

Summary of study: EHP for dairy: Unit - 6

Industry : Dairy

Unit profile : A dairy plant located in Chandigarh manufacturing dairy products like milk, milk products, ghee, butter, cheese, paneer, etc.

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

Application : Pre-cooling of water sent to ice banks and pre-heating of water supplied to LPG/ furnace oil fired boiler

Year of investigation : 2012

Key features:

			Proposed System
EHP	Hot water inlet	°C	35
	Hot water outlet	°C	90
	Hot water flow rate	m ³ /hr	0.83
	Cold water inlet	°C	4
	Cold water outlet	°C	1
	Cold water flow rate	m ³ /hr	10
	Heating capacity	kW	52.9
	Cooling capacity	kW	32.3
	Power consumption	kW	23.0
	COPt	-	3.7



Energy saving and CO₂ reductions:

		For single EHP
Annual operating hours	hours	6000
Electricity unit price	Rs/kWh	5.95
LPG unit price	Rs/kg	61.47
FO unit price	Rs/lit	47.50
Annual energy reduction cost (Lakh Rs)/reduction rate (%)		22,69,821 / 73%
Annual CO ₂ reduction (t-CO ₂)/ reduction rate (%)		128 / 42%

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.