

ENERGY RECOVERED

GREEN ENERGY AND TEMPERATURE CONTROL SYSTEMS



Date 12-Feb-18
 Customer Sofitel Macau
 Project LPG Fired Boiler
 Revision 2.0

CUSTOMER SUPPLIED DATA

Boiler Type	LPG	
Fuel Type	N/A	
Cost of Electrical - Average Price	0.147	USD/kWh
Cost of Fuel - LPG	0.147	USD/kWh
Hot Water Demand		
Mass flow rate of water	10000	kg/hr
Inlet temperature	18.0	deg C
Outlet temperature	45.0	deg C
Efficiency	80%	
Heating Capacity	394	kW
Usage/Day	11	Hours
Usage/Week	7	Days
Usage/Year	52	Weeks
Total Running Hours	4004	Hours
Heat Load Per Day	4331	kWh
Total Heat Load / Year	1576575	kW
Total Energy Consumption	1576575	kW
CO ₂ Emissions [0.266/kW]	419369	kg CO ₂ E
Total Yearly Cost	231757	USD

TECHNICAL DATA

CO2 Heat Pump		
COP Heating	4.2	
COP Cooling	3.6	
Hot Water Demand		
Mass flow rate of water	10000	kg/hr
Inlet temperature	18.0	deg C
Outlet temperature	45.0	deg C
Heating Capacity	315	kW
Electrical Power Input	75	kW
Usage/Day	11	Hours
Usage/Week	7	Days
Usage/Year	52	Weeks
Total Running Hours	4004	Hours
Heat Load Per Day	825	kWh
Total Electrical Consumption	300300	kW
Total Energy Consumption	300300	kW
CO ₂ Emissions [0.544/kW] [GRID]	163363	kg CO ₂ E
Total Yearly Cost	44144	USD

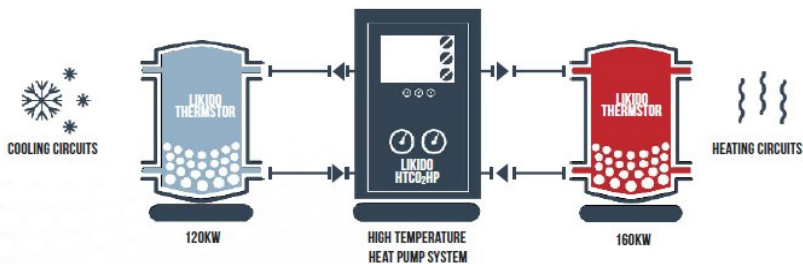
"FREE" CHILLED WATER DATA

Cooling "Free" Energy Produced	270	kW
Mass flow rate of water	46286	kg/hr
Inlet temperature	8	deg C
Outlet temperature	13	deg C
Total Electrical Consumption	FREE	
Total Cooling Energy Produced	1081080	kWh

EXISTING CHILLED WATER DATA

Actual COP	4.0	
Existing Chiller Energy Consumption	270270	kWh
Existing Chiller CO ₂ [0.460]	147027	kg CO ₂ E
Total Yearly Cost	39730	USD

SYSTEM SKETCH



HEATING & COOLING

ENERGY SAVINGS PER YEAR	1,546,545	kWh
ENERGY SAVINGS PER YEAR	5,568	GJ/Year
ENERGY SAVINGS PER YEAR	83.7%	
CO ₂ EMISSIONS PER YEAR	403,033	kg CO ₂ E
COST SAVINGS PER YEAR	227,342	USD
COST SAVINGS PER MONTH	18,945	USD