ENERGY SAVING MEASURES AT RAMZAN SUGAR MILLS

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INTRODUCTION

Keeping in view production of sugar, higher cost of maintenance and cost of cane it became very necessary to increase plant efficiency and save energy.

In central Punjab it is not only necessary to reduce production cost by enhancing plant efficiency and energy saving for profitability but it is utmost requirement to reduce production cost for survival of sugar industry.

In southern Punjab the scenario is different due to higher recovery and more crop days.

RSML continuously working on thermal & electrical energy saving and enhancing plant efficiency.

Benchmark

To enhance efficiency & energy saving.

- Steam 42% on Cane
- Electrical power 28 - 30 KW. Hr per ton cane
- Some years ago steam consumption at RSML was about 55 - 56% on cane with 95 % mixed juice.
- After taking following steps we remain successful to reduce steam up to 45 - 46% on cane
- Following Steps were taken

Power Saving

- Installation of Automated Indian Condensers
- Installation of VFD
- Replacement of cutters Steam Turbine

Installation of Automatic Indian Condensers

- Installation of automatic Indian Condensers, Spray and Injection pumps
- Saving of 1.2 MW of electric energy

Installation of VFD

- Installation of VFD at cane carriers and all cart tippers and auto feeding system up to 1st Mill and VFDs on two boilers drive
- Saving of about 500 KW

Replacement of Cutters Steam Turbine

- Replacement of Cutters steam turbine with electric motors

Steam Saving

- Installation of FFEs
- Installation of DC heaters
- Vapour Line Juice heaters
- Condensate Heater
- flash Cigar
- Molasses conditioner
- Hot water Radiator

- Minimum Usage of Steam

Installation of FFEs

- Steam temperature 120C° to 125C°
- Vapour temperature 114C° to 115C°
- Lower ΔT
- Low inversion losses
- Higher heat transfer
- Higher temperature of steam condensate
- High density low thermal conductivity glass wool used for insulation of exhaust steam lines & FFEs

Installation of DC Heaters

- No cleaning required
- Better clarification
- High heat transfer coefficient
- Utilization of low temperature vapor
- Least Radiation Heat Losses

Installation of Vapour Line Heaters

- Steam saving
- Low temperature condensate for Mills house
- Less vapor load at condenser
- Higher syrup brix

Installation of Condensate Heater

- Steam saving
- Low temperature condensate for Mills house
- Increases juice temperature up to 8 to 10 °C

Installation of Condensate Cigar

- Recover heat from condensate resulting in steam economy
- Centralized Condensate Management system to eliminate multiple nos. of pumps Thus reducing power consumption
- Steam saving 0.6% on cane

Installation of Hot water radiators

- Utilization of heat of condensate water
- Saving of live steam
- Efficient in sugar drying

Minimum Usage of Steam

- For washing of pans exhaust steam and vapors are used
- High temperature condensate used for sugar remelter
- No use of washing steam at centrifugals
- 2^{nd} & 3^{rd} vapours used at raw pans
- No steam used for juice heating
- 1^{st} vapour used at secondary heaters at 2^{nd} stage

Conclusion

These struggles, of course, resulted in plant efficiency with decrease in fuel consumption. A huge saving in bagasse, consequently, encourages for power generation, to resolve energy crises in the country and to enhance the asset value of the project too.

In the next stage we are trying to decrease the steam consumption to a remarkable level. For this purpose further planning is being executed while installation work of one more 6000 M² FFE and electric drives with VFD on first three mills is in progress.

THANKS