



# Ponni sugars(Erode) limited

Partnering with paper to prosperity



## EXCELLENCE IN ENERGY MANAGEMENT

*Excellence is never an accident. It is always the result of high intension, sincere effort and intelligent execution. It represents the wise choice of many alternatives-choice, not chance, determines your destiny.*

Date : SEP 2024

Team : Mr.S.Boopathi – Manager- Cogen  
Mr.C.Natarajan – Manager -Process

# ABOUT US



*Innovative structuring as backward integration to paper*



*First to commit bagasse for paper and derive value addition*



*Pioneered long sugar season*



*Implemented a unique effluent irrigation scheme converting waste to wealth*



*ISO 9001:2015 certified for Quality Management System*



*ISO 14001:2015 certified for Environmental Management System*



*ISO 45001:2018 certified for Occupational Health and Safety Management System*



# ABOUT US

**1984**

**Sugar Mill Inception – 1250TCD structured on the concept of bagasse to paper production**

**1996**

**First stage Expansion to 2500 TCD**

**2004**

**Second Stage Expansion to 3500 TCD**

**2012**

**Installation of 19MW Cogeneration Power Plant**



# ABOUT US

*Startup cane crushing  
Capacity (TCD)*



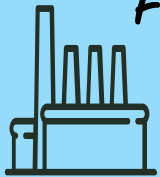
**1250**

*Present cane crushing  
Capacity (TCD)*



**3500**

*Factory Area (acres)*



**33.51**

*Colony Area (acres)*



**9.10**

*No of Cultivators*



**4500**

*No of Employees*



*Regular - 133  
Seasonal - 147*

**280**

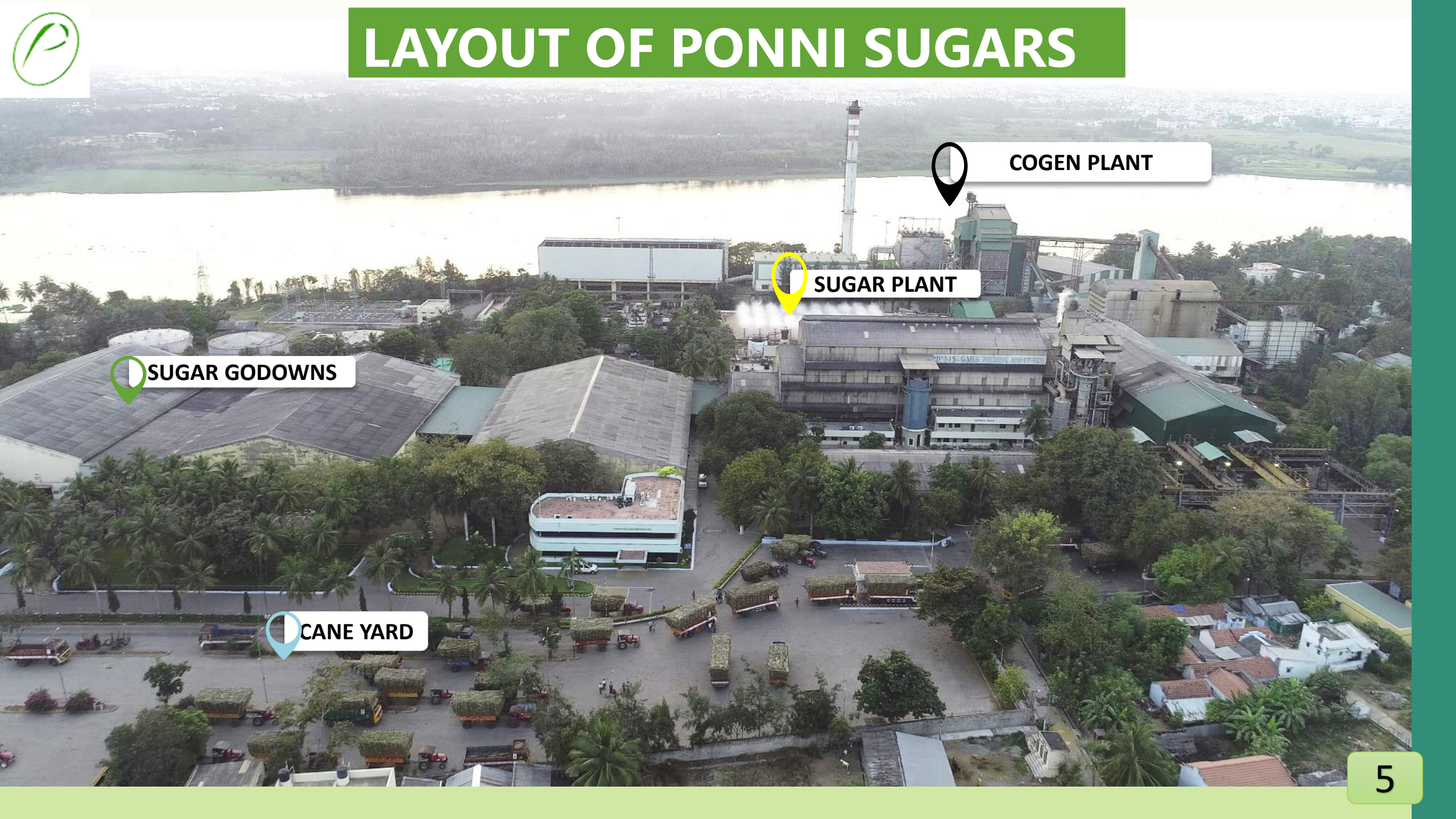
*No of Employee Quarters*



**145**



# LAYOUT OF PONNI SUGARS



SUGAR GODOWNS

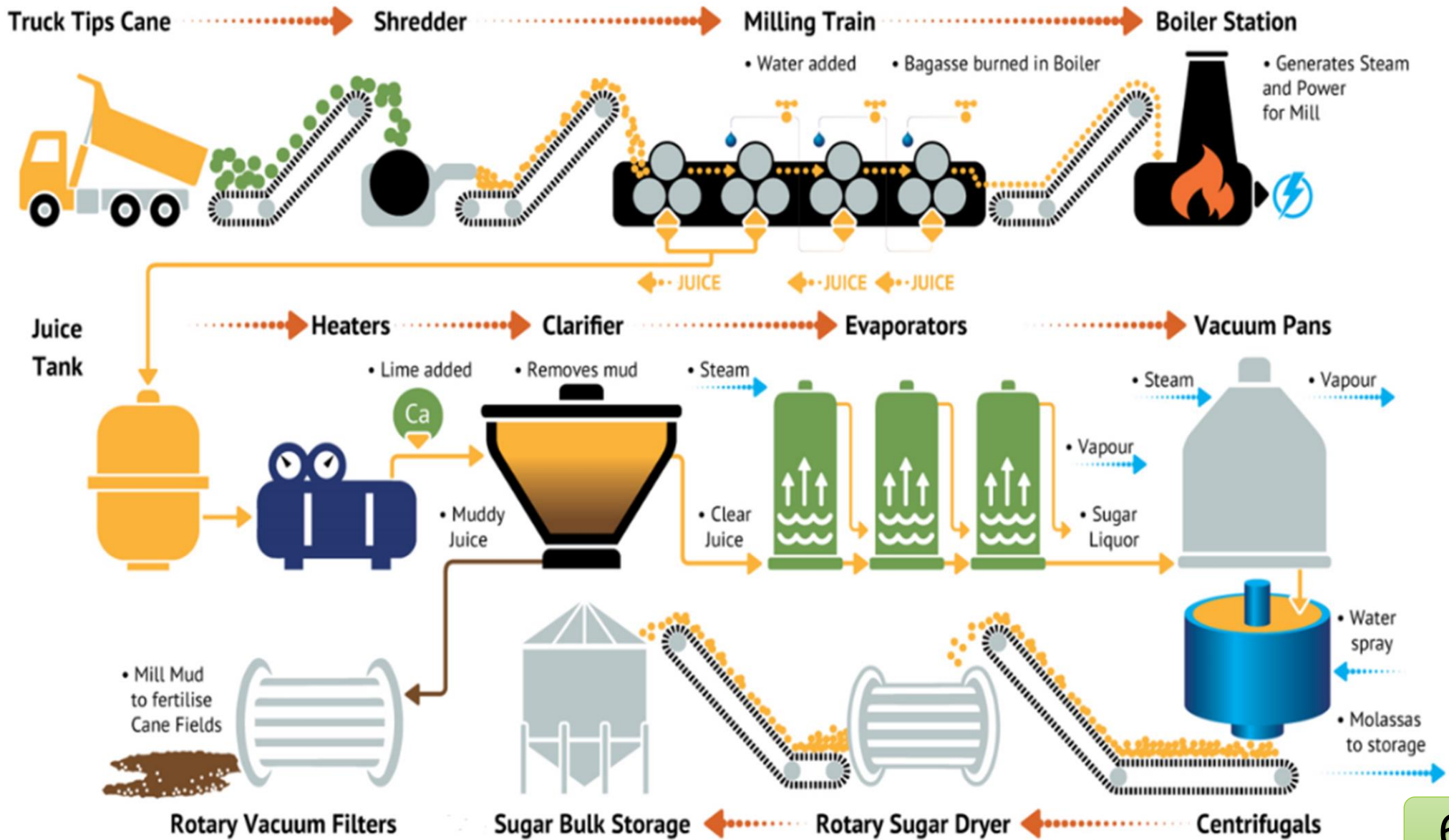
CANE YARD

SUGAR PLANT

COGEN PLANT



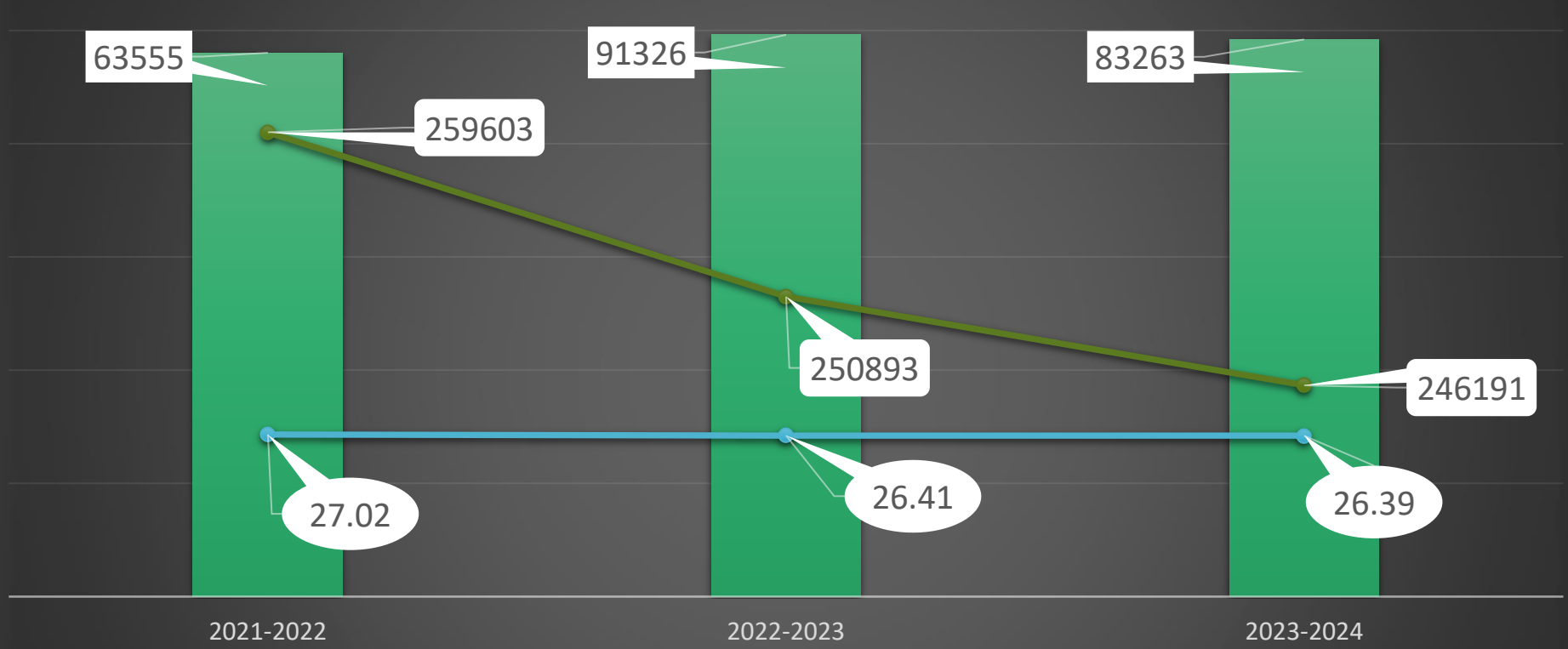
# SUGAR PLANT PROCESS





# Production v/s Specific thermal and Specific Electrical Energy Consumption

### Production Data



- Sugar
