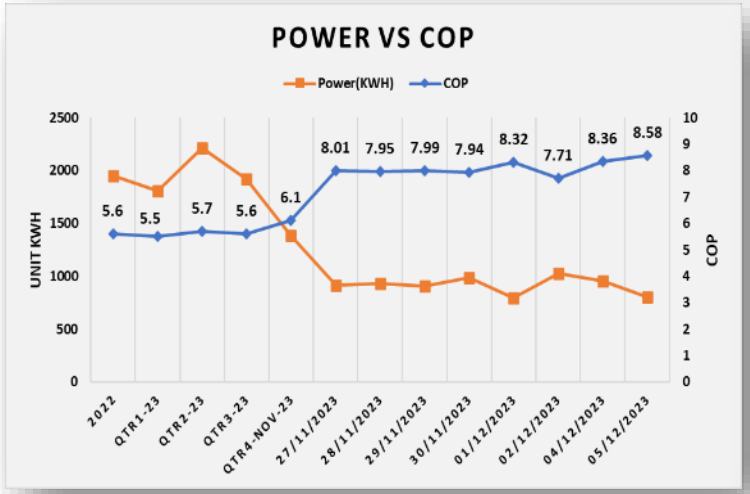
- No mechanical wear over entire life
- No capacity or efficiency degradation over life
- Oil free magnetic bearing. No lubrication needed.
- Minimal refrigerant leakage risk
- **Zero** maintenance cost for compressor





Replicated at 5 sites with 8 sites in progress

2253 GJ saving/year



Parameter	Turbocor Maglev Chiller	Existing Oil Screw Chiller
Capacity, TR	300	330
IPLV (KW/TR)	0.45-.38	0.60
IPLV (COP)	7.5-9	5.9
Refrigerant	R1234ze	R134A
Sustainability	**20 times lower GWP ; ODP-0**	**GWP*-1300**; ODP-0
Annual KWh Consumption	2,70,000	6,60,000
Savings	**56.3 Lakhs/Annum**	

Typical COP 4 to 6.1

**GWP is measured as a multiple of CO_2*

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INNOVATIVE PROJECT-2 – Air Source Heat Pump (1st in HUL)

Process Description: Pasteurized hot water **> 80deg** is required for CLS batch & CIP process. The hot water is generated by using HSD fired HWG. With avg hot water Req – **100 Kl/day**

Major Challenges :

Avg Diesel Consumption -**536 lit/day**
Annualized diesel cons – **160.8 Kl**
GJ impact by HSD - **6401 GJ**
Annual CO2 impact – **480 Tons**

Typical Unilever Applications	
Applications	**Temperature Range**
CIP System	< 80 - 85 ºC
Process Water	< 80 - 85 ºC
Domestic Hot Water	< 40 - 45 CC
Boiler Feed Water Preheat	Up to 95 ºC
Steam Systems	150 ºC to 200 ºC

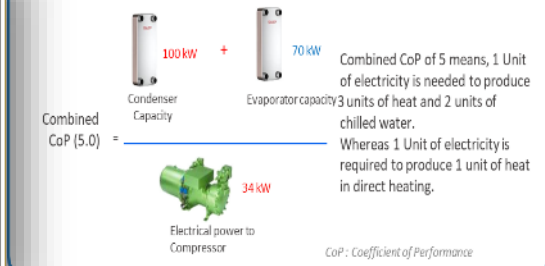
Ultra-High Temperature Lift

- Temperature raised from 15C ambient on evaporator to 86C hot water on condenser side
- 310 kW heat pump capacity
- **Twin screw compressor model used for high lift**

Elimination of diesel

- Since operation of heat pump, diesel consumption in HWG is **completely eliminated**
- All ancillary costs like blower, maintenance, spares, fuel pumps etc shut down.

Why HEAT PUMP is more effective than direct electric heating?



Zero gross emissions. Electric heat pumps do not emit GHG

High Efficiency The coefficient of performance (COP) of electric industrial heat pumps can approach 4.0

Reduce dependency on fossil fuels There is no requirement of combustion fuel, combustion air and combustion management systems.

No Risks associated with Combustion Fuels

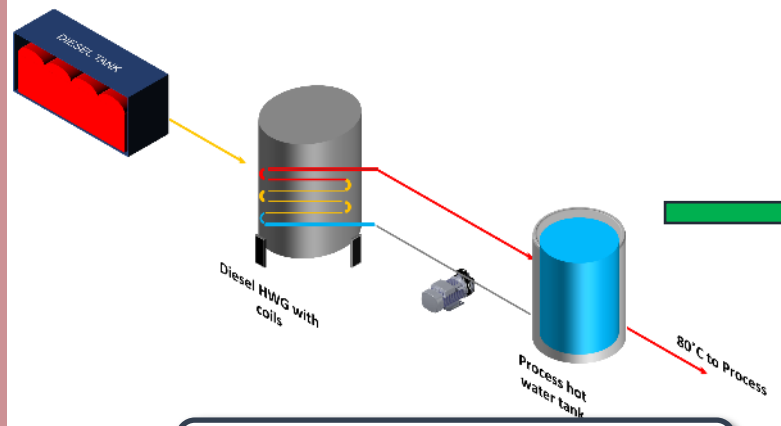
Operational Cost Savings Significant utility cost saving can be achieved

Recyclability. There is no recyclability risk since most of the parts are reusable..

Age. With optimum care it can be used upto 14 years.

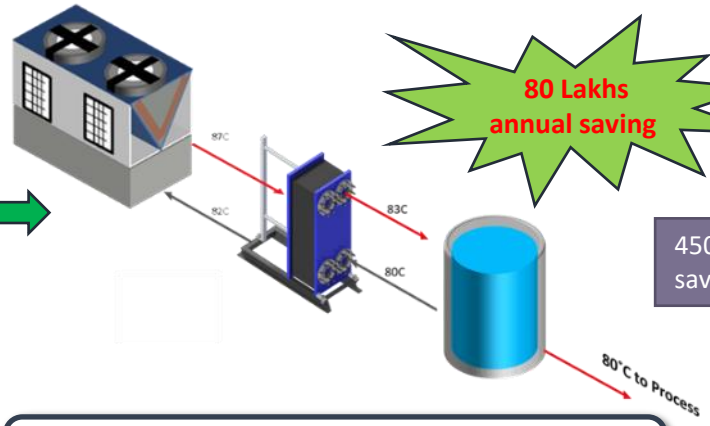
Diverse Applications Heat pumps can be applied to Process Heating, Space Heating, Cooling etc.

Diesel fired Hot Water Generator



Cost per GJ – INR 3300, CO2 – 400-500 Ton CO2 per year

Air Source Heat Pump

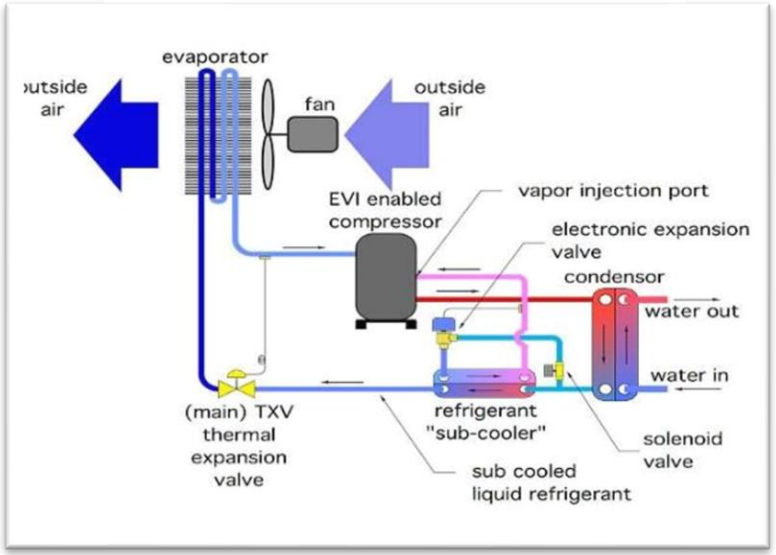


80 Lakhs annual saving

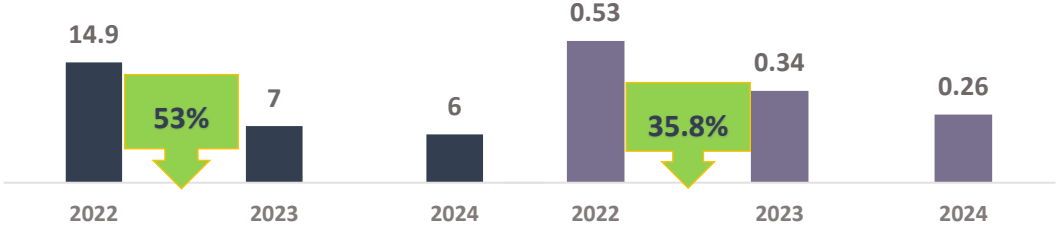
450 Tons CO2 saving/annum

Cost per GJ – INR 1650; CO2 – Zero ;
New age refrigerant **R1234ze with GWP<5 and ODP of 0**

Basic Principle of ASHP

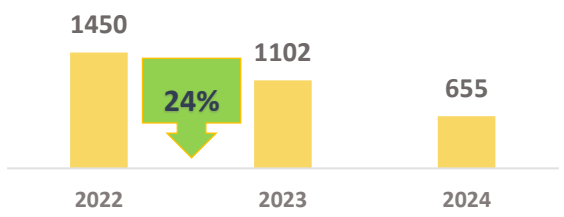


HSD/Ton(Litre/Ton)

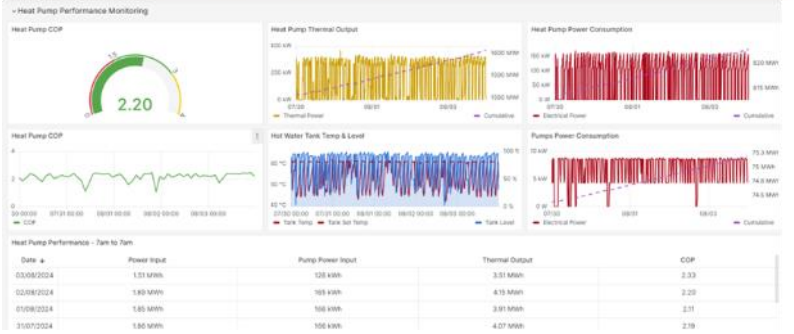


Thermal Energy(GJ/Ton)

HSD Cost/Ton(INR/Ton)



