



SIFLON DRUGS LIMITED

Replacement of Wood Fired Boiler with High Efficiency Coal or Oil Fired Boiler

SUMMARY OF THE OPTION

Siflon Drugs Ltd. are a leading manufacturer of about 4 to 5 different popular veterinary drugs. Among these their main-stay product is oxyclozanide, introduced since the company's inception in 1999. The Team focused on Boiler area and Steam Distribution networks. Observations based on the field study and short trials revealed that the existing wood fired boiler was operating at a low efficiency of around 55 per cent. Insulation of steam lines were damaged in several locations, leading to heat losses. All the condensate was being drained. End use equipments like reactors and tray dryers which were using steam indirectly as heat sources were not provided with steam traps. The package of options proposed were, replacement of the existing inefficient boiler with high efficiency coal or oil fired boiler, relaying of damaged insulation on the steam lines, recovery of valuable uncontaminated condensate that was being drained, and installation of steam traps at each of the steam-using equipment. It was initially envisaged that implementation of the above package of options would yield an annual firewood saving of 300 Tons of firewood worth of US\$ 5,582, and equivalent to a GHG reduction of around 390 Tons of CO₂/per year. In reality, however barring the boiler option (which was not implemented) all other options were implemented leading to an annual firewood savings of 150 Tons worth US\$ 2,791 amounting to a reduction 195 Tons CO₂/per year.

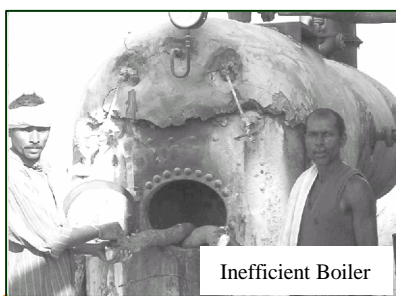
KEY WORDS

India, Chemicals, Boilers and Thermic fluid heaters, Wood fired boiler

OBSERVATIONS

During the field visit conducted by the Team the following observations were highlighted for Energy Efficiency improvement and GHG reduction.

- **Steam Distribution:**
 - Steam line insulation was badly damaged.
 - Expensive condensate is drained (without any recovery).
 - Non-availability of Steam traps at the steam use equipments like reactors which results in steam bypassing.
- **Boiler**
 - The operating efficiency of the existing wooden fired boiler: 50-55 per cent (*Whereas the design efficiency: 60 - 65 per cent*)
 - Feed water temperature: 30⁰C
 - High level of excess air around 100 per cent was being admitted into the boiler as there was no instrumentation for assessment of excess air or any damper for control at the flue gas exit.





Option-1: Efficiency improvement in steam utilization by installing steam traps and condensate recovery system.

Rationale:

- Avg. Steam Consumption: 300 kg/hr
- Measured steam savings due to installation of steam traps at the steam use equipment: 60 kg/hr
- Eqvt. Fire wood savings: 17.15 kgs fire wood / hr (60kg/hr/3.5 Evap.ratio)
- Eqvt. Fire wood savings by improving feed water temp. from 30⁰C to 65⁰C through recovery of 70 per cent of the (uncontaminated) condensate: 1.84 kg's fire wood / hr (300 kg steam/hr X 0.7 X (65-30))/(1000 X 4000 GCV)

Option – 2: Boiler efficiency improvement by replacing existing wood fired boiler with new coal or wood fired boiler.

This option is yet to be implemented owing to capital resource constraints. The amount involved is a bit high for this small scale unit. The Plant management is exploring the possibility of obtaining relevant subsidies under certain schemes offered by Govt. of India for energy efficiency equipment. Savings shown are the envisaged savings that could be achieved if this option is implemented.

Rationale:

- Existing Boiler fuel consumption: 1.7 Tons/day
- Efficiency improvement by replacing existing boiler of 55 per cent operating efficiency with new coal/wood fired boiler of 75 per cent efficiency: 20 per cent
- Reduction in input fuel consumption: 26.6 per cent (75-55) X 100 / 75

RESULTS

Result for Option 1

- Financial benefits:
 - Investment: Rs.1,00,000 (US\$ 2326)
 - Annual cost savings: Rs.1.20 lakhs (US\$2791) (150 tons/yr X Rs.800/ton)
 - Payback period: less than 10 months
- Environmental benefits:
 - Annual fuel savings at end use: 150 Tons of fire wood {= (17.15 + 1.84) kg/hr X 24hrs/d X 330 d/yr}
 - Annual GHG emission reduction: 195 Tons of CO₂, (150 Tons/yr X 1.3 tons of CO₂/Ton of firewood) [2]
 - Annual water savings: 210 liters of Boiler Feed Water (as a result of condensate recovered as boiler feed water)

Result for Option 2:

- Financial benefits
 - Investment: Rs.4,00,000 (US\$ 9302)
 - Annual cost savings: Rs.1.2 lakhs (US\$ 2791 = 150 tons/yr X Rs.800/ton)(@43 Rs./ US\$)
 - Payback period: 3.3 years
- Environmental benefits
 - Annual fuel wood savings : 150 tons (0.266 X 1.7 tons/day X 330 days/yr) [2]
- Annual GHG emission reduction: 195 tons CO₂ (= 150 tons / yr X 1.3 tons of CO₂/ton of firewood)



SIFLON DRUGS LTD: Replacement of wood fired boiler with high efficiency coal or oil fired boiler

FOR MORE INFORMATION

GERIAP National Focal Point in India

Mr. A. K. Asthana, Group Head Energy Management
Dr. P. K. Gupta, Director, NCPC-India
National Productivity Council
5-6, Institutional Area, Lodi Road, New Delhi - 110003
Tel: 0091 – 11 – 24697446
Fax: 0091 – 11 – 24698138
E-mail: ak.asthana@npcindia.org / ncpc@del2.vsnl.net.in

GERIAP Company in India

Mr. R. Anantaiah
Company Managing Partner
Siflon Drugs
Rachnapalli Village, Anantpur Rural and Mandal
Anantpur Dt., Andhra Pradesh
India
E-mail: siflon_drugs@rediffmail.com

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