

BREAK THROUGH INTO ENERGY EFFICIENCY - HIGH TEMPERATURE HEAT PUMPS

Application : Pre-Treatment for plating Application
Fuel Replaced : Super Kerosene Oil (SKO)

Customer : Automotive Manufacturer
Sector : Automotive

BACKGROUND

A leading automotive manufacturer of 2 wheelers was carrying out , the pre-treatment application in their plant, as a 17-tank process, with varied temperatures to be maintained in each tank. The heating needs were initially met by a Diesel fired Hot Water generator. At peak loads, the fossil fuel based unit incurred huge Operational costs. The automotive major, being an active player in implementing sustainable practices, was looking for an energy-efficient heating option.

SOLUTION

Aspiration Cleantech Ventures worked out a comprehensive solution, which can reduce the Process heating's Operational Costs. Applying our subject knowledge; R&D backbone; and project expertise, which was coupled with an extended support from the automotive major, it resulted in the installation and commissioning of **India's 1st 120 Deg. C** Hot water outlet Heat Pump, to cater to the Pre-Treatment process of this plant.

INSTALLATION

Design:

162 kW (162 kW X 1 Nos.) water source heat pump was proposed to be installed to meet the process heat requirement.

Integration:

The heating solution was provided to an application of pre-treatment line - plating shop (17-tank process). The inlet and outlet lines are connected to the common header such that when the heat pump is at maintenance, the hot water generator can be used.

Cooling benefit - Enhanced Savings :

In addition to delivering heat to the plating line tanks, the cooling benefit of heat pump is utilized as cold air in the server rooms, neglecting the usage of 4 Nos. of Air conditioners there.

TYPE OF MACHINE : WATER SOURCE

MAX. OUTLET TEMPERATURE : 120 Deg. C

COMPRESSOR TYPE: SCREW

DESCRIPTION	BEFORE	AFTER
HEATING SOLUTION	Hot water generator	High Temperature heat pump
ENERGY SOURCE	Diesel	Electricity
INSTALLED CAPACITY	465 kW	162 kW
COST OF HEATING SOURCE	Rs. 90 per Liter	Rs. 8 / kWh
CONSUMPTION PER DAY	330 Liters	1980 kWh
OPERATIONAL COST	Rs. 1.03 Crores	Rs. 41.71 Lakhs

PERFORMANCE COMPARISON



INSTALLATION PICTURE

BENEFITS



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



More than 45% energy savings compared to the baseline.



Usage of cold air through AHU for server room cooling, neglecting AC usage

Combined Annual Savings on Heating and Cooling - Rs. 69.86 Lakhs