Real Time Cloud Based Dashboard



Replicated at 8 sites with 4 sites in progress

INNOVATIVE PROJECT-3 - Utility reduction in Process-2023-24

Batch Cycle Time Improvement

Steam Elimination from Process

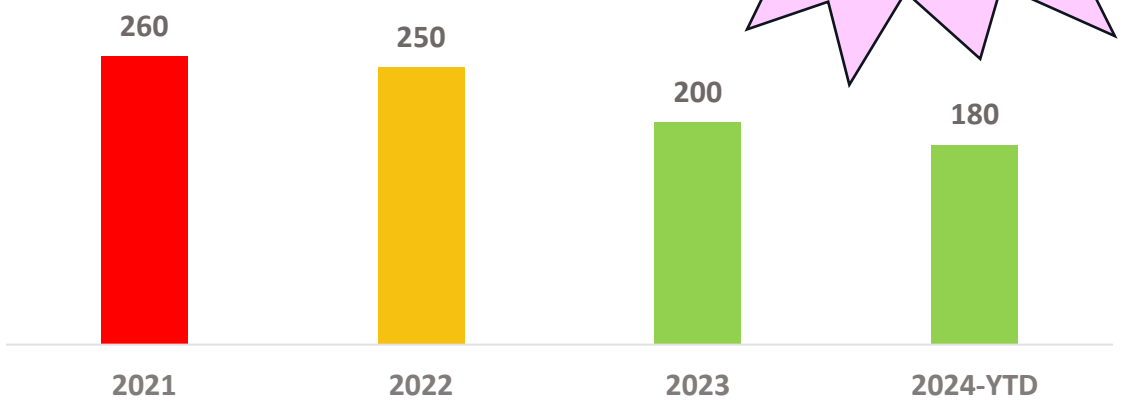
- Water Addition
- Surfactant Addition
- Heating
- Other RM's Addition
- Chilling
- Perfume Addition

→

- Water Addition
- Surfactant Addition
- Other RM's Addition
- Perfume Addition

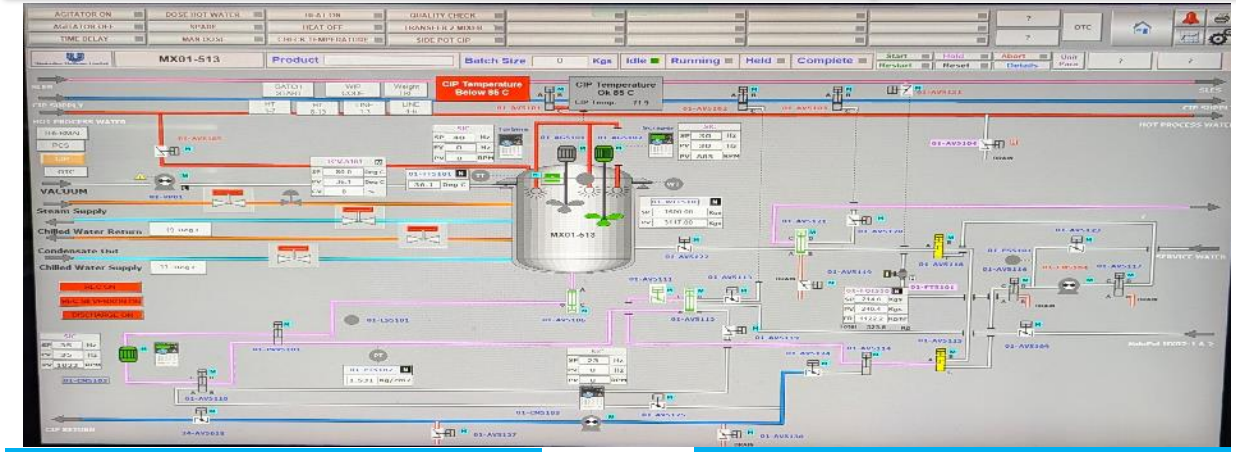
Chilling

718 GJ/YEAR SAVED



One Touch CIP

Customised one touch SCADA system for ClP



Standardization of process Time

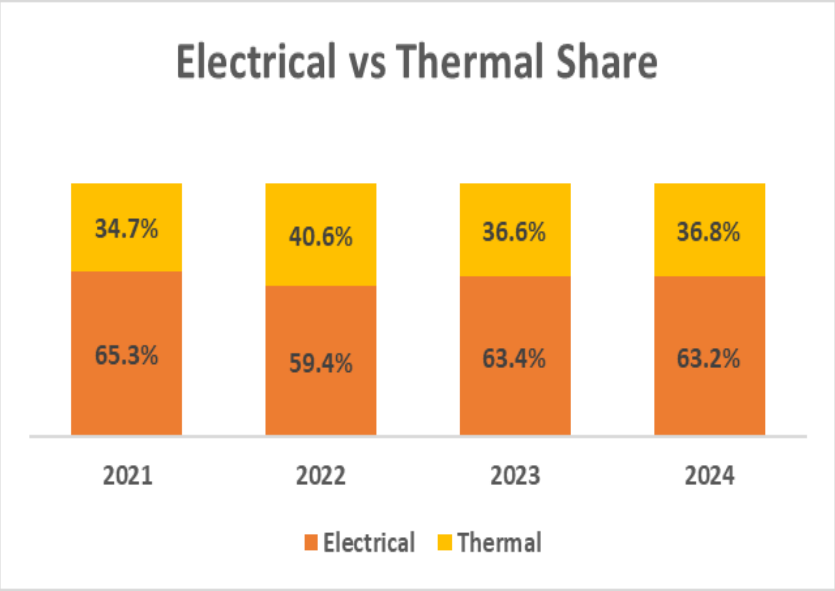
Elimination of Manual Dependency

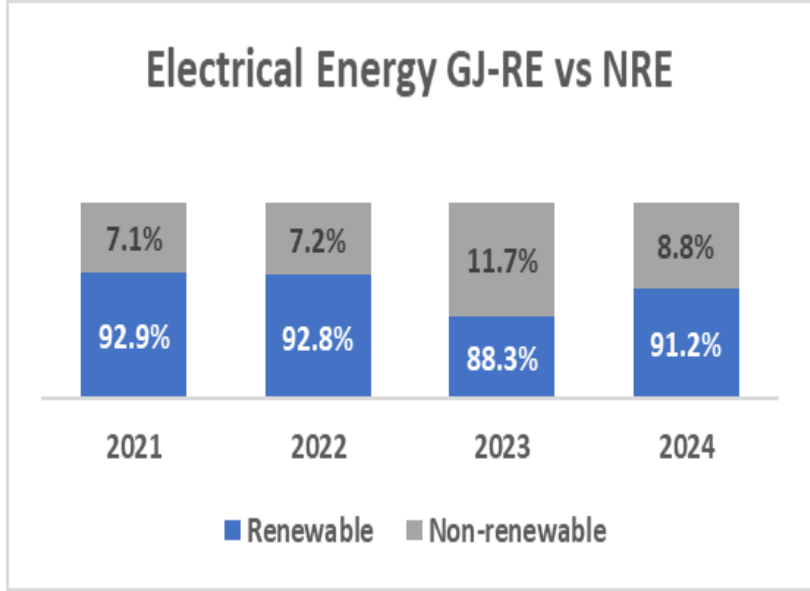
Reduction in time and Hot Water Usage: Steam & Power usage Reduction

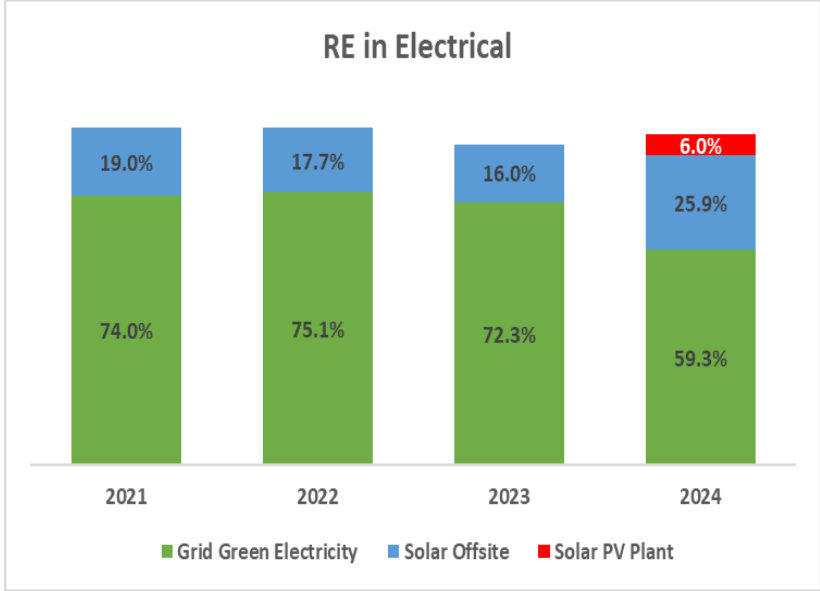
CIP TIME REDUCED FROM 2 HRS TO 1 HR PER CIP

