

HINDUSTAN UNILEVER LIMITED HOSUR BEVERAGES FACTORY

TEAM:

1. VINTI ARORA, FACTORY MANAGER
2. SAI SREE, FACTORY ENGINEER





GENERAL

- Unit setup by **Brooke Bond** in **1983** for Instant Coffee.
- Situated **40KM** from Bangalore
- **Population**-300,000 (Males constitute 53%, Females constitute 47%) .
- Average literacy rate of **75%**.
- Official Language – Tamil (Alternate - Telugu and Kannada)
- Total Site Area – **67217 Sqm** (Constructed Area-15665 Sqm)
- Site GBV: 162 Cr , TO: 400 Cr

MANPOWER

- **5** Managers, **19** Executives and **163** Shopfloor employees.
- Average Age -44 years (shopfloor)
- Direct + Indirect Employment -322

MANUFACTURING

- **14K Tons** Annual Volume (IC ~ 8000 Tons ; CC ~ 6000 Tons)
- Highly process intensive IC production (Roaster, Extraction, Evaporation , Spray Drier)
- **5** packing lines (IC – 3 ; CC- 2)
- **Zero** Discharge plant



PRESENTERS



VINTI ARORA
FACTORY MANAGER



SAI SREE R
FACTORY ENGINEERING MANAGER



ORGANIZATION CHART



Kavita Jain
VP, N&IC, South Asia



Vinti Arora
Factory Manager



Monika Bhima
Manufacturing Manager



Suresh Kumar
General Shift Officer



Chandrasegar K
Shift Officer



Selvam T
Shift Officer



Suriya Raj
Shift Officer



Sivaselvan
Shift Officer



Ranjith Kumar
Shift Officer



Aastha
Shift Officer



Sheetal
Manex Executive



Saisree R
Factory Engineer



Kumaravel
Engg Executive



Nelson
Sr. Utility Executive



Muraloodharan
Safety Officer



Am. Sundararajan
Sr. Electrical Executive



Reshma
Electrical Executive



Bhuvanesh U
Supply Chain Manager



Sridhar Babu
RM/PM/Engg Store



Chinnathambi T
Dispatch Officer



Srinidhi Rao
UHRM



Ashikha
HR Executive



Dinesh
HR Officer



Deepika
Quality Exec

5 Managers, 19 WL1+ leading the operations



HOSUR SITE PASSPORT

14 K Tons of Installed Capacity
(IC~8000 Tons ; CC~6000 Tons)

8.3K Tons Annual Volume in 2022
(IC ~ 5367 Tons ;
CC ~ 2952 Tons)

275 Crore Turn Over
162 Cr GBV

Highly Process Intensive IC
manufacturing
Roaster, Extractor, Evaporator,
Spray Drier

Zero Liquid Discharge Plant



11 SKUs
Only Sourcing unit for SS, HTS ,
BGL KE & BGL Nice

Total Site Area – 67217 Sqm (16.6
Acres)
Constructed Area–15665 Sqm (3.87
Acres)



5 Packing Lines
(3-IC & 2-CC)

5 Managers
19 Executives
165 Shopfloor Employees
322 Contractual Employees

COFFEE MANUFACTURING PROCESS

ROASTING



Roasting coffee beans and granulising them

EXTRACTION



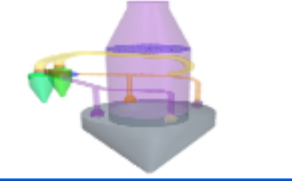
Generating liquor from the granulized beans by extracting hot water in pressurized column

EVAPORATION



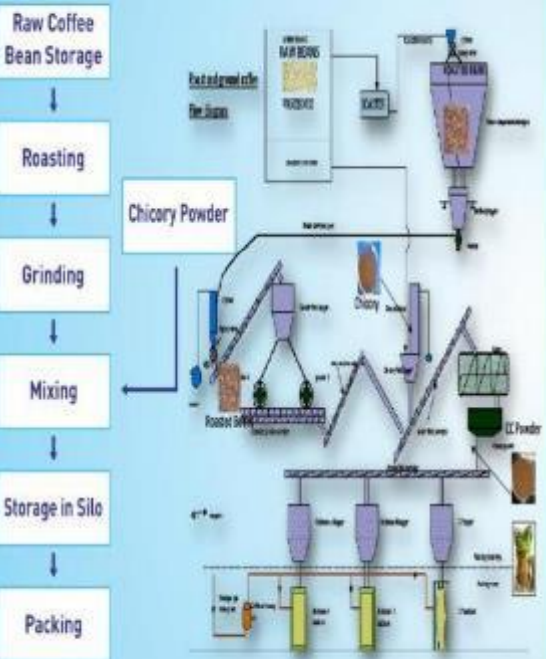
Improving the concentration of coffee liquor from 11.5% to 52%

SPRAY DRYING

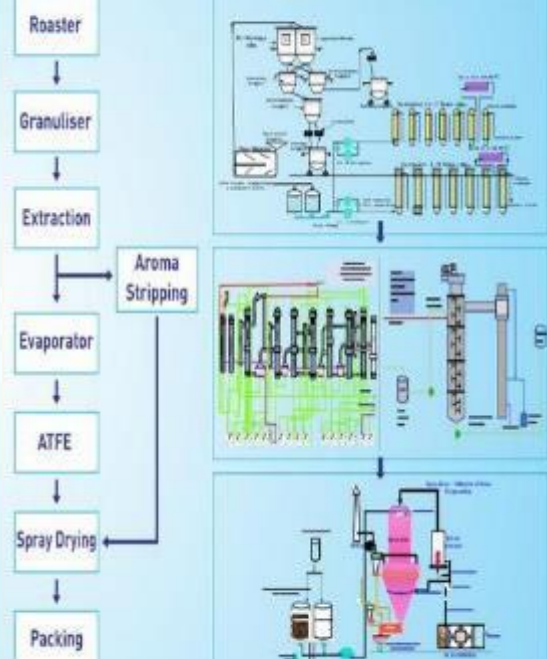


Spraying of the concentrated liquor and collecting the powder

Process Flow : Roast and Ground Coffee

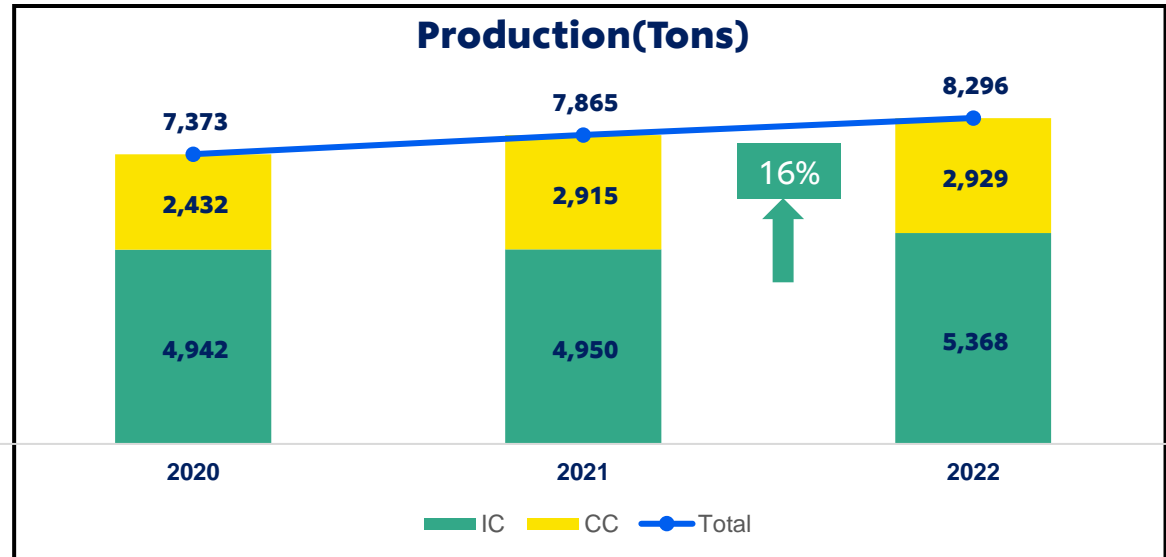
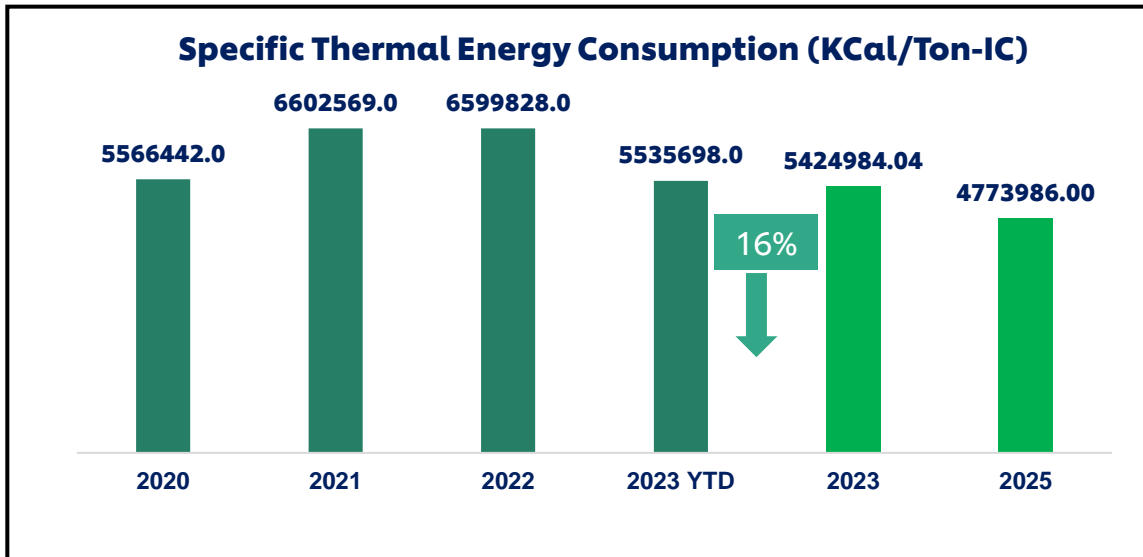
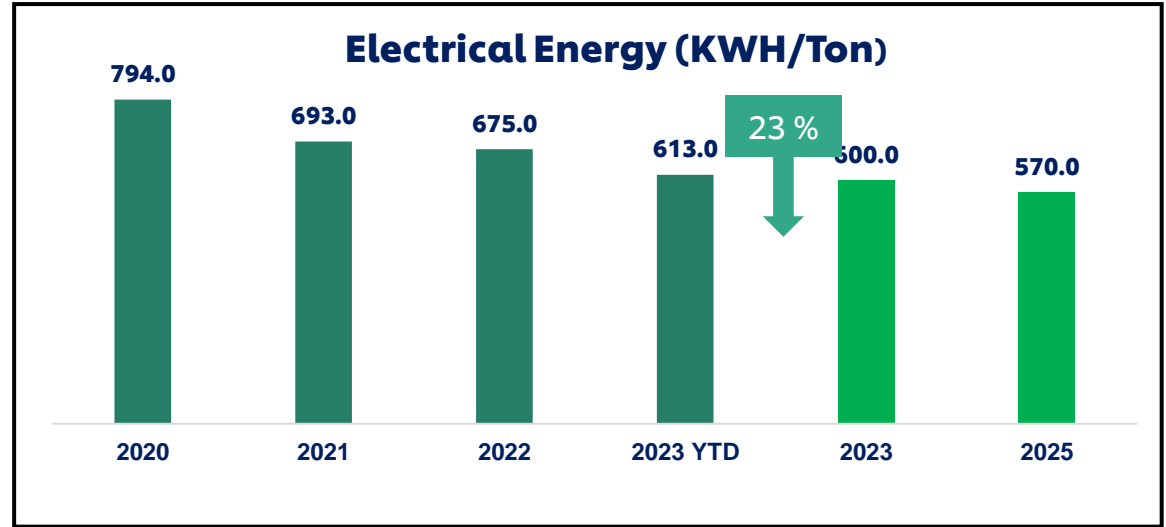
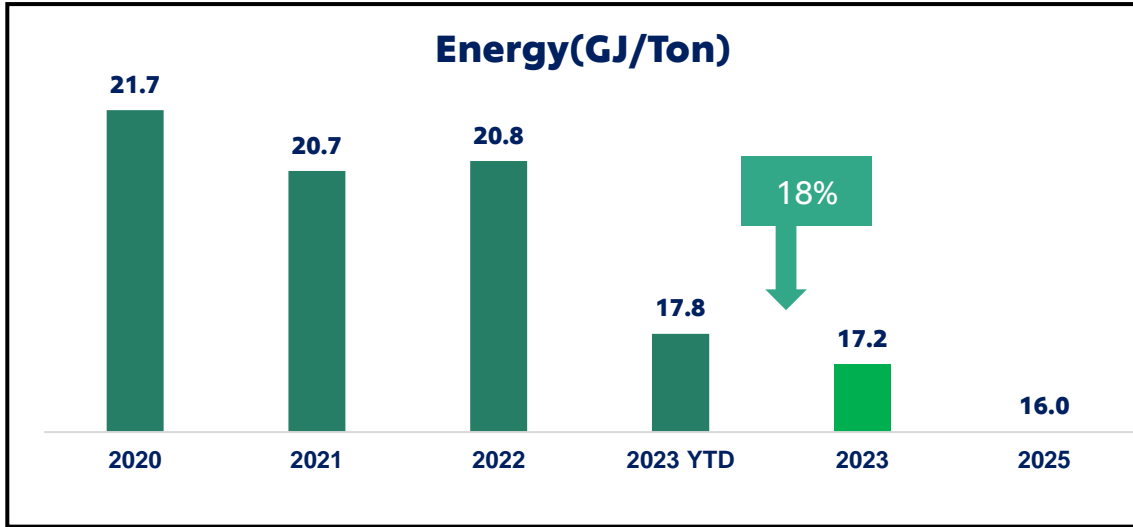


