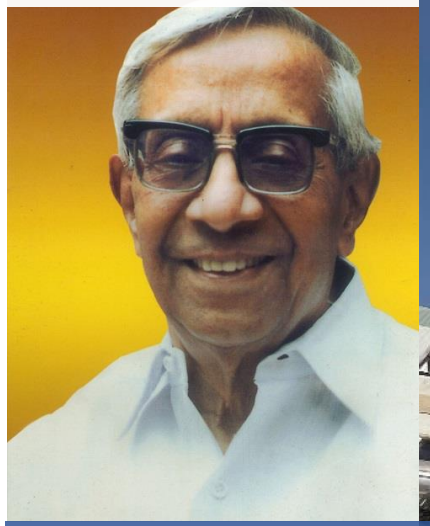
OUR FOUNDER



PONNI SUGARS

Partnering with Paper to Prosperity

40 Years of Expertise

EXCELLENCE IN ENERGY MANAGEMENT

Date : SEP 2023

Team : Mr.A.Ravikumar – GM-Engg
Mr.S.Boopathi – DM- Elect

ABOUT US

2012

Installation of 19MW Cogeneration Power Plant

2006

Second Stage Expansion to 3500 TCD

1996

First stage Expansion to 2500 TCD

1984

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

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

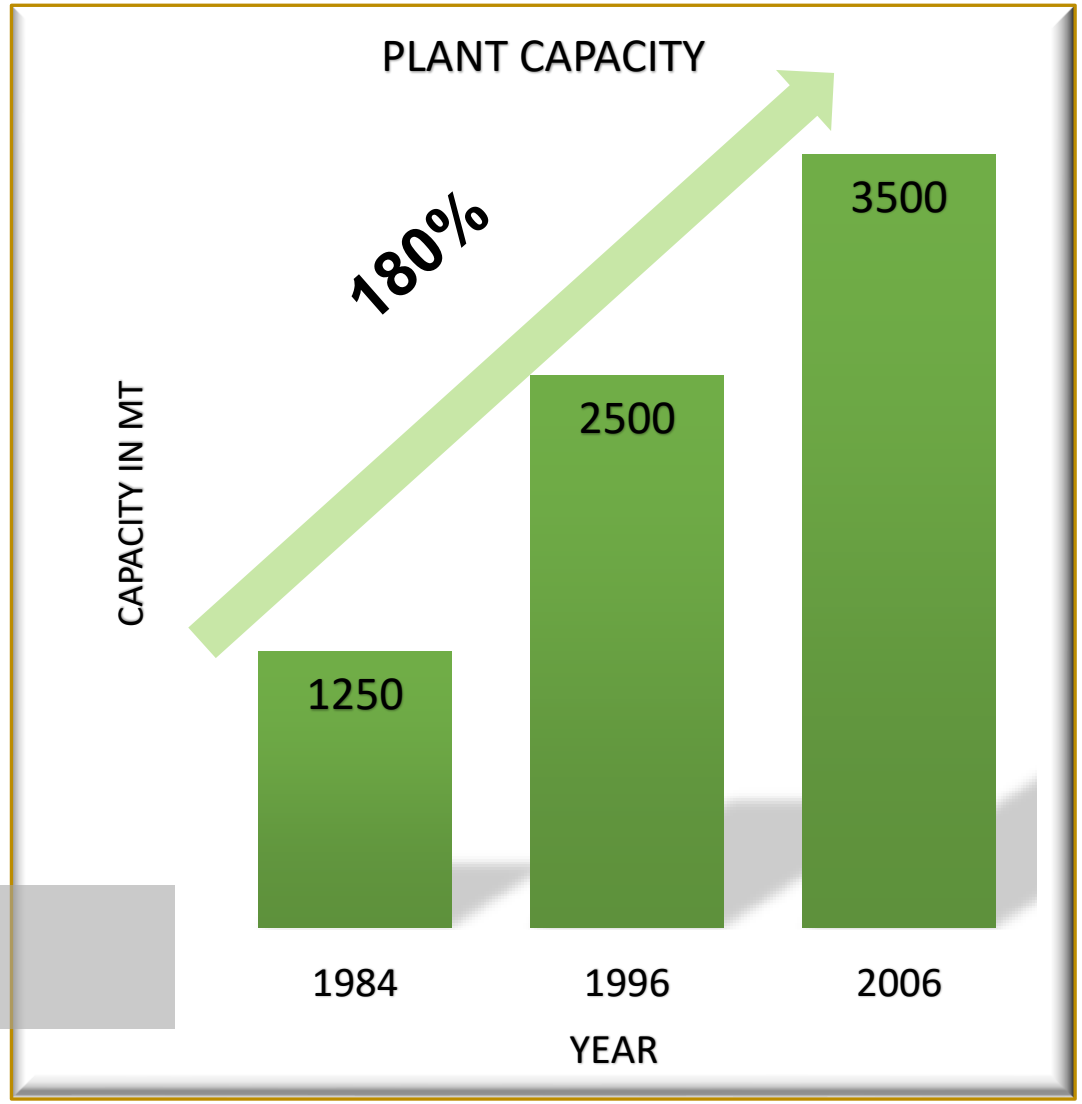
280

No. of Employee Quarters

145

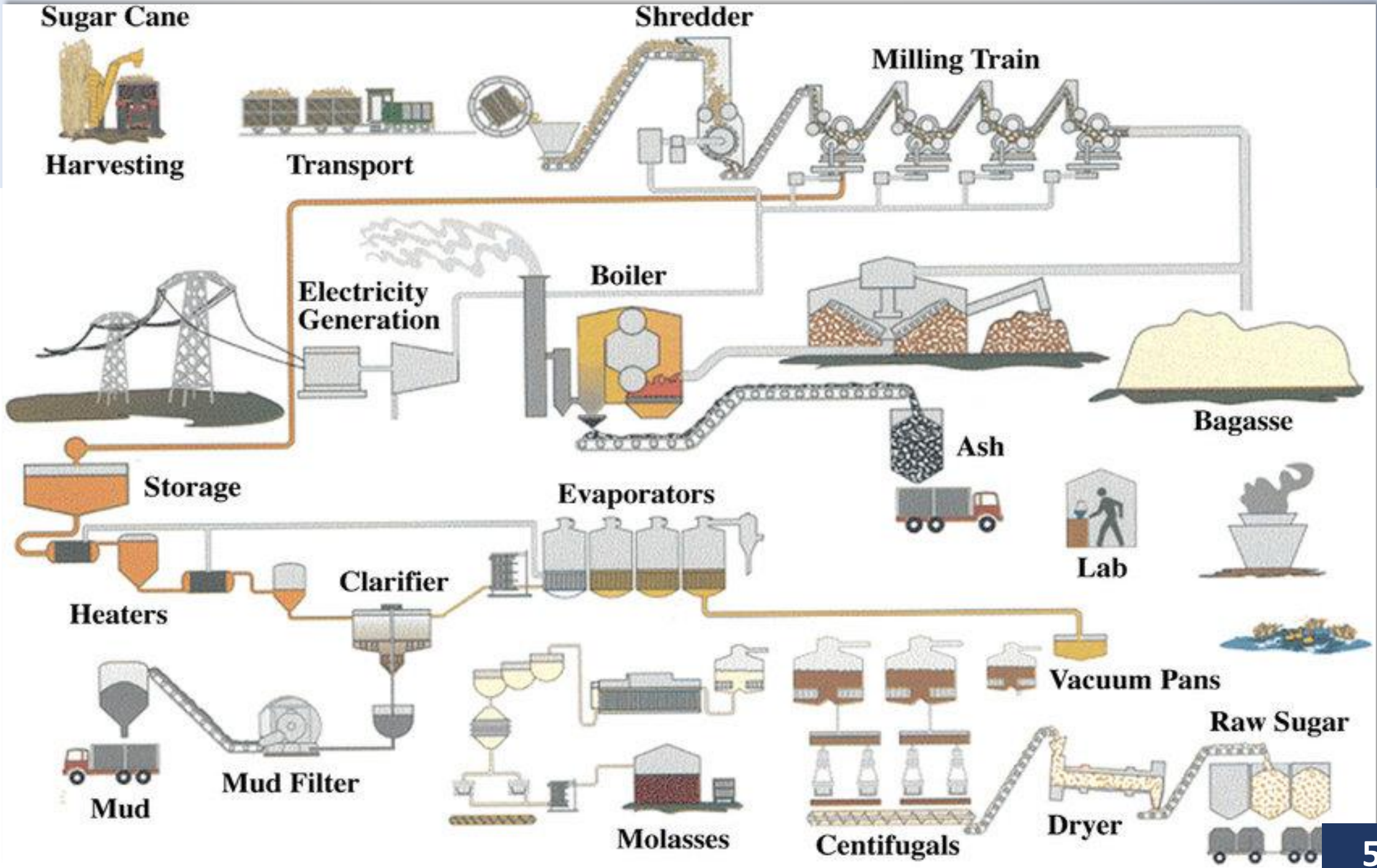
ABOUT US

- 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