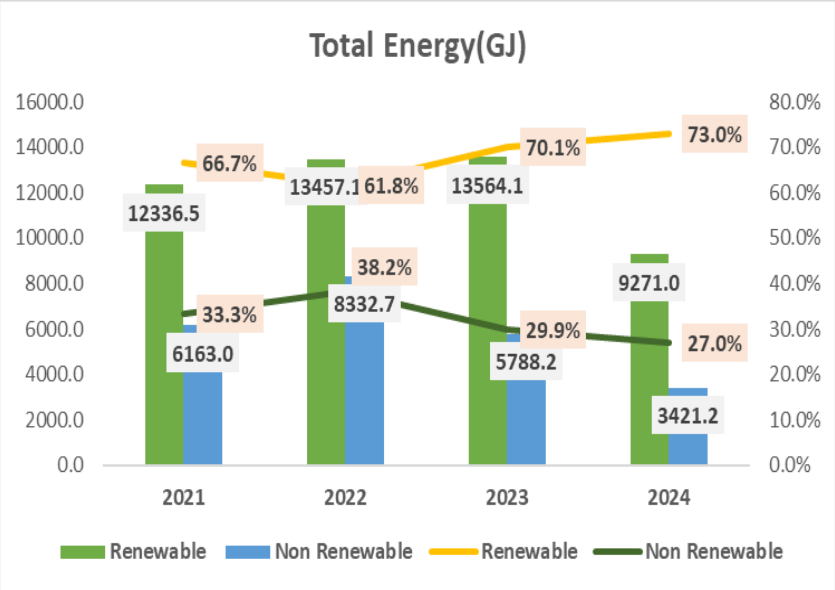
1728 GJ/YEAR SAVED

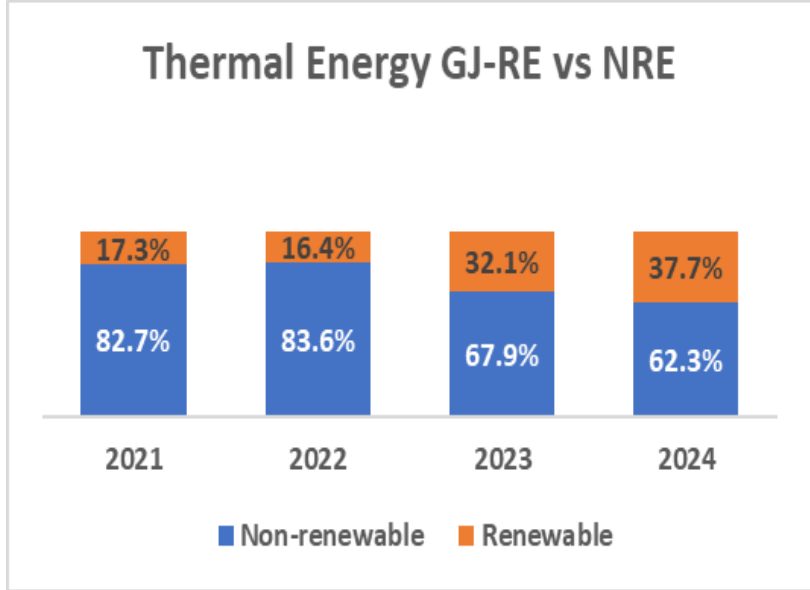
UTILISATION OF RENEWABLE ENERGY SOURCES

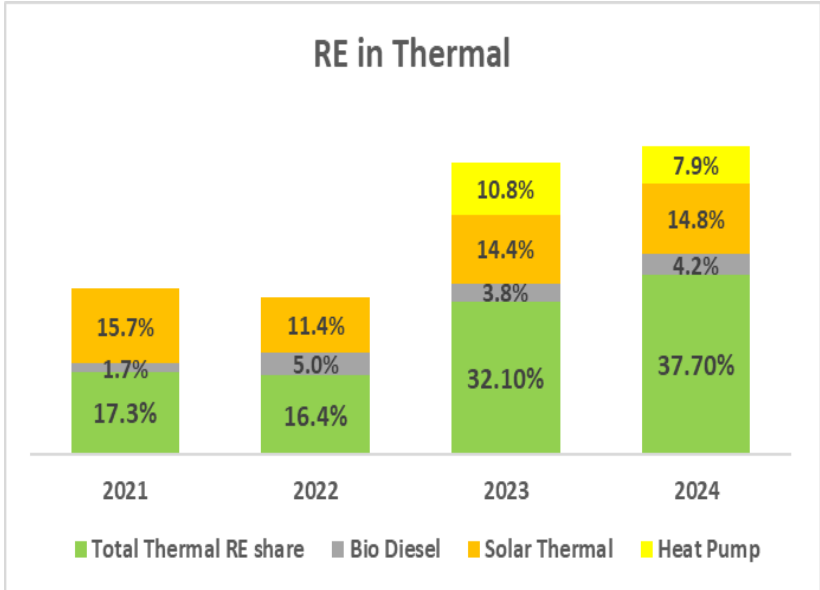




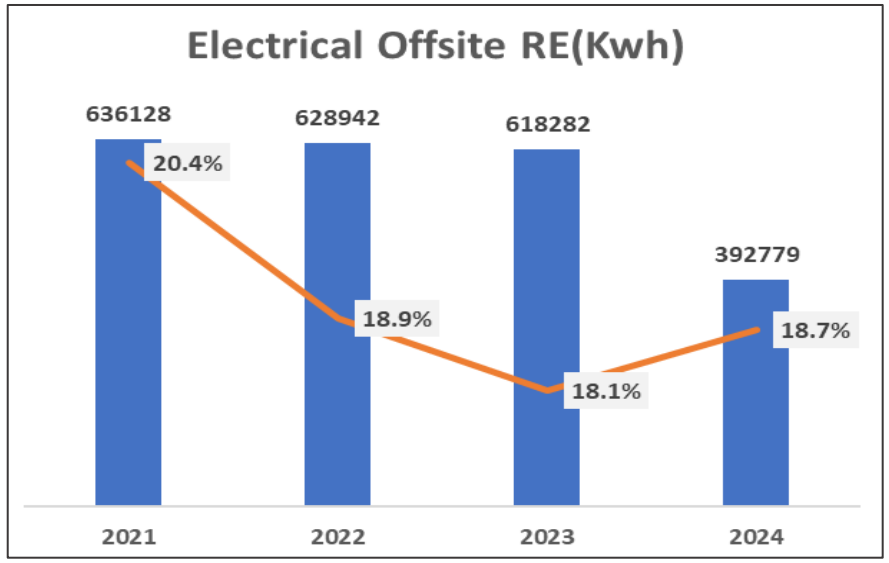


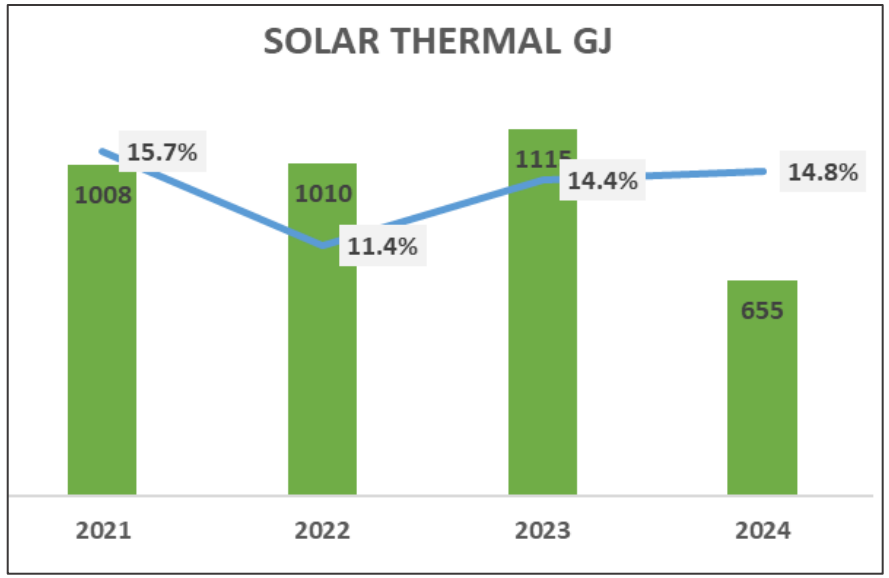






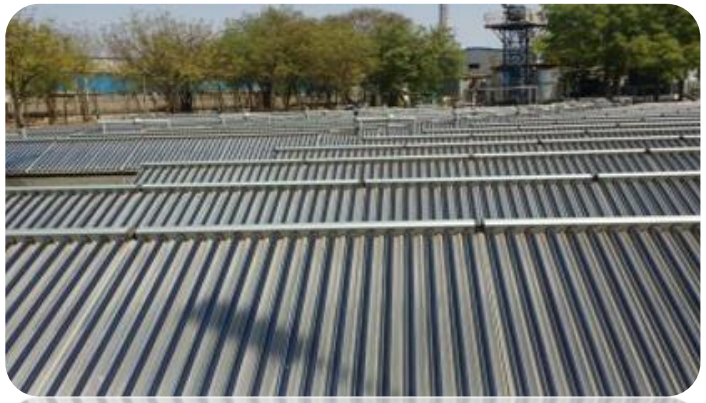
UTILISATION OF RENEWABLE ENERGY SOURCES & FUTURE PLAN



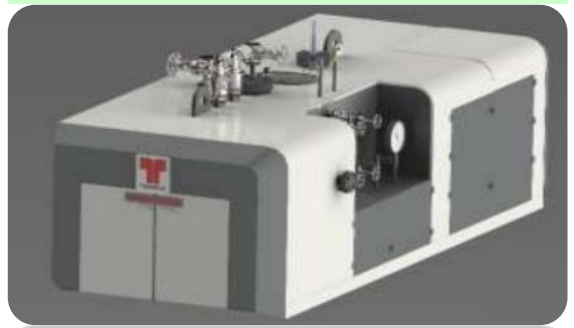


BROOKFIELD SOLAR MEGA PROJECT-12.85 MW

SOLAR WATER HEATER EXPANSION UPTO 2016 GJ



1 TPH ELECTRIC BOILER IN PLACE OF HSD FIRED BOILER



1-OFFSITE WINDMILL- 1MW

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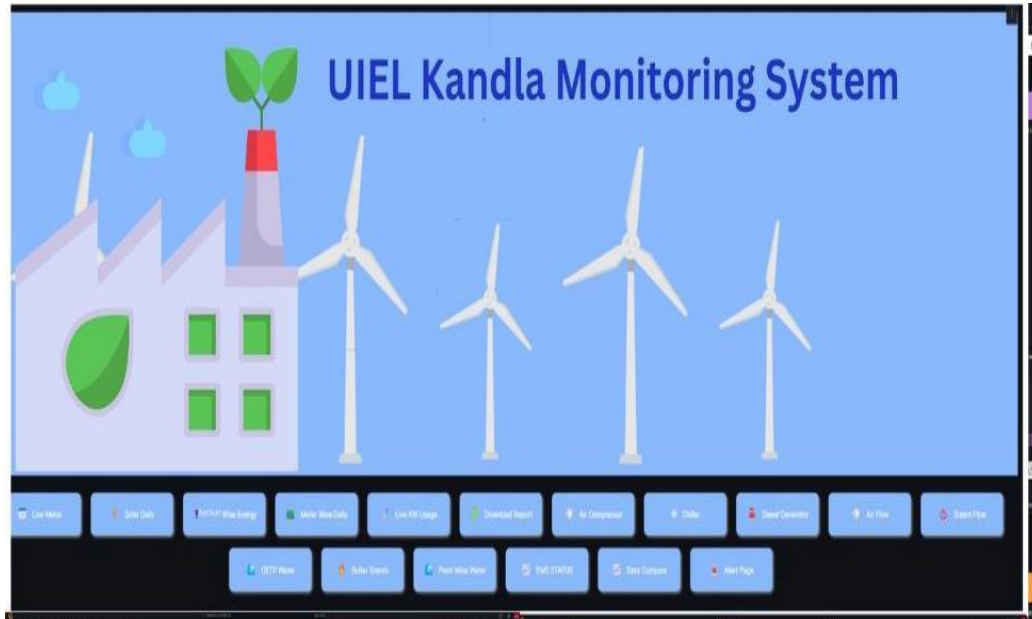
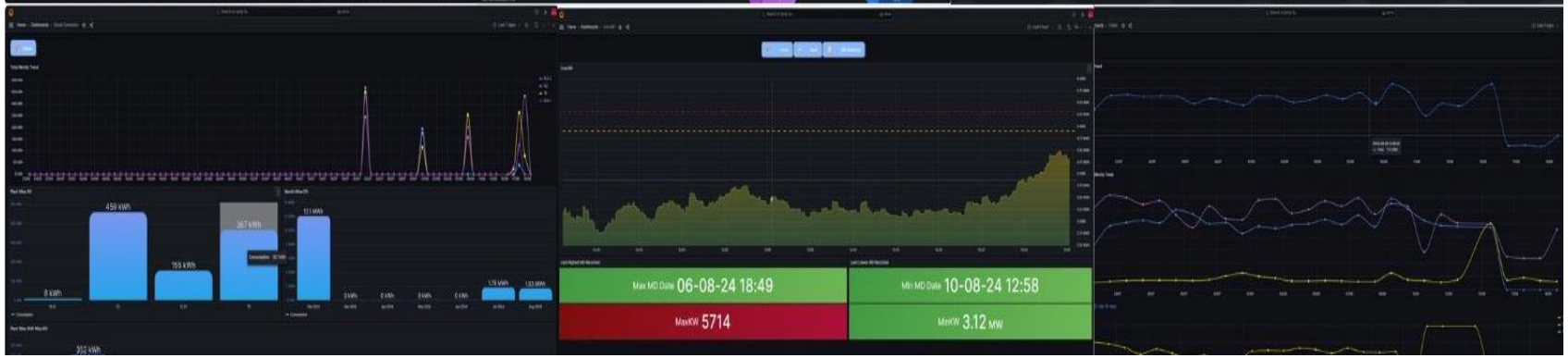
EMS System





