

HEAT PUMPS IN HOTEL - SAFER AND MORE ECONOMICAL

Application : Hot Water for Bathing
Fuel Replaced : Diesel

Customer : 5 Star Hotel, Chennai
Sector : Hotel

BACKGROUND

Our Customer, a 125+ Rooms 5-Star Hotel, was experiencing a decline in its profits due to the increasing fuel costs. The Hot Water requirement of the hotel was 16,000 Litres per day at 65 Deg C to cater to the bathing needs of its guests. Two boilers were consuming 64 Litres of Diesel per day. The cost of Diesel had increased by almost 40% during the past one year. Apart from the fuel cost, the diesel boilers required frequent maintenance, leading to significant downtime. The burning of diesel was also leading to air pollution within the Hotel premises.

SOLUTION

Aspiration Cleantech Ventures proposed to replace the boilers with Heat Pumps that could

- Maintain temperature within the band of 55-60°C
- Operate 24 hours in a day, if required
- Be integrated easily with the existing Calorifier Tank

INSTALLATION

Design:

Based on the past fuel consumption data, 2 Nos of 28 kW heat pumps were designed to meet the customer's requirement.

Integration:

After doing the sizing study, our team decided to install 2 air-source heat pumps to meet the hot water requirement of the hotel. The heat pump system was seamlessly integrated with the existing hot water storage and distribution system (Calorifiers, Heat Exchangers and Piping) without disrupting the existing operations.

Since Hotel industry is highly sensitive to customer satisfaction issues, redundancy was built into the system to ensure that there was no shortage of hot water in case of failure of one of the units. 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.

TYPE OF MACHINE : AIR SOURCE

MAX. OUTLET TEMPERATURE : 60 Deg C

TYPE OF COMPRESSOR : SCROLL

DESCRIPTION	BEFORE	AFTER
HEATING SOLUTION	Boiler	Heat Pump
ENERGY SOURCE	HSD	Electricity
CAPACITY	116 kW	56 kW
FUEL COST	Rs.85/Litre	Rs.9.5/kWh
CONSUMPTION PER DAY	63.75 Liters	135.7 kWh
OPERATIONAL COST	Rs.19 Lakhs/yr	Rs. 4.51 Lakhs/yr

PERFORMANCE COMPARISON



INSTALLATION PICTURE

BENEFITS



- Lower space for installing a large capacity compared to existing heat source.
- Easier to operate and troubleshoot, compared to a Diesel fired Boiler.



More than 50% savings on energy and fuel operational costs