LAYOUT OF PONNI SUGARS

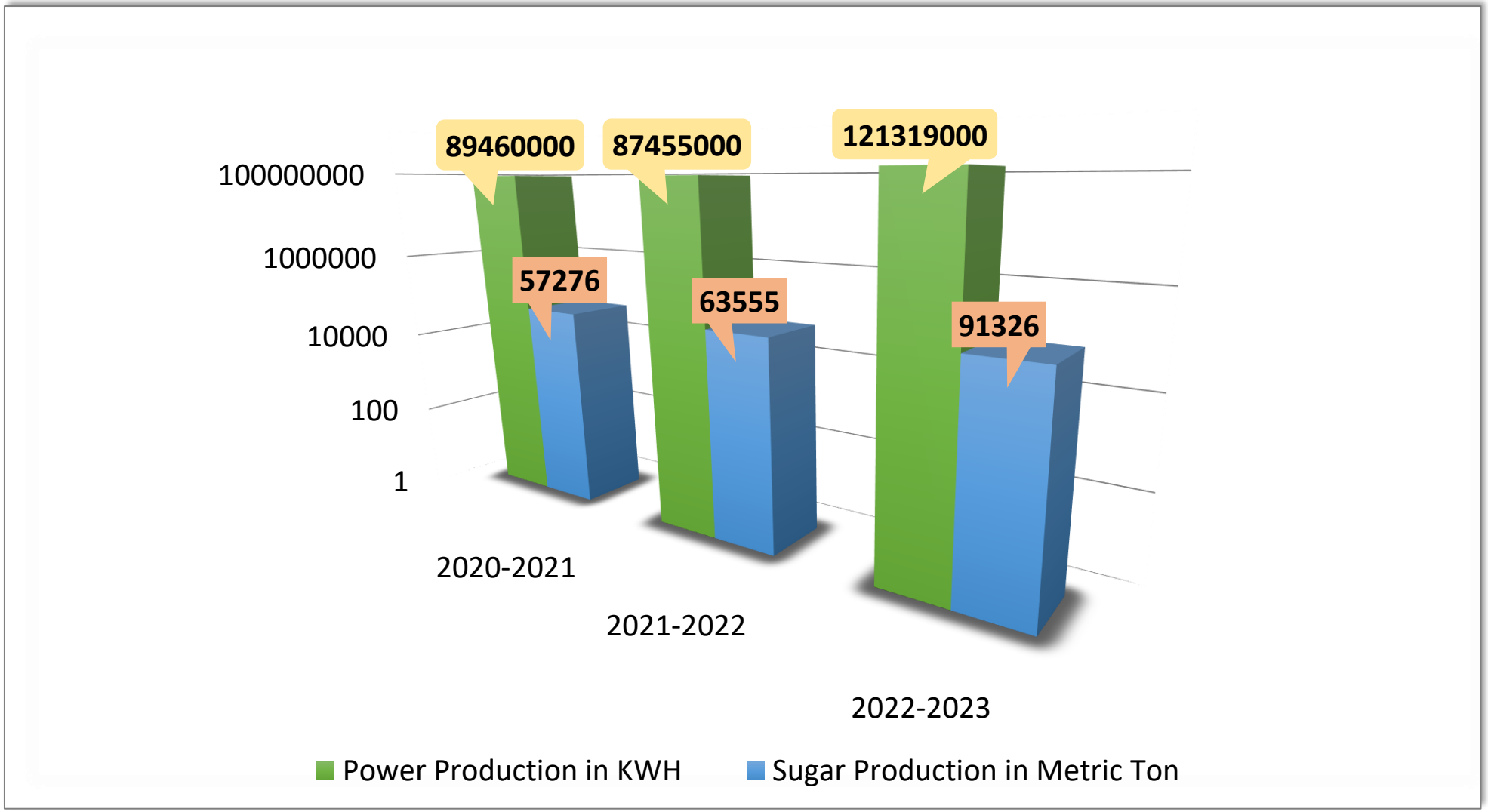
SUGAR PLANT PROCESS



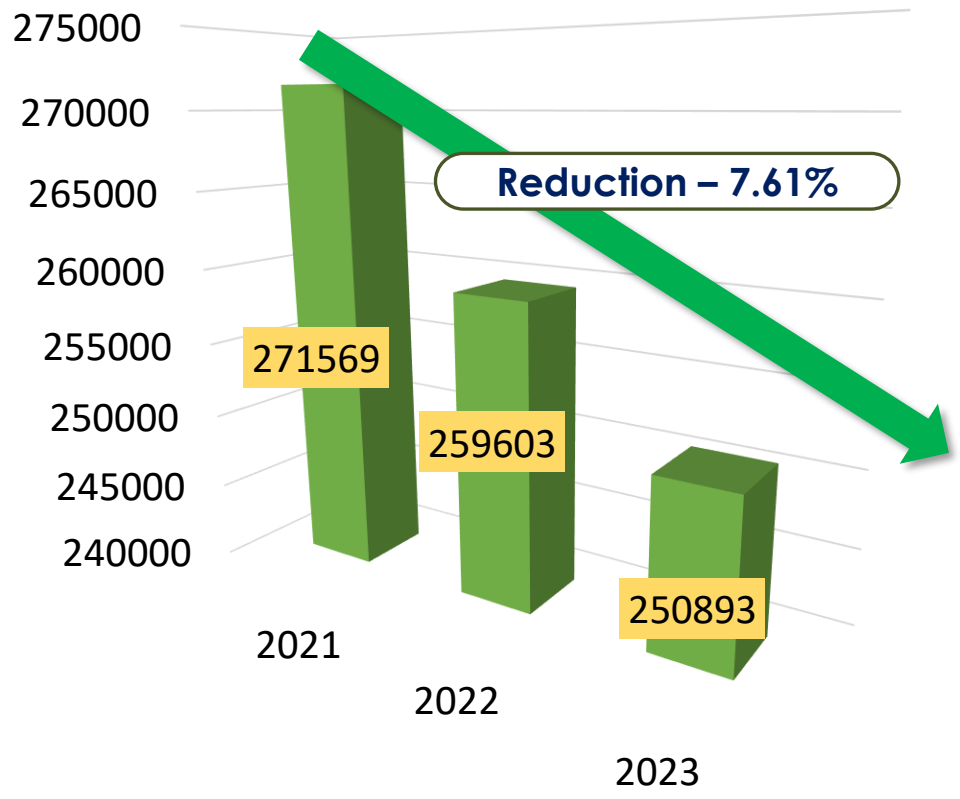
SPECIFIC ENERGY CONSUMPTION (FY 2020-23)

Specific Energy Consumption	UOM	2020-21	2021-22	2022-23
Electrical	Kwh/Ton of Cane Crushed	27.21	27.02	26.41
Thermal	Kcal/Ton of Cane Crushed	271569	259603	250893