- Live meter
- Section Wise Energy
- Live KW Usage
- Air Compressor Status
- Chiller Status
- ETP Water
- Data Comparison

and many more..

UNILEVER GHG TARGET & ACTION PLAN

Our Climate Targets

Unilever has three principal targets that guide our actions:*

- a **Short-term Emissions Reduction Target:** to reduce in absolute terms our operational (Scope 1 & 2) emissions by 70% by 2025 against a 2015 baseline;
- a **Medium-term Emissions Reduction Target:** to reduce in absolute terms our operational emissions (Scope 1 & 2) by 100% by 2030 against a 2015 baseline; and
- a **Long-term Net Zero Value Chain Target:** to achieve net zero emissions covering Scope 1, 2 and 3 emissions by 2039.+

Net Zero by 2039 across **Scope 1, 2 & Scope 3** emissions

Scope 1 & 2 emissions reduction against a 2015 baseline **100%** **2030**

Scope 1 & 2 emissions reduction against a 2015 baseline **70%** **2025**

Halve the footprint of our products by 2030 against a **2010** baseline

Integrated **GHG roadmaps** for all key materials and ingredients

Zero deforestation by **2023** in palm oil, tea, soy and cocoa

100% renewable grid electricity (achieved January 2020)

Eco-efficiency programmes to reduce energy demand

Estimated **40-50%** reduction in logistics emissions by **2030**

At least 25% **Recycled plastic** by **2025**

Transition to **100%** renewable heat by **2030**

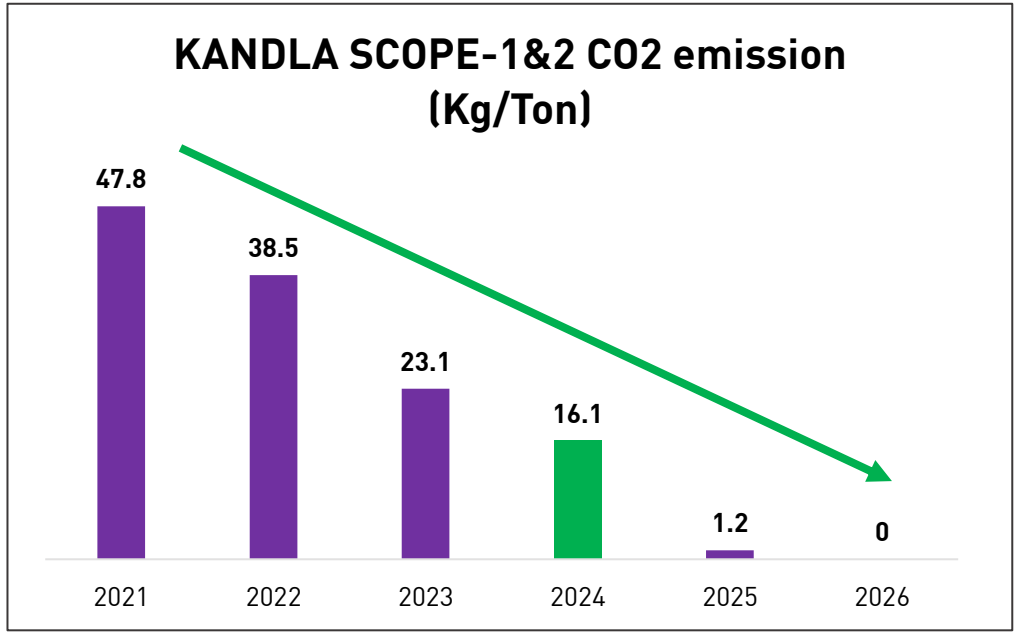
Align capital expenditure with our **1.5° pathway**

100% EVs or hybrids in our global car fleet by **2030**

Reduce emissions from **aerosol propellants** in North America

Phase out high-impact **HFC refrigerants** from cooling systems

Halve food waste in our operations by **2025**



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GHG INVENTORISATION & ACTION PLAN

STEP 1.1 : ASSESS WHICH OF THE 3 MAIN CONTRACTUAL OPTIONS TO DELIVER 100% RENEWABLE ELECTRICITY

GREEN POLICY

	Option 1	Option 2	Option 3
			
	RENEWABLE ELECTRICITY CERTIFICATES*	ON SITE PPA	Bundled REC / OFF SITE PPA/ Green Tariff
Supply contract	Multi-customers	single customer	Multi-customers
Contract strcuture	regional/ national/site	site supply	national or site supply
Contract terms	1+ yrs	10-15 yrs	3-10 yrs
Covers % of consumption	up to 100%	~ 10-30%	up to 100%
Implementation complexity	low **	high	medium
Savings vs. On cost	On cost	Savings	Savings

* These have different names in different markets

** low if REC concept & system implmented in country

Options	Renewable Market & Legislation		
	CLOSED (Not supportive)	REFORMING (Partially supportive)	OPEN (Pro renewables)
1 RECs	Y	Y	Y
2 On/near site solar (Power Purchase Agreement –PPA- or Capex)	Y	Y	Y
3 Contract renewable electricity (e.g. green tariff or short-term PPA)		Y	Y
4 Long term renewable electricity PPA contracts (virtual or physical)			Y
5 CAPEX (to leverage corporate tax credit or subsidies)			Y

Particulate Matter reduction

Compliance to NGT order dated 06.08.2019 in the matter of "Report filed in O.A. No. 681/2018. This is with the objective for PM reduction by using retrofitted emission control devices (RECD) for in-use diesel operated internal combustion engines up to 800 kW gross mechanical power for generator set (Genset) application.

INITIATIVES TAKEN AND FUTURE PLAN

- Usage of food waste for producing Bio-Gas to reduce no. of LPG cylinders in canteen for cooking
- Replacement of old refrigerant to natural one
- Retrofit emission control device in DG to reduce the PM
- Bio-diesel in DG set
- Electric boiler to eliminate HSD usage and zero flue gases in chimney
- Localisation of raw material supplier to reduce trucks Kms and reduction in GHG emissions by 60% in transportation
- Usage of EV vehicle for factory staff

Eco Friendly/ Green Refrigerants inventorisation

Unilever objective:

Phase out of high GWP refrigerants to achieve our carbon neutral commitment.

Classification of Refrigerants

Natural Refrigerants

e.g. Water, Ammonia etc.

Zero ODP

Very low / Zero GWP

Synthetic Refrigerants

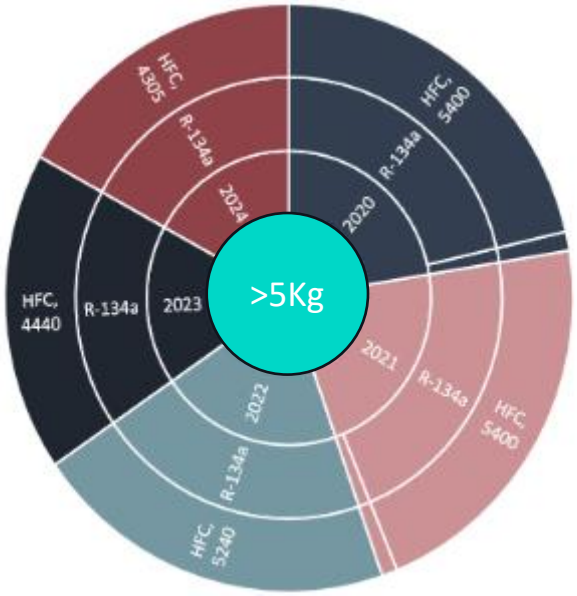
e.g. CFC, HCFC, HFC, HFO, etc.

