E.I.D PARRY (INDIA) LIMITED

NELLIKUPPAM,CUDDALORE - TAMILNADU

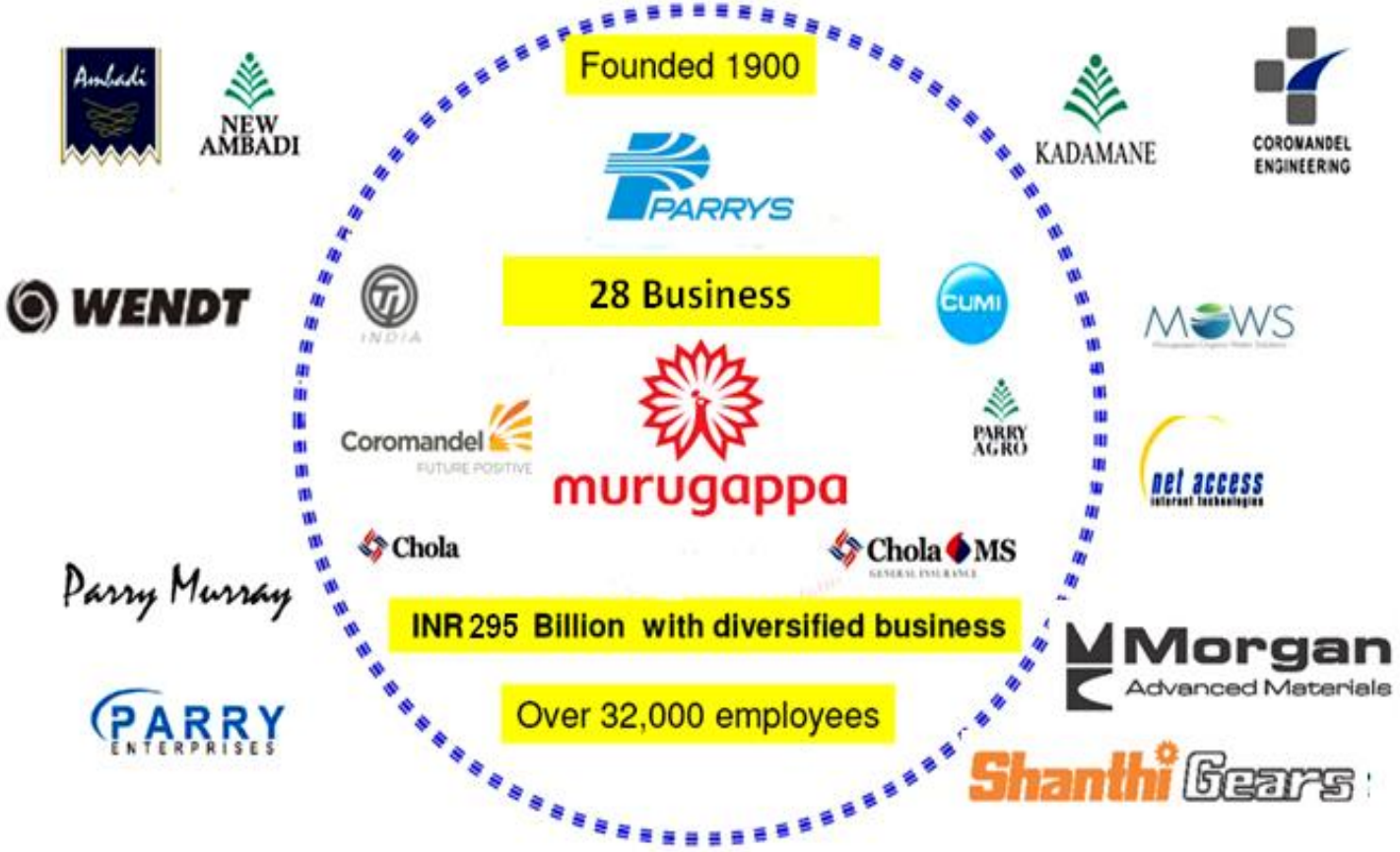
VISION: *"Enriching & Energizing lives by creating Value added products from AGRICULTURE (Sugar)"*

TEAM MEMBERS

Rajendran. E	RajendranE@parry.murugappa.com	9994206420
Senthilvelan. S	Senthilvelans@parry.murugappa.com	9790624758
Bhagyaraj. K	Bhagyarajk@parry.murugappa.com	9486836123

ABOUT OUR GROUP

32,000 Employees | 28 Businesses | One Group



- **EID Parry is the flagship company of the Murugappa Group**
- **228 years old!!**
- **Pioneers in:**
  - **Sugar from 1842.**
  - **Distillery from 1848.**
  - **Sanitary ware from 1906.**
  - **Fertilizers from 1906.**
  - **Sugar Based confectionery from 1914.**
  - **Biogas and Bio earth 1987.**
  - **Bio-pesticides from 1995.**
  - **Co-generation Power for GRID from 1997.**
  - **Algal Neutraceuticals from 1997**
  - **Branded sugar from 2004.**

ABOUT OUR FACTORY

- Our Nellikuppam unit was set-up the country's first sugar plant established in year – 1842 & Distillery operation started on year – 1848.

- A fully integrated complex with Sugar, Refinery, Co-Gen, Distillery, Fertilizer plant & CO2 Production.

First cane sugar factory in world to practise TPM

SUGAR
7500 TCD

CO-GEN
24.5 MWH

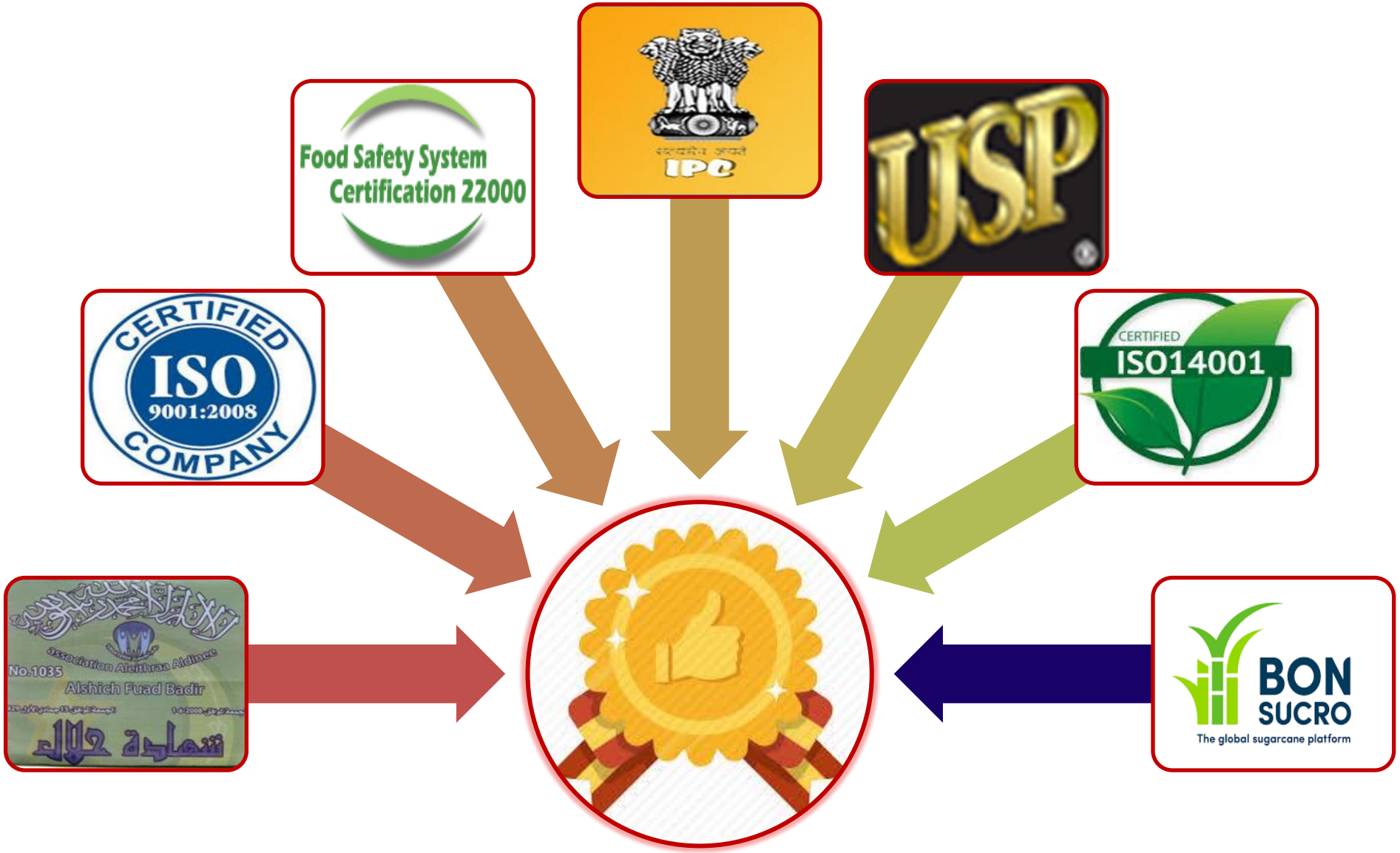
FERTILIZER PLANT
45 TPD

REFINERY
190 TPD

DISTILLERY
90 KLPD

CO2 PLANT
30 TPD

OUR CERTIFICATIONS ARE UNIQUE IN INDIA



We are the first Indian sugar company having Pharma Licenses & Quality

RECAP OF CONVENTIONAL SYSTEM
SUGAR & DISTILLERY


SUGAR CANE


MILLING SECTION


JUICE CLARIFICATION


FILTERATION


EVAPORATION


SYRUP CLARIFICATION


CRYSTALLIZATION


CENTRIFUGATION


GRADING

FINAL PRODUCT

BY-PRODUCTS


BAGASSES


PRESSMUD


COGEN-POWER


BACK TO SOIL


MOLASSES


FERMENTATION


DISTILLATION


ALCOHOL

POTASH RICH FERTILIZER

BMSW EVAPORATOR-II & ATFD


INTEGREATED EVAPORATOR


BMSW RO PLANT


BIO-DIGESTER


BIO-GAS BOILER

FOOD, BEVERAGES AND CONFECTIONARY CUSTOMERS

PHARMA CUSTOMERS

PARRYS

murugappa

MEDREICH

Abbott
A Promise for Life

medopharm
We Value... Life

Flamingo
Pharmaceuticals Ltd.

gsk GlaxoSmithKline

zim
Zeal & Innovation in Medicine

aspen
HOLDINGS

Cipla
Caring for life

oceanpharma

SKAN
Research Lab (P) Ltd.