Process Flow : Instant Coffee



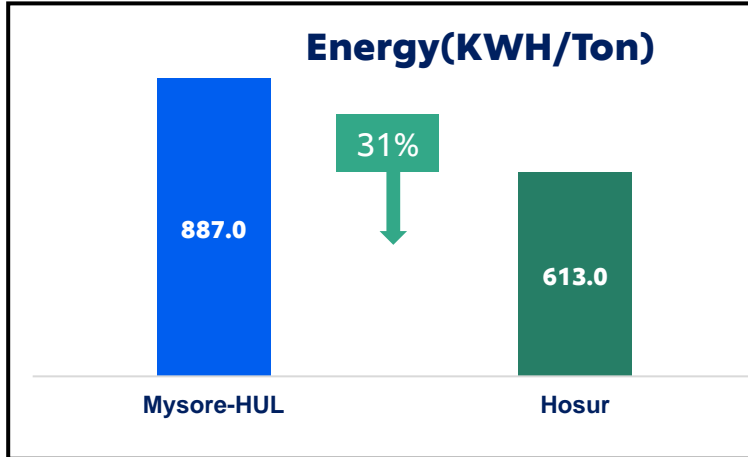
COFFEE PROCESS

SPECIFIC ENERGY CONSUMPTION

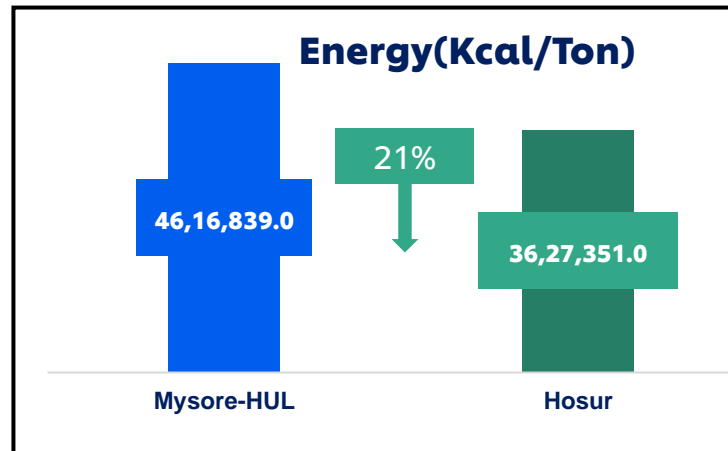


ENERGY BENCHMARKING

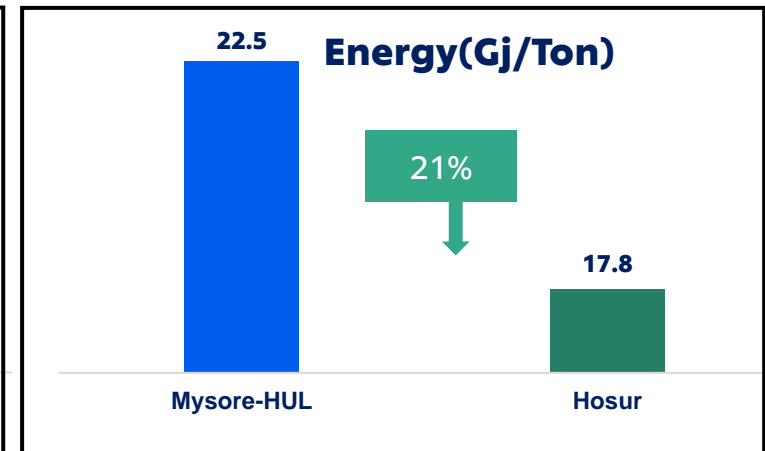
Electrical Energy Benchmarking



Thermal Energy Benchmarking



Energy Benchmarking

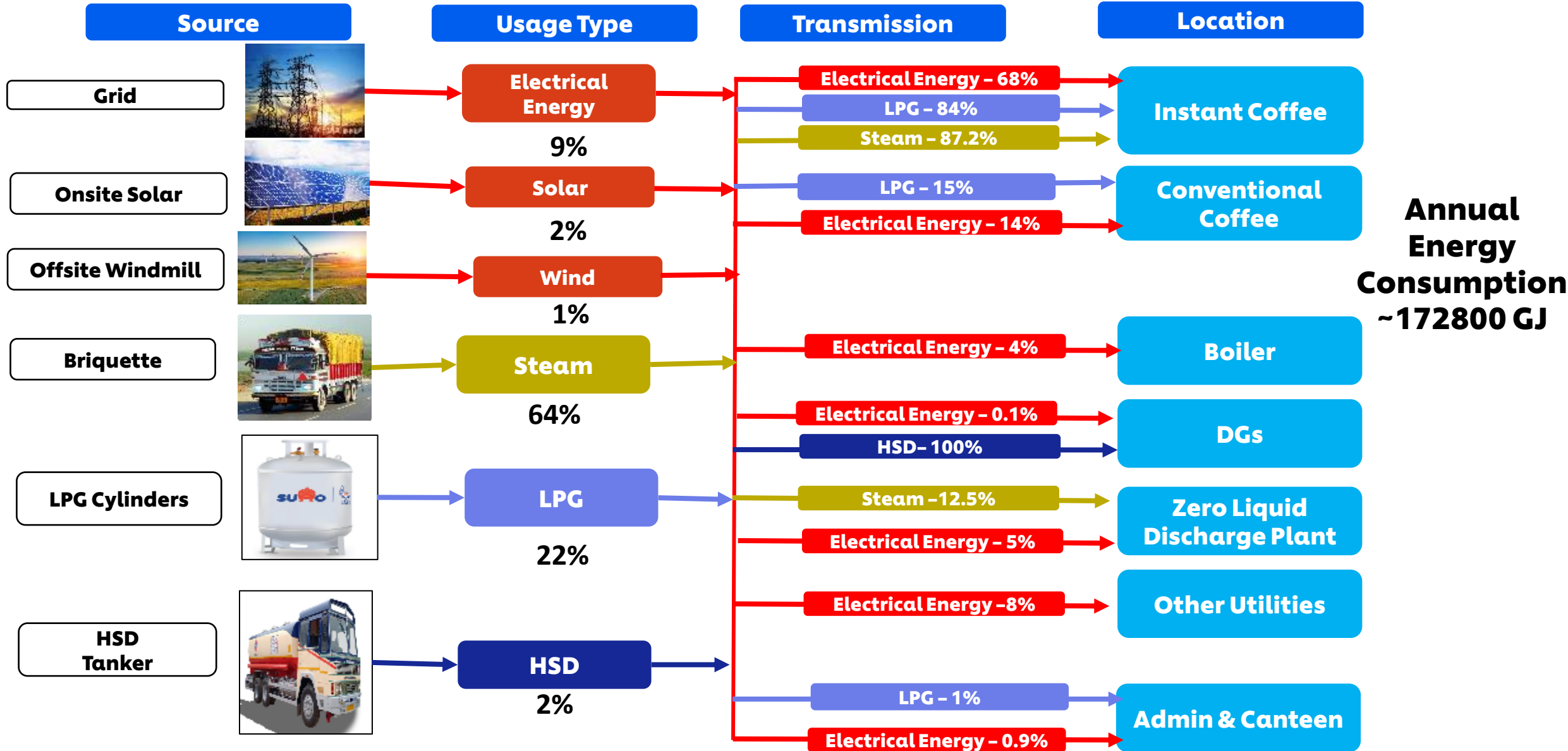


Major Encon Projects in 2023-2024

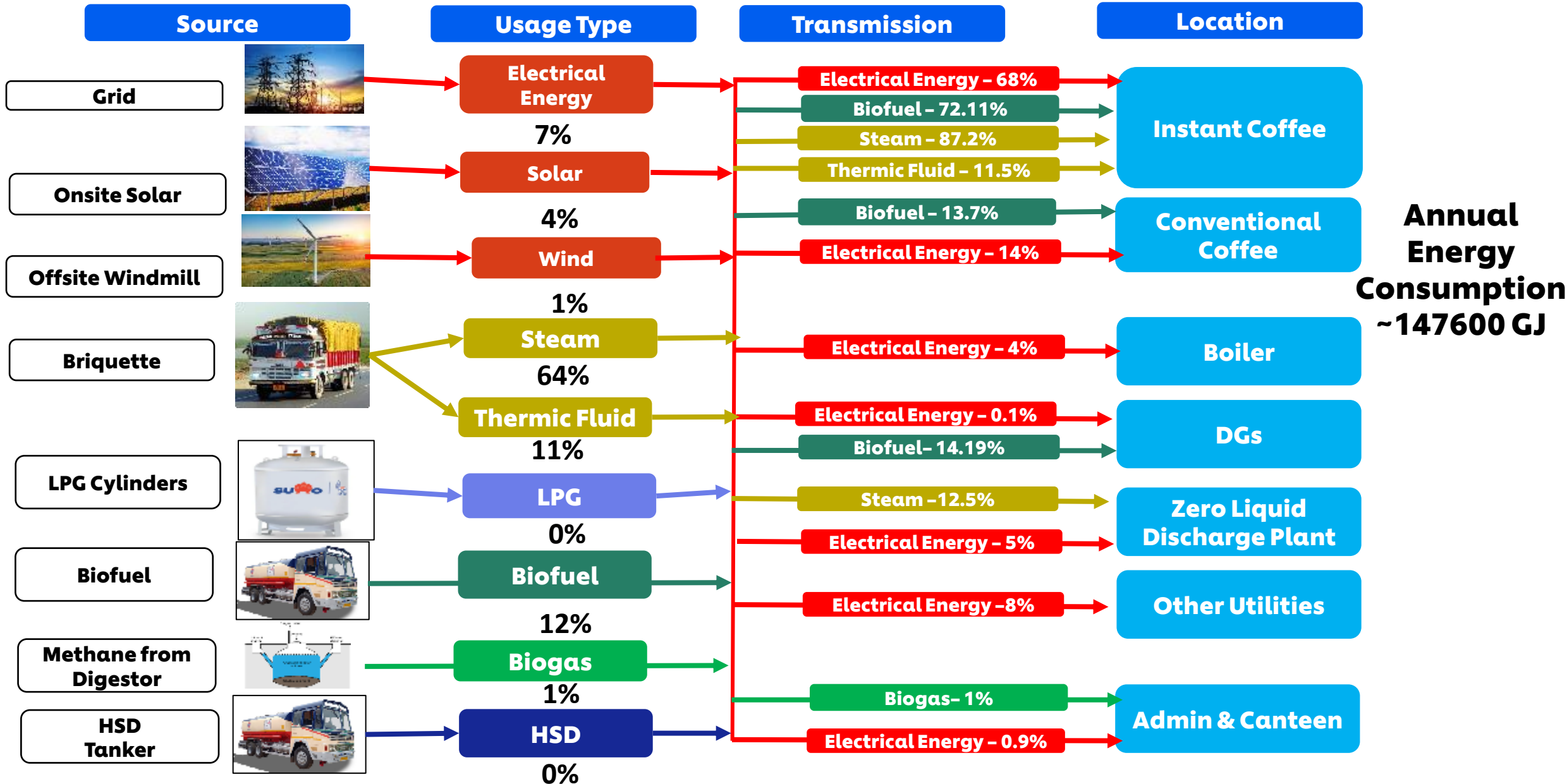


| Project | Target Completion Date | Investment |
|------------------------------|------------------------|------------|
| Thermic Fluid Heater | Nov-23 | 13 Cr |
| Heat Recovery System for TFH | Dec-23 | 4 Cr |
| High Concentration Spray | Feb-23 | 1.2 Cr |
| Biofuel Usage in DG Sets | Sep-23 | |
| EC Blowers for DHU | Oct-23 | 9 Lakhs |
| FRP Fans for Cooling Towers | Nov-23 | 6 Lakhs |
| ATCS for Chillers | Nov-23 | 8 Lakhs |

HOSUR ENERGY MAPPING-AS IS-WHERE WE ARE !