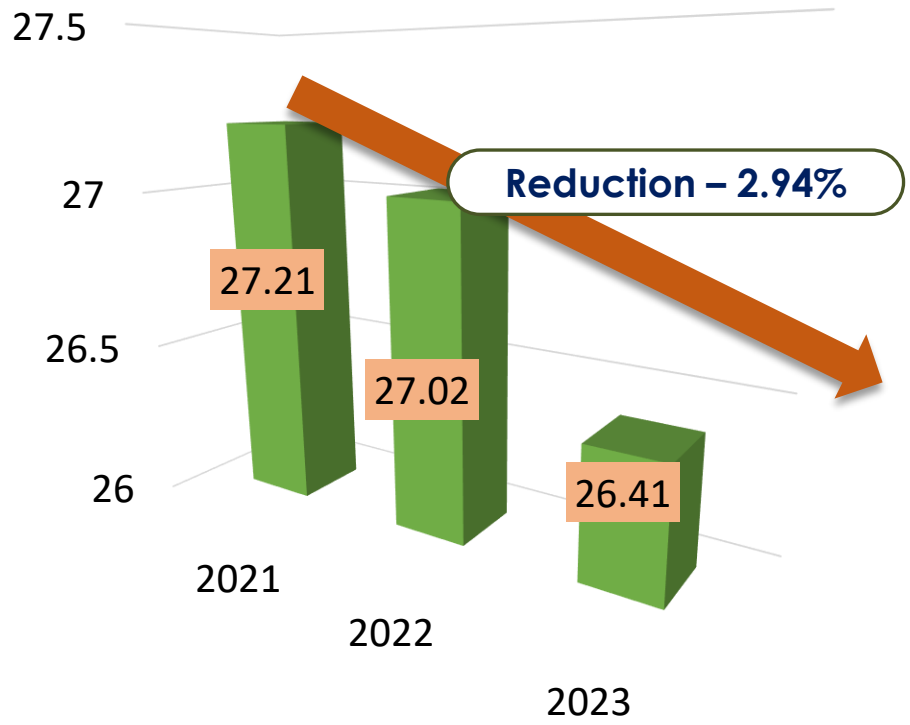
PRODUCTION DATA



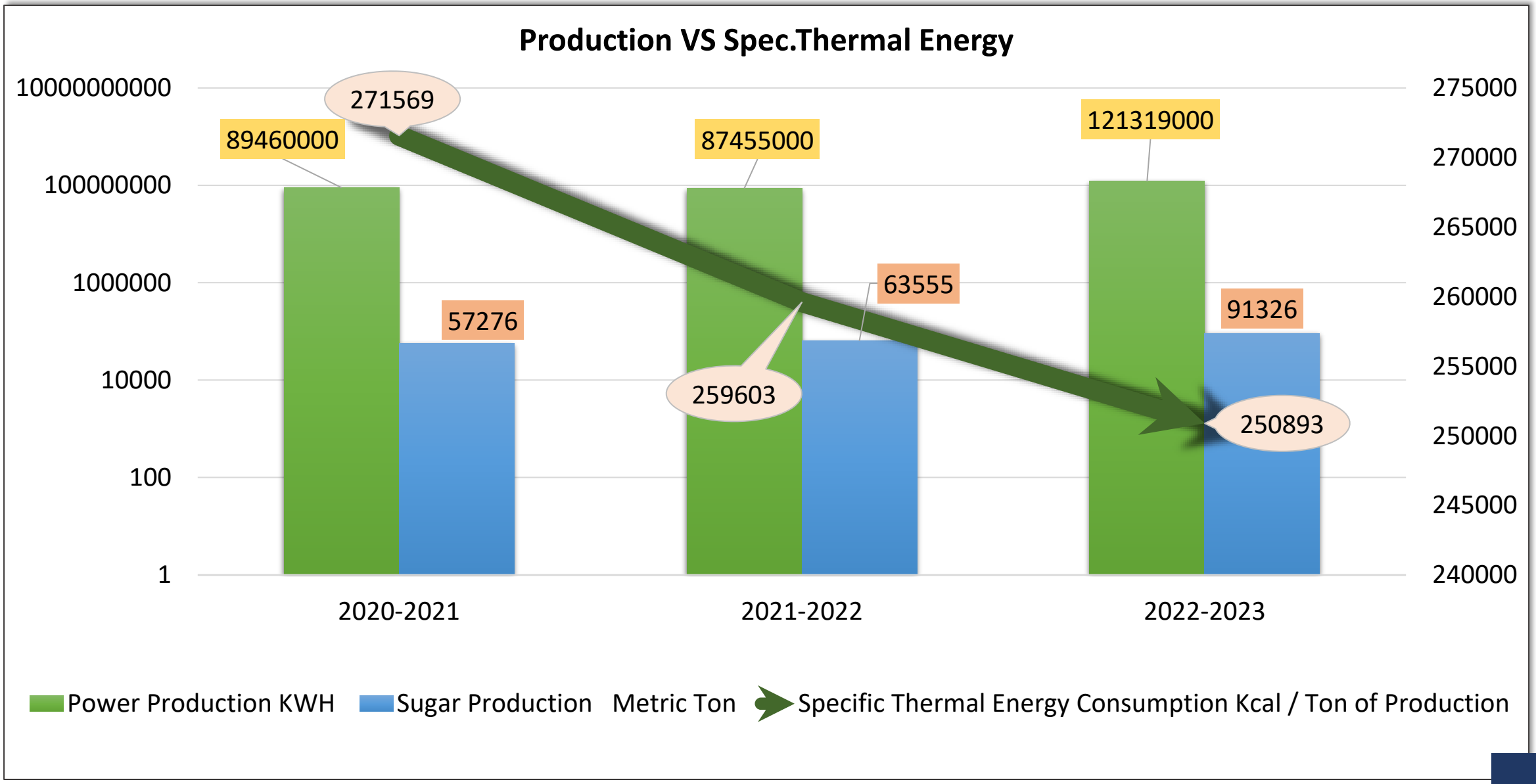
Specific Thermal Energy



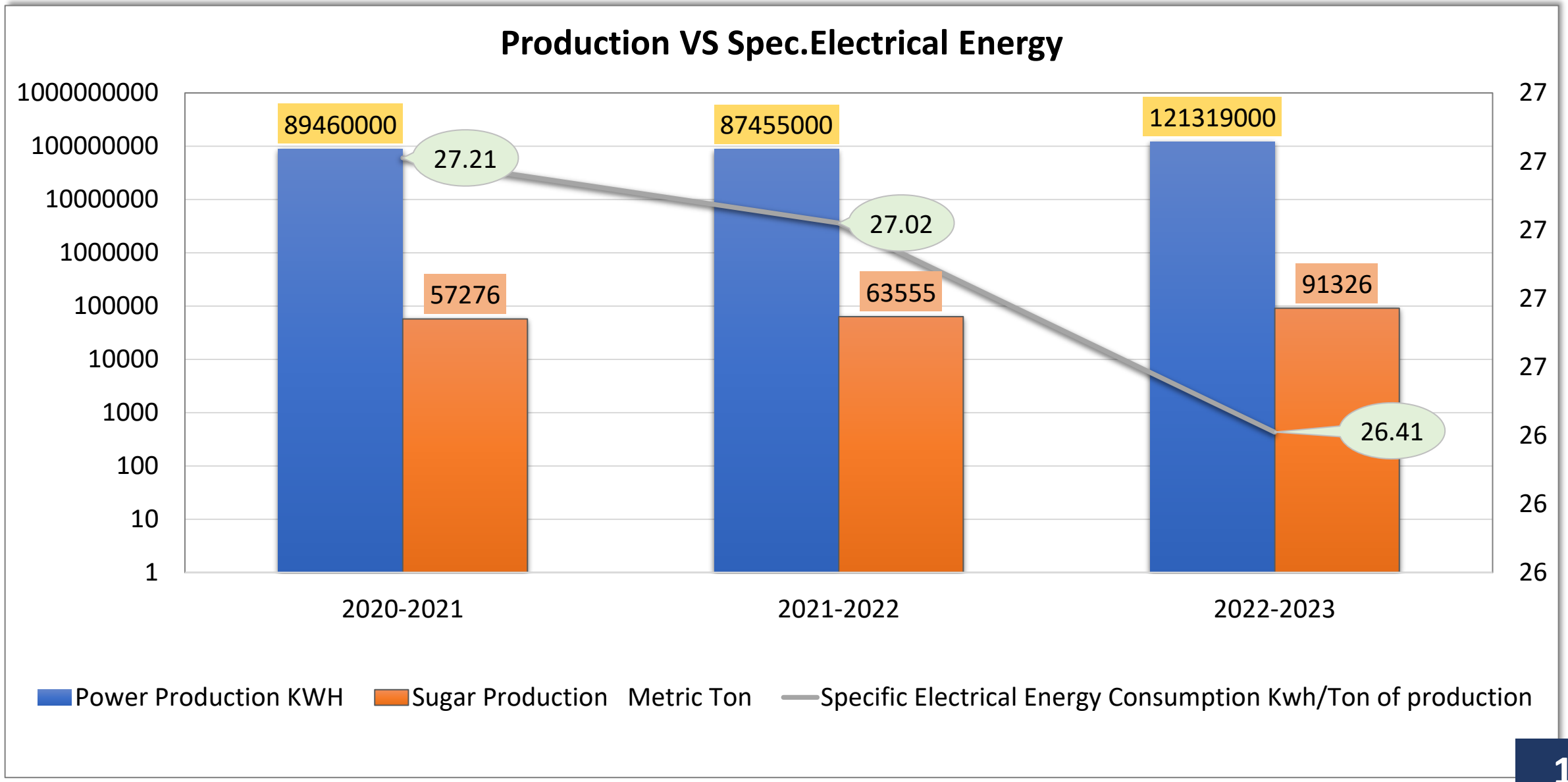
Specific Electrical Energy



