

Summary of study: EHP for Food Processing: Unit - 1

- Industry** : Food processing
- Unit profile** : A plant producing frozen meat products located in Uttar Pradesh, India
- Technology** : Air-heat source electric heat pump (EHP)
- Application** : Pre-heating of water supplied to boilers
- Year of investigation** : 2014



Key features:

			Proposed System
EHP	Hot water outlet temperature	°C	90
	Hot water inlet temperature	°C	29
	Outside air temperature	°C	25
	Hot water flow rate	L/min	18.7
	Heating capacity	kW	79.5
	Power consumption	kW	23.6
	COPt	-	3.37

Energy saving:

			Air-heat source EHP
Hot water outlet temperature		°C	90
Heat source			Hot water
Cold source			Outside air heat source
Annual operating hours		hours	7,000
Heating capacity		kW	79.5
Hot water flow rate		L/min	18.7
COPt		-	3.37
Electricity unit price		Rs/kWh	7.38
Fuel for boiler			Rice husk
Fuel unit price		Rs/kg	3.5
CO ₂ emissions unit			0 (Carbon neutral)
Annual energy cost	Reduction	Lakh Rs.	Δ 4.2
	Reduction rate	%	Δ 47
Annual CO ₂ reduction	Reduction	t-CO ₂	Δ 161.0
	Reduction rate	%	—

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.