

Heat Pumps in the Hotel - Safer and More Economical

Application - Hot Water for Bathing

Customer- A 4 Star Hotel, Chennai

Fuel Replaced – Liquefied Petroleum Gas (LPG)

Sector – Hospitality

Background

The Hotel was consuming about 35-50 kg LPG per day as a energy source to generate hot water to cater bathing needs of its guests. The increasing LPG cost was affecting the bottom-line of the hotel. Moreover, while LPG is a cleaner fuel compared to Diesel, its usage posed a safety hazard and hence required lot of safety measures.

Under these circumstances, the hotel management contemplated replacement of the boiler with a more energy efficient and safer product available in the market.

Solution

Considering the client's requirement, Aspiration Energy proposed a Heat Pump system that

- Supplies heat for 24 hours without any hassle.
- Had Less transition/modification to convert existing heating system to heat pump system.
- Handle variable temperature control from 40 – 90 °C.
- Had an on-site error indication in the system.

Installation

Design:

Based on fuel consumption data, 1 Nos of 28 kW Heat Pump was designed to meet customer's requirement.

Integration:

The Heat Pump was installed at the top floor of the Hotel, which made the integration more difficult. The Heat Pump was integrated with the existing hot water supply system seamlessly.

The integration was completed in 3 days' time. Since the water quality was good, there was no need for additional Heat Exchangers and Circulation pumps. This type of integration, also known as direct integration, further reduced cost of the system.

An online thermal energy monitoring system was also installed to keep track of the health of the system and address any problems on an almost real-time basis..

Installation picture



Performance Comparison

DESCRIPTION	BEFORE	AFTER
Heating Solution	Boiler	Heat Pump
Energy Source	LPG	Electricity
Capacity	50000 kCal	24080 kCal
Operating Costs	Rs.76.5 /kg	Rs.8 / kWh
Consumption / day	34 kg	90 - 100 kWh

Benefits



Technical

- Safer and Easier to Operate.
- Easy to Monitor and Control.



Financial

- More than 70% energy savings compared to the baseline
- Less than one year payback period.



Environmental

- The Heat Pump system reduces the usage of LPG fuel which in turn reduces the emission of CO2.

Heat Pump will save Rs. 5,11,000 annually.