

Bhusawal Thermal Power Station

Deepnagar

Energy Conservation Activities

G S Pumps

- Old 10UP3m1 GS Pumps of Unit No-2 & 3 replaced with new Energy Efficient Pump Model-UP251/57.
- Total No of Pumps Replaced : 7 Nos.
- Total Cost of Replacement : Rs 98 Lacs
- Old Pump : Efficiency 61.7 % Load : 237 KW
- New Pump : Efficiency 84 % Load : 205 KW

G S Pumps

- Yearly Savings per Pump : $32 \text{ KWh} \times 24 \times 365$
 $= 2,80,320 \text{ KWH}$
- Assuming 5 pumps running Total Energy saved for the year : $280320 \times 5 = 14,01,600 \text{ Kwh}$

Cost saved : $\text{Rs } 1401600 \times 3 = \text{Rs } 42,04,800$

CWCT Fans

- CWCT fans solid FRP blades replaced by New Hollow FRP blades for Unit-2 & 3 in phased manner.
- Total 21 fans blades replaced
- Total cost : Rs 2.8 Lacs x 21 = Rs 58.8 Lacs

CWCT Fans

- Benefits
- Current of CT Fans minimized from 120 A to 90 A
- Energy saved : Net saving of @ 30 amps Energy Saved /fan /per day : $30 \times 415 \times 24 \times 0.85 = 253.98$ KW
- Energy saved for 21 Fans/Year : $253.98 \times 365 \times 21 = 19,46,756.7$ Kwh
- Yearly cost benefit : Rs 58,40,270

AC Plant

- Unit No- 2 Air Conditioning plant[PCR] complete compressor/blower/radiator system replaced by new microprocessor based package unit of M/s Blue star.
- Total cost of supply installation and commissioning is Rs 40,00,000

AC Plant

- Old unit loading was @ 80 amps plus maintenance and spares cost @ Rs10,00,000 /Year

New package unit power consumption is average 72 amps+ maintenance and spares cost NIL for about 5 years

- Energy Saved : $8 \times 415 \times 0.85 \times 24 = 67.728$ Kwh

Yearly Energy saved : $67.728 \times 365 = 24,720.72$ Kwh

- Yearly Cost saved : Rs 1,74,162 (Including Repair & Maint cost of Rs 1,00,000/-)

Boiler Feed Pump

- Unit no 2 BFP 2C Recirculation valve was found passing
- complete valve with actuator replaced by new Masolinenon make valve which costs @ Rs16,00,000

Boiler Feed Pump

- Unit no 2 BFP 2A performance is deteriorated due to increased internal clearance and wear.
- Completed inside stator cartridge is replaced.
- Cost of cartridge repair and replacement is @ Rs19,00,000 in June 2010

Boiler Feed Pump

- before replacement of cartridge
pump discharge flow was 270T/hr
motor current 290amps
energy consumption was 9.78 kwh/h against
design value of 8.09 kwh/h;
pump efficiency 43.84% against design of 74.89%
- After replacement of inside cartridge
discharge flow increased to 320T/h
At motor current of 290 A

Boiler Feed Pump

- As such BFP current reduced by @ 15 A at required flow
- Daily Energy saving :
 $15 \times 6.6 \times 0.85 \times 24 = 2019.6$ Kwh
- Yearly Energy saved : $2019.6 \times 365 = 737154$ Kwh
- Which amounts to yearly cost savings of Rs 22,11,462 /-

Booster Pump House

- New Energy efficient motors level 2 fitted to Seal Water pumps at Booster pump house.
- 75 Kw x 1 & 30 Kw x 2 motors fitted.
- Yearly energy saved : 1,65,301 Kwh
- Cost saving : Rs 4,95,903 /-

Lighting Transformer

- Lighting Transformer Tap changed from position-2 to 1 (Minimum) , thus lighting supply voltage reduced from 242 V to 237 V for Lighting Transformer No-1 & 2.
- Units saved due to this : 2,07,000 Kwh/Month
- Thus 24,84,000 Kwh/Year
- Cost Saving Rs 7,45,2000 /- per year

Instrument Air Compressor

- IAC-2A & 2D fitted with VFD.
- On the basis of the actual Energy Meter Readings recorded, it is found that, the energy consumption of each 90 Kw IAC reduced by 252 Kwh daily.
- Based on this Energy saved : 1,83,960 Kwh per year.
- Yearly Cost savings = Rs 5,51,880/-

Proposed replacement

Turbo vane fly wheel roof extraction fans

- At present 32 nos of 2.2 Kw , motor driven roof extraction fans are installed for unit no 2 and 3 in turbine house to expelled out hot air since commissioning.
- Complete replacement of exhaust fan with Turbo vane fly wheel type self driven fans is proposed.
- Total proposed cost is Rs 8 Lacs
- Yearly saving $32 \times 2.2 \times 24 \times 365 = 616704$ Kwh
- Yearly cost saving : Rs 18,50,112 /-

- Thank You

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