- Specific Electrical Energy Consumption Kwh/Ton of production
- Specific Thermal Energy Consumption Kcal / Ton of Production

**Specific Thermal Energy**



5.2%



**Specific Electrical Energy**



2.3%





# BENCHMARK

Parameters	Ponni Benchmark	Global benchmark	Achieved
Specific Thermal Energy Consumption Steam % cane	39.00	38.0 As per ISSCT proceedings 2005	37.86
Specific Electrical Energy consumption Kwh/ton of cane	26.5	27-28 As per NFCSF	26.39





# LIST OF ENCON PROJECTS PLANNED- 2024-25

VFD for long travel & cross travel of cane unloader no-3

**1**

Annual Electrical Saving: 0.006 Million kWh	Annual Energy Saving (ToE): 0.52
Investment: 0.3 Million Rs	Estimated Payback Period: 11.4 months

VFD Based Vacuum Pump for Vacuum Filter

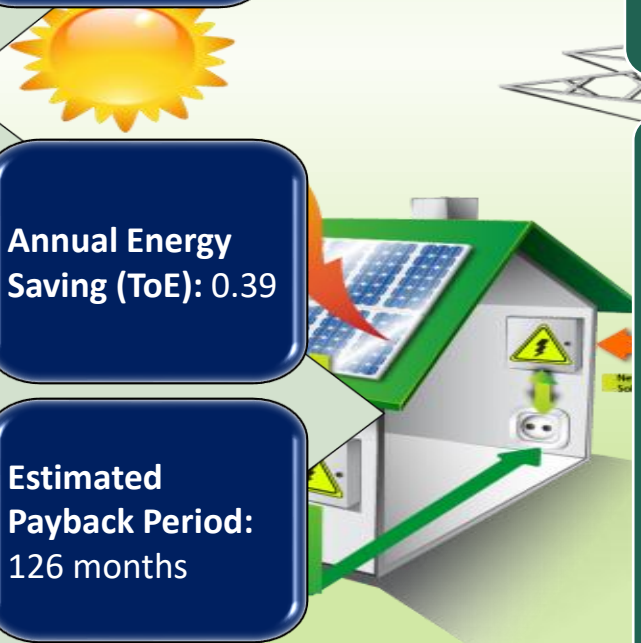
**2**

Annual Electrical Saving: 0.022 Million kWh	Annual Energy Saving (ToE): 1.89
Investment: 34.5 Million Rs	Estimated Payback Period: 36 months