Specific Thermal Energy Consumption



Specific Electrical Energy Consumption



BENCHMARK

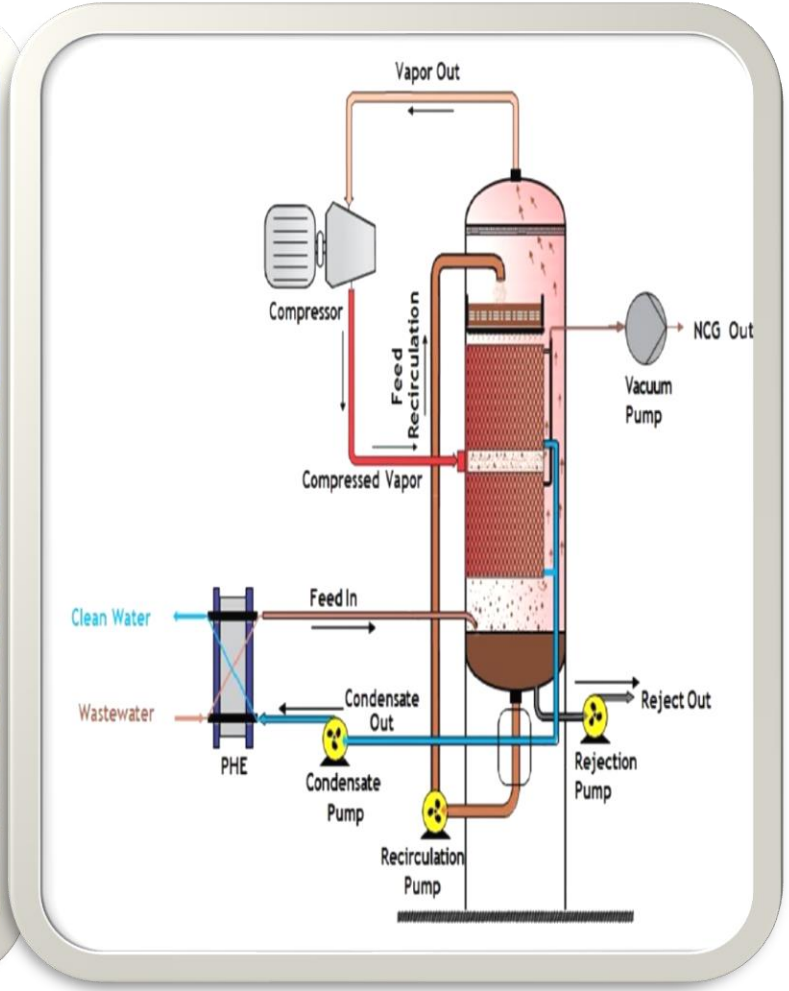
Parameters	Ponni Benchmark	Global benchmark	Achieved
Specific Thermal Energy Consumption	39.00	38.0 % As per ISSCT proceedings 2005	38.59
Specific Electrical Energy consumption	26.5	27-28 kWh/ton of cane As per NFCSF	26.41