HOSUR ENERGY MAPPING-TO BE-OUR VISION !





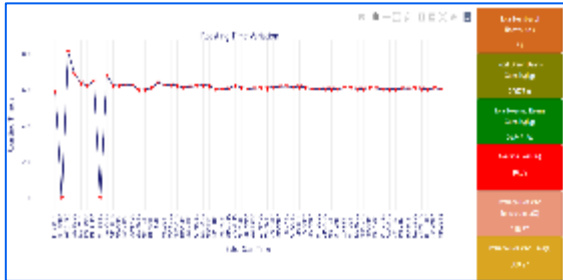
HISTORY OF ENERGY SAVING PROJECTS IN LAST 3 YEARS

| Year | No. of Energy Saving Projects | Investment (INR Million) | Thermal Energy Saving (Million Kcal) | Electrical Energy Savings (Million KWH) | Total Savings (INR Million) | Payback Period (in Months) | Impact on SEC (% Reduction) |
|-----------|-------------------------------|--------------------------|--------------------------------------|-----------------------------------------|-----------------------------|----------------------------|-----------------------------|
| 2020-2021 | 2 | 11.3 | 2642 | - | 7.7 | 8 | 46 Bps |
| 2021-2022 | 2 | 7.1 | 2191 | - | 5.1 | 9 | 4.6% |
| 2022-2023 | 5 | 101.66 | 6792 | 1588500 | 69.16 | 7 | 15% |

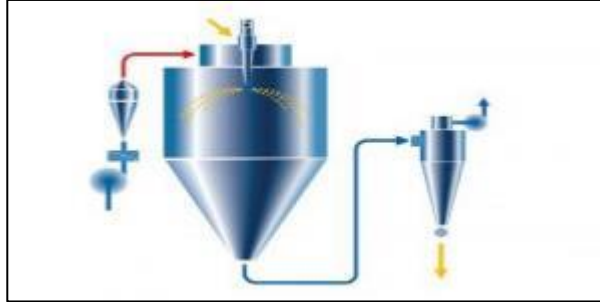
**12 Cr
Invested**

**8.2 Cr
Savings**

Pre-Heating of Air in Coffee Beans Roaster & Reduction in SFC through digitalization



Pre-Heating of Air to Spray Drier



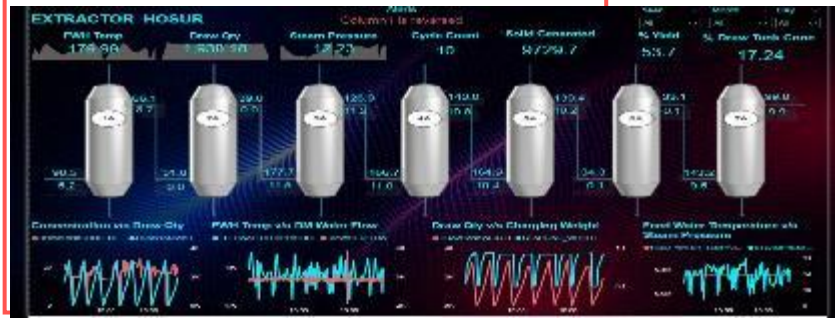
Low-Cost Alternate Fuel Usage



Energy Efficient Pumps & Motors, VFDs



Single Extraction Operation-BCT Reduction & DOF Increase



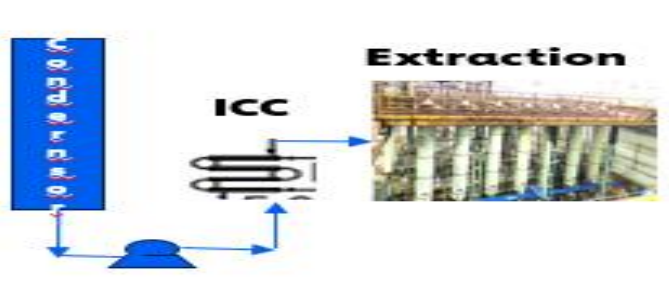
Evaporator Upgradation



AHFs Installation



Evaporator condenser water recovery & Reuse



Boiler SFR Improvement



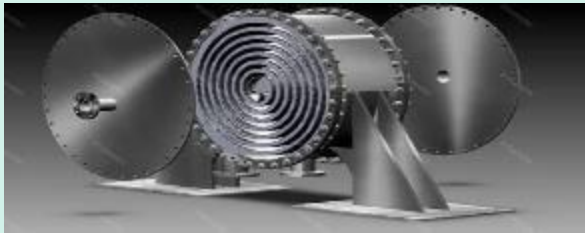
INNOVATIVE PROJECTS IMPLEMENTED

1. SINGLE EXTRACTION OPERATION

Feed Water Heater Temperature Variation

| PARAMETER | Welded type spiral heat exchanger | Plate Heat exchanger | Shell & Tube heat exchanger |
|--------------------|-----------------------------------|----------------------|-----------------------------|
| Flow rate | 5460kg/h | 6000kg/h | 7600kg/h |
| Cleaning Frequency | 4 days | 6 days | 30 days |
| Asset Life | 10 years | 10 Years | 25 Years |
| Cost | 1.8 L | 13 L | 15 L |

BEFORE



Spiral Welded Type Heat Exchanger

AFTER



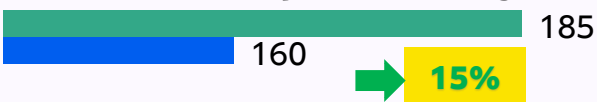
Shell & Tube Heat Exchanger

Capex – 15L

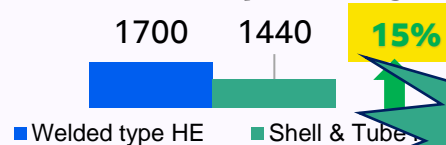


B/C – 0.93

Feed water temperature in deg

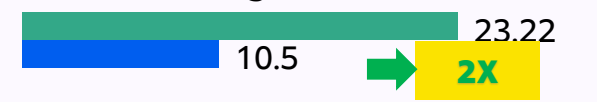


Steam Consumption in Kg/h

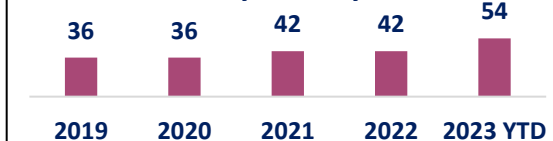


Savings – 3.3 Cr

Heating Surface area



Cycles/day



Draw Transfer Pump Capacity Upgradation

BEFORE



3 HP Pump
40 NB Pipeline

AFTER



5 HP Pump
50 NB Pipeline

60% redn in Draw transfer time

Post Extraction PHE replacement to Shell n tube

BEFORE

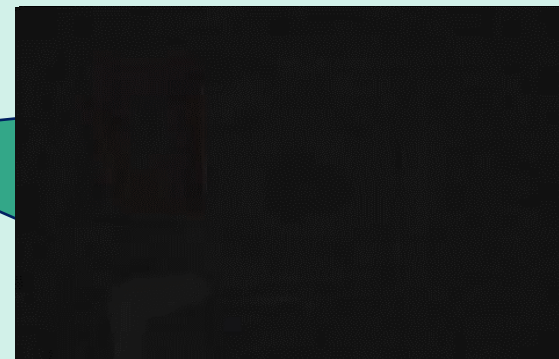
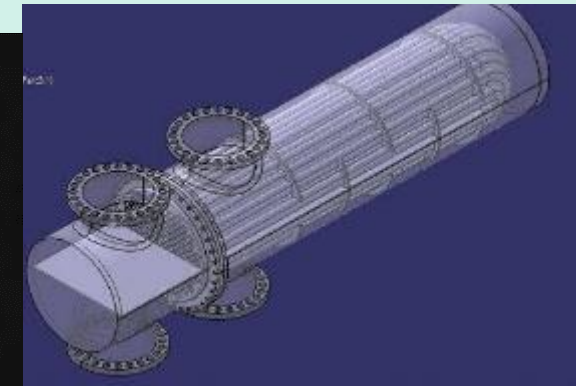


Plate Type Heat Exchanger

AFTER



Shell & Tube Heat Exchanger

Cleaning Time Reduced by 4X

2. EVAPORATOR UPGRADATION-INCREASE IN WATER EVAPORATION CAPACITY



Increase rate of water evaporation

Replace with a new evaporator of higher water evaporation capacity

High Capex, High lead time

Increase recirculation

Scaling Issue in long term, Lower capacity

Decrease diameter of tubes

Increase in number of tubes-Changes in Design, Long implementation time

Increase number of effects

Good Steam Economy, Low lead time, Low capex

Existing Evaporator Upgradation

New Evaporator

| PARAMETER | Option-1 | Option-2 | Option-3 |
|-------------------------|----------|-----------|----------|
| Feed rate | 5460kg/h | 7000kg/h | 6000kg/h |
| Initial Solids | 11.5% | 11.5% | 11.5% |
| Concentrate Solids | 55% | 55% | 55% |
| Concentrate Output | 1390kg/h | 2557kg/h | 1000kg/h |
| Total Water Evaporation | 4070kg/h | 4,674kg/h | 5000kg/h |
| Steam Economy | 4.3 | 5.5 | 5.0 |
| Final Price (Cr) | 2.01 | 2.615 | 7.25 |

Value Engineering Capex Avoidance: 4.6 Crores

Capex Avoidance of 4.6 Cr

Upgradation by increasing the heat transfer area and number of passes in one effect and by adding additional calandria for the other two existing effects with low capex and no increase on utilities to achieve desired rate of water evaporation.

