

Summary of study: EHP for Dairy: Unit - 2

Industry : Dairy

Unit profile : A dairy plant located in Haryana, India manufacturing dairy products like milk, yoghurt, ice cream, and skimmed milk

Technology : Water-heat source electric heat pump (EHP)

Application : Pre-cooling of water sent to chillers and pre-heating of water supplied to furnace oil fired boilers



Year of investigation : 2014

Key features:

			Proposed System
EHP	Hot water outlet temperature	°C	90
	Hot water inlet temperature	°C	30
	Cold water inlet temperature	°C	4
	Cold water outlet temperature	°C	0
	Hot water flow rate	L/min	13.9
	Cold water flow rate	L/min	134.6
	Heating capacity	kW	58.2
	Cooling capacity	kW	37.6
	Power consumption	kW	22.8
	COPt	-	4.20

Energy saving:

		For single EHP
Hot water outlet temperature	°C	90
Heat source		Hot water
Cold source		Cold water
Annual operating hours	hours	7,000
Heating capacity	kW	58.2
Cooling capacity	kW	37.6
COPt		4.20
Annual energy reduction cost (Lakh Rs.)/reduction rate (%)		16.6/55%
Annual CO ₂ reduction (t-CO ₂)/ reduction rate (%)		98.8/38%
Electricity unit price	Rs/kWh	7.6
Furnace oil (FO) unit price	Rs/kg	40

Note:

This report is an example for investigating the potential of application of Japanese low carbon technology (LCT) in Indian industries. EHP is the LCT which can generate greater benefits by the conditions for use of the outside temperature, the incoming water temperature, and the cold water temperature, etc, since the performance will increase/decrease depending on the conditions.