LIST OF ENCON PROJECTS PLANNED- 2023-24

No	Title of Project	Annual Electrical Saving (Million kwh)	Annual Thermal Saving (Million Kcal)	Investment in Million Rs	Comment
1	2500M2 Falling Flim Evaporator Installation	0	11700	35	Replacement for Low efficiency Roberts type evaporator.
2	Replacement of 5th Mill DC System with AC system,	0.18	0	5	DC motor was employed, which resulted higher power consumption.
3	Fan-less Cooling Tower Installation	0.25925	0	4	There were four cooling fans were utilised and it was consumed more power
4	Solar Street Light Installation	0.000256	0	0.25	There was no solar energy harvesting
5	IE3/IE4 Energy Efficient Motor Installation	0.0153	0	1.4	Lower Efficiency motor consumed more power
6	Hot Condensate Pump 30M^3 VFD installation	0.01836	0	0.4	11KW motor was in DOL mode and it consumed more power
7	Solar water heater for Ponni emergency quarters (D-Type)	0.035	0	0.225	Electric geyser was utilised and it consumed more power

2500M2 Falling Flim Evaporator Installation

Low temperature evaporator for thickening of caustic soda



ENERGY SAVING PROJECTS IMPLEMENTED IN LAST THREE YEARS

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)
2020-21	8	2.036	0.36	0	0.717	34
2021-22	7	4.655	0.153	0	0.8	70
2022-23	6	10.537	0.055	4667	6.66	19

LIST OF ENCON PROJECTS IMPLEMENTED - 2020-21

S.No	Name of Energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback (Months)
1	VFD -55KW Installed for treated juice pump	0.23	0.037	0	0.195	14
2	VFD-11 KW installed for syrup pump	0.108	0.041	0	0.216	6
3	VFD-7.5 KW installed for clear syrup pump	0.038	0.01	0	0.053	9
4	VFD -55KW Installed for Air Blower	0.254	0.011	0	0.058	53
5	VFD installed for cane unloader-1 - Four Numbers (30KW-2 Nos, 15KW-01 No,7.5KW-01 No)	0.731	0.006	0	0.031	283
6	Inverter Type Air conditioner -10 Numbers	0.55	0.007	0	0.034	194
7	Alternator Coolers control valves Automation	0.125	0.019	0	0.1	15
8	Return Bagasse Conveyor Motor Power Reduction from 45KW to 15KW	0	0.005	0	0.03	Spare one
	Total	2.036	0.36	0	0.717	34

LIST OF ENCON PROJECTS IMPLEMENTED - 2021-22

S.No	Name of Energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback (Months)
1	VFD installed for mill juice pumps - 6 Nos 7.5KW-3 Nos, 11KW-1 No & 15KW-2 Nos	0.794	0.006	0	0.033	289
2	VFD provided for SSRE-1,2,3&5th rake elevator(11KW-3 Nos & 18.5KW-1 No)	0.787	0.008	0	0.039	242
3	4th Mill Motor power rating reduction from 750KW to 550KW -01 no (120Kwh)	2	0.03	0	0.157	153
4	VFD - 55KW Installed for Air Compressor-01 no (100Kwh)	0.36	0.025	0	0.131	33
5	In 1st Godown area we implemented LED lamp (145W-12Nos & 72W-6Nos) (24Kwh)	0.114	0.06	0	0.31	44
6	VFD provided to RO plant High pressure pumps and CPU DG transfer pumps	0.3	0.012	0	0.065	55
7	VFD provided to Bagasse conveyor BC-2 & BC-3	0.3	0.012	0	0.065	55
		4.655	0.153	0	0.8	70

LIST OF ENCON PROJECTS IMPLEMENTED - 2022-23

S.No	Name of Energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback (Months)
1	Plate type Heat Exchanger for raw juice heating	4.2	0	4628.0	6.31	8
2	Mechanical Vapour Re-compression system	3.5	0	39.6	0.05	778
3	VFD installation to Wet Scrubber system pumps (7.5KW-2No & 3.7KW - 2No)	0.5	0.007	0	0.04	52
4	Energy Efficient Air Compresser	1.64	0.022	0	0.12	164
5	IE3/IE4 Energy Efficient Motor	0.097	0.004	0	0.024	49
6	Sealing Air Automation and Coal Spreader air flow control	0.6	0.022	0	0.12	60
		10.537	0.055	4667.6	6.66	19