2. EVAPORATOR UPGRADATION & HIGH CONCENTRATION SPRAY

EVAPORATOR UPGRADATION

BEFORE



AFTER

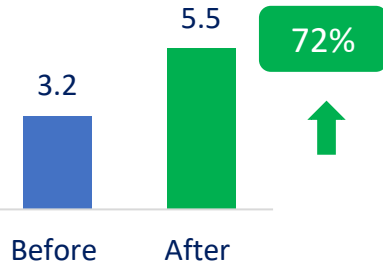


Additional Calandria + Multi passes

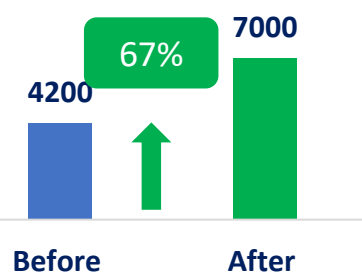
Evaporation rate (Kg/h)



Steam Economy



Feed Rate (Kg/h)



Noise level dropped by 14% through reduction of steam inputs

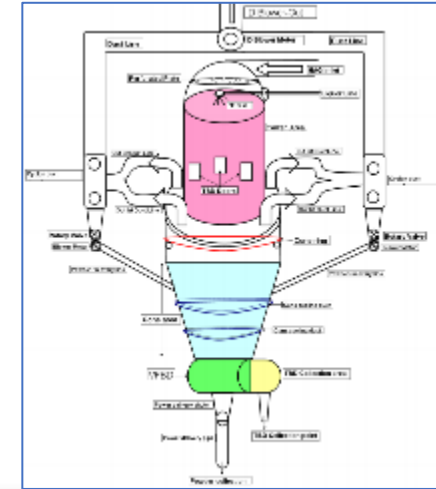
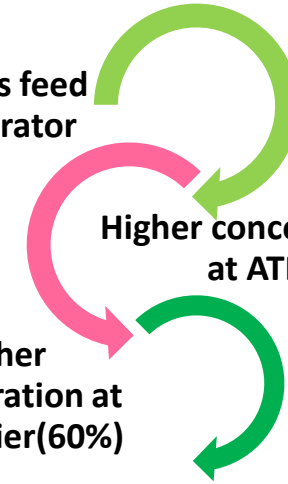
Steam Consumption reduced by 20%

HIGH CONCENTRATION SPRAY

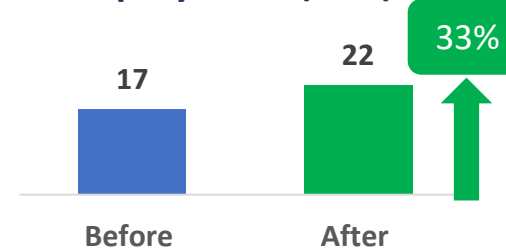
Higher solids feed from Evaporator

Higher concentration at ATFE

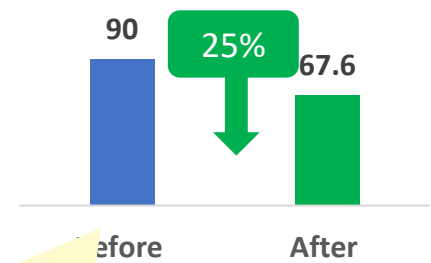
Higher concentration at Spray drier (60%)



Spray drier (TPD)



LPG Consumption



Utility Savings - 1.1 Cr

3. SFR IMPROVEMENT IN BOILER & USAGE OF LOW-COST ALTERNATE FUEL

Higher Outlet Temperature

BEFORE



AFTER



Single spiral inside boiler tubes of shell drum

Two spirals welded together to cover boiler tubes completely

Improved heat recovery **by 15%** from 280deg to 240 deg increasing steam generated

Low Fuel Density

BEFORE



AFTER



Fuel density – 250 kg/m³

Fuel density – 450 kg/m³

- Adjusted Roller positions to increase fuel density by **1.8X**
- Increased ID draft to **-2.5mm from -1.5mm**

Low-Cost Alternate Fuels Usage



Mango Seed to beat and inflation of 25%

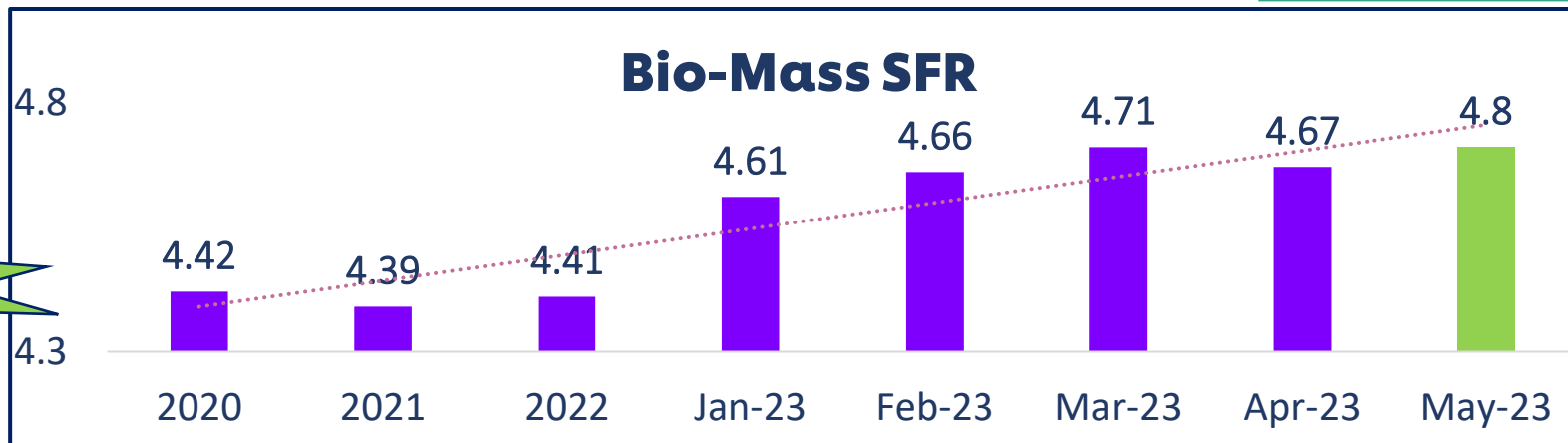
Dried Lagoon Sludge

Usage of two alternate low-cost SUPER FUELS:

- Crushed Mango Seed
- Dried Lagoon Sludge

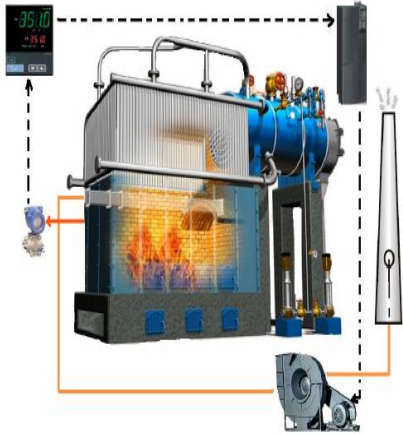
RESULTS

680 Bps



Replication Potential in Boilers across factories

3. BOILER HUB - LEVERAGING DIGITAL TO REACH EXCELLENCE



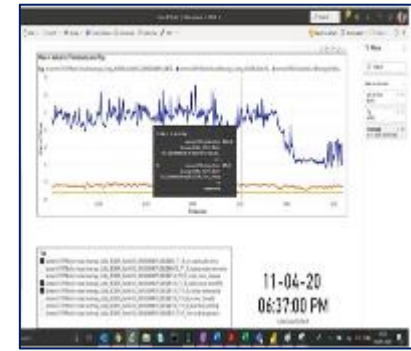
Improvement in Specific Fuel Consumption in Biomass Utility by **5%**

Data Streaming & Visualisation

HMI Visualisation



Real time Data Streaming

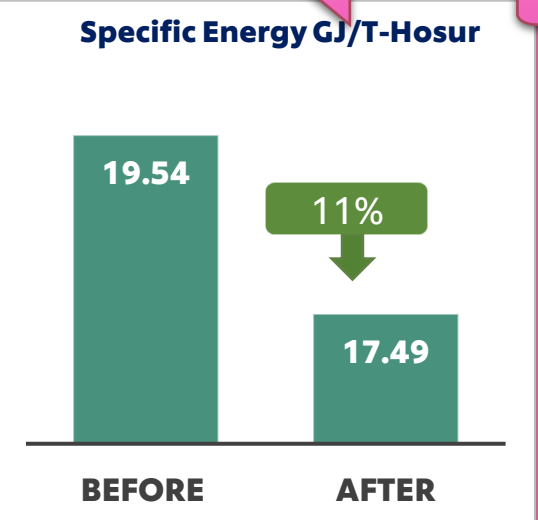
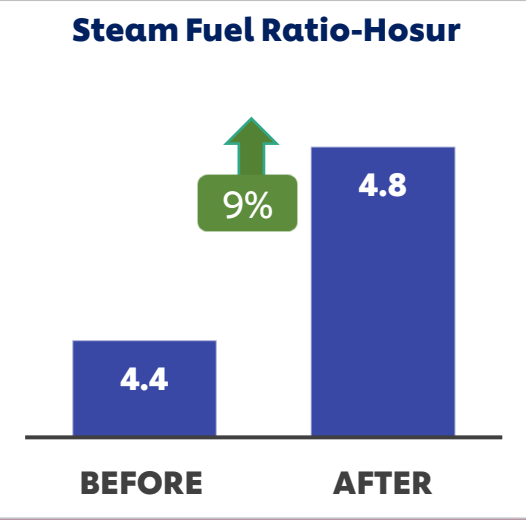


Dashboards

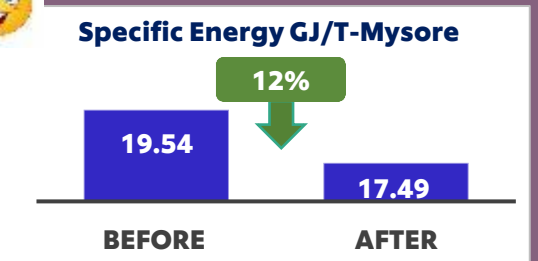
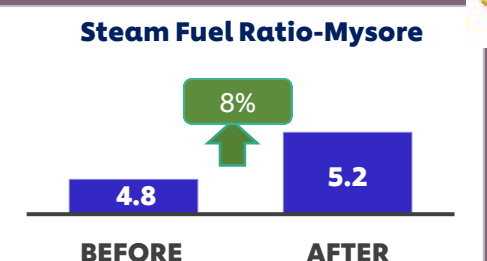
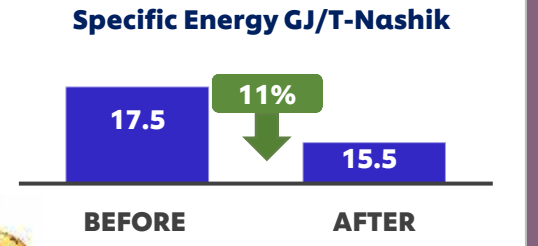
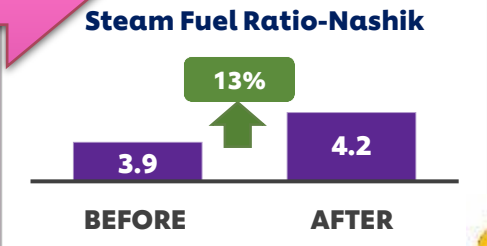


Delivered Savings of 33L
And the same is deployed at 8 other sites

Hosur Results



Horizontal Replication Results






MAJOR ENERGY CONSERVATION PROJECTS IN LAST ONE YEAR

| DESCRIPTION | PROJECT | SAVINGS | UNIQUENESS | REPLICATION POTENTIAL |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <p>Single Extractor Operation</p> <p>Optimization of Extraction Feed Water Temperature & Increase in Draw off factor</p> | | <p>3.43 Cr</p> | <p>Capacity Unlock & Energy Savings by sweating assets</p> | <p>Replicated in HUL Mysore Factory & replicable in any coffee factory</p> |
| <p>Evaporator Upgradation</p> <p>Increase in water evaporation capacity by upgrading existing evaporator</p> | | <p>1.1 Cr</p> | <p>Capex avoidance of 4.6 Cr through Value Engineering</p> | <p>Easily replicable in any evaporator</p> |
| <p>High Concentration Spray</p> <p>Increase in spray concentration to decrease LPG & Steam consumption</p> | | <p>0.8 Cr</p> | <p>Capex Avoidance for Spray Drier by optimization of operating parameters</p> | <p>Replicated in Mysore Factory. Replicable in other spray driers</p> |
| <p>Draw filter liquor & Quench Water recovery & Reuse</p> <p>Reuse in Extraction operation and reduction in load on ZLDP</p> | | <p>20 Lakhs</p> | <p>Conversion of Crisis into Opportunity. Nothing goes waste!</p> | <p>Easily replicable. Replicated in Mysore HUL</p> |