Contributes to ODP**

Contributes to GWP**

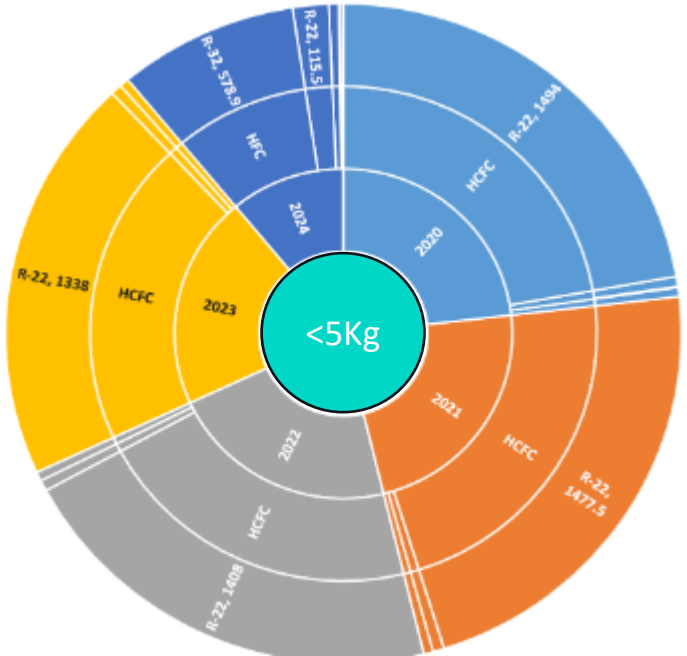
Unilever Policy Towards use of Eco-Friendly Refrigerants:

1. Use of **natural refrigerants wherever possible**
2. No refrigerants with ODP > 0
3. **For Existing Installations:** No refrigerants with GWP > 1500 by December 2021.
4. **For New installations:** No new CFCs or HCFCs in installations + Use of new ultralow GWP refrigerants with GWP < 150



Refrigerant Contained in Large Systems (> 5Kg) on Site (Kg)

Refrigerant Contained in Large Systems (< 5Kg) on Site (Kg)



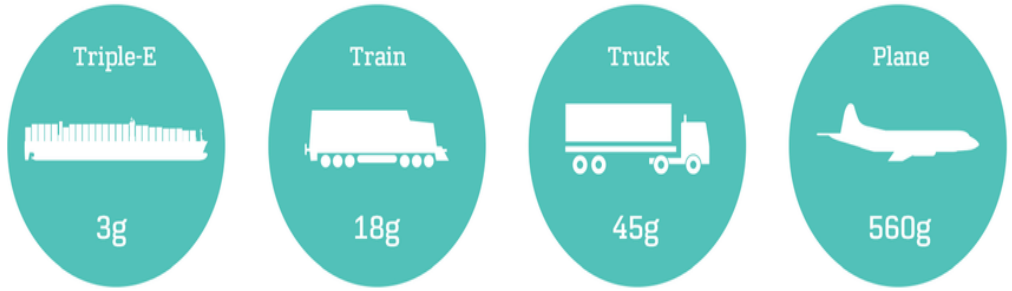
GREEN SUPPLY CHAIN MANAGEMENT

INSOURCING RIGID SUPPLIER INSIDE SEZ

CREATIVE KASEZ

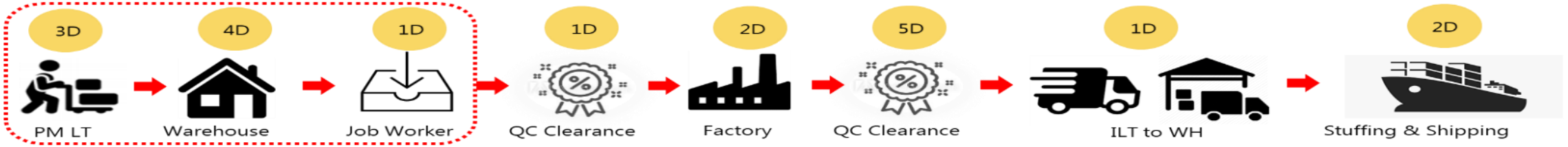
- LT reduction by **10 days**
- Import price parity of Resins/RM – **Duty savings**
- **660 Kms / 410 Miles** travel reduction

Savings – 500K+ Euro



53000 Kg
Co2 emission reduction

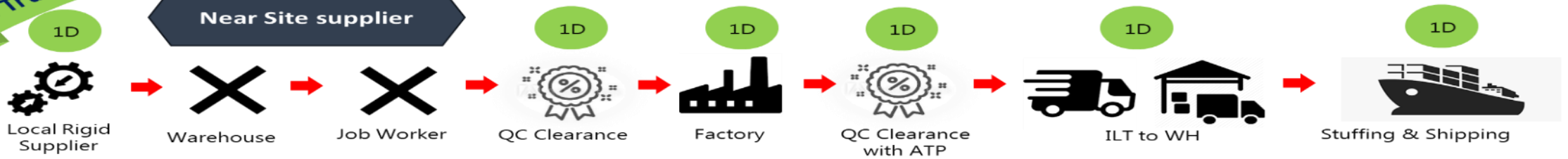
Lead Time 2022 — **19**



68% Reduction In Truck Kms

Lead Time 2024-25 — **6**

Near Site supplier



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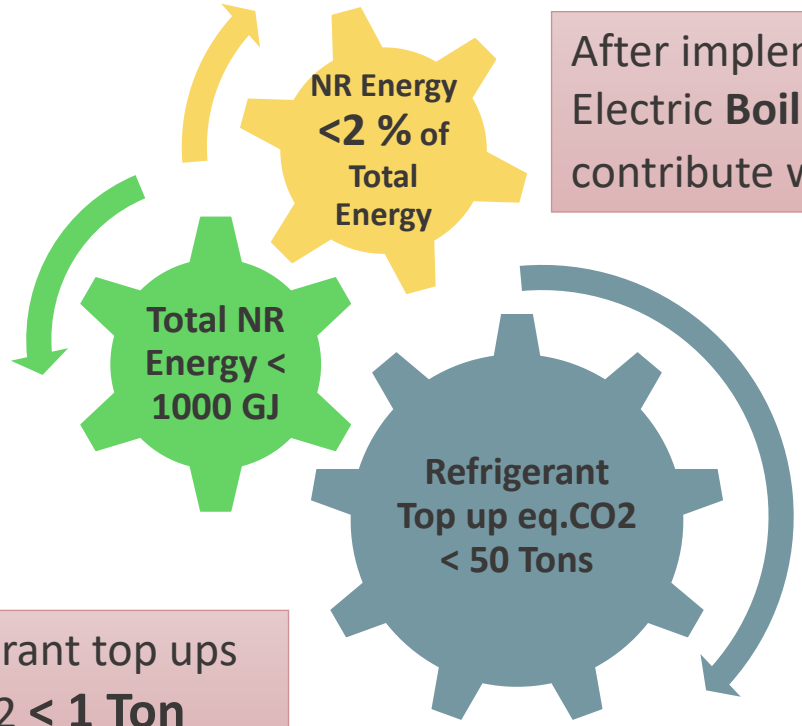
KANDLA NET ZERO COMMITMENT

VOLUNTARY INITIATIVE-EP 100

- Usage of Heat Pump across 8 sites
- Magnetic bearing compressor chiller across 5 sites

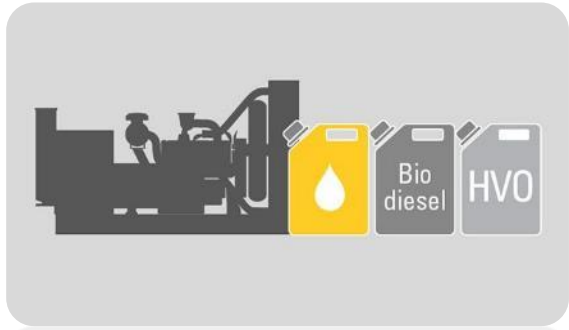


After implementation of Electric **Boiler,** only **DG** will contribute which is **< 1.5%**

DG HSD Contribution will be **< 350 GJ**

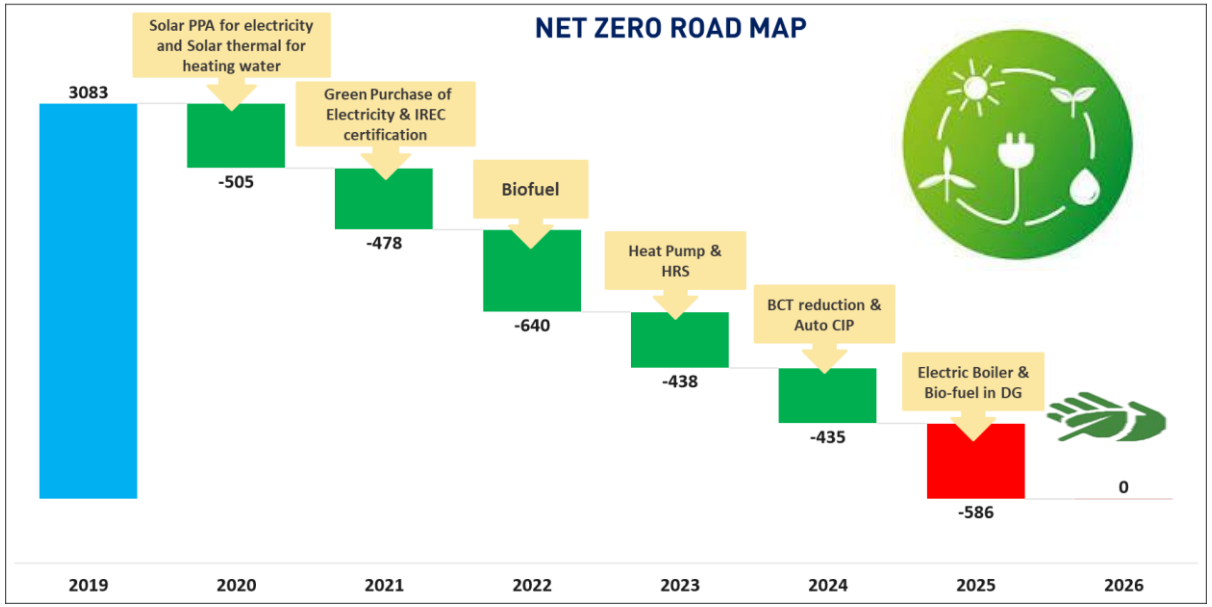
Refrigerant top ups eq. CO_2 **< 1 Ton**

BIO-FUEL IN DG



FUTURE INITIATIVE & PLAN-RE 100

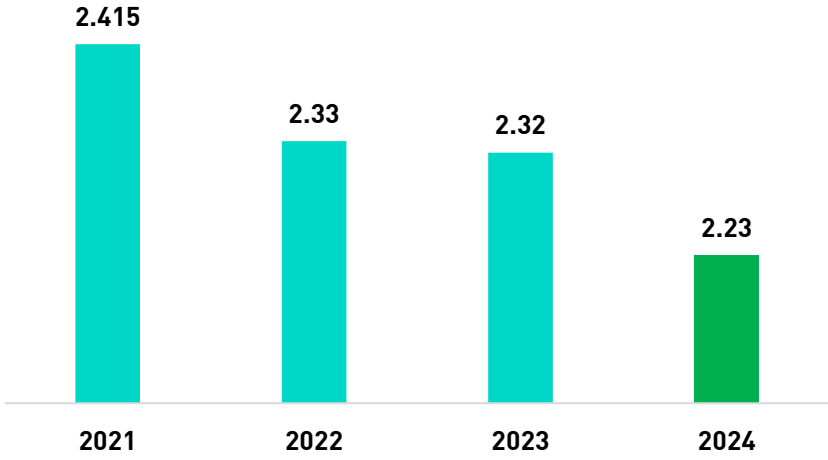
Usage of DM cold water in place of pasteurize hot water for making Shampoo for export-Applied for approval-**1800 Ton** steam saving/Annum



