

"PROMOTING ENERGY EFFICIENCY AND RENEWABLE ENERGY IN SELECTED MSME CLUSTERS IN INDIA"

To develop and promote a market environment for introducing energy efficiency and enhanced use of renewable energy technologies in process applications in the selected energy-intensive MSME clusters, United Nations Industrial Development Organization (UNIDO) in collaboration with Bureau of Energy Efficiency (BEE) is implementing a project titled "Promoting Energy Efficiency and Renewable Energy in selected MSME clusters in India" funded by Global Environment Facility (GEF) and co-financed by Ministry of Micro, Small and Medium Enterprises (MoMSME) and Ministry of New and Renewable Energy (MNRE).

Waste heat recovery from the process effluent of a textile dyeing unit

Objective

To utilize the waste heat in the effluent to preheat the boiler feed water

Implementation

Installed a waste heat recovery system to recover the waste heat from the textile dyeing effluent and use it for preheating the boiler feed water

Principle

Fabric dyeing process utilizes dye, water and steam. At the end of the process, the effluent, which is a mix of dye, water and steam is discharged from dyeing machine and collected in a tank before draining it into effluent treatment plant (ETP). The temperature of the collected effluent is about 85 °C. With installation of a plate heat exchanger, the waste heat in the effluent will be recovered and utilized to preheat the boiler feed water



Savings

₹36,54,000



Investment

₹1,00,00,000



Pay Back

33 months

Benefits

- Better handling of waste water at ETP due to reduced temperature
- Reduced fuel consumption and fuel costs



Outcomes



• 870 T of annual coke saving



₹ 36,54,000 of annual cost saving



2,610 T of CO₂ reduction per year (96 kg/GJ of coal)



Replication Potential

In all the units with heated effluent discharge

Cost Economics

Coal savings per day	2.9 T
Coal savings per annum (300 days/yr)	870 T
Cost savings per year (₹ 4,200/T)	₹ 36,54,000
Investment cost	₹ 1,00,000
Simple Payback period	33 months



Calculation

Coal savings per annum (kWh/year) = (coal consumption before implementation - after implementation, T/day) * no of working days/year

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Unit

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