ALUS
PHARMACEUTICALS

KEMWELL

Zim

DR. REDDY'S

ipca
A dose of life

Orchid
HEALTHCARE

MERCK

AUROBINDO

Nosch

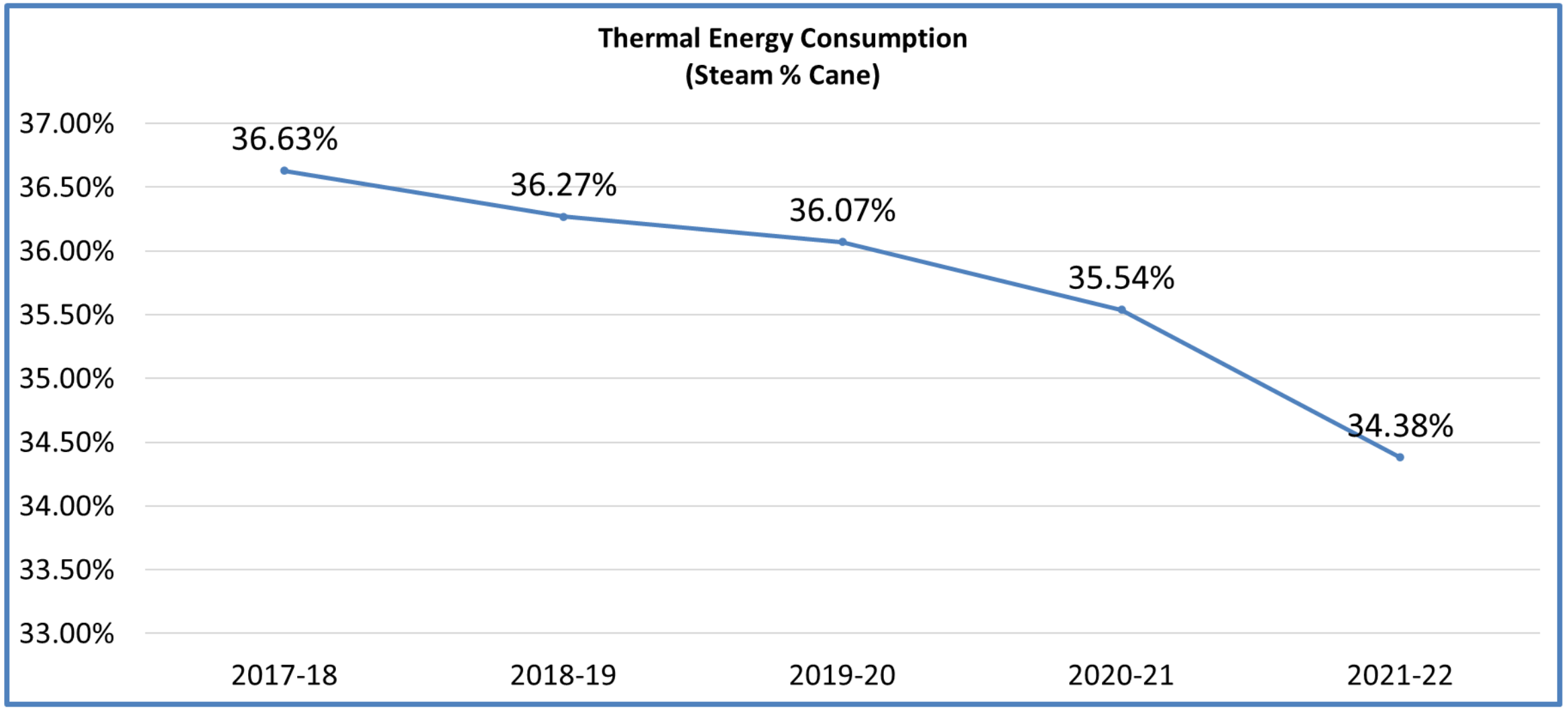
LUPIN

HETERO
Research is Development

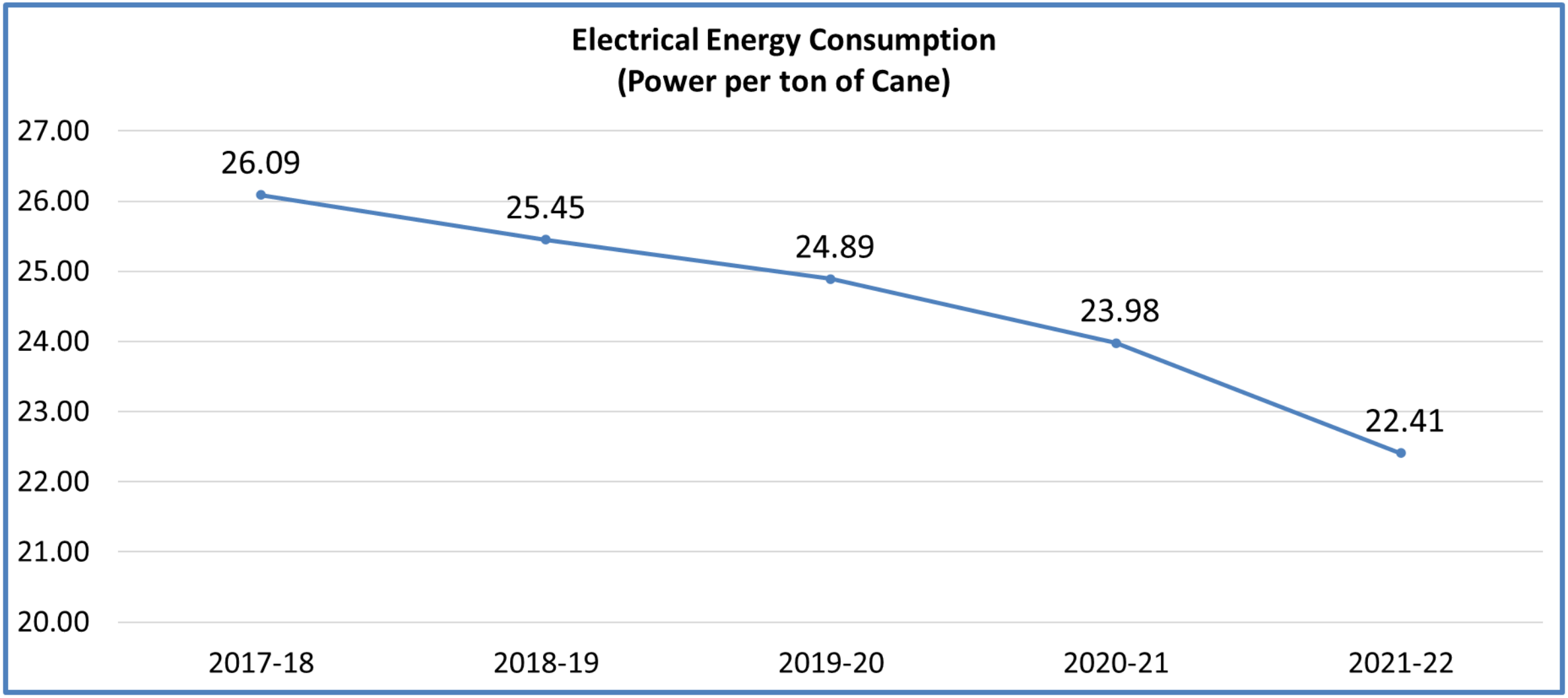
MICRO LABS

CII
Confederation of Indian Industry

REDUCTION IN THERMAL ENERGY CONSUMPTION (STEAM % CANE)



REDUCTION IN ELECTRICAL ENERGY CONSUMPTION (KWH / MT OF CANE)



COMPARISON WITH GLOBAL BENCHMARKS

Parameters	National Bench Mark	Global Bench Mark	EID – Nellikuppam Achievement
Specific Thermal Energy Consumption	38-40 %	38 % As per ISSCT proceedings 2005	34.38 %
Specific Electrical Energy consumption	28 kWh / ton of cane	27-28 kWh/ton of cane As per NFCSF	22.41 kWh / ton of cane

A Whopping reduction in Thermal Energy

Steam % Cane prior to Implementation	36.27 %
Steam % Cane post to Implementation	34.38%

GOOD

- **A Saving of 1.89 % of Thermal energy**

In terms of money …..

- **A saving of Rs.230.34 Lakhs**

A Whopping reduction in Electrical Energy/ MT of Cane

Power/MT of cane prior to Implementation	25.45 KWH
Power/MT of Cane post to Implementation	22.41 KWH

GOOD

- **A Saving of 3.04 Units/MT of cane**

In terms of money …..

- **A saving of Rs. 107.50 Lakhs**

ENERGY CONSERVATION ACTIVITIES – FY 2019 and 2021

No	Year	Title of Project	Annual energy Saving in Lakhs
1	2019-20	Installed just adequate capacity high efficiency Cooling water Pump at cogen	22.20
2	2019-20	Operated plant with flow control mode for the 2.5 ATA steam to sugar.	36.00
3	2019-20	Addition of 2.5 ATA pipe from Cogen. to Sugar - Reduced the Pressure Drop in the steam pipe line from Cogen to Sugar plant by 0. 3 kg / cm2 and in one stroke the evaporator capacity got upgraded to handle 310 TPH of juice flow from 280 TPH.	31.70
4	2019-20	VFD for Super Heater Wash Water System	11.30
5	2019-20	Planetary Gear Box for Crystallizers	44.00
6	2019-20	Installation Bio gas boiler	273.00
7	2019-20	B & C Melter lifting for gravity flow	5.29
8	2019-20	Replace the existing Mud pump and Motor	1.38
9	2019-20	Cane kicker drive replacement	1.16
10	2020-21	Planetary Gear Box for Crystallizers	4.50
11	2020-21	VFD's For of OFA Fan, Compressor	23.00

ENERGY CONSERVATION ACTIVITIES – FY 2021-22

No	Year	Title of Project	Annual energy Saving in Lakhs
1	2021-22	Power factor improvement at Refinery MCC	3.70
2	2021-22	Vapour demand for pan boiling reduced by raising the melt brix	3.00
3	2021-22	Sugar Recirculation reduced in batch centrifugal by introduction of air cutting in plough scrapper	95.37
4	2021-22	First vapour for transient heater instead of 8 Ata	14.00
5	2021-22	Syrup brix improvement	92.31
6	2021-22	B & C Melter lifting for gravity flow	9.50
7	2021-22	Fibrizer Anvil Plate wrap angle reduction-Power saving	55.50
8	2021-22	Isolate one primary juice pump	0.70
9	2021-22	Eliminate one motor in head on cutter	6.50
10	2021-22	VFD in Cooling tower Fan	2.29

Covered in case study - 3

Covered in case study - 2

Covered in case study - 1

ENCON PROJECTS FOR NEXT 3 YEARS

1. Bagasse dryer for reducing the moisture % Bagasse
2. Incineration boiler for distillery of capacity 45 TPH.
3. Condenser modification in evaporator and pan condenser
4. Sugar Injection water Treatment– Project.
5. Furnace oil from distillery effluent (Spent wash)