MAJOR ENERGY CONSERVATION PROJECTS IN LAST ONE YEAR

| DESCRIPTION | PROJECT | SAVINGS | UNIQUENESS | REPLICATION POTENTIAL |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------|---------------------------------------------------------------|
| <p>SFR Improvement in Boiler</p> <p>Improvement in SFR from 4.4 to 4.8 through Digitalization</p> |    | 33 Lakhs | Big results through small changes/kaizens | Easily replicable in CPRG Boilers |
| <p>Low-Cost Alternate Fuel</p> <p>Usage of low-cost alternate fuels like Mango Seed & Lagoon Sludge</p> |   | 55 Lakhs | Conversion of Crisis into Opportunity. Nothing goes waste! | Easily replicable. 3 Sites in HUL have started trials |
| <p>Active Harmonic Filters</p> <p>AHF Installation to improve PF and reduce harmonic losses</p> |   | 17.6 Lakhs | Low-cost solution to reduce harmonic losses | Easily replicable in any factory |
| <p>Energy Efficient Pumps</p> <p>Usage of energy efficient pumps (IE4 & IE5 motors)</p> |    | 33 Lakhs | Simple & Energy Efficient | Replicated for high energy consuming pumps. Easily replicable |

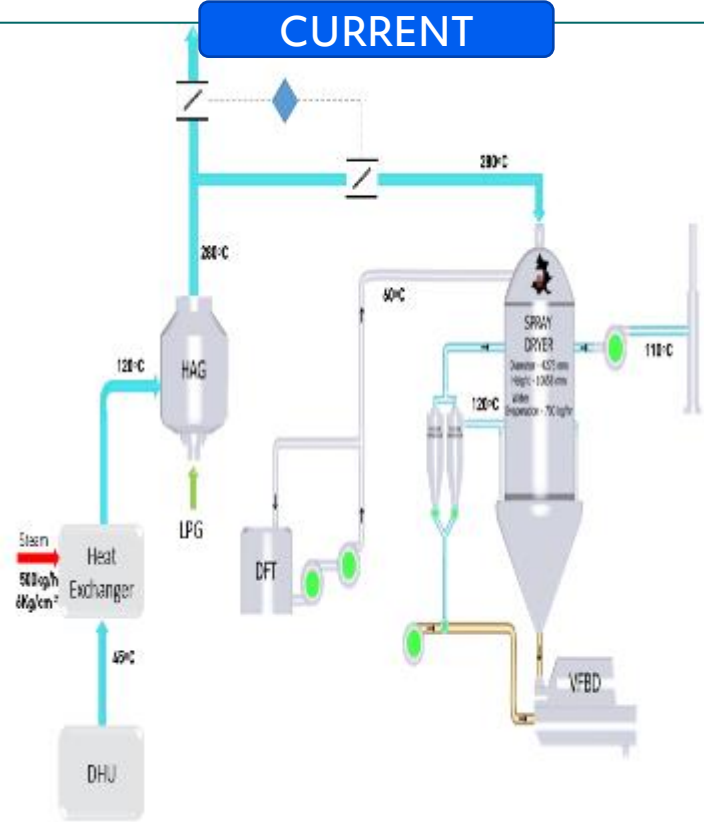
MAJOR ENERGY CONSERVATION PROJECTS IN 2023-WIP

| DESCRIPTION | PROJECT | SAVINGS | UNIQUENESS | REPLICATION POTENTIAL |
|--------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <p>Heat Recovery System-TFH</p> <p>Usage of flue gas from TFH to pre-heat the extraction feed water</p> | | <p>1.5 Cr</p> | <p>Flue gas heat recovery and elimination of steam usage for heating</p> | <p>Replicable for Boilers and TFH with hot water requirement</p> |
| <p>ATCS</p> <p>Usage of automatic tube cleaning system for chillers and heat exchangers</p> | | <p>11 Lakhs</p> | <p>Simple & Energy Efficient. Eliminates chemical cleaning</p> | <p>Easily replicable in Chillers & Shell & Tube Heat Exchangers</p> |
| <p>FRP Fans for Cooling Towers</p> <p>Usage of FRP fans instead of conventional aluminium fans</p> | | <p>4 Lakhs</p> | <p>Cost Effective, Simple & Energy Efficient</p> | <p>Easily Replicable for any cooling towers</p> |
| <p>EC Blowers</p> <p>Usage of EC Blowers in DHUs</p> | | <p>10 Lakhs</p> | <p>Energy Efficient & Easy to use</p> | <p>Easily replicable</p> |
| <p>Eco Clean Dosage in Cooling Towers</p> <p>Dosage of Eco Clean Liquid to reduce the blow down frequency and load on ETP</p> | | <p>7 Lakhs</p> | <p>Low-cost solution to eliminate blowdown</p> | <p>Easily replicable</p> |

BIOMASS BASED HAG TO ELIMINATE LPG IN SPRAY DRIER

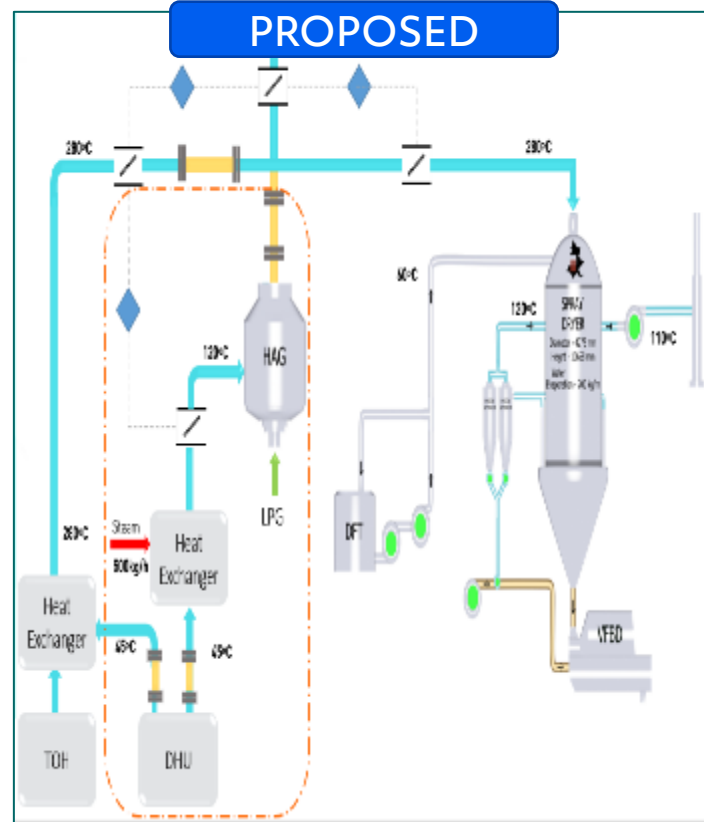
HEAT RECOVERY SYSTEM FOR THERMIC FLUID HEATER

CURRENT



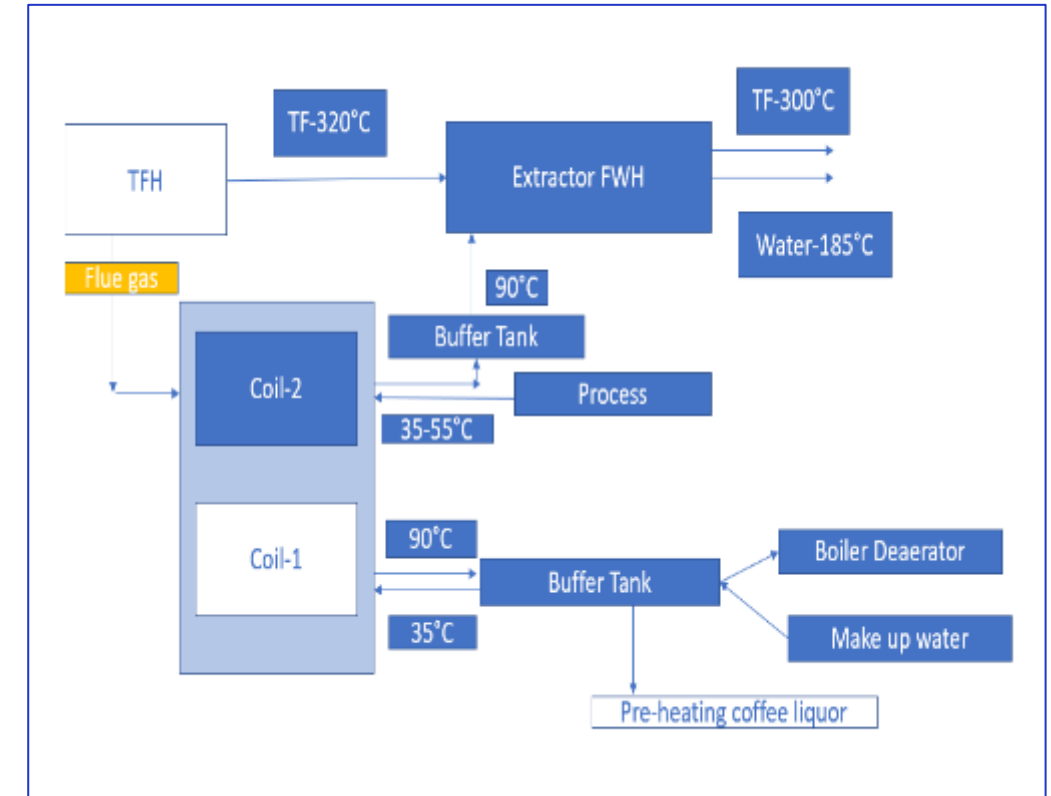
DIRECT FIRED WITH LPG AS FUEL HAS MULTIFUEL OPTION FOR BIODIESEL/ HSD AND LPG

PROPOSED



BIOMASS THERMIC FLUID HEATER WITH LIQUID TO AIR HEAT EXCHANGE MOVING FROM DIRECT FIRED TO INDIRECT FIRED EXISTING HAG USED AS BACK UP

Reduction in CO2 by 1887.5 Tons/Year | | Annual Savings 4 Cr



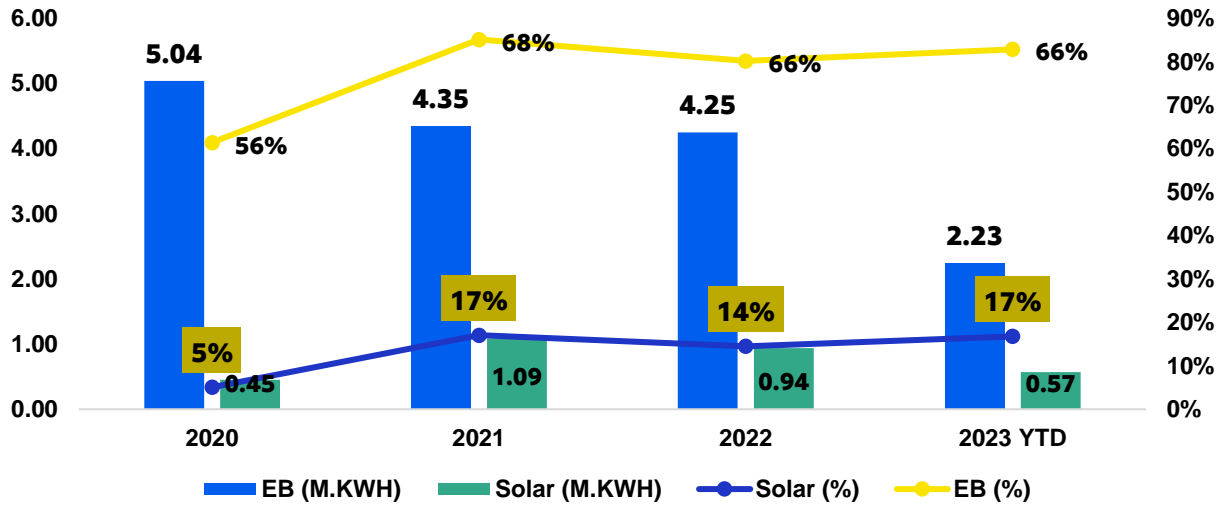
Recovery of Flue gas from TFH and Reuse for pre-heating the Extraction Feed Water, which was earlier heated using steam.

