

Energy saving potential within MSMEs engaged in Textile Dyeing

Process of dyeing involves aqueous application of colour to the textile substrates, mainly using synthetic organic dyes and frequently at elevated temperatures and pressures in some of the steps. This requires significant amounts of energy in the process. Using good operational practices with existing processes can help to save energy, particularly for MSMEs. Usually entrepreneurs in the MSME sector are averse to investment risks and tend to invest in proven technology only.

STENUM Asia team made Energy Efficiency feasibility reports for two MSMEs, wherein low cost and no cost options for saving energy were provided to the MSMEs. During this work STENUM Asia also developed resource use indicators set improvement targets for forthcoming periods.

Case Study 1: Company A

S.No.	Prevalent Situation	Recommended Changes
1.	<p>No condensate recovery was observed, hot water of 96°C was draining and feed water tank to the boiler was not insulated.</p> 	<p>Condensate hot water should be recovered by installing pipes to existing condensate recovery tank connected to the boiler feed water tank. Additionally boiler feed water tank should be insulated to avoid heat loss.</p>
<p>Cost of Intervention: Rs. 2000 Potential Annual Saving: Rs. 16,000 (2 t of coal) Payback Period: Immediate</p>		
2.	<p>Improper size coal and big lumps of coal were being fed to the boiler. High un-burnt coal losses were observed.</p> 	<p>Three possibilities are proposed: To purchase pre crushed coal from coal supplier OR Train the operator to crush the coal in proper size & instruct him to avoid large coal lumps to be fed to the boiler OR Install a coal crusher machine with mesh to avoid heavy lumps being fed to the boiler.</p>
<p>Cost of Intervention: Nil (for first 2 options) or Rs. 1,25,000 (for third option) Potential Annual Saving: Rs. 2,80,000 (35 t of coal) Payback Period: Immediate (for first 2 options) or 6 months (for third option)</p>		

Case Study 2: Company B

S.No.	Prevalent Situation	Recommended Changes
1.	<p>No condensate was recovered. Hot water at 96°C was flowing into drain, however a drum was kept to store it but it was overflowing and not being reused to feed into the boiler.</p> 	<p>To install insulated drums and store the condensate hot water properly, use it to feed the boiler feed water tank. This would increase the feed water tank temperature and help in decreasing the coal consumption, & also reduce water consumption.</p>
<p>Cost of Intervention: 15,000 Potential Annual Saving: Rs. 21,500 (2.5 t of coal) Payback Period: 2 months</p>		
2.	<p>Huge waste steam containing heat flow was flowing into the air through exhaust.</p> 	<p>To control the steam flow of loop hauser machine. It is recommended to provide steam based on the pressure gauge and as per lowest pressure demand (mentioned in the manual of machine).</p>
<p>Cost of Intervention: Minimal Potential Annual Saving: Rs. 25,800 (3 t of coal) Payback Period: Immediate</p>		

Case Study 3: Company C

S.No	Prevalent Situation	Recommended Changes
1.	Oxygen percentage found in flue gas is very high leads to high energy loss in dry flue gas	Air supplied for combustion should be controlled by oxygen sensor and VFD in FD fan
<p>Cost of Intervention: 2 lakh Potential Annual Saving: Rs.6.1 Lakh (68 t of coke) Payback Period: 4 months</p>		
2.	Sodium vapor lamp,FLTs and CFLs found in use at the unit	All should be replaced with energy efficient LED
<p>Cost of Intervention: Moderate</p>		

Conclusion:

MSMEs by making changes such as those recommended as above could minimise their processing cost and save energy in the textile industry.