Energy Saving activity carried out in Fibrizer

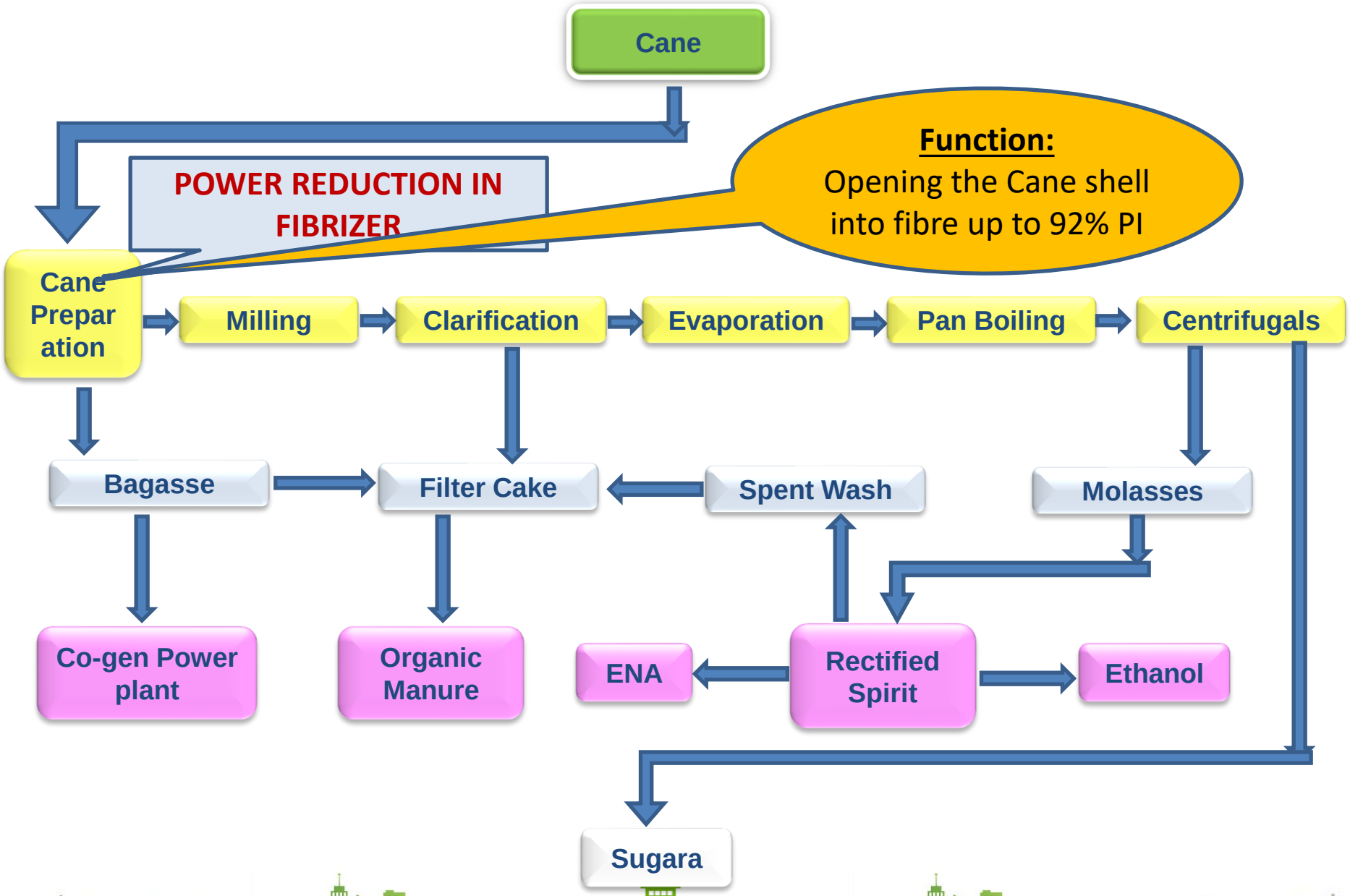
Objective : For Electrical energy saving

- Existing anvil plate having wrap angle 170 degree is reduced to 85 degree

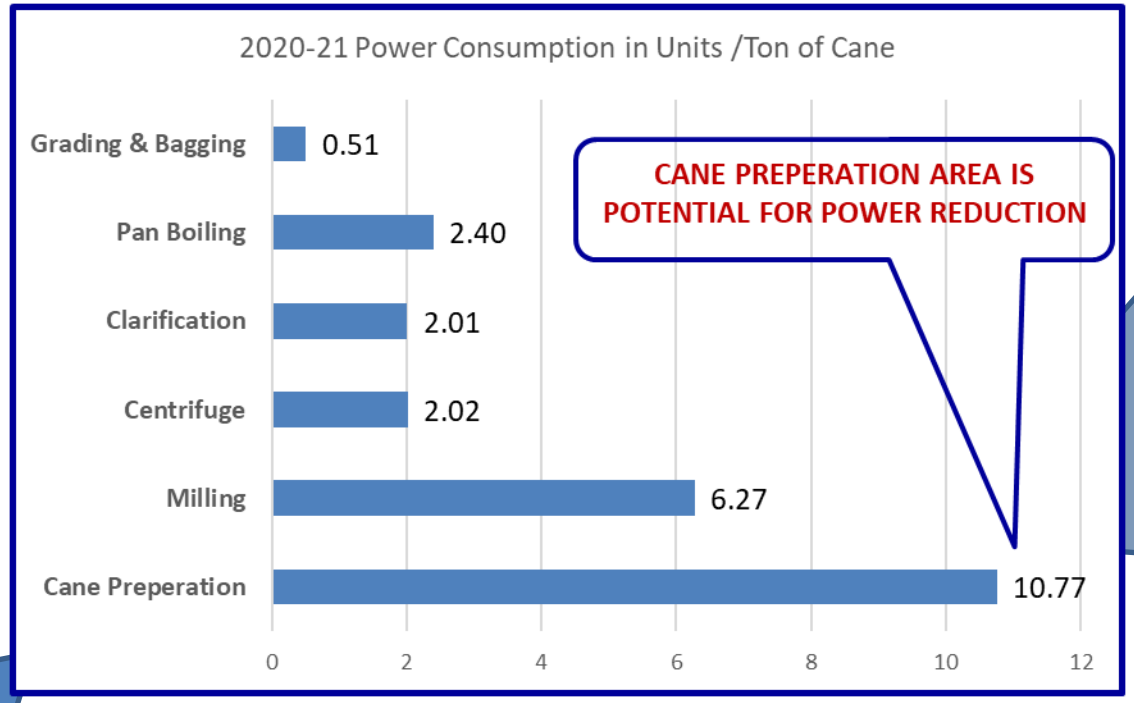
- Reduced the number of hits by the Hammer tips on the anvil plate.

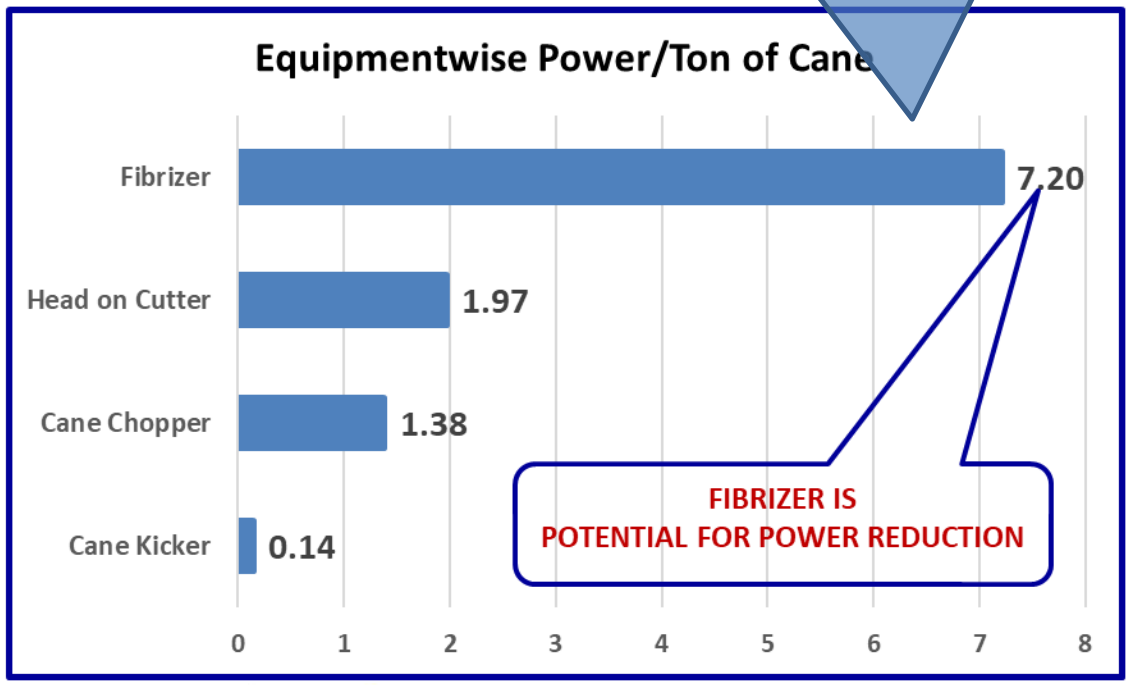
Tangible benefits : Conserved electrical energy 1.17 KWh per ton of cane. There by saved a cost Rs. 55 lakhs/year

