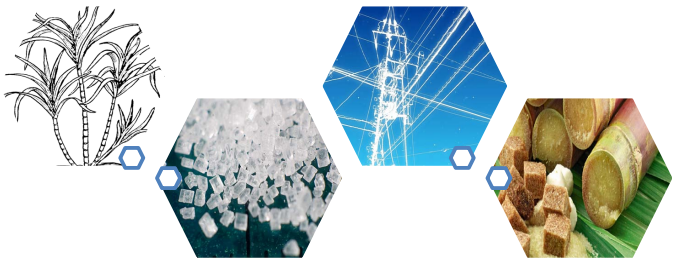
ADOPTION OF NEW TECHNOLOGIES



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NEED TO ADOPT NEW TECHNOLOGIES

To maintain Global Competiveness we must constantly improve :

- Energy Consumption
- Cost of Production
- Quality and variety of Product Portfolio
- Repair and Maintenance cost
- Manpower Skill
- Environment and waste management

REASONS OF ADOPTING LTEM™

- Low Temperature Evaporation Module V1.0
- Low retention time
- High heat transfer Co-efficient (k-value)
- Use of waste heat – Vapors leaving to Spray Pond
- No additional steam generation from Steam Boiler
- Energy Saving

LTEM™ - INSTALLATION

- Installation time in 6 weeks when civil work is complete
- Location is after 4^{th} effect evaporator
- 3 effect evaporator will convert the 4 effect evaporating system into 7 effect system

BENEFITS OF LTEM™

- Separation of water as condensate from clear juice
- Operating Temperature 70-75 ˚C
- We observed up to 25 m^3/h of Water Removal
- 10 degree increase in brix of Clear Juice
- No mechanical cleaning, only Chemical Cleaning required

TROUBLESHOOTING PLAN

- LTEM™ was retained on same its present position after 4th evaporator.
- Exhaust Steam Pressure maintained 1.1 – 1.2 bar G.
- Pans had been put on 2nd vapor - All pans provided with mechanical circulators.
- Switching of single stage TG set with Multiple stage.
- Electrification of two mills by installing of two motors.

ELECTRIFICATION OF MILLS

- Two ways to accomplish
  a) Replace the turbine with motor
  b) Replace the Turbine, High Speed Gear and Low Speed Gear with Direct roller shaft mounted Planetary Gears with motor
- Both the arrangements have pros & Cons

ADOPTION

Motor + Old Arrangement	Motor + Planetary Gear
Just replace Turbine with motor	Replace whole arrangement with direct shaft mounted Planetary Gear box with motor and removing crown pinion.
Get the benefit of difference in steam consumption of mill turbine and TG-Set	All losses of crown pinion, mill square end coupling, Tail bar and transmission gear are avoided.
No change in the available torque for the milling	Higher Torque application is possible by selecting up to three times toque from the present gear.
No change in extraction or moisture resulting similar bagasse losses	Extraction is improved as bagasse moisture is decreased along with increase in boiler efficiency
All the torque is still transmitted through a single shaft using crown pinion resulting in wear tear and losses of efficiency	Toque is transmitted trough three to five gear boxes saving single shaft and crown pinion from over load.

LIMITATIONS IN OUR CASE

- Material received during start up of Crushing Campaign
- Installed the gears during Crushing Campaign by just arranging bypass to each mill
- Requires 2 days per mill to install
- The trash plates used were according to old arrangement to avoid our season loss
- No Automation
- All rollers were moving independently not in synchronized manner

RESULTS OBTAINED

- Electrification by installing motor with VFD saved steam up to 7% on cane.
- Blowing of exhaust steam was eliminated due to reduction in steam requirement of the power turbines.
- Bagasse Pol was reduced by 0.20-0.25%.

PROBLEMS FACED

- It did not worked with Low Temperature 50-60 ˚C
- Pressure drop across the Calandria and Vapor area
- The Vacuum in 4^{th} effect dropped to 20-22 in Hg
- The Brix of Syrup did not raised above 60 degree
- The exhaust steam demand of boiling house decreased
- There was a continuous blowing of exhaust steam

THANKS FOR YOUR VALUABLE TIME