Annual Savings: 1.7 Cr, 30 TPD reduction in steam

UTILIZATION OF RENEWABLE ENERGY SOURCES

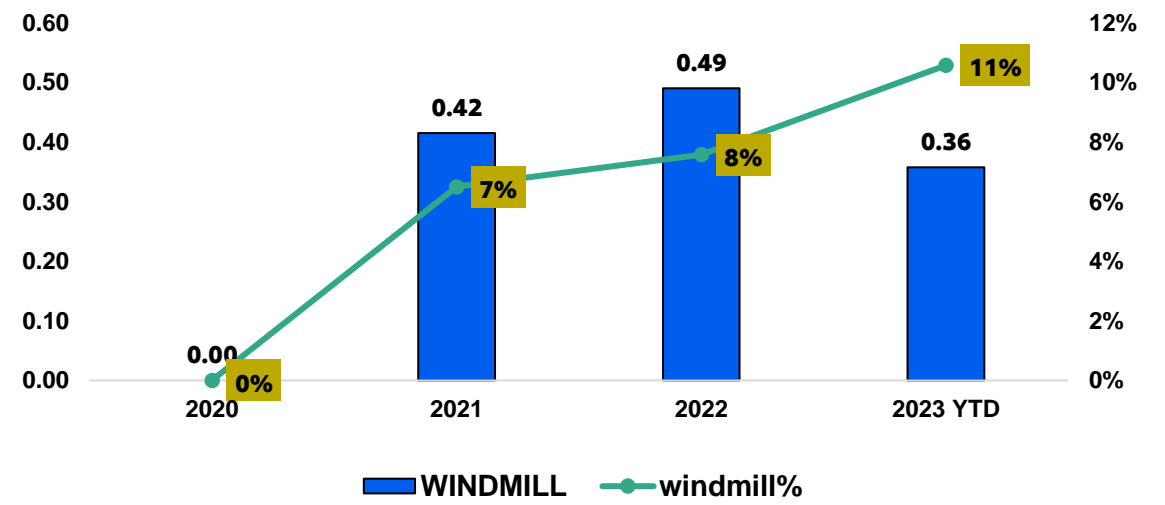
1 MW Onsite Solar Plant

Electrical Onsite-Renewables (Million-KWH)

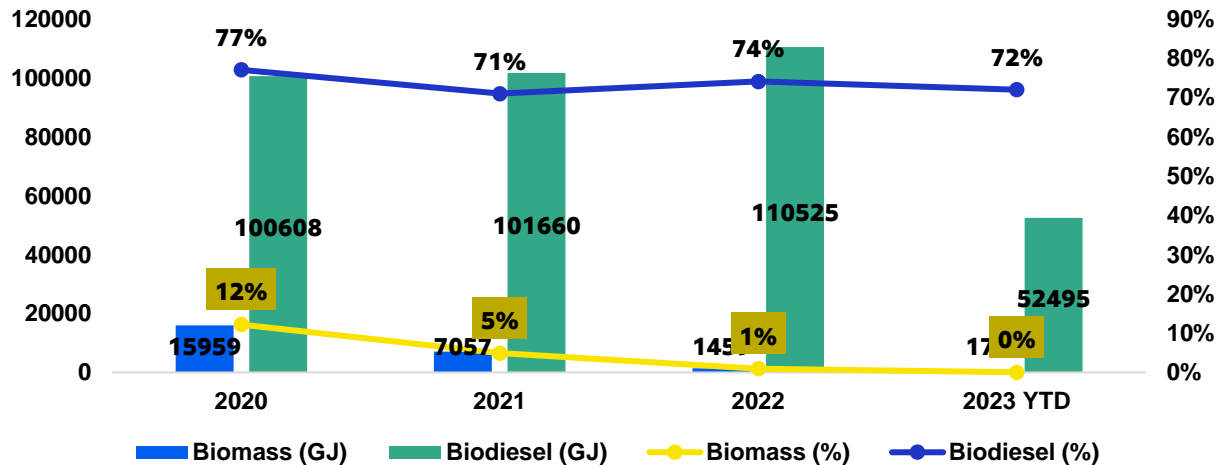


2 Offsite Windmills (225 KW each)

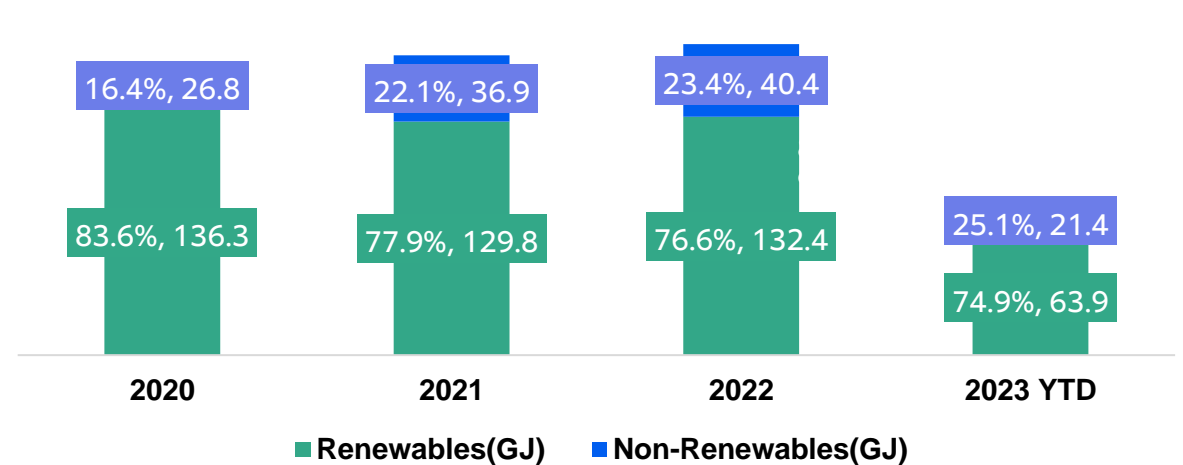
Electrical Offsite Renewables (Million-KWH)



Thermal-Renewables

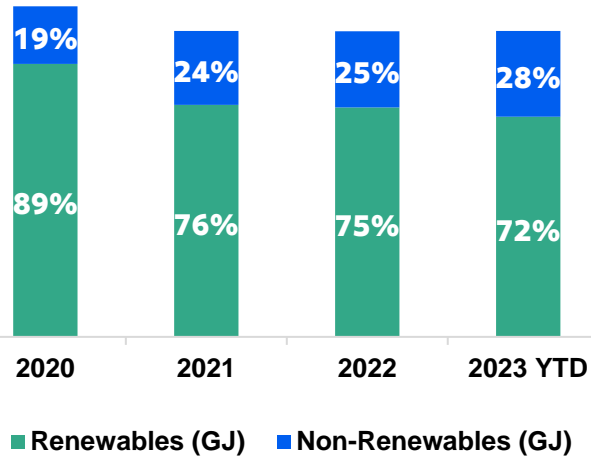


Total Energy (GJ)

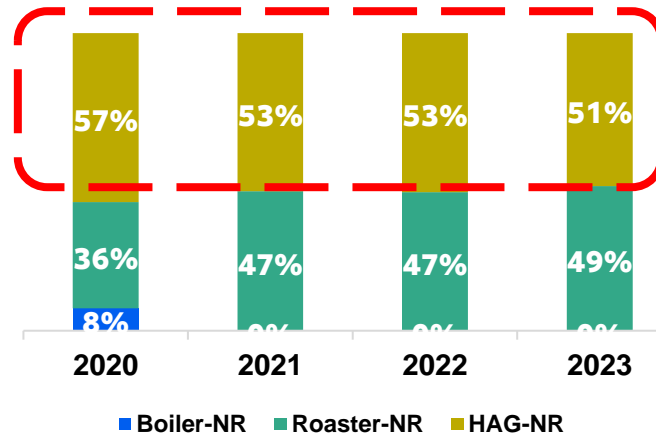


RENEWABLE ENERGY MAXIMISATION TO REDUCE GHG EMISSIONS

Thermal Energy (GJ)



Non-Renewable Thermal Energy



Biomass Based HAG-Thermic Fluid Heater



ZERO LPG in Spray Drier by Dec'2023

Dual Burner in Roaster for Biodiesel



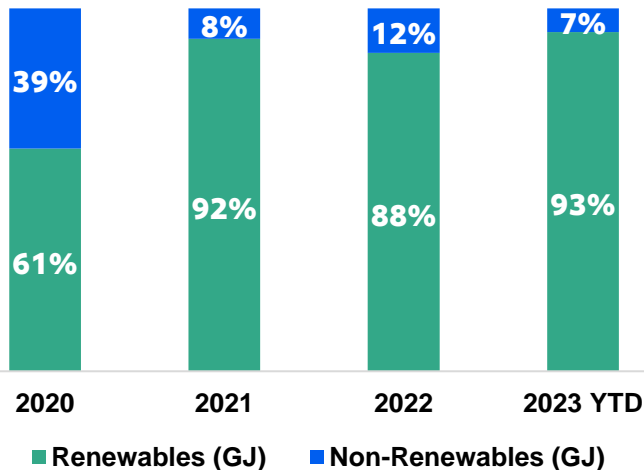
Capability established but LPG is economical

NIL Use of Oil Boiler



Zero Breakdowns in Bio-Boiler in 2022

Electrical Energy (GJ)



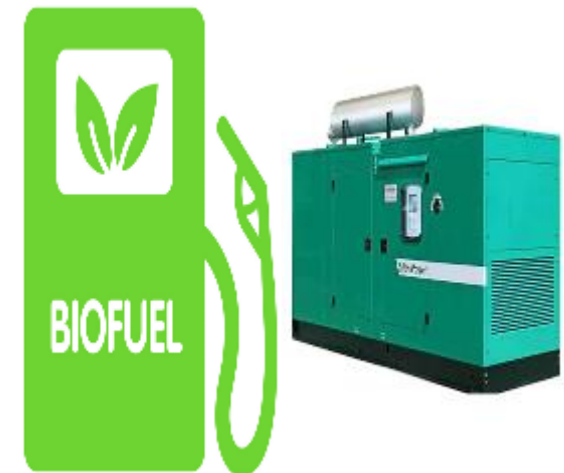
1 MW Onsite Solar Plant



3 Offsite Windmills



Biofuel usage in DGs





GREEN SUPPLY CHAIN MANAGEMENT-ORGANISATION'S BRANDING UNILEVER'S SUSTAINABLE LIVING PLAN

Win with our brands, powered by superior products, innovation and purpose

Improve the health of the planet

Climate action

Net zero emissions from all our products from sourcing to point of sale by 2039

Halve greenhouse gas impact of our products across the lifecycle by 2030

Zero emissions in our operations by 2030

Replace fossil-fuel derived carbon with renewable or recycled carbon in all our cleaning and laundry product formulations by 2030

Share the footprint of every product carbon we sell

Protect and regenerate nature

Deforestation-free supply chain in palm oil, paper & board, tea, soy and cocoa by 2023

Help protect and regenerate 1.5 million hectares of land, forests and oceans by 2030

100% sustainable sourcing of our key agricultural crops

Empower farmers and smallholders to protect and regenerate farm environments

Implement water stewardship programmes in 100 locations in water-stressed areas by 2030

100% of our ingredients will be biodegradable by 2030

Waste-free world

50% virgin plastic reduction by 2025, including an absolute reduction of 100,000 tonnes

25% recycled plastic by 2025

Collect and process more plastic than we sell by 2025

100% reusable, recyclable or compostable plastic packaging by 2025

Halve food waste in our operations by 2025

Maintain zero waste to landfill in our factories

Supported by: **€1 billion Climate & Nature Fund**

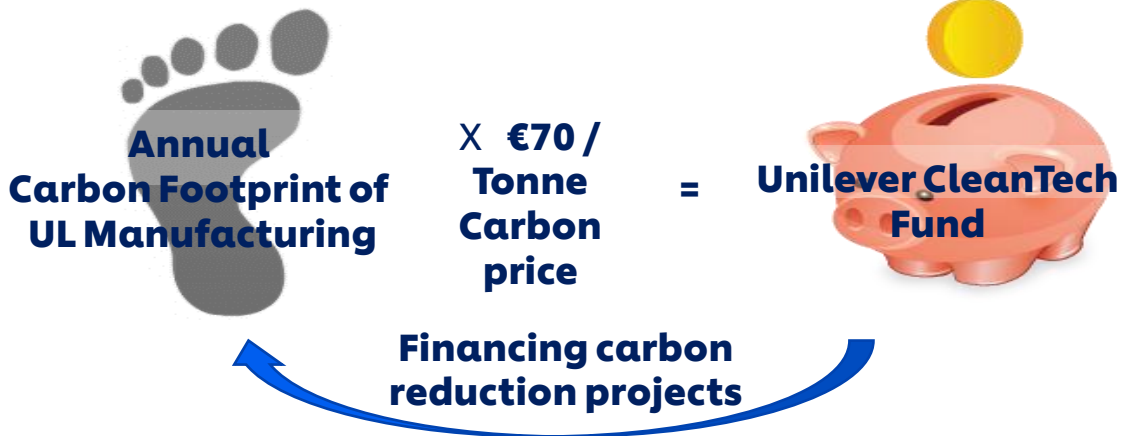


GREEN SUPPLY CHAIN MANAGEMENT: BUDGET & POLICY

Budget Allocation

- Unilever Clean Tech Fund: Projects aligned with long term strategic vision for the site on Sustainability

Unilever Clean Tech Fund



Our Policy

Policy displayed in local language at various locations

Policy approved by central committee

Regular communication of the policy to ensure good level of awareness among employees

EMS – Environment Management System Pyramid



GHG INVENTORISATION & ACTION PLAN-CARE FOR PLANET

Alternate Fuel usage

820 Kg/ton CO2 reduction



HSD → LPG
in HAG & Roaster



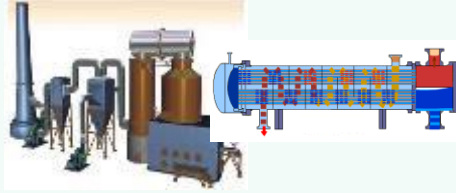
869 Kg/ton CO2 reduction



HSD → Biodiesel
in Boiler



1880 Tons/Year of CO2 Reduction



Biomass based TFH for HAG



Thermic Fluid Based FWH & HRS



Reduce Energy Consumption



Boiler Digitization
Steam Fuel ratio improved from 4.4 → 4.8



Air Preheater in Roaster



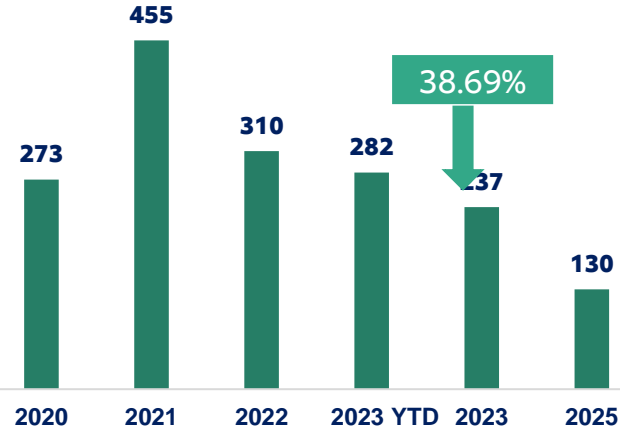
Increase in Spray concentration



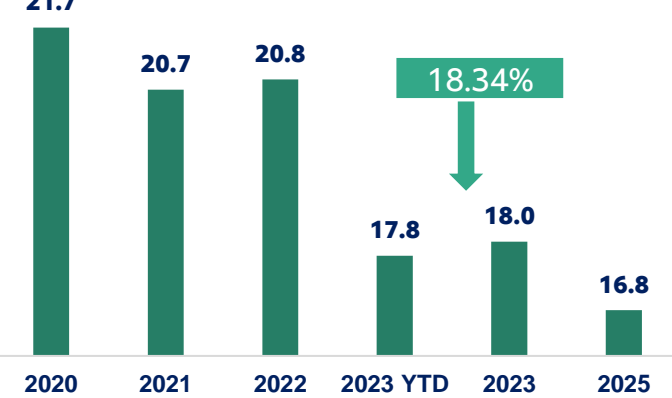
- EC Motors for DHUs
- ATCS for Chillers
- FRP Fans in Cooling Towers



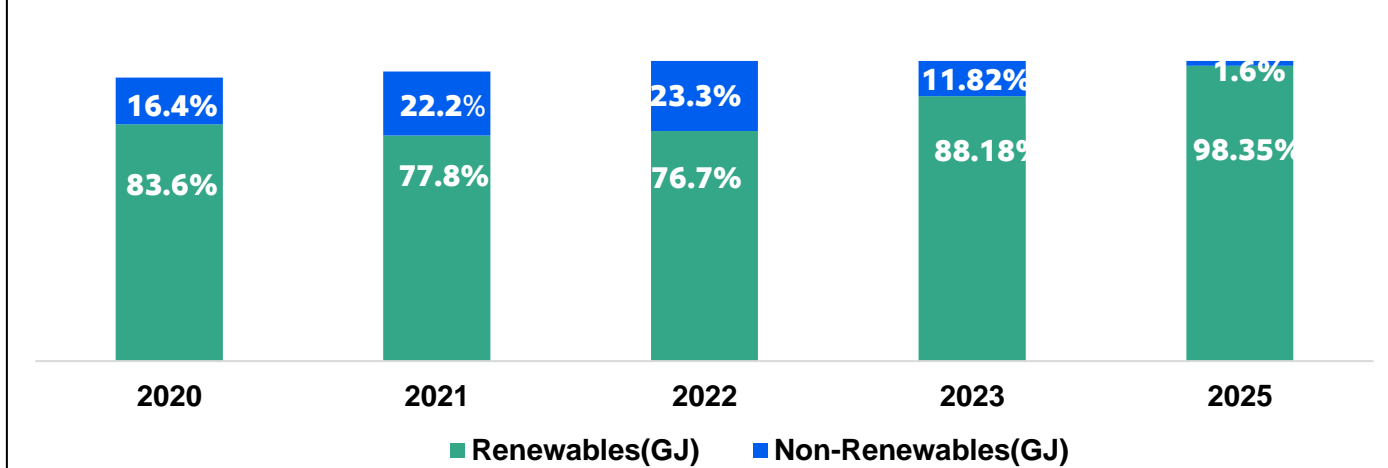
CO2 (Kg/Ton)



Energy(GJ/Ton)



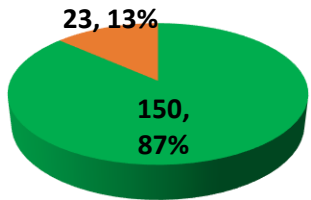
Sustainability Road Map



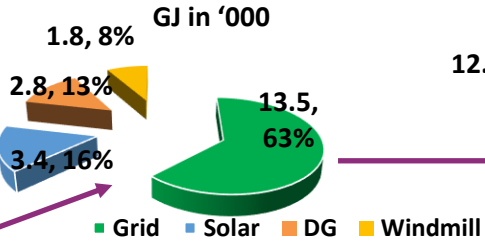
Ambition is 58% reduction in CO₂ & 98% of energy sourced to be GREEN ENERGY by 2025

2022 ANALYSIS

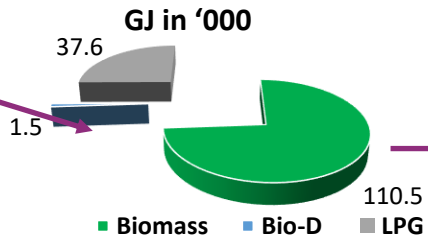
Energy Break up in 000'GJ



■ Thermal ■ Electricity



■ Grid ■ Solar ■ DG ■ Windmill



■ Biomass ■ Bio-D ■ LPG

Type of Energy in Elec.



■ Renewable Energy

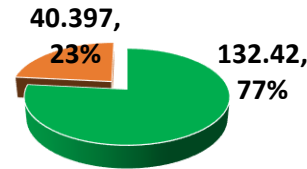
Type of energy in Thermal



■ Renewable Energy

213 ton CO₂/annum

Renewable Vs Non-Renewable

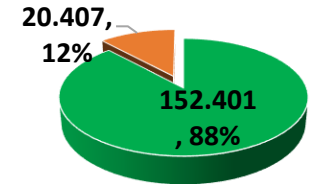


■ Renewable ■ Non-Renewable

2358 ton CO₂/annum

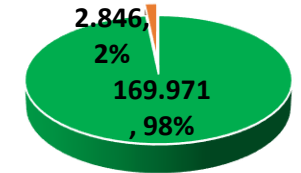
TARGET-2023 FY

Renewable Vs Non-Renewable



■ Renewable ■ Non-Renewable

Ambition-2025



■ Renewable ■ Non-Renewable

Thermal Energy

- **Elimination of LPG** in Spray Drier HAG by end of 2023 through Biomass Based HAG.
- Strategic sourcing of biofuel for Roaster to replace LPG since **technical capability is already in place** and cost is the constraint.

ACTION PLAN



Electrical Energy

- **Offsite Solar Boot Model** with banking in addition to the existing 1 MW onsite solar plant.
- **Biofuel usage in DGs** to reduce and eventually eliminate usage of HSD in DGs.

EMS SYSTEM & LEARNINGS FROM CII

Need

System Description

Benefits

- ✓ Risk of misreporting energy consumption due to manual intervention.
- ✓ Limited coverage of feeders.

- ✓ Wireless system for monitoring energy via energy meters
- ✓ Live status of machines on web portal – current, power factor, load

- ✓ Live energy consumption monitoring
- ✓ Minimal inaccuracy
- ✓ Timely action possible with dynamic data availability and monitoring

2022

2023

2024 JQ

- 30 Energy Meters Installed.

Setting up the architecture and covering all feeders & installation of 30 Energy Meters.

Cover Full Factory under EMS



- Real time monitoring of energy in key areas and analysis by comparing against golden batch specifications.
- 100% Feeders will be covered by 2024 JQ and full factory will be under EMS.

1

• Daily monitoring of DG & Air Compressors performance

2

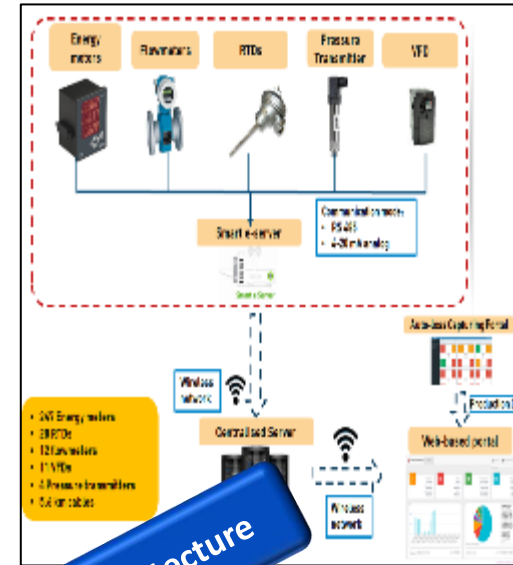
• Daily monitoring of factory maximum demand

3

• Daily monitoring of high energy consumption loads

4

• Real time monitoring of SFR & steam consumption in critical areas with alerts.

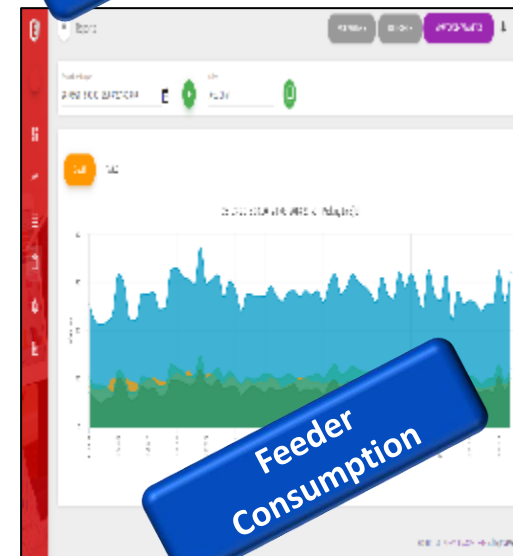


Architecture



Dashboard

Production Vs Consumption Trend



Feeder Consumption



Prod. Vs Consumption

LEARNINGS FROM CII

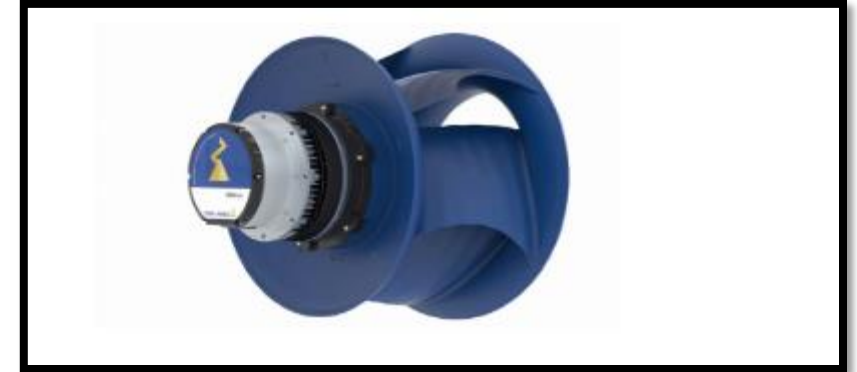


**Three Phase
induction motor with blower**

**HP Consumption : 157 HP
Power consumption per day=1611KWH**



© CanStock



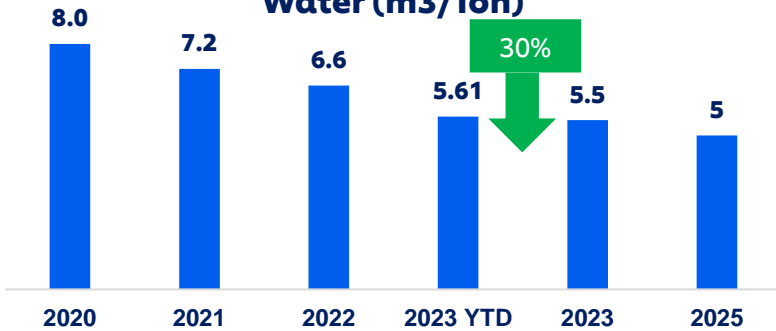
Electronically Commutated motor with blower

**HP Consumption : 55 HP
Power Consumption per day=814KWH**

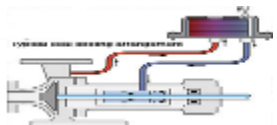
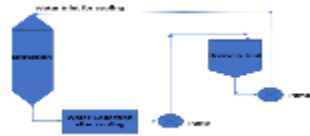
Idea of replacing conventional motors in our DHUs with **Electronically commutated motors** was adopted from one of the best practices presented in CII Energy Awards

Water

Water (m³/Ton)



Extraction quench water recovery
10 KL/day water savings



Recovery and reuse of Pump seal cooling water and quench water
3 KL/day water savings

RO system is used in the place of DM to reduce regeneration water.
20 KL/day water savings

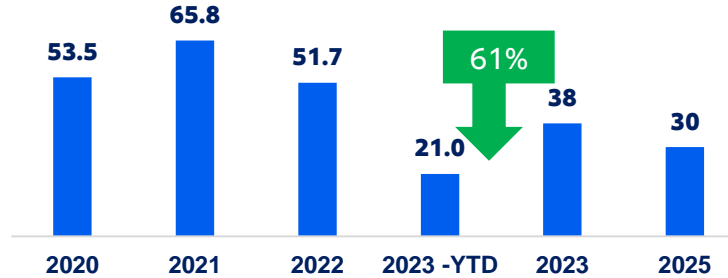


Eco-Clean Dosing in Cooling Towers to reduce frequency of blow down

30% reduction in water consumption in past 5 years

Plastic Waste

Plastic waste (Tons)



24 Kl Liquid Chicory SS Tanks instead of Plastic Tanks

25 tons/year



Elimination of outer carry bags in HTS Coffee packs.

7.8 tons/year

MLP laminate change in SS/Tripti 200g



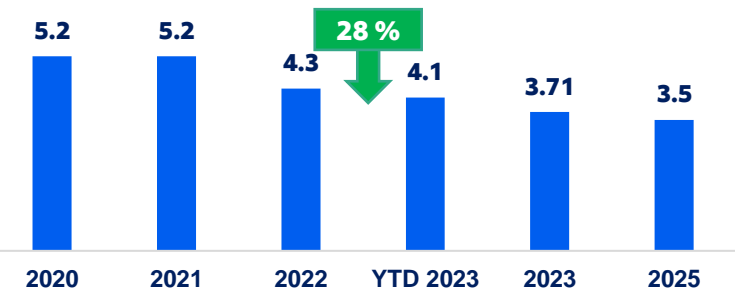
Repurposing of shredded laminate for making biofuel



75% reduction in plastic waste generation

Effluent

Effluent (m³/Ton IC)



Anaerobic Lagoon to Digester
9900 kl/year increase in water reuse



ETP sludge to boiler briquette
746 tons/year

Recovery of extractor draw filter liquor
360 kl/year of effluent reduction

Draw filter

Draw tank

18% reduction in Effluent generation

BEST PRACTICES & KEY INITIATIVES @ HOSUR

ZERO LIQUID DISCHARGE PLANT TREATED WATER USED BACK IN PROCESS



First
in HUL

USAGE OF ALTERNATE FUELS LIKE MANGO SEEDS



First
in HUL

REPLACEMENT OF BAG FILTERS WITH ESP



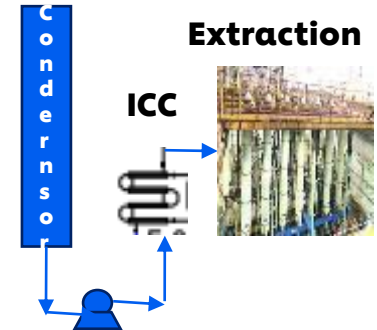
Reduction in PM from 150
Mg/Nm³ to 50 Mg/Nm³

INSTALLATION OF RECD FOR DGS



~90% reduction in PM &
CO, 50% reduction in
NO₂ and SO₂

CONDENSATE RECOVERY & REUSE IN EXTRACTION



INSTALLATION OF ANAEROBIC DIGESTOR AND DEMOLITION OF 40-YEAR-OLD SLUDGE LAGOON

BEFORE



AFTER



- Installation and commissioning of **Anaerobic Digester** with Flare System.
- Emptying of anaerobic lagoon by removing **5000+ tons of sludge** with ZERO near misses & incidents.
- **Reuse** of the lagoon sludge as boiler fuel post drying and mixing it with briquettes.
- Backfilling will be done.
- Elimination of one of the significant risks in factory.
- Reduction in effluent treatment by **15 Kl/day** during monsoons (**~780 Kl/year**) with an equivalent utility savings of **~5 Lakh/annum**.

AWARDS & RECOGNITIONS-WAY TO NET ZERO



2025

2022

Forecast

1. Co2 Reduction - 99%
2. Water Reduction - 50%
3. Energy Reduction - 19%
4. Waste Reduction - 65%

Achievements

1. Co2 Reduction - 133 Kg/ton
2. Water Reduction - 0.1 Kl/ton
3. Energy Reduction - 0.2 GJ/ton



2021

Achievements

1. Co2 Reduction - 25 kg/ ton
2. Water Reduction - 0.8 Kl/ton
3. Energy Reduction - 1.0 GJ/ton
4. Waste Reduction - 22.4 tons

2020

Achievements

1. Co2 Reduction - 187 Kg/ton
2. Water Reduction - 0.6 Kl/ton
3. Energy Reduction - 0.1 GJ/ton
4. Waste Reduction - 4.5 tons

2019

Achievements

1. Co2 Reduction - 680 Kg/ ton
2. Water Reduction- 1.8 Kl/ton
3. Energy Reduction - 0.7 GJ/ton
4. Waste Reduction - 6.7 tons

AMBITION TO BE PLASTIC AND WATER NEUTRAL WITH 98% GREEN ENERGY BY 2025



WOW STORIES

TEAM HOSUR'S INCREDIBLE JOURNEY OF COST REDUCTION BEATING INFLATION

Problem Statement: INFLATION BEATEN COST

Key Actions:

- Single Extraction Operation through process optimization
- Evaporator Upgradation
- Spray drier fuel economy Improvement with High Concentration spray
- Utility cost reduction by strategic and responsible sourcing of fuels
- Usage of Mango seeds as fuel substitute and maximising the coffee spent fuel

Cost Performance - IC CPT

| Year | Value |
|----------|--------|
| 2021 | 91,009 |
| 2022 | 95,776 |
| 2023 YTD | 94,720 |

Cost Performance - Utility CPT

| Year | Value |
|----------|--------|
| 2021 | 20,226 |
| 2022 | 21,800 |
| 2023 YTD | 16,410 |

Cost Performance - Overall CPT

| Year | Value |
|----------|--------|
| 2021 | 62,742 |
| 2022 | 60,420 |
| 2023 YTD | 62,600 |

Net PC

| Year | Value |
|----------|--------|
| 2021 | 0.77% |
| 2022 | 5.17% |
| 2023 YTD | -1.40% |

KUDOS TO TEAM HOSUR

Team members: Saisree Ramachandran, Bhuvareshwaran, Nelson Isaac, Kumarvel, Sridhar Babu, Sudresh, Surash Kumar, Monika Bhima, AM Sundarajan, Narasimha Prakash.

TEAM COFFEE'S OUTSTANDING PERFORMANCE IN UNLOCKING CAPACITY ENABLING ZERO POWDER PURCHASE FROM MARKET

Problem Statement: CAPACITY UNLOCK

Actions:

- Roaster:** BCI reduction by 9%
- Extraction:** Liquid Chikory 1200+ TPA unlock 12% Unlock
- Evaporation:** Evaporator Upgradation 2X Evaporation Rate
- Spray Drier:** 75:25:0 Approach Higher conc liquor sprayed

Benefits:

- Capacity Unlock of 1500 TPA
- 800T growth delivered with zero purchase from market with cost avoidance of 5.7 Cr
- Capex Avoidance of 7Cr
- Water consumption dropped by 440 bps despite increase in production by 650 Bps

KUDOS TO TEAM COFFEE FOR THEIR INCREDIBLE WORK!!

Team members: Narasimha Prakash, Monika Bhima, Bhuvareshwaran, Raghunathan Raman, Sureshkumar Veeranki, Sankaralingam, Salyam, K, Chandrashegar, K, Vertika Srivastava.

CII NATIONAL AWARD FOR ENVIRONMENTAL BEST PRACTICES

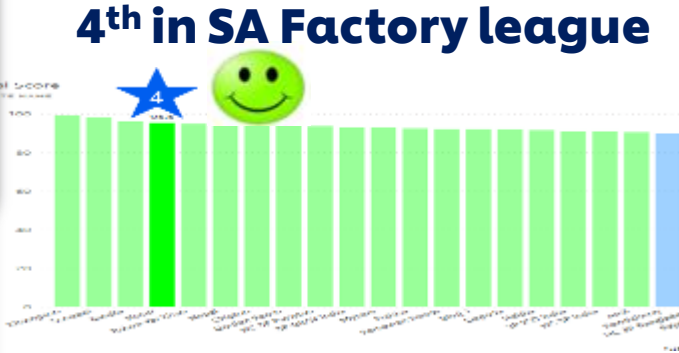
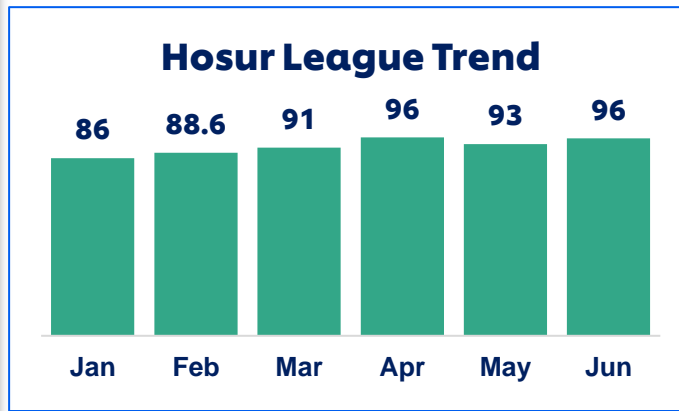
Leading in environmental practices

Our Hosur, Sonipat and Rajahmundry factories have each received CII's National Awards 2023 for Environment Best Practices.

Congratulations to the teams!



FACTORY LEAGUE PERFORMANCE



Thank you

COFFEE PROCESS

THANK YOU

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