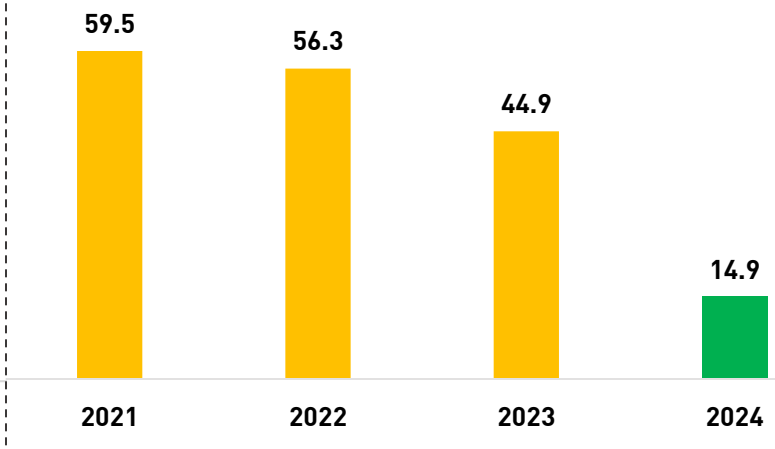
B&W

CARE FOR PLANET-WATER AND WASTE

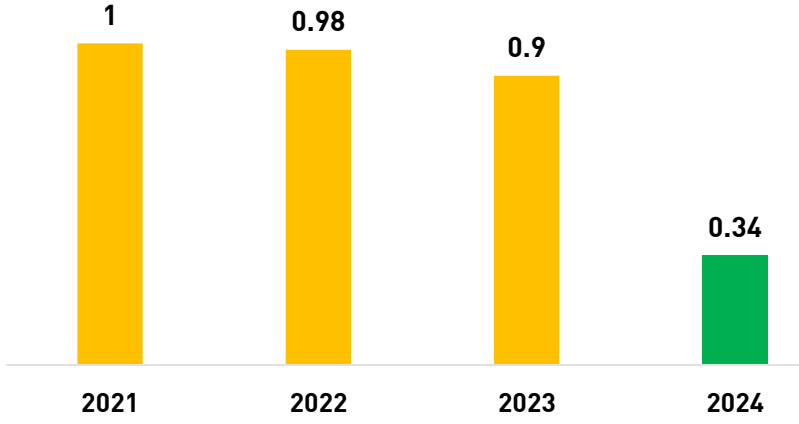
Water (M3/Ton)

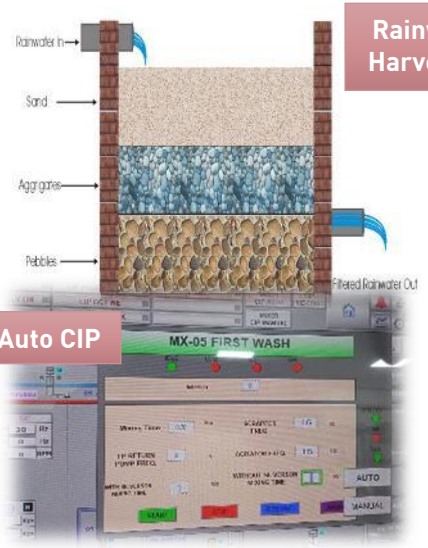


Plastic and Paper Waste (Kg/Ton)



EFFLUENT(M3/Ton)



