hindavi

HINDAVI INDUSTRIES

AIR SOURCE HEAT PUMP

WHAT IS AIR SOURCE HEAT PUMP

Air source heat pump works with atmospheric air independent or sunlight. “it is an instrument / concept where the heat from atmospheric air is absorbed, and is transferred to water through the mechanism for water heating using thermodynamic principle, saving up to 70-80% energy, available hot water 24/7