INNOVATIVE PROJECTS IMPLEMENTED

S.No	Name of the Project	Year of implementation	Annual Savings (Rs. in Lakhs)	Investment (Rs. In Lakhs)
1.	Automation of cooling water to Alternator	2021	1.32	1.2
2.	Automation system for fuel silo doors	2020	0.65	3

INNOVATIVE PROJECTS IMPLEMENTED

Automation of cooling water to Alternator

- Factory has a 19MW synchronous generator with water cooling system.
- Four water coolers handle 40m³/hr each installed for the above.
- As per design - 3 Numbers of water cooler are sufficient for 100% generation.
- All Coolers kept fully open regardless of power generation by operators on fear.
- To overcome the above, we planned to implement the automation.
- Two pneumatic control valves with bypass system to act according to the winding temperature.
- Replicability : Two nearer sugar factories had visited our factory for implementing this project.
- Achieved energy savings in cooling water pumping system: 83 kWh/day.

INNOVATIVE PROJECTS IMPLEMENTED

Automation system for Fuel Silo Doors

Root Cause: Fuel compression during fuel silo levelling with different fuel sizes.

- **Our boiler originally designed to use bagasse, bagasse pith, and coal as fuels.**
- **We have trailed 150 fuels ,out of which presently we are using 14 fuels only.**
- **Problem : Failure of fuel feeders while using other than designed fuels.**
- **Impact: More unburnt fuel from boiler impacting boiler efficiency which leads to high Specific steam consumption In turbine.**
- **Innovation: We improved the system by installing motorised silo doors with level sensors. The automation logic was developed based on silo level to avoid the fuel compression.**

INNOVATIVE PROJECTS IMPLEMENTED

Automation system for Silo Doors

Ponni demonstrated operational excellence by implementing the following changes:

- Replaced manual fuel feeding doors with electrically actuated ones.
- Silos equipped with level sensors for monitoring fuel levels.
- Silo level feedback controls actuation of fuel feeding doors.
- Front-end fuel conveyor speed adjusted based on silo level to maintain balance.
- Multiple fuel feeding points on-site, all controlled through automation.

Benefits achieved:

- Constant main steam pressure because of even fuel feeding.
- Reduced wear and tear of conveying and feeding equipment.
- Before the average pressure of the boiler was 99 kg/cm2 against 112kg/cm2 now we have achieved 108kg/cm2
- We have brought down the specific steam consumption from 5.2T/MW to 5.0T/MW

Replicability

- This solution will be very useful for those who are using biofuels of different varieties.

UTILISATION OF RENEWABLE ENERGY SOURCES

S.No	Title of Project	Year	Annual Electrical Saving (kWh)	Electrical saving (kw)	Annual Electrical Cost Saving (Rs million)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Payback (Months)	Comments
1.	Solar based Stand alone LED lights	2021-22	1000	0.35	0.005	0.005	0.1	240	There was no solar energy harvesting installations

GHG INVENTORISATION

SCOPE –I EMISSION 2022-2023				
Fuel	MT	CO_2 e MT	Sugar Prod MT	CO_2 e MT / Ton of Prod
Coal	10984	16651	91326	2.96
Biofuel	253388	253388		
		270039		
SCOPE - II	85.6 MW	61		0.00067
	Total Emission		Scope-1 + Scope-2	2.96

EMS SYSTEMS

- Installed Energy Monitoring system on March 2021
- Hook-up of 70 Energy meters
- Implementation of DCS for Sugar Plant

Learning from CII or other award programs

- *Conducting Periodical Energy audits once in two years.*
- *Setting Energy Goals & targets through management systems for reducing energy consumption, increasing energy efficiency.*
- *Identify Best Practices: Following good practices and strategies of awarded companies in our organization.*
- *Networking: Attend award events to network with industry leaders and experts for knowledge sharing and collaborations.*
- *Adaptation to Trends: Get informed about industry trends through award categories that reflect emerging priorities.*
- *Continuous Improvement: Analyse award-winning companies' commitment to continuous improvement to foster a similar culture in our organization.*

AWARDS AND RECOGNITIONS

Year	Awards won	Awarded by
2016-17	**Best performing co-generation award** **Platinum award**	The South Indian sugarcane & sugar technologists association
2018-19	**Best performing co-generation award** **Platinum award**	The South Indian sugarcane & sugar technologists association
2020-21	**Best co-generation award** **Platinum award**	The South Indian sugarcane & sugar technologists association
2021-22	**Best co-generation award(Private sugar factory Category)** **Rank 2**	Cogeneration Association of India
2022-23	**National Energy Conservation Award -2022** **1st prize (Sugar Sector)**	Government of India Ministry of power

NATIONAL ENERGY CONSERVATION AWARD -2022

Ponni Sugars (Erode) Ltd won 1st prize (Sugar Sector) 14.12.2022

THANK YOU

Mr.A.Ravikumar GM-Engg
ar@ponnisugars.com
9345940280