VFD for boiler silo doors

**3**

Annual Electrical Saving: 0.0045 Million kWh	Annual Energy Saving (ToE): 0.39
Investment: 0.25 Million Rs	Estimated Payback Period: 126 months



Camera for Furnace

**4**

Annual Thermal Saving: 690 Million Kcal	Investment: 1.2 Million Rs
Estimated Payback Period: 12 months	

# LIST OF ENCON PROJECTS PLANNED- 2024-25

VFD for Travelling  
Grate No. 2

5

Hydraulic Drive  
Replaced with  
Planetary Gear

Annual Thermal  
Saving: 345 Million  
Kcal

Investment: 1  
Million Rs

Estimated Payback  
Period: 20 months

Energy Efficient Feed Water  
Pump

6

Annual Electrical  
Saving: 0.1 Million  
kWh

Annual Energy  
Saving (ToE): 8.60

Investment: 4.1  
Million Rs

Estimated  
Payback Period:  
96 months

## ESTIMATED RESULTS FOR ENCON PROJECTS 2024-25

Annual  
Electrical  
Saving: 0.18  
Million kWh

Annual  
Thermal  
Saving:  
1035  
Million Kcal

Annual  
Energy  
Saving  
(ToE): 15.26

Investment:  
45.75  
Million Rs

Installation of Active  
Harmonic Filter with  
RTPFC Panel

7

Annual  
Electrical  
Saving: 0.045  
Million kWh

Annual Energy  
Saving (ToE):  
3.87

Investment:  
4.4 Million Rs

Estimated  
Payback  
Period: 220  
months

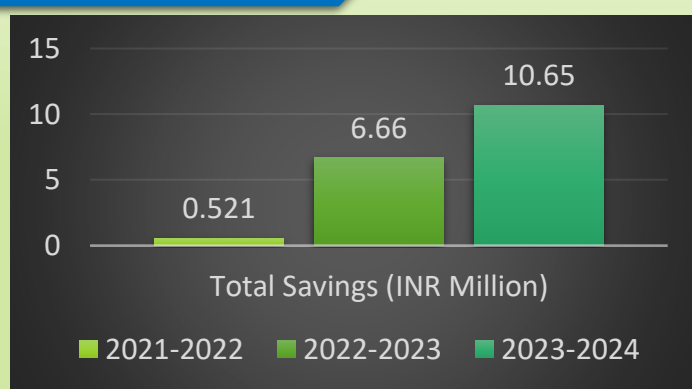
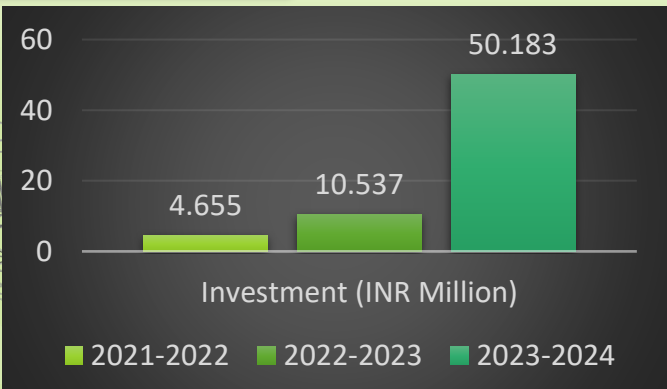
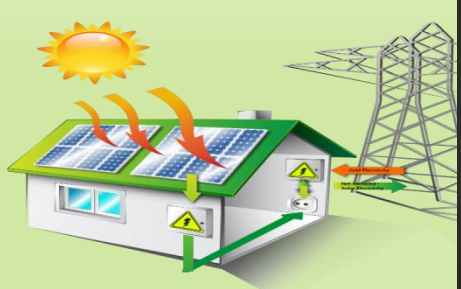
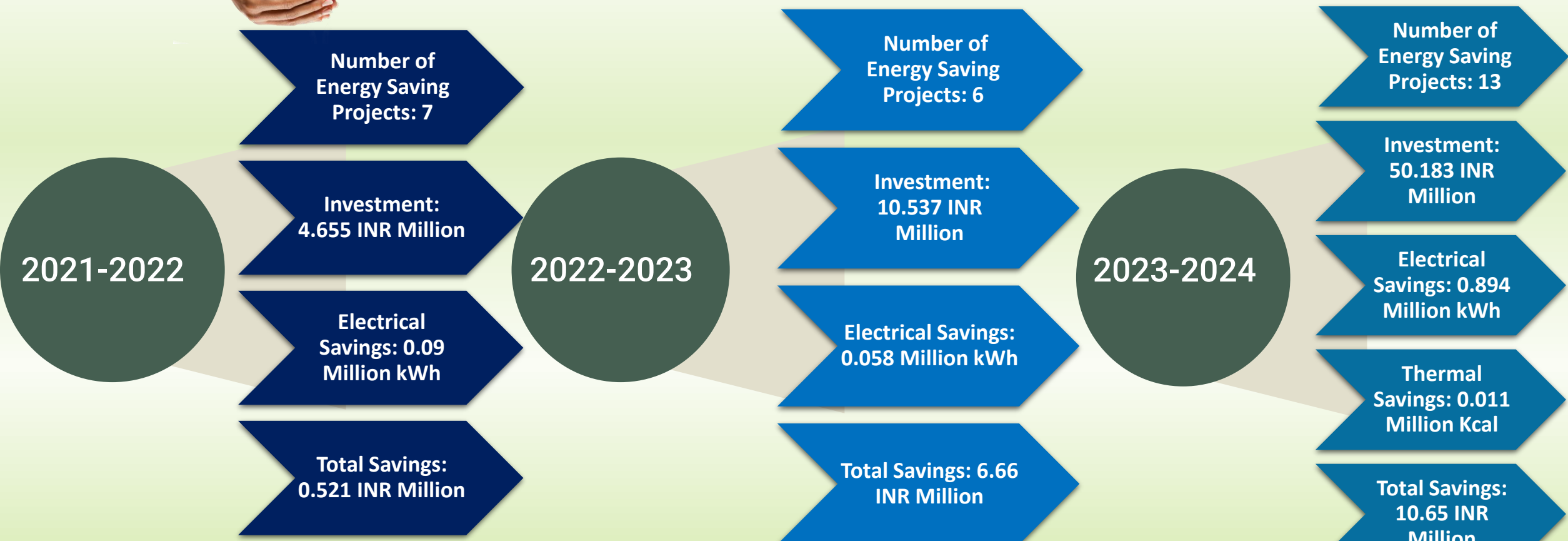