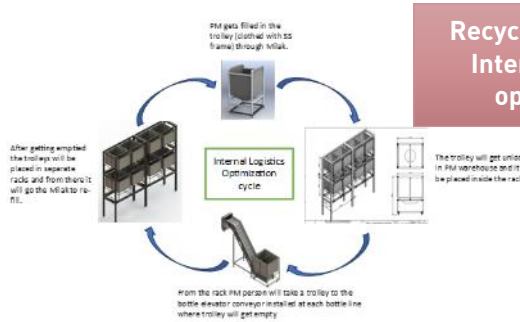


Rainwater Harvesting

ETP TREATED WATER USAGE IN WASHING,CANTEEN AND TOILETS

Auto CIP

OPTIMIZATION OF RO PLANT TO REDUCE ITS REJECT



Recycle to Reuse by Internal logistic optimization

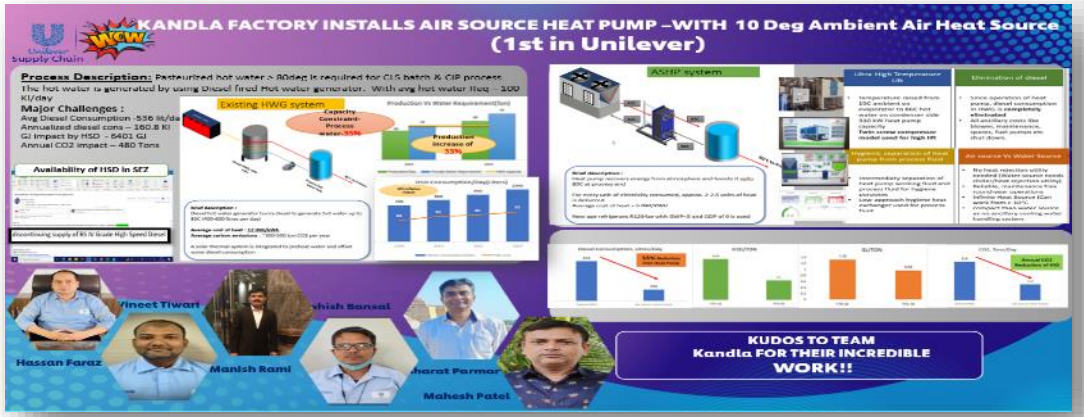
Biogas Plant

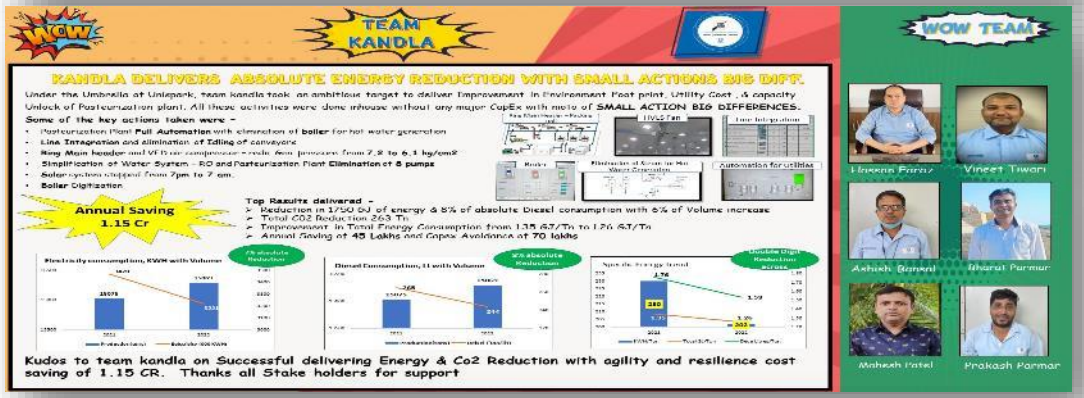
PIGGING IN MFG

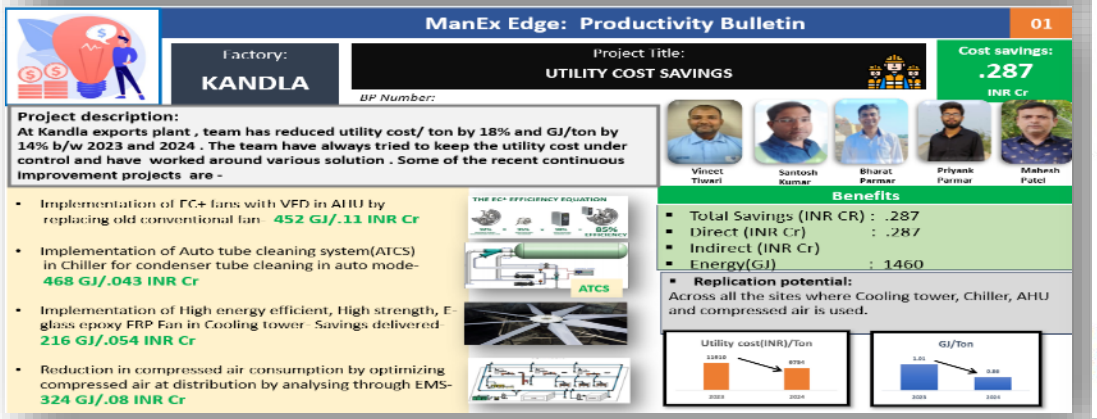
B&W

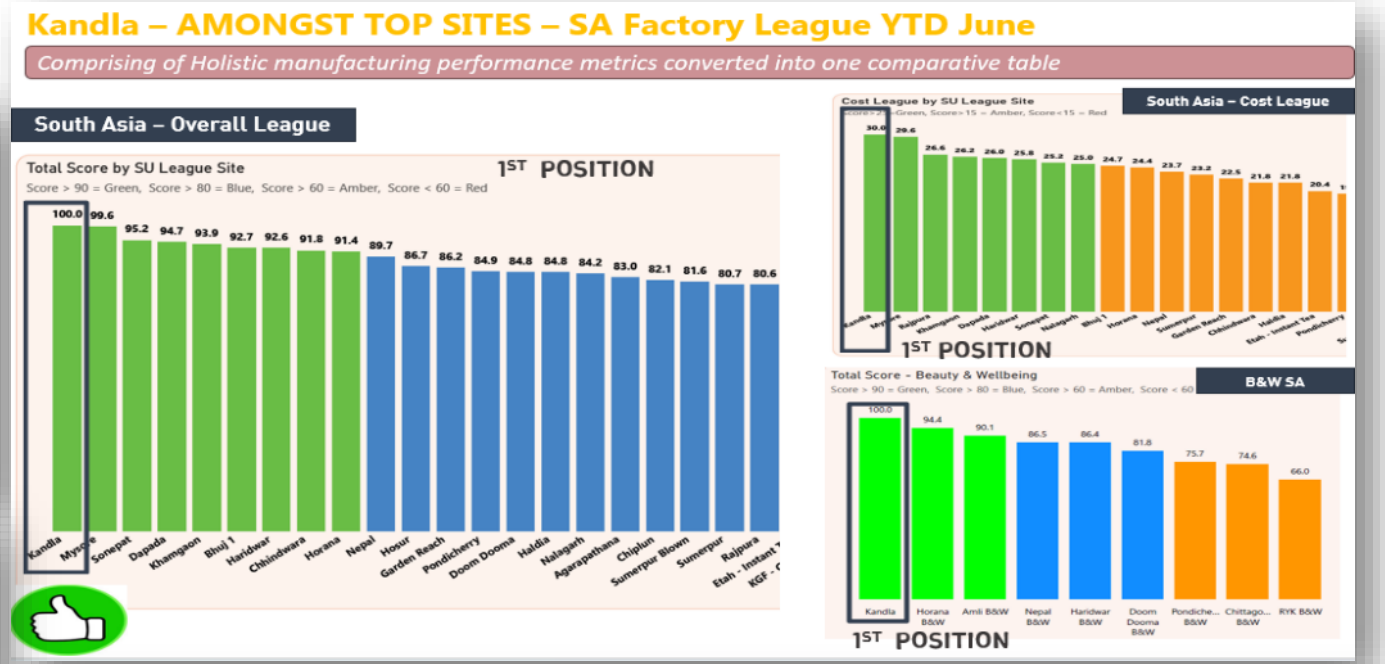
REWARDS AND RECOGNITION

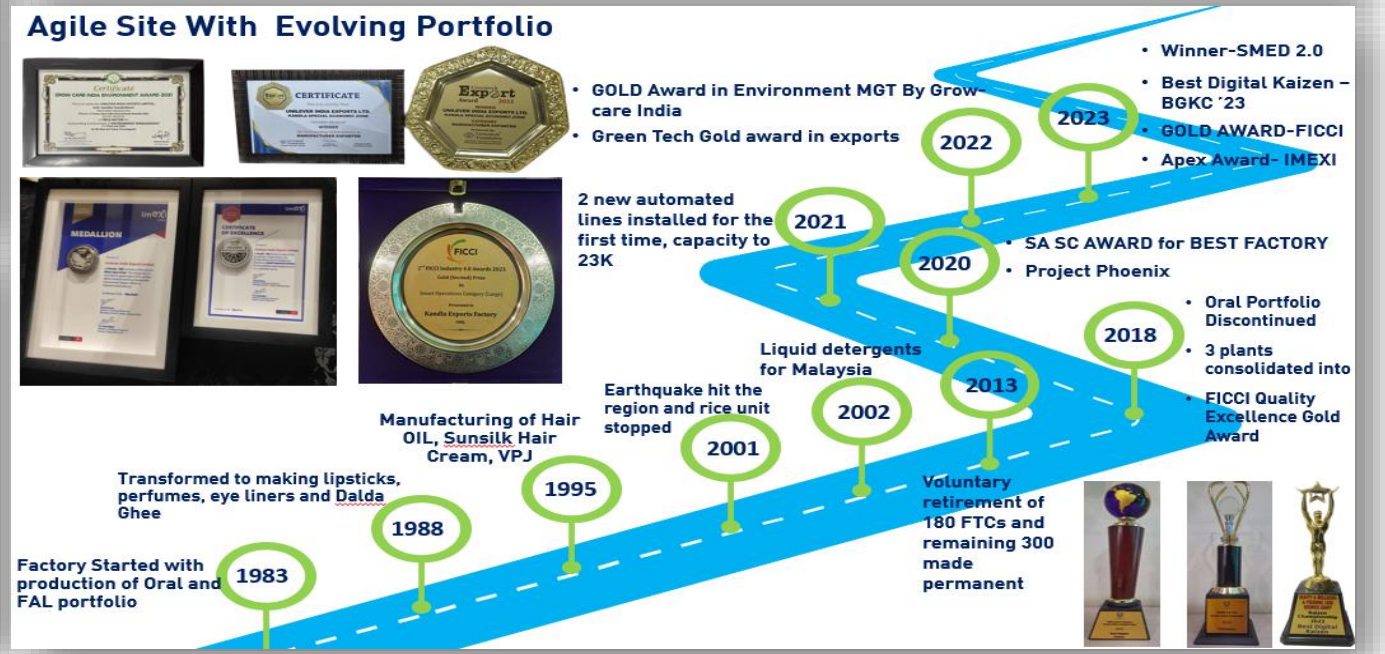
Published WOW stories



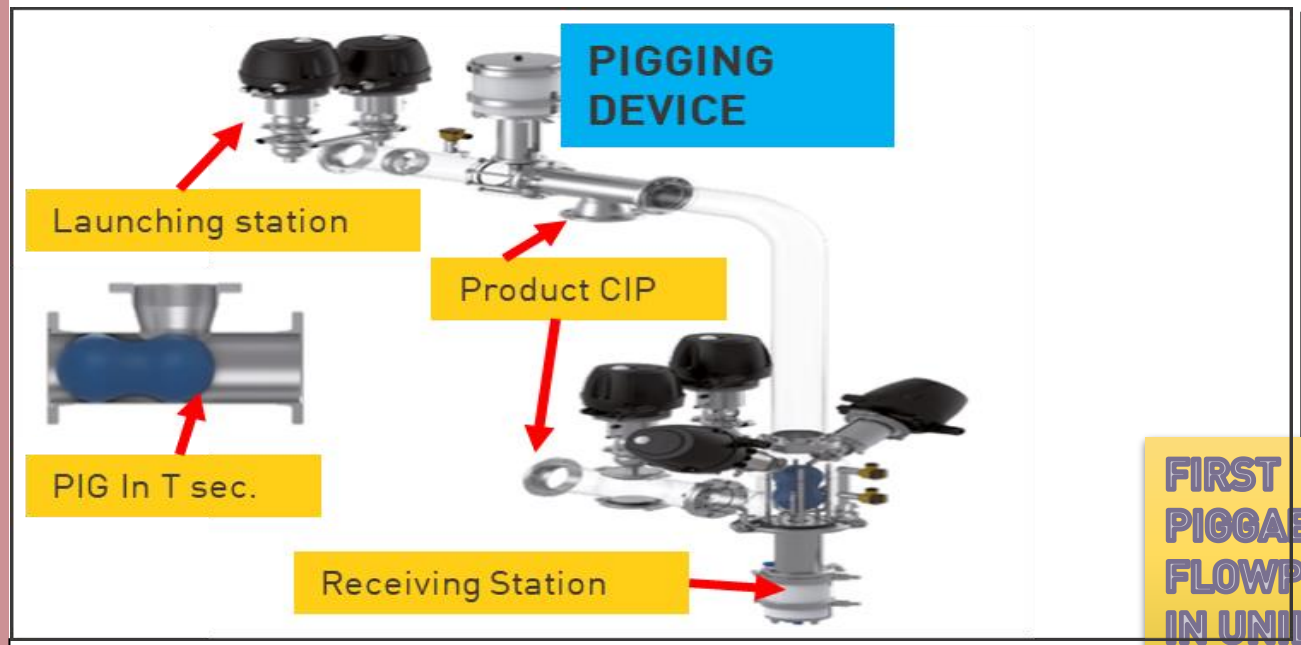


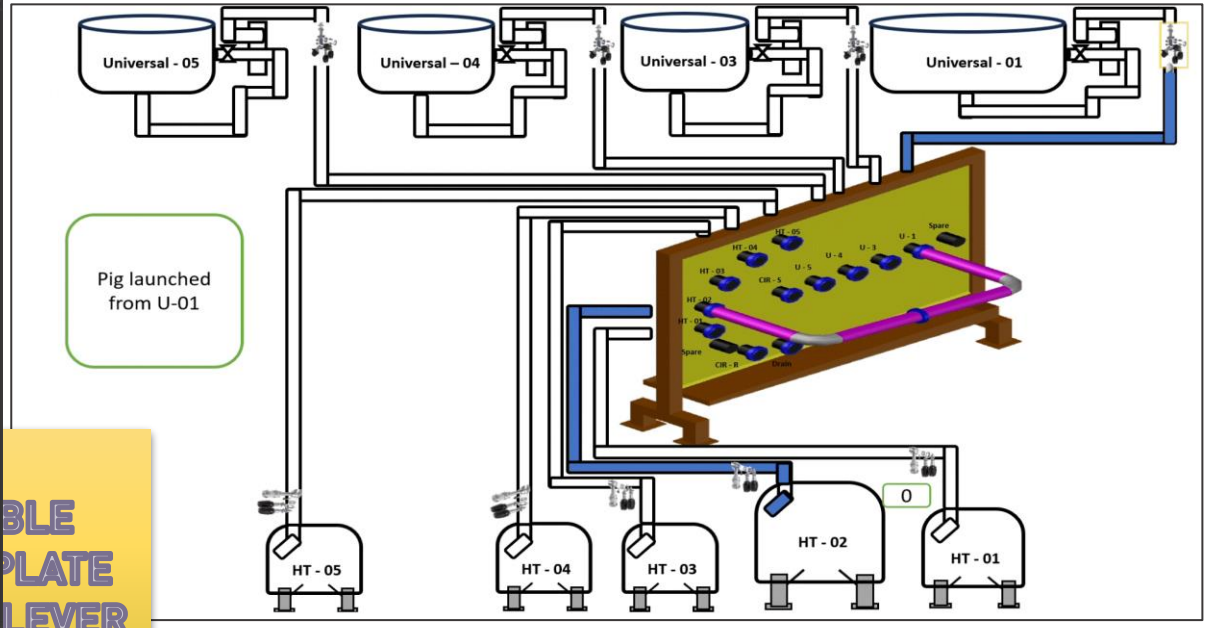




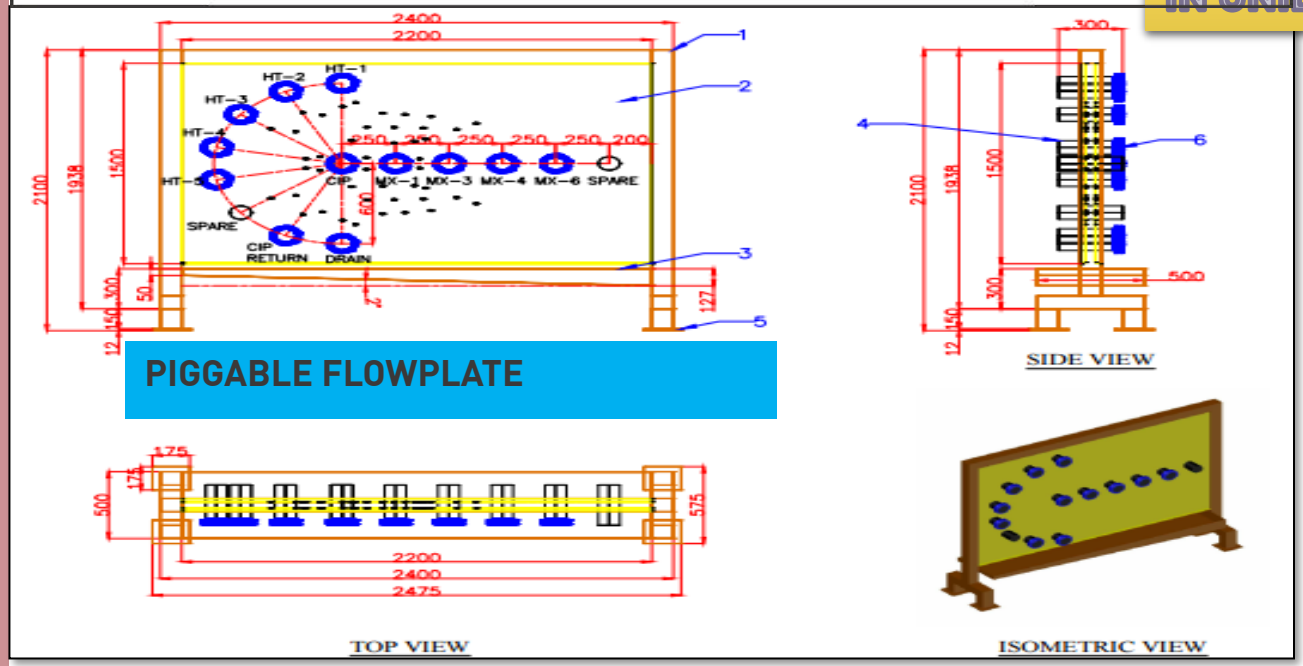


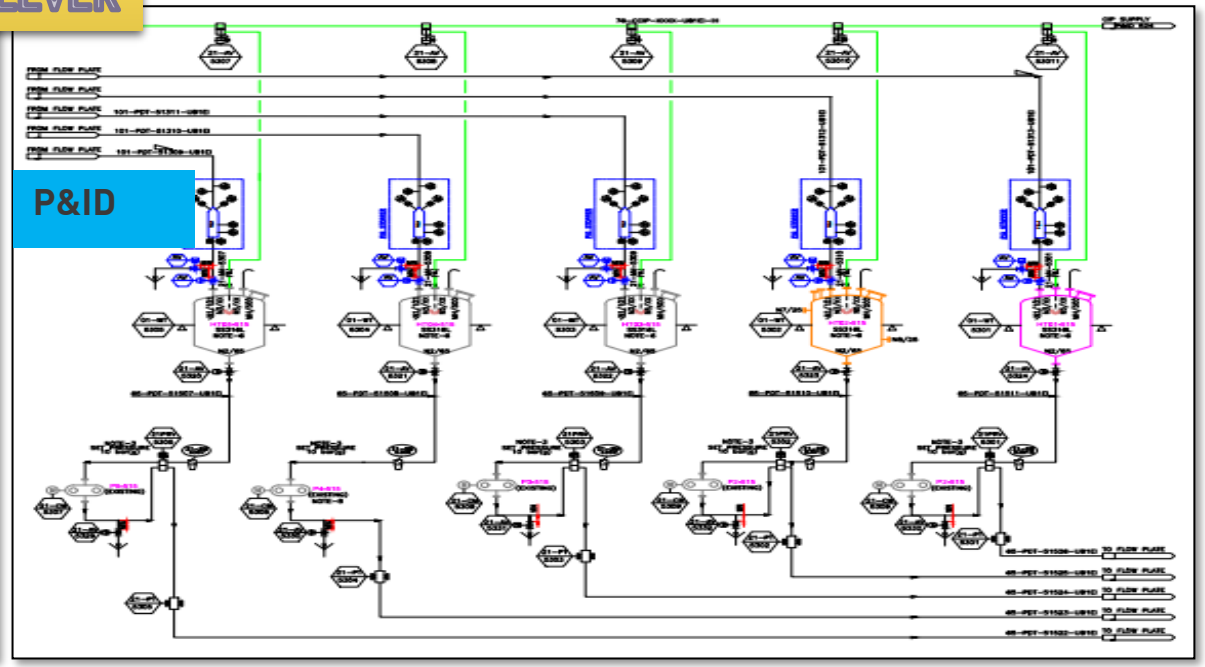
PIGGING THROUGH CUSTOMIZE PIGGABLE FLOW PLATE





FIRST PIGGABLE FLOWPLATE IN UNILEVER





3D Modelling Printing in Manufacturing Space: Industry 4.0

3D printing and reverse Engg. to create Universal Change Parts

- Universal Jaw Claw Design Standardization for all 90% pumps.

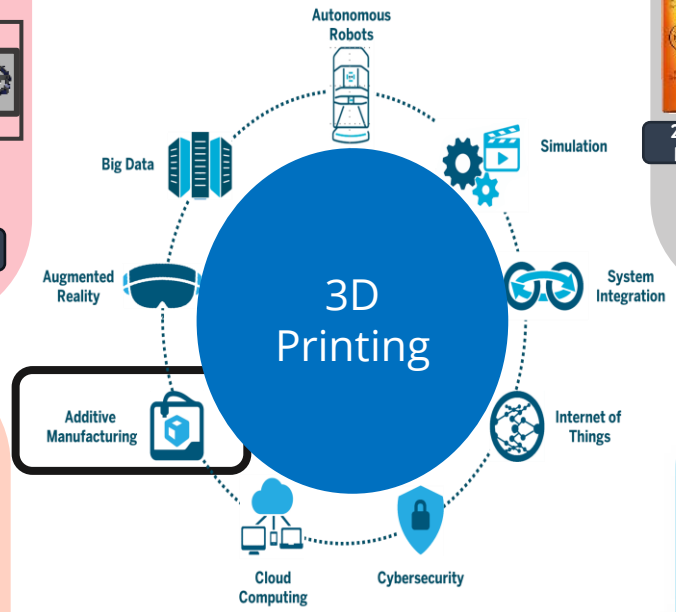
- Harmonization of Common change parts by 60%.

- Height adjustable Jaw design for all pumps/caps.

Savings: 33K Euro per innovation