Process Flow Chart of Integrated Sugar Complex



Identifying the potential area for Energy Conserving





In 2020-21 Total Sugar unit consumption 23.83 KWh / Ton of cane

Identifying the root cause for high energy consumption

Problem : High power consumption

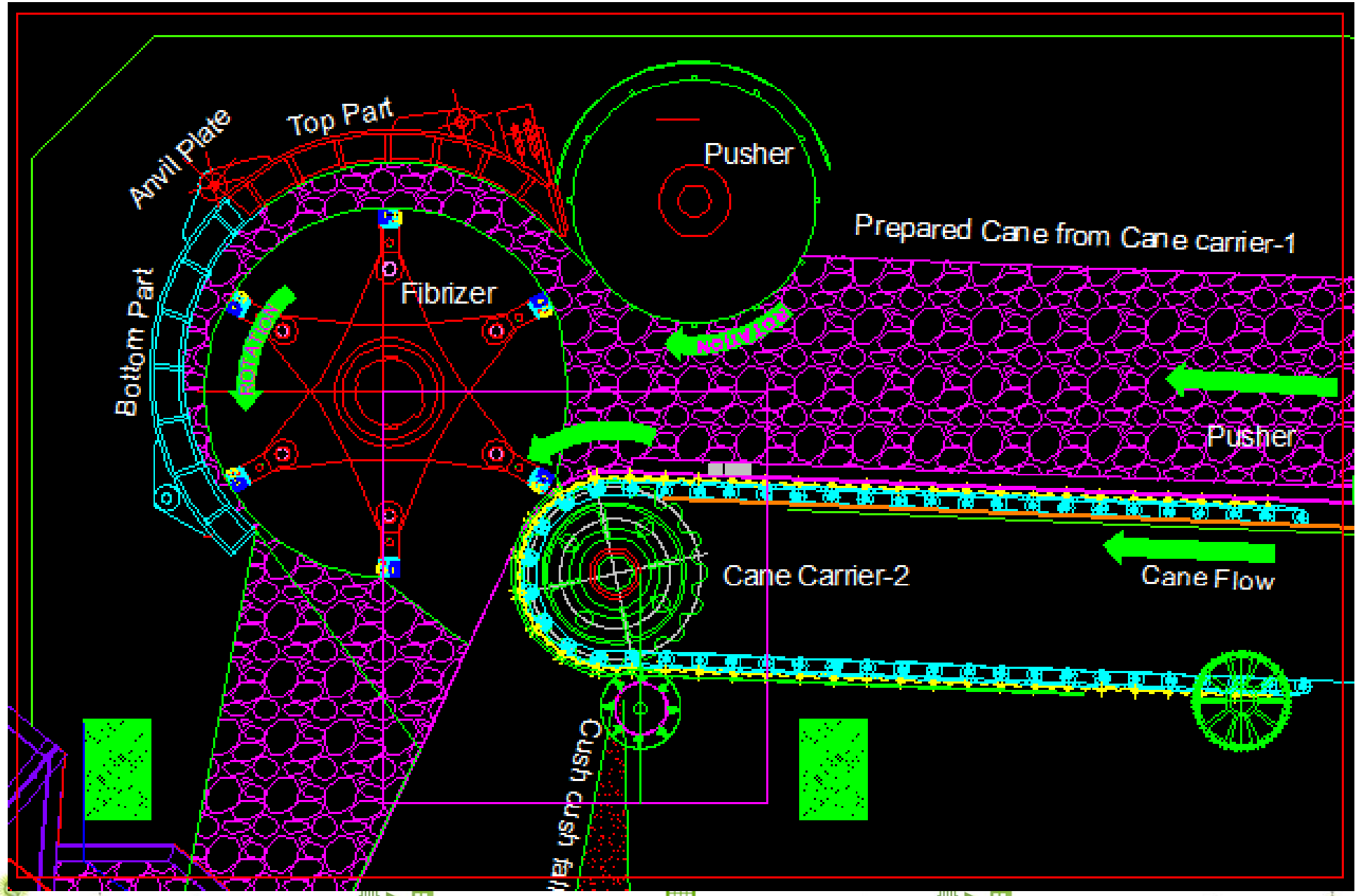
(Consuming 25% of overall sugar plant consumption-Potential for reducing power will impact more on Saving cost)

Problem Identification through 5W 1H method

What : Power consumption high
Where : Fibrizer motor operation
When : Fibrizing the prepared cane to maintain Preparatory Index (PI)
Who : Anvil plate
Which : Strike plates (16 Nos.)around 170 degree

How : More hits by the tips on Anvil plate strikes plates per rotation than requirement

Showing the Anvil Plate modification area



WHY- WHY ANALYSIS

- Why 1 : Power Consumption high in Fibrizer motors
- Why 2 : Loading of cane in-between anvil plate to hammer
- Why 3 : High contact surface in anvil plate to hammer.
- Why 4 : More strike plates around 170 degree wrap angle
- Why 5 : Weak design (OEM Recommendation)

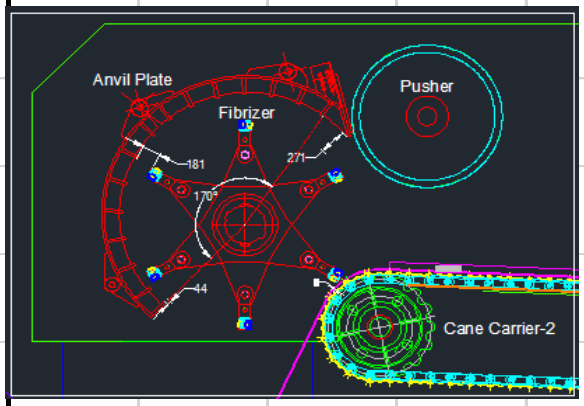
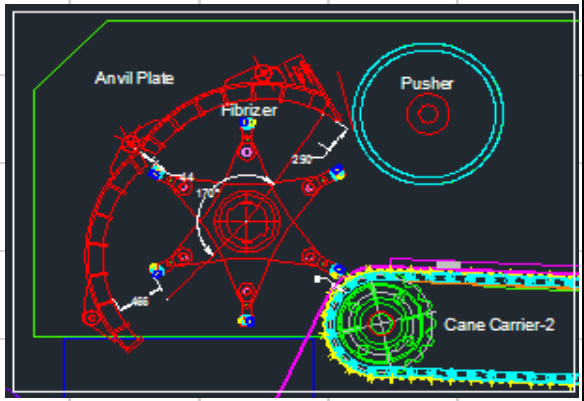
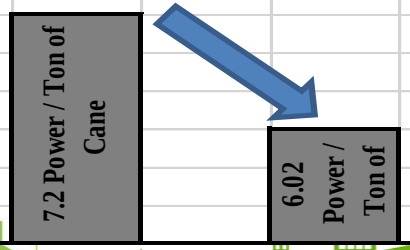
Root Cause :

- Weak design (More number of strike plates in anvil plate)

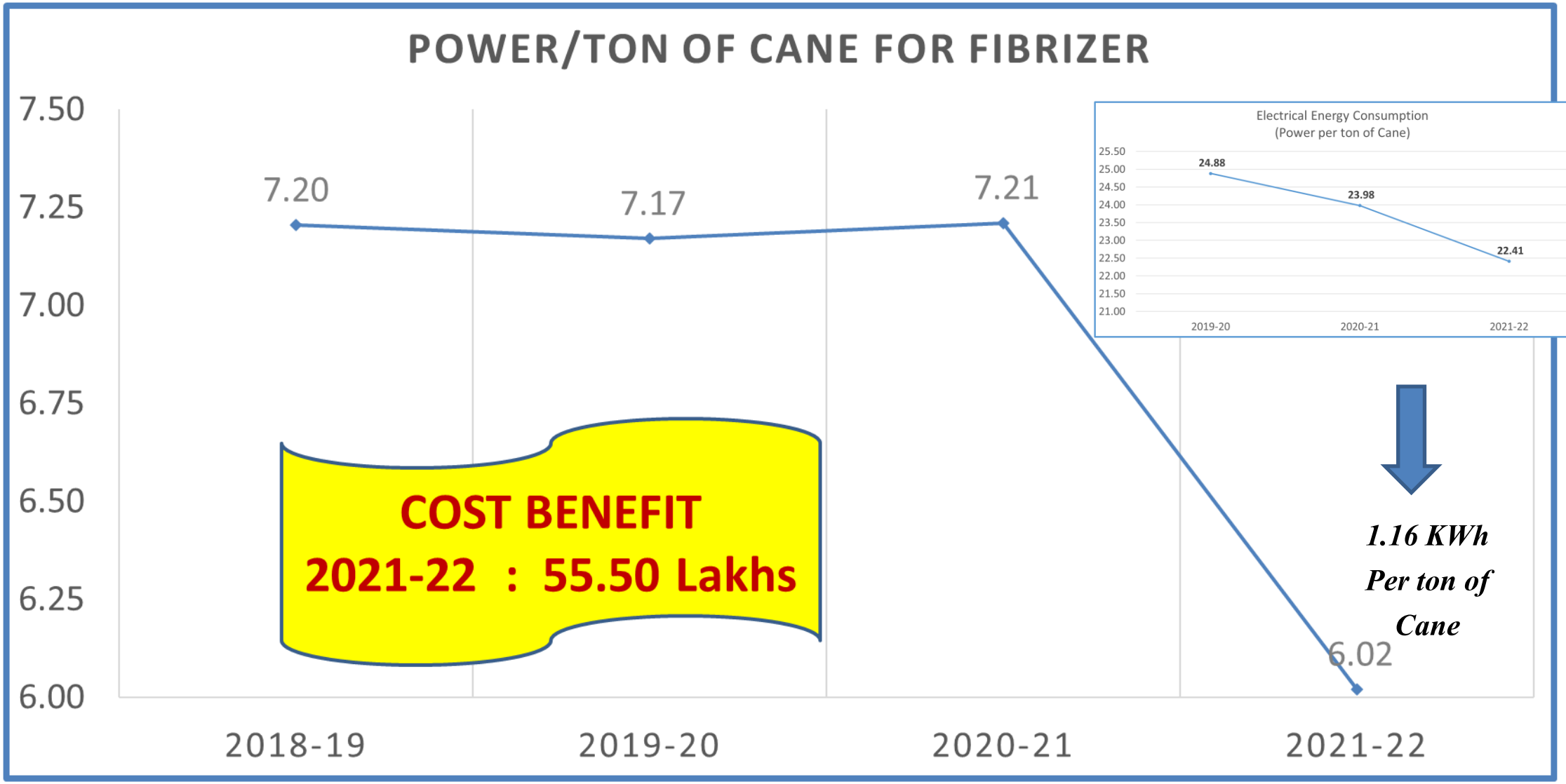
Counter measure :

- *Reduce wrap angle (No of strike plates)*

Kaizen Sheet

EIDP/NKM/TPM/F0:	KAIZEN DATA SHEET									NAME	: Rajendran.E
THEME :	PILLAR	JH	KK	PM	QM	OTPM	SHE	EST	DM	MACHINE	: Fibrizer
To Reduce Power Consumption in Fibrizer	LOSS		✓	✓					✓	BENCH MARK	: 7.2 PTOC
	P	**Q**	**C**	**D**	**S**	**M**				TARGET	: 6.2 PTOC
PROBLEM / PRESENT STATUS	**KAIZEN IDEA :**									START DATE	: 02.05.2021
1.Power cionsumption high	REDUCE THE WRAP ANGLE OF ANVIL PLATE ASSEMBLY IN FIBRIZER									END DATE	: 20.05.2021
2.Reduced tool life										**MEMBERS :**	
3.Maintennace cost high	**COUNTER MEASURE :**									1.Kesavan.K.E	
	REDUCE THE NUMBER OF STRIKE PLATE IN ANVIL PLATE									2.Rajendran.E	
										3. Manikandan.P	
ANALYSIS	BEFORE :				AFTER:					4.Palanivel.G	
1. Power Consumption high in Fibrizer motors										5.Gurunathan.J	
2. Loading of cane in-between anvil plate to hammer										**BENEFITS :**	
3. High contact surface in anvil plate to hammer										1.Energy Saving of 55.50 Lakhs in 2021-22	
4. More strike plates around 170 degree wrap angle										2.Reduced the Maintenance Cost	
5. Weak design (OEM Recommendation)										3.Tool Life increased	
ROOT CAUSE :	RESULT :									**HD PLAN :**	
Weak Design										This project may horizontally displayed to our group industry	