# LIST OF ENCON PROJECTS IMPLEMENTED (2021-2024)





# ENERGY SAVING PROJECTS IMPLEMENTED IN LAST THREE YEARS (2021-2024)



# ENERGY SAVING PROJECTS IMPLEMENTED

2021-2022

## 4th Mill Motor power reduction from 750KW to 550KW

- Investment Made – 20 Lakhs
- Annual Electrical Saving (kWh) – 30000
- Total Annual Savings- 1.57 Lakhs

## VFD installed for mill juice pumps - 6 Nos (7.5KW-3 Nos, 11KW-1 No & 15KW-2 Nos )

- Investment Made – 7.94 Lakhs
- Annual Electrical Saving (kWh) – 6000
- Total Annual Savings- 0.33Lakhs

## VFD - 55KW Installed for Air Compressor

- Investment Made – 3.60 Lakhs
- Annual Electrical Saving (kWh) – 25000
- Total Annual Savings- 1.31 Lakhs

## VFD provided to RO plant High pressure pumps and CPU DG transfer pumps

- Investment Made – 3 Lakhs
- Annual Electrical Saving (kWh) – 12000
- Total Annual Savings- 0.65 Lakhs



# ENERGY SAVING PROJECTS IMPLEMENTED

2022-2023

## Energy Efficient Air Compressor Installation

- Investment Made – 16 Lakhs
- Annual Electrical Saving (kWh) – 22950
- Total Annual Savings- 1.20 Lakhs

## Plate Heat Exchanger Installation

- Investment Made – 42 Lakhs
- Annual Thermal Saving – 4266 Million Kcal
- Total Annual Savings- 6.31 Lakhs

## Mechanical Vapour Re-compression system installation

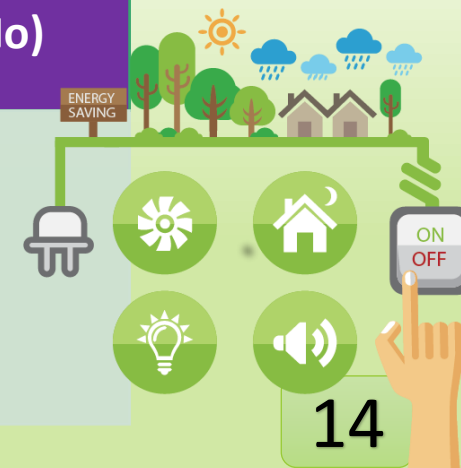
- Investment Made – 35 Lakhs
- Annual Thermal Saving – 39 Million Kcal
- Total Annual Savings- 0.50 Lakhs

## Sealing Air Automation and Coal Spreader air flow control

- Investment Made – 6.0 Lakhs
- Annual Electrical Saving (kWh) – 22950
- Total Annual Savings- 1.20 Lakhs

## VFD installation to Wet Scrubber system pumps ( 7.5KW-2No & 3.7KW - 2No)

- Investment Made – 5.0 Lakhs
- Annual Electrical Saving (kWh) – 7650
- Total Annual Savings- 0.40 Lakhs