SMED

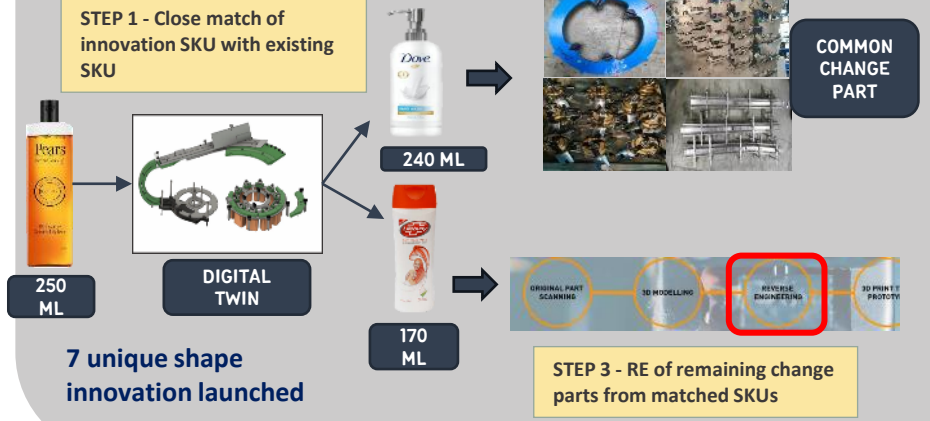
Innovation



Faster Innovation in Bottle Line

STEP 2 -
Max common change parts can be used from matched existing SKU)

STEP 1 - Close match of innovation SKU with existing SKU



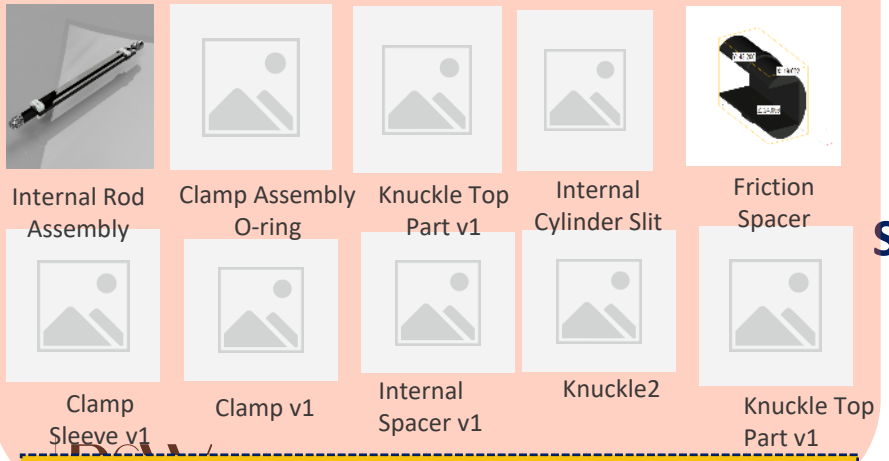
7 unique shape innovation launched

STEP 3 - RE of remaining change parts from matched SKUs

Savings: 80 K Euro, 50% LTFN Reduction

Spare Part Redesign

- Critical part Redesigning using 3D modelling resulting Spare part cost reduction and lead time reduction

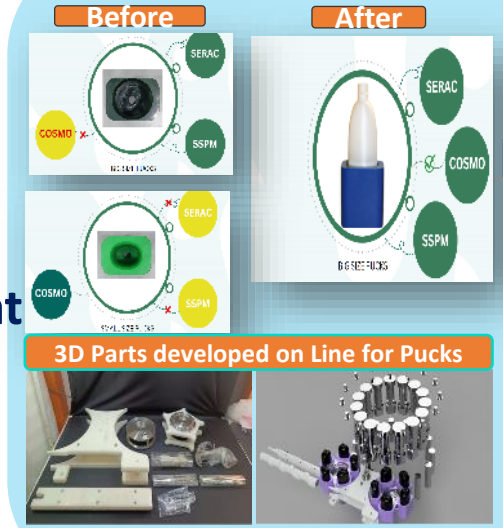


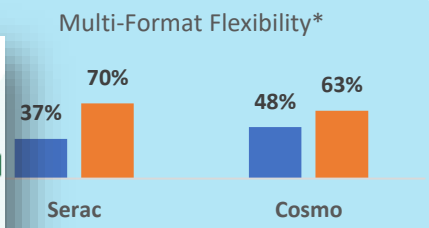
Savings:21K Euro

Spare Part Redesign

Multiformat Flexibility

Providing MFF to all bottle lines to run all SKU's





- Multiformat flexibility through puck standardization by 3D modeling and RE.
- Elimination of skill dependency on line specific operator..

Savings: Depn. cost avoidance 50K Euro

**Multiformat Flexibility is measured as a ratio of packs which can be produced and total formats that exists*

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THANK

Unilever

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