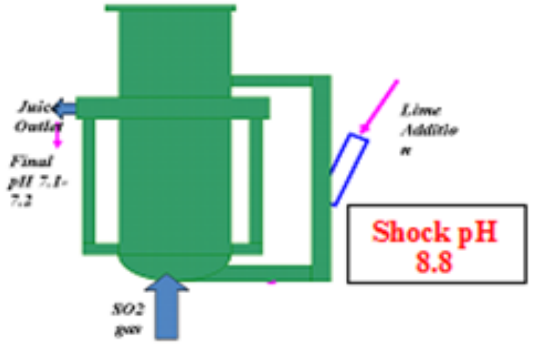
RESULT


POWER/TON OF CANE FOR FIBRIZER
7.50
7.25
7.00
6.75
6.50
6.25
6.00
7.20
7.17
7.21
6.02
2018-19
2019-20
2020-21
2021-22
COST BENEFIT
2021-22 : 55.50 Lakhs
Electrical Energy Consumption
(Power per ton of Cane)
25.50
25.00
24.50
24.00
23.50
23.00
22.50
22.00
21.50
21.00
24.88
23.98
22.41
2019-20
2020-21
2021-22
1.16 KWh
Per ton of
Cane

Case study :2 Increasing Rate of evaporation by reducing Shock pH

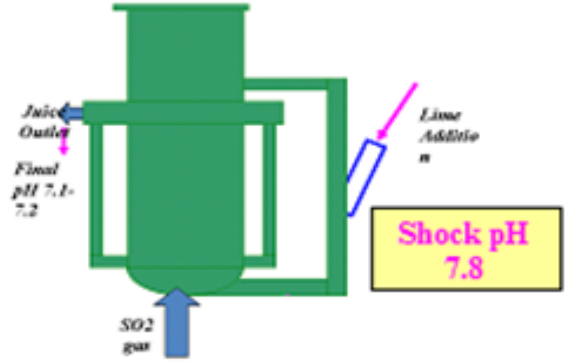
Increasing Rate of evaporation by reducing Shock pH

Previous shock pH 8.8



- Due to High lime addition scaling in Evaporator is high .
- Rate evaporation is Poor
- Evaporator outlet Syrup Brix not increased more than 56
- Due to low syrup brix Vapour demand in pan is high which requires more steam demand and increases steam% cane

Modified Shock pH 7.8



- Milk of Lime addition reduced ,Evaporator scaling reduced
- Rate of evaporation increased
- Evaporator outlet brix increased from 56 to 60 without additional steam
- Vapour Demand in Pan reduced
- Steam % cane reduced to 0.99%

WHY? WHY? ANALYSIS FOR HIGHER STEAM % CANE

Steam % cane is high

Why?

2.5Ata steam consumption is high

Why?

High vapour demand in Pan

Why?

Syrup Brix low

Why?

Evaporator tube Scaling high

Why?

Addressed in 2016-17

Addressed in 2019-20

Project taken in 2021-22

Uneven juice distribution
Kaizen-1

Uneven level in the evaporator
Kaizen-2

High scaling of Calcium sulphate salt
Kaizen-3

WHY? WHY? ANALYSIS

Kaizen-1

Uneven juice distribution

Why 1 : Syrup tank level high at pan floor

Why 2 : Evaporator syrup concentration (brix) low

Why 3 : Evaporator tube scaling

Why 4 : Evaporator tube getting dry

Why 4 : Juice level low in evaporator

Why5 : No distribution coil

Why 6 : Weak Design

Kaizen-2

Uneven level in the evaporator

Why 1 : Syrup tank level high at pan floor

Why 2 : Evaporator syrup (concentration) brix low

Why 3 : Evaporator tube scaling

Why 4 : Evaporator tube getting dry

Why 5 : Evaporator body level low

Why 6 : Juice cut over valve passing

Why 7 : Wrong Selection of Valves

Kaizen-3

High scaling of Calcium sulphate salt

Why 1 : Syrup tank level high at pan floor

Why 2 : Evaporator syrup (concentration) brix low

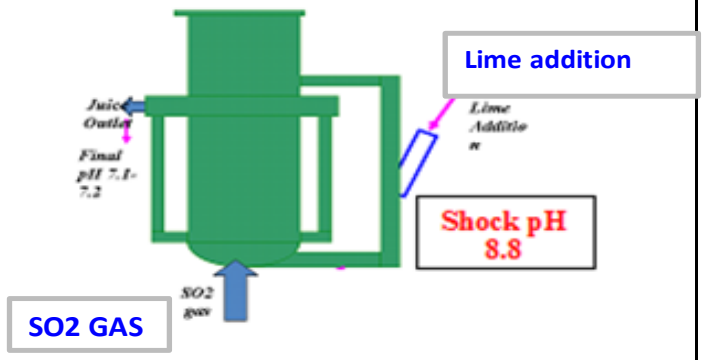
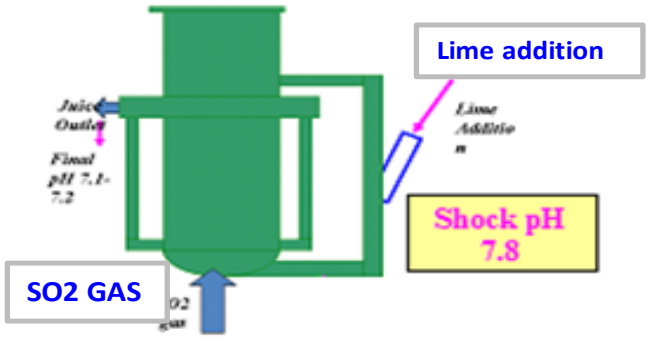
Why 3 : Evaporator tube scaling

Why 4 : High calcium scale

Why5 : Shock pH high

Why 6 : Change in Spec

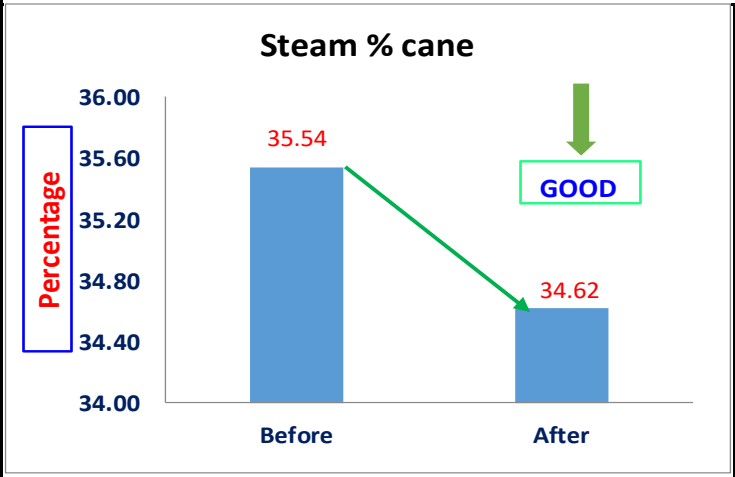
KAIZEN SHEET

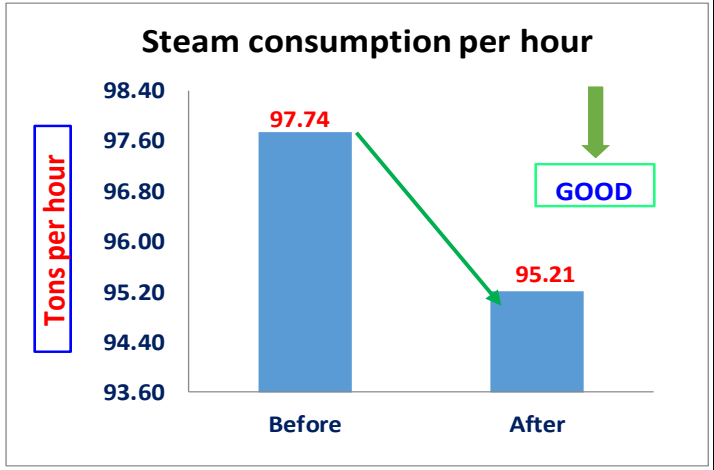
PROBLEM	BEFORE	AFTER
What : Steam consumption high **Where** : In evaporators **When** : During evaporation **Who** : Operator **Which** : Higher scaling **How** : Higher by 3.4 tons per hour		
	Problem : High steam consumption **Root cause :** High shock pH 8.8 to 9.0	**Result :** Low steam consumption **Counter measure :** Reduced shock pH to 7.8

ANALYSIS

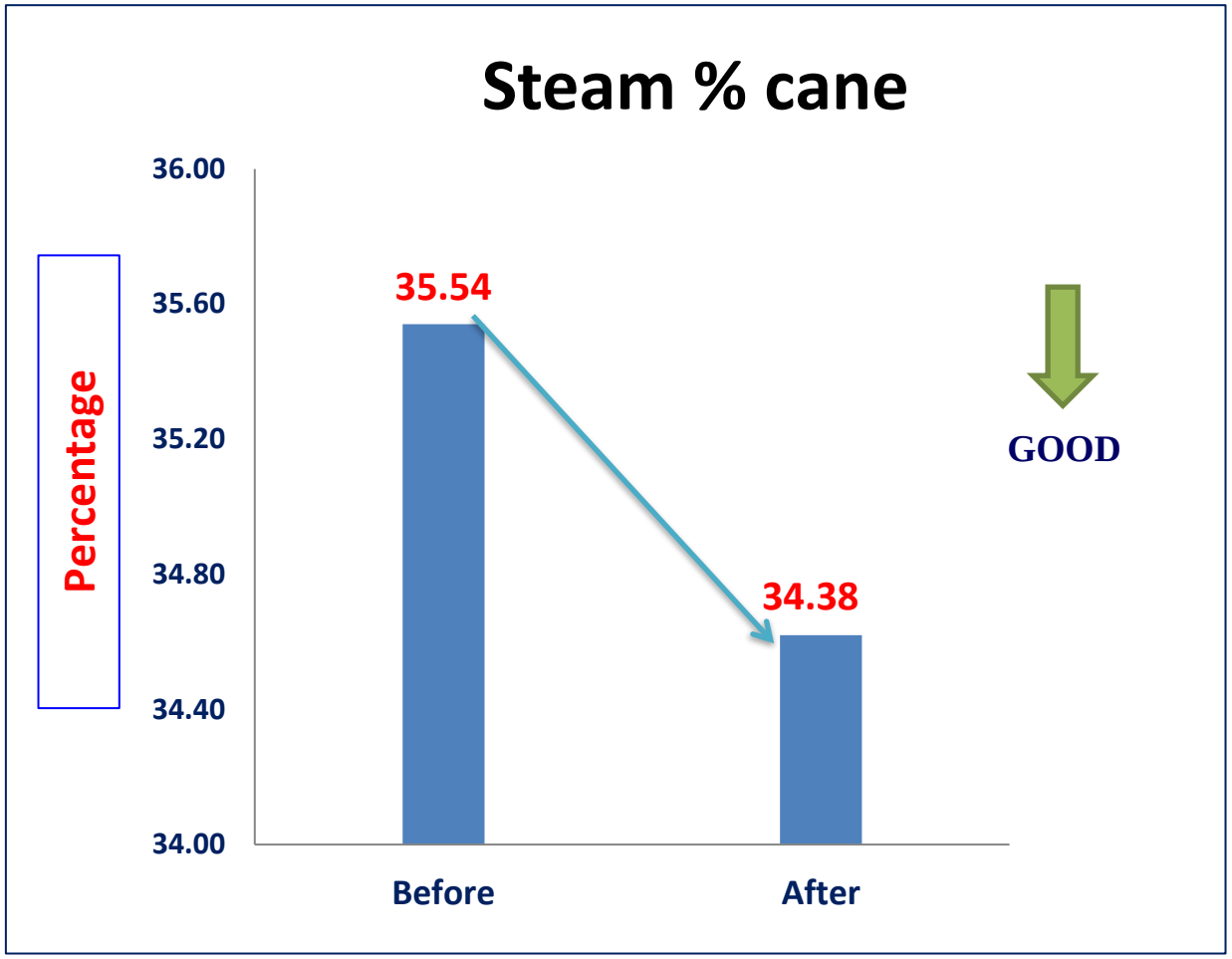
Why 1 : Steam consumtion high in evaporator
Why 2 : Rate of evaporation is low
Why 3 : Poor heat transfer in evaporator
Why 4 : Scaling rate is high in Evaporator tubes
Why 5 : High Calcium & Silica in juice
Why 6 : High Liming dose(pH 8.8 to 9.0)

RESULT





BENEFITS - PQCDSM



Cost savings

Rs. 92.31

Lakhs per year

TANGIBLE & INTANGIBLE BENEFIT

Tangible benefits:

- Reduced Steam consumption of 60.72 MT /day .
- Cost saving through steam reduction-Rs 92.31 L /Annum
- Lime consumption reduced from 0.12 % on cane to 0.09 % on cane .Thereby saved Rs 32.62 lakhs /Annum
- **Sulphur Consumption reduced from 0.035% to 0.02 % on cane .thereby saved Rs 34.35 lakhs /Annum**
- **Chemical cost per ton cane reduced to Rs 28.5 Rs/ton of cane from Rs 34 Rs /ton of cane**

Intangible benefits :

- *Crushing rate per hour increased from 300 to 325 m3/Hr.*
- *Evaporator Tube cleaning rescheduled from 4 days to 8 days*
- *Crushing rate reduced due to syrup tank full 95% addressed .*
- *Tube cleaning in evaporator becomes easy .*
- *Morality of employees improved .*

CASE STUDY – 3

Sugar Recirculation reduced in batch centrifugal by introduction of air cutting in plough scrapper

A-Pan → Crystallizer → A-Pug Mill → A-Batch Machine

Problem/present status

5W1H Method:

What : High Residual Sugar 20 to 25 Kg per Cycle.

Where : Sugar Deposited in Machine working screen.

When : After Sugar scraping operation.

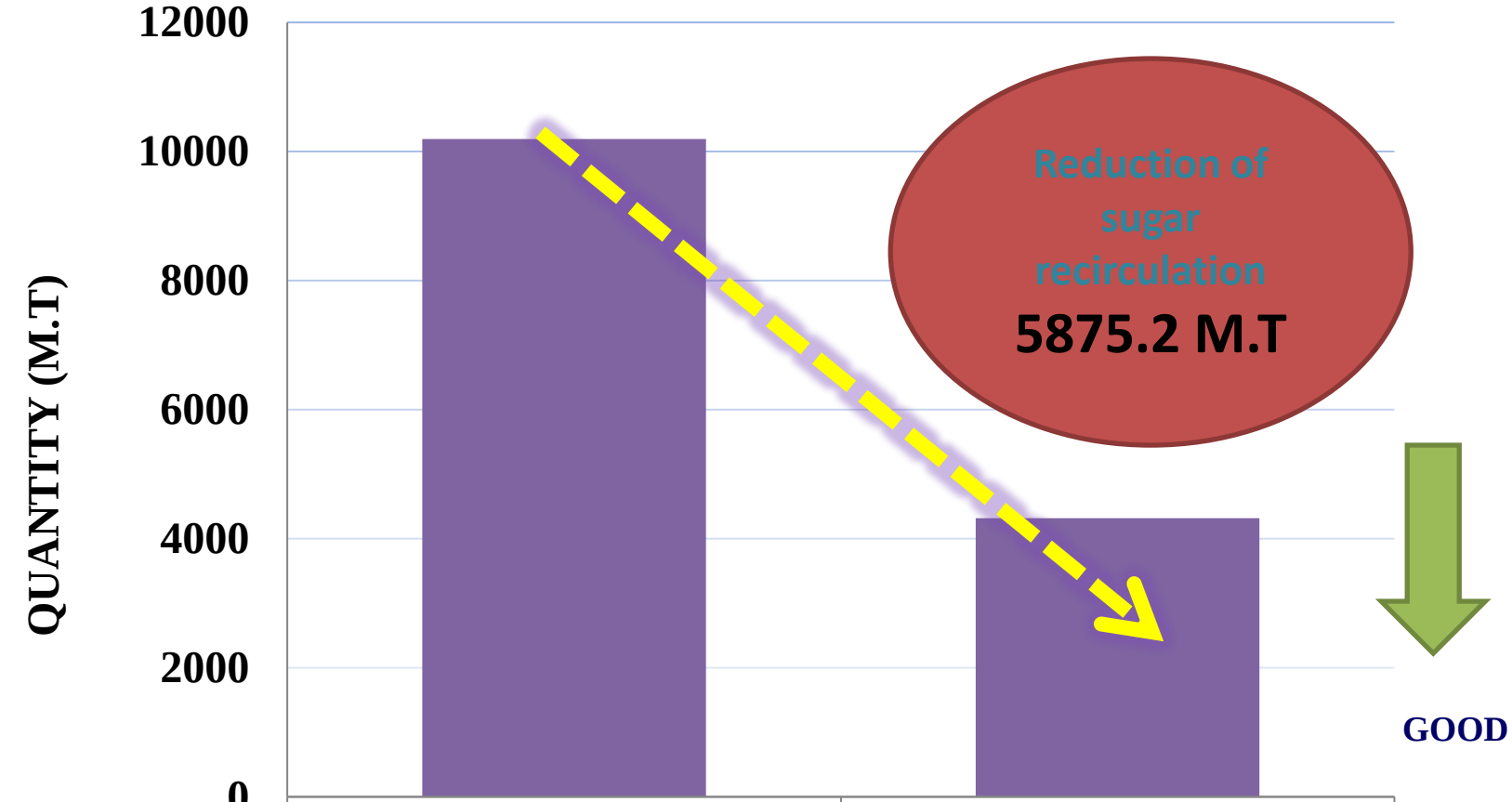
Who : Gap between the working screen and scraper is 3 to 4mm.

Which : Reducing gap less than 3mm will lead to damage the screen

How : Re-circulation of Sugar.

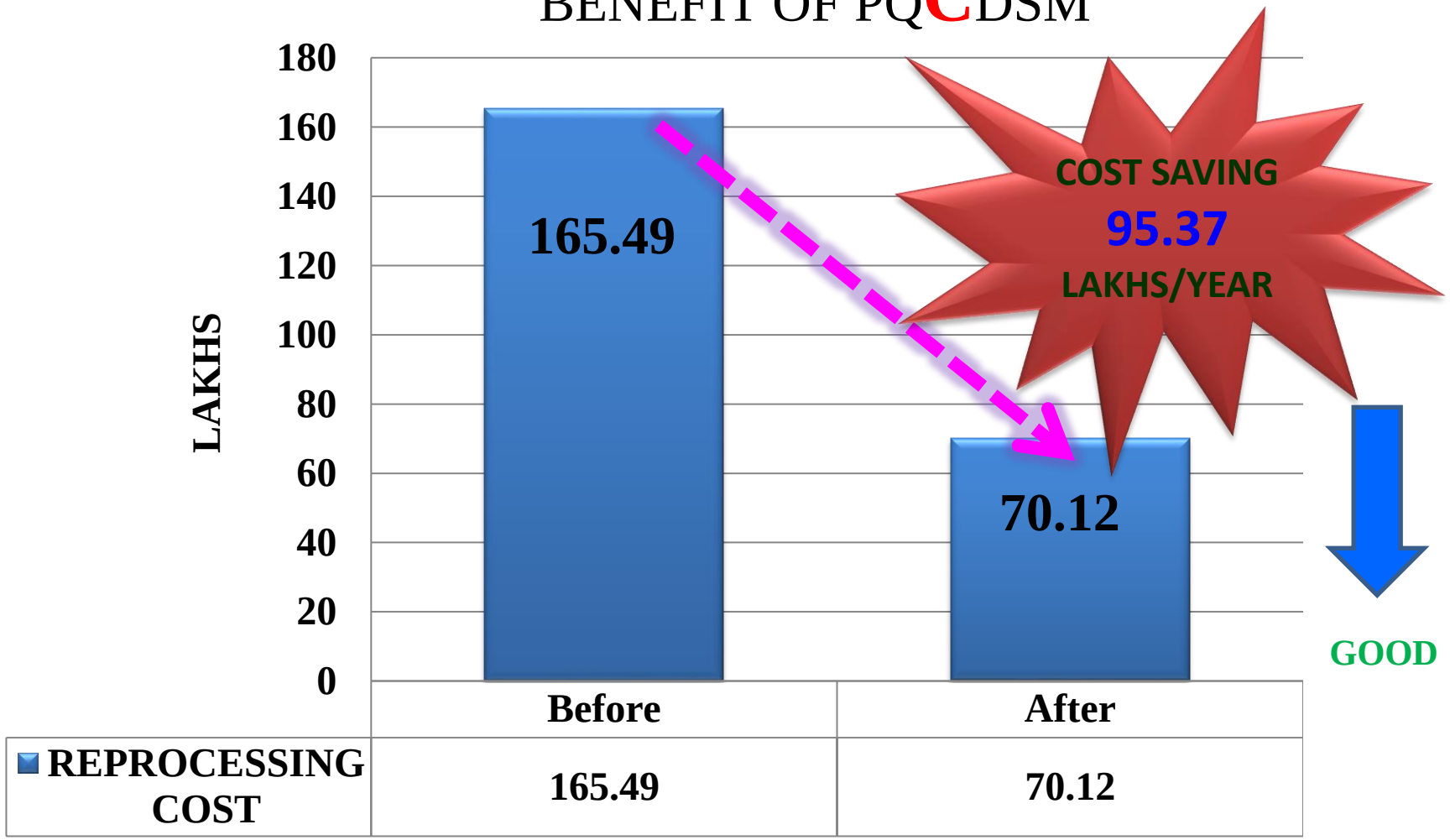
Sugar Scraping with Air cutting System

BENEFIT OF PQCDSM



	Before	After
RESIDUAL SUGAR/YEAR (M.T)	10195.2	4320

BENEFIT OF PQCDSM



Case Study-4

Condensate Polishing Unit

Moving Towards Zero liquid discharge

Sugar

Confederation of Indian Industry

Main Source of Effluent

- Excess condensate from boiling House
- Blow down and excess water from Cooling tower.
- Effluent from vessels testing and cleaning – Evaporator
- Floor washings.

What Triggered us

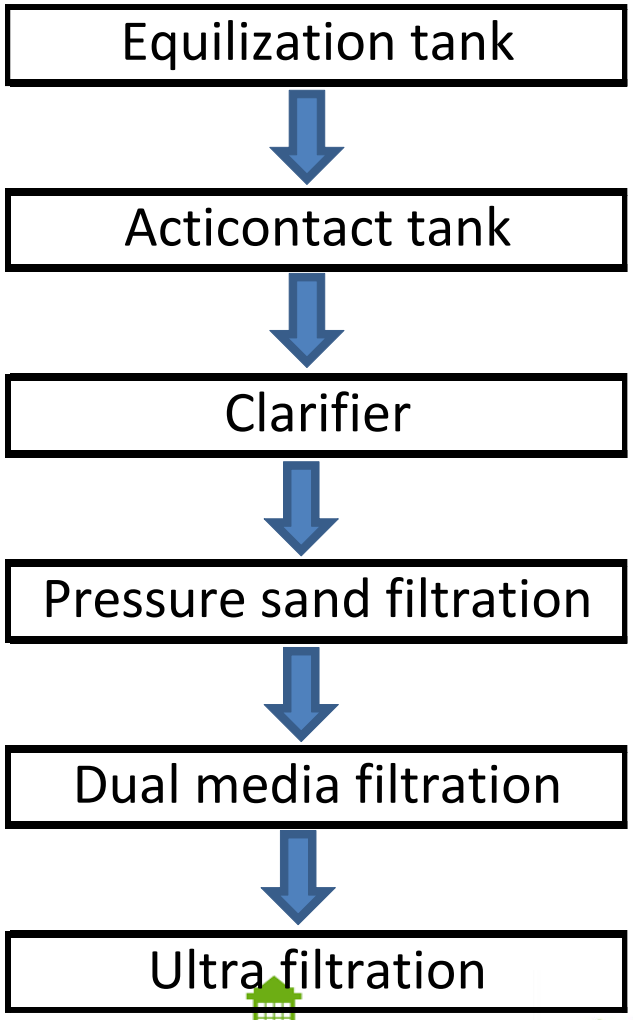
- When plant capacity scaled up to 7000 TCD enormous volume of excess condensate .
- Though sufficient lands was available continuous usage couldn’t been ensured due to nearby coastal area.
- More drawl of ground water for our other unit operations like distillery and power plant.

Actions planned and implemented

- Separation of Lean Effluent -Excess condensate from evaporator was separated
- Common condensate cooling system.
- Monitoring of cooled condensate characters.
- Treatment of excess condensate in a pilot plant to arrive at a commercial scheme.
- Based on the trials and the outputs, decided to go with a MBBR treatment scheme.

Condensate Polishing Unit

Process Flow chart

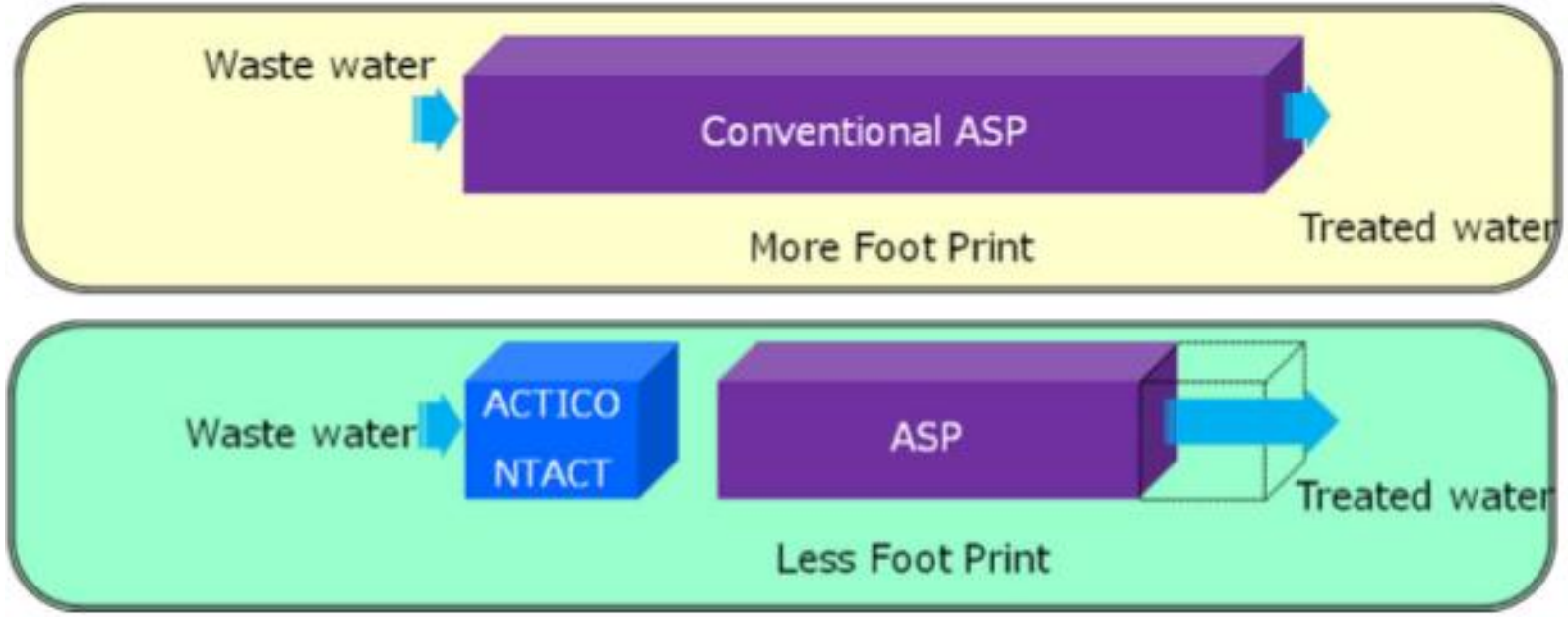


Usage of Aerobic bio film treatment system

ACTICONTACT

- ✓ ACTICONTACT is the trade name of aerobic bio film treatment unit.
- ✓ Selection of the fixed-bed or moving-bed type is based on factors such as loading rate, wastewater components and treatment objective.
- ✓ Three times higher BOD loading rate can be achieved than with conventional activated sludge systems and large settling tank is not necessary.

Advantages of ACTICONTACT design



Design Philosophy

DESIGN BASIS	
Source of Water	Condensate Water
Expected Capacity	100 m3/hr – 24 Hours
Operating hours for Secondary Treatment	24 Hr
Operating Hours for Filter & UF	22 Hr

Inlet water parameters considered

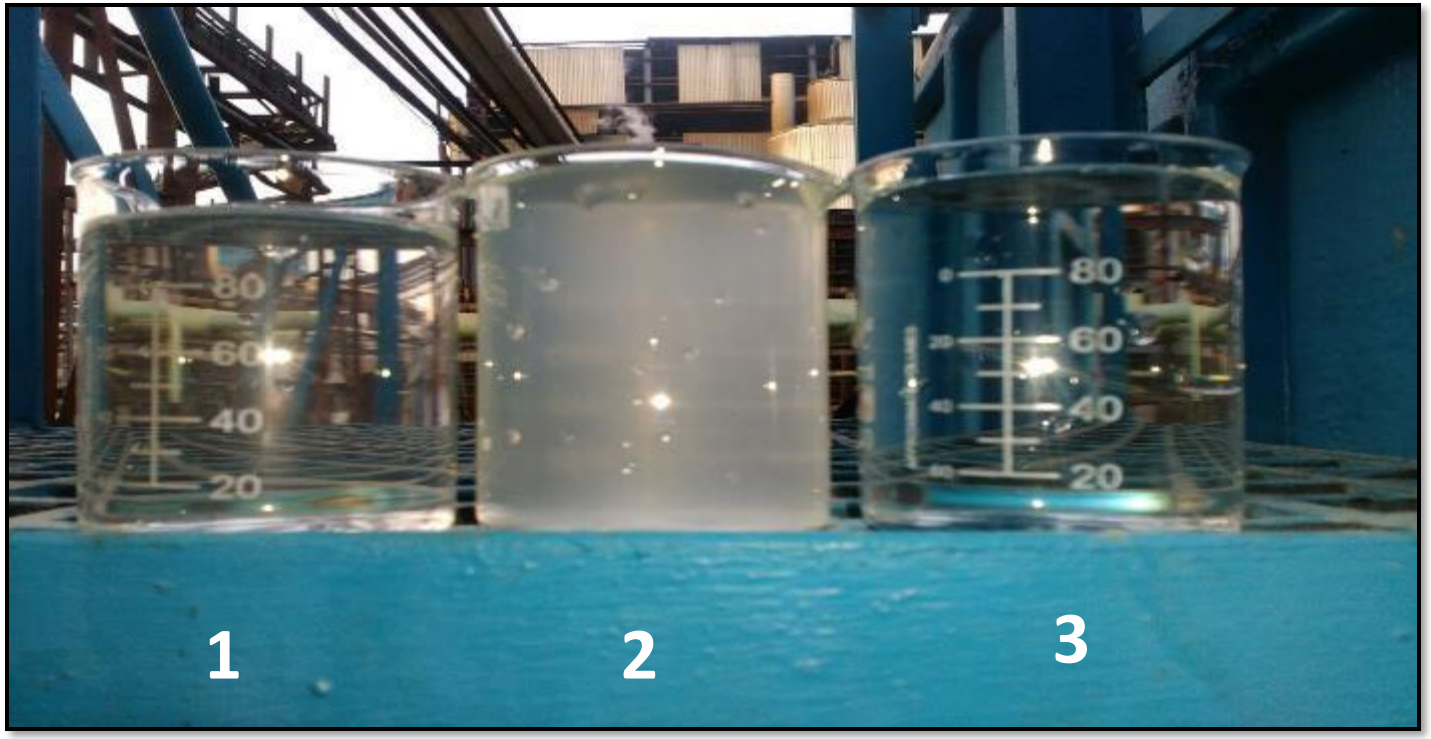
SL.NO	PARAMETERS	UNITS	DESIGN VALUE CONSIDERED
1.	pH		6.2
2.	COD	ppm	<1000
3.	BOD	ppm	<300
4.	TOC	ppm	<300
5.	Turbidity	NTU	<10
6.	TDS	ppm	600

CPU – ACTI CONTACT TANK

CLARIFIER

FILTERS

WATER SAMPLES



1. Common condensate
2. Secondary Clarifier outlet
3. UF outlet

Treated water parameters

SL. NO.	PARAMETERS	UNIT	SECONDARY CLARIFIER OUTLET	FILTERS OUTLET	UF PERMEATE
1.	pH	-	6.5- 7.5	6.5- 7.5	6.5- 7.5
2.	COD	ppm	< 250	<200	<30
3.	BOD	ppm	< 30	<20	<5
4.	Turbidity	NTU	<20	<5	<1
5.	TOC	PPM	<30	<10	<5

Usage of treated water

- ✓ Boiler feed in the place of raw water .
- ✓ Boiler cooling tower.
- ✓ Distillery use.