KEY PROJECTS



# ENERGY SAVING PROJECTS IMPLEMENTED

2023-2024

## Replacement of 5th Mill DC System with AC system

- Investment Made – 65 Lakhs
- Annual Electrical Saving (kWh) – 105060
- Total Annual Savings- 5.60 Lakhs

## Replacement of impeller for 250KW injection water pump no :1

- Investment Made – 07 Lakhs
- Annual Electrical Saving (kWh) – 98880
- Total Annual Savings- 5.2 Lakhs

## Dry seed conveyor installed to stop the Batch seed machine

- Investment Made – 6.0 Lakhs
- Annual Electrical Saving (kWh) – 55620
- Total Annual Savings- 2.90 Lakhs

## VFD compatible motor for Spray pump & VFD for spray pumps

- Investment Made – 23 Lakhs
- Annual Electrical Saving (kWh) – 455775
- Total Annual Savings- 24 Lakhs

## 2500M2 Falling Film Evaporator Installation

- Investment Made – 350 Lakhs
- Annual Thermal Saving - 10471 Million Kcal
- Total Annual Savings- 59 Lakhs

## Fan-less Cooling Tower Installation

- Investment Made – 40 Lakhs
- Annual Electrical Saving (kWh) – 69525
- Total Annual Savings- 3.7 Lakhs

KEY PROJECTS



# INNOVATIVE PROJECTS IMPLEMENTED

## Automation of Melt Clarification Process

INNOVATION PROJECT - 1

### Before Automation:

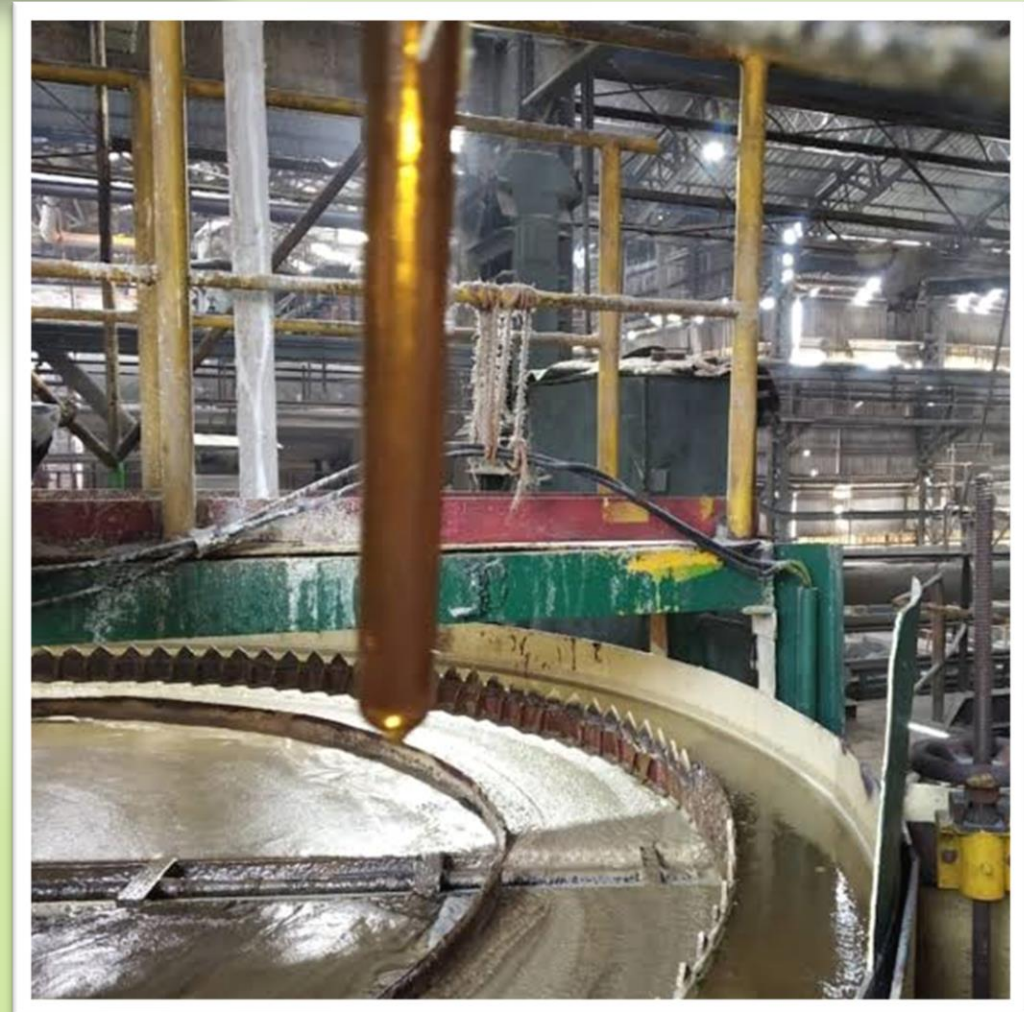
#### •Manual Processes:

- Chemical preparation based on shift requirements
- Manual operation of valves
- Monitoring levels and adjusting dosages
- Manual melt discharge

### After Automation:

#### •Automated System Implementation:

- Sensors for chemical tank level measurements
- Automatic valve control based on detected levels
- Consistent melt discharge in auto mode
- Improved quality parameters
- Reduced wastage







## Automation of Melt Clarification Process

### •Technologies Used:

- Advanced sensors
- Real-time control systems
- Integration into DCS

### •Operational Benefits:

- Significant cost reduction
- Minimized human error
- Enhanced product quality

### •Safety Improvements:

- Reduced human involvement in hazardous environments

### •Sustainability:

- Optimized resource usage
- Reduced waste

**Year of implementation- 2023**

**Annual Savings (Rs. in Lakhs ) – 4.50**

**Investment (Rs. In Lakhs)- 4.80**



# INNOVATIVE PROJECTS IMPLEMENTED

## Automated Cane Feeding System with Level Sensors

INNOVATION  
PROJECT - 2





# INNOVATIVE PROJECTS IMPLEMENTED

## Automated Cane Feeding System with Level Sensors

### INNOVATION PROJECT - 2

- Consistent Cane Flow:** Ensures even distribution.
- Error Reduction:** Minimizes manual errors and blockages.
- Power Efficiency:** Reduces high power consumption.
- Safety & Efficiency:** Enhances operational safety and performance.
- Replicability:** High adaptability to similar setups.
- Cost Savings:** Annual savings of Rs. 1.65 lakhs.
- Year of implementation - 2023**
- Annual Savings (Rs. in Lakhs ) - 1.65**
- Investment (Rs. In Lakhs)-1.28**





# UTILISATION OF RENEWABLE ENERGY SOURCES

**Bio**  
94 % Biofuel Usage in in-house power generation

**Standalone Solar Lights**

**4000 LPD Solar Water Heater**



# GHG INVENTORISATION



### Emissions

**Scope 1 (Coal & Bio fuels)**

**Scope 2 (Grid import)**

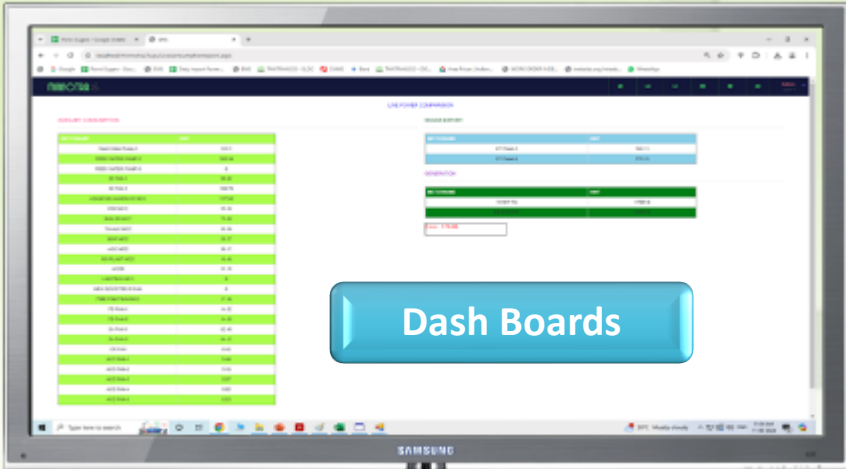
**Scope 3 (Raw material transport, Fuels transport, Chemicals transport, Employee commute & Despatch to depots)**

EMISSION 2023-2024				
Fuel	MT	CO <sub>2</sub> e MT	Sugar Prod MT	CO <sub>2</sub> e MT / Ton of Prod
Coal	8034	12181	83263	2.97
Biofuel	235266	235266		
<b>SCOPE – I</b>		<b>247447</b>		
<b>SCOPE – II</b>	77.6 MW	<b>112</b>		0.00067
<b>SCOPE - III</b>		<b>1681</b>		0.0201
	<b>Total Emission</b>		<b>Scope-1 + 2 + 3</b>	<b>2.99</b>



# ENERGY MONITORING SYSTEM

Daily Energy Consumption



Dash Boards

100 Nos of Energy Meters

Review Mechanisms

Online Data Dashboards



**Periodic Reporting:** Generate daily/weekly reports and conduct monthly review meetings to assess energy consumption.

**Benchmarking:** Set energy benchmarks and assign departmental targets for performance tracking.

**Energy Audits:** Conduct regular internal and third-party energy audits to identify inefficiencies.

**Continuous Improvement:** Develop action plans based on audit findings and monitor the impact of implemented measures.

**Technology Upgrades:** Invest in energy-efficient technologies and automate systems to optimize energy

**Real-Time Monitoring:** Use smart meters and centralized dashboards for continuous energy tracking.



PONNI SUGARS (ERODE) LIMITED  
Date: 21/08/2024

Description	Quantity
Steam Generation (T)	2199
Steam to TG (T)	2142
Steam to Ejector(T)	57
3 ATA TO PROCESS(T)	1277
9 ATA TO PROCESS(T)	3
3 ATA TO COGEN(T)	0
9 ATA TO COGEN(T)	151
CRT to Deaerator(T)	711
Power Generation(U)	430000
Power Export(U)	304800
Power To Sugar(U)	87200
Power To Cogem(U)	38000
Auxillary %	8.84
Pith(T)	353.220
Bagasse (T)	57.802
JULIE FLOURA WOOD CHIPS (T)	38.325
WOOD WASTE (T)	25.740
FIRE WOOD-15 (T)	80.755
STEAMING (NON COKING) COAL (T)	40.720
FLY ASH (T)	21.380
BED ASH (T)	17.155
Bagasse to SPB (T)	234.800
Bagasse to TNPL (T)	252.980



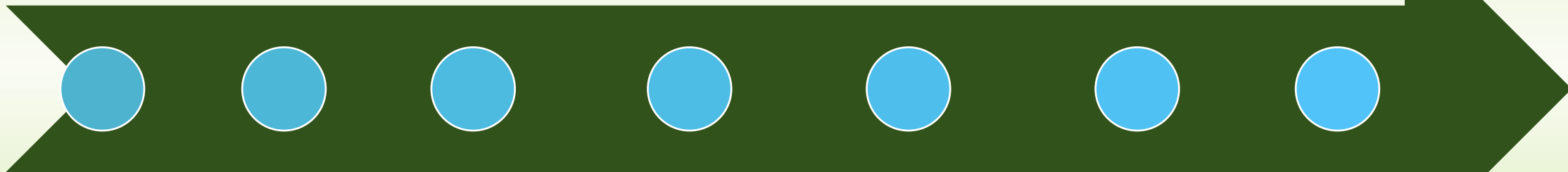
# LEARNING FROM CII OR OTHER AWARD PROGRAMS



*Conducting  
Periodical  
Energy  
audits once  
in two  
years*

*Identify Best  
Practices –  
Baccomber  
Installation*

*Adaptation  
to Trends*



*Setting  
Energy  
Goals &  
targets*

*Networking*



*Continuous  
Improvement*



# UTILIZATION OF WASTE



## WASTE TO FUEL

Utilization of Bagasse Pith and Chipper Dust: Efficiently using bagasse pith and chipper dust as fuel sources to enhance sustainability and reduce waste.

## WASTE ASH TO BRICKS

Fly ash – selling to brick manufacturers



# GREEN SUPPLY CHAIN MANAGEMENT



Procurement from ISO-Certified Suppliers



Prioritizing Indigenous Raw Materials



Adopting BEE Star Rated and Energy-Efficient Technologies

	Ponnai Sugars (Erode) Limited	Doc Ref: PSEL-GPP-1
	<b>GREEN PURCHASE POLICY</b>	Version: A
		Revision: 00 dt. 01/04/2024
		Last Review Date: 01/04/2024
		Page 1 of 1

We committed to sustainable procurement practices that minimize environmental impact and promote responsible sourcing throughout our supply chain. We achieve this through:

- Sustainable Sourcing:** Prioritizing environmentally and socially responsible raw materials, including certified materials and promoting sustainable agriculture. Local suppliers are preferred to reduce transportation emissions.
- Resource Efficiency:** Utilizing eco-friendly chemicals, energy-efficient equipment, and exploring renewable energy sources like solar power.
- Waste Reduction (3R):** Minimizing waste through maximizing recovered materials, closed-loop recycling, and comprehensive waste management programs.
- Supplier Engagement:** Collaborating with suppliers through awareness programs, environmental training, and supplier audits. We prioritize environmentally certified vendors and continuous improvement initiatives.

Implementation procedures and guidelines are developed for our procurement team to address supplier selection, environmental considerations in product specifications, and monitoring/reporting mechanisms.

**K. Yokanathan**  
Senior President and CFD  
Ponnai Sugars (Erode) Limited

Date: 01/04/2024



Implementing Awareness and Efficiency Enhancement Initiatives



- Choosing Batteries with Buyback Programs
- Ponnai Sugars EPR Initiative: New Plastic Waste Partner



Supplier Performance Evaluation



# TRAINING & INVOLVEMENT



# AWARDS AND RECOGNITIONS



2020-2021

**SISSTA**

**Best co-generation award  
Platinum award**

2021-2022

**Cogeneration  
Association of India**

**Best co-generation award (Private sugar  
factory Category)  
Rank 2**

2022-2023

**Government of India  
Ministry of power**

**National Energy Conservation Award -2022  
1st prize (Sugar Sector)**

2023-2024

**CII 24<sup>th</sup> National Award for  
Excellence in energy  
Management 2023**

**Energy Efficiency Unit Award –(General  
Sector) 2023**



Ponni Sugars (Erode) Ltd won  
1st prize (Sugar Sector)  
14.12.2022 NATIONAL ENERGY  
CONSERVATION AWARD -2022



# THANK YOU

B.Chandrsekar  
President (Operations)  
[bcs@ponnisugars.com](mailto:bcs@ponnisugars.com)  
9443247352