Benefit from Condensate Polishing Unit

- ✓ Boiler feed in the place of raw water .
- ✓ Cogeneration Plant cooling tower Make up.
- ✓ Distillery Cooling Tower make up.
- ✓ Usage of domestic purpose

Zero water Drawl

&

Zero Effluent Discharge

TANGIBLE & INTANGIBLE BENEFIT

Tangible benefits:

- Recovering Resources from sugar Condensate– Potash fertilizer
- Effluent water discharge completely eliminated.
- Water recovery and recycle thereby reducing the ground water drawl.

Intangible benefits :

- Employment opportunities
- Organizational goals are achieved
- Reduction in Green house gas emission
- Morale of the employee increased.

Lets be a Change...

Case Study-5

POTASH DERIVED FROM DISTILLERY EFFLUENT (WEALTH FROM WASTE)

RECAP OF CONVENTIONAL SYSTEM

SUGAR & DISTILLERY

SUGAR CANE

SUGAR PROCESS

SUGAR

&

MOLASSES

FERMENTATION

DISTILLATION

800 KLPD

BIO-DIGESTER

BIO-GAS BOILER

800 KLPD of BIO METHANETED SPENT WASH

Recovered Permeate & Condensate recycled back to Process

BMSW RO PLANT

400 KLPD

INTEGREATED EVAPORATOR

200 KLPD

E-Compost: Conc. BMSW of 28 Brix is mixed with Press Mud

Press Mud Sold to Cement Industries

NEED FOR THE PRACTICE

- The distillery is the second largest red category industry coming under Conventional effluent treatment system.
- Mainly the effluent treatment in all sugar attached distilleries are mixing their effluent with press mud as a bio compost and sales to cement industries.
- Now a days pollution control board restricted the effluent management system in all distilleries. They are not allow to run the plant not more than 300 days.
- In present scenario most of the distilleries are upgraded and completely disposed their effluent to incineration boiler. But again disposal of fly ash is threats to them.

PROBLEM FACED

- In this system we need to handle minimum ***200 m³*** of spent wash transportation as well as huge activities on bio composting which were causing issues on environment front & effluent disposal.

- Our plant is located in heavy rainfall area during monsoon and surrounded with residential area.

- Plant to be stopped during rainy days to avoid the environmental issues and complaints received from residential.

PRESENT SCENARIO IN DISTILLIERS

DISTILLERY

Raw spent wash to evaporator

MULTIPLE EFFECT EVAPORATOR

Concentrated spent wash incinerated to boiler

INCINERATION BOILER

Fly ash dumping to land

create the environment issues

Breakthrough with new technology

BRAIN STORMING SECTION

Had a brain storming section with our management…

- Bio composting or selling spent wash to cement Industries or direct application to farmers crop field creates environmental issues. ✗
- Erection of an incineration boiler for effluent management is high in Project cost of approx 20 crs. ✗
- Then we have searched for an alternative and finally we found that **DRYER OPERATION** with low project cost of 7.5 crs. ✓

WAY FORWARD TOWARDS SUCCESS . . .

Project title : ***ZERO LIQUID DISCHARGE IN DISTILLERY THROUGH DRYER OPERATION***

BOTTLENECKS FACED DURING PROJECT IMPLEMENTATION

- Concept development
- Pilot trial
- Product testing
- Market survey
- Design of full scale plant
- Erection and commissioning

UNIQUENESS OF THE PROJECT

The conventional way of treating spent wash is through Bio-composting or ferti-irrigation as per protocol. Bio-composting has a difficulty on following aspects.

- ✓ Require huge land and concrete platform for carrying out this process.
- ✓ Operational difficulty during rainy days
- ✓ Possibility for leaching and run-off during rainy days
- ✓ Plant operating days restricted to 300 days a year.

The unique advantages are :

- ➢ By this system, distillery can operate for 365 days a year.
- ➢ The final product is rich in Potash, Nitrogen & Organic carbon.
- ➢ With this system we achieve complete zero liquid discharge.
- ➢ This is completely automated, built in a small area and operates with a closed loop system.
- ➢ Water is recovered and recycled back to process.
- ➢ Reduce foreign exchange and create wealth to nation

OUR THOUGHTS COMES TRUE…

DISTILLERY

750 KLPD

BIO DIGESTER

800 KLPD

BMSW RO

400 KLPD

Recovered Permeate & Condensate recycled back to Process

INTEGRATED EVAPORATOR

200 KLPD

BMSW EVAPORATOR-II & AGITATED THIN FILM DRYER

45 TPD

POTASH POWDER AS A FERTILIZER

ECONOMICAL BENEFIT

- By this practice we are able to produce additional **38,00,000 liters** of ENA by running the plant with additional **51 days** in each year which generates additional income of **Rs. 4.39 crs.**
- By running the plant with additional 51 days itself we get more than the payback value.

...We Proudly Says

COST SHEET

PROFIT Rs.4.39 Crs

K-BOOST PRODUCTION COST SHEET		
Description	**Units**	**Cost**
UTILITY COST		
Steam	Rs.	36000
Power	Rs.	17424
Defoamer	Rs.	5200
Nitric Acid	Rs.	3600
Manpower Cost - 10 Nos	Rs.	3000
Total Operating Cost per day	**Rs.**	**65224**
Rs. Per Litre of Alcohol	**Rs.**	**0.87**
PRODUCTION COST		
K-Boost Production	TPD	45
Cost of Production	Rs./Ton	1450
Selling Price	Rs./Ton	2000
Contribution	Rs./Ton	550
Revenue Generation per day	Rs.	24750
Revenue Generation per year	**Rs. In Lacs**	**87**
ADDITIONAL COST		
Additional distillation operating days	Days	51
Additional ENA production	LL	38
Additional revenue generation @ Rs.8.25 per Litre	Rs. In Lacs	316
Additional CO_2 production	MT	1530
Additional revenue generation @ Rs.2.40 per kg	Rs. In Lacs	37
Net Revenue Generation	**Rs. In Lacs**	**439**
Project Investment	**Rs. In Lacs**	**679.69**
Pay Back Period	**Years**	**1.5**

TANGIBLE & INTANGIBLE BENEFIT

Environmental benefits achieved :

- Recovering Resources from Industrial Waste – Potash fertilizer
- Water and Air pollution are completely eliminated.
- Water recovery and recycle thereby reducing the ground water drawl.
- Reduce foreign exchange.
- Reduction of use of chemical fertilizer thereby retaining soil quality and improving organic content of soil.

Intangible benefits :

- Employment opportunities
- No of operating days increased by 51 days thereby increase in revenue.
- Organizational goals are achieved

REPLICATION POTENTIAL WITHIN THE SECTOR

- We have already replicated this in our other unit which is located in **Sankili, Srikakulam district, AP.**
- Likewise all the distilleries in India can install this system to achieve ZLD as well as produce Potash fertilizer which can reduce foreign exchange.
-

ACHIEVED NATIONAL BENCHMARK

- ✓ New Fertilizer Product in the Market
- ✓ Becoming Alternate for MOP Fertilizer
- ✓ Created huge demand in market

AS PER FERTILIZER CONTROL ACT

Sl. No	Parameters	FCO Norms (%)	K-BOOST Result (%)
1	Moisture	<4.79	3.05
2	Total Nitrogen	>1.66	3.8
3	Neutral Ammonium Citrate Soluble Phosphate	>0.39	0.11
4	Water Soluble Potash	>14.70	14.72
5	Fixed Carbon	-	Approx. 8 – 10% (since Total Carbon is 21.24%)

Participation by down the line shop floor personal in implementing ENCON ideas

S.No.	ENCON Idea	Year of Implementation	Source of Idea	Annual savings
				Rs.in Lakh
1	Sugar recirculation avoided by altering the grader transfer points.	2019-20	Fitter	33.75
2	Usage of first vapour for heating treated juice reduced by 50 % by adding a new direct contact heater for second body vapour.	2019-20	Pan Officer	22.5
3	Variable Frequency Drive for condensate Extraction Pump-2	2019-20	Electrical Supervisor	2.16
4	Injection Header modification by eliminating separate pump for evaporator	2020-21	Shift Chemist	27.27
5	Reusing of Boiler blow down water	2020-21	Shift Chemist	0.86
6	Sugar lumps quantity reduction during bin cleaning by polishing the bin internals	2020-21	Engg Supervisor	4.86

Participation by down the line shop floor personal in implementing ENCON ideas

S.No.	ENCON Idea	Year of Implementation	Source of Idea	Annual savings
				Rs.in Lakh
7	ATFD condensate recovery improvement	2020-21	Engg Supervisor	2.64
8	Variable Frequency Drive for Sulphur burnor blower	2020-21	Electrician	2.21
9	B Grain pump with VFD	2021-22	Shift supervisor	0.66
10	B-Massecute Pump VFD installation	2021-22	Pan Officer	1.34
11	Air Compressor Header Modification	2021-22	Engg. Supervisor	9.06
12	Elimination of intermediate belt conveyor in Refinery Feed Centrifuge	2021-22	Shift Chemist	0.66
13	Elimination of Slat conveyor during coal operation by introducing new conveyor	2021-22	Boiler operator	4.30
14	Elimination of BC-8 & BC-9 by introducing new coal conveyor	2021-22	Shift electrician	1.58

ENERGY CONSERVATION MONITORING & REPORTING

1. 23 flow meters for all process fluids including steam
2. DCS based data logging for daily energy monitoring and reporting
3. 35 energy meters were installed at all important stations
4. Utility report is generated on daily basis which captures specific power, steam and water consumption.
5. Internal and external energy audits at regular interval
6. Displaying daily energy consumption figures in the plant
7. Daily report to the top management
8. Equipment running hours are monitored on daily basis to identify idle running/under loading of the machineries

ENERGY MANAGEMENT MONITORING METHODOLOGY

- Introduced Real Time Online monitoring of Critical parameters from the Desktop PCs of all Senior Executives
- Hourly SMS auto alerts
- Daily manufacturing report
- SAP generated auto alerts
  - Plant comparison
- Stock reports from warehouse
- Trend charts from QA
  - Incoming raw material
  - In process
  - Weekly compliance report
- Monthly employee productivity linked incentives

RECOGNITION FOR OUR INNOVATION

Received winner award from our group chairman for best operation & excellence project

Platinum award received from SISTA for the best distillery

Received winner award in 35th TPM Kaizen Competition in Breakthrough Category

TRUTH BEHIND OUR SUCCESS

LABOURS

PRODUCTION TEAM

MECHANICAL TEAM

ELECTRICAL & INSTRUMENTATION TEAM

SHIFT INCHARGES

LAB ANALYSTS

ENGINEERS/MANAGERS

UNIT HEAD

TOP MANAGEMENT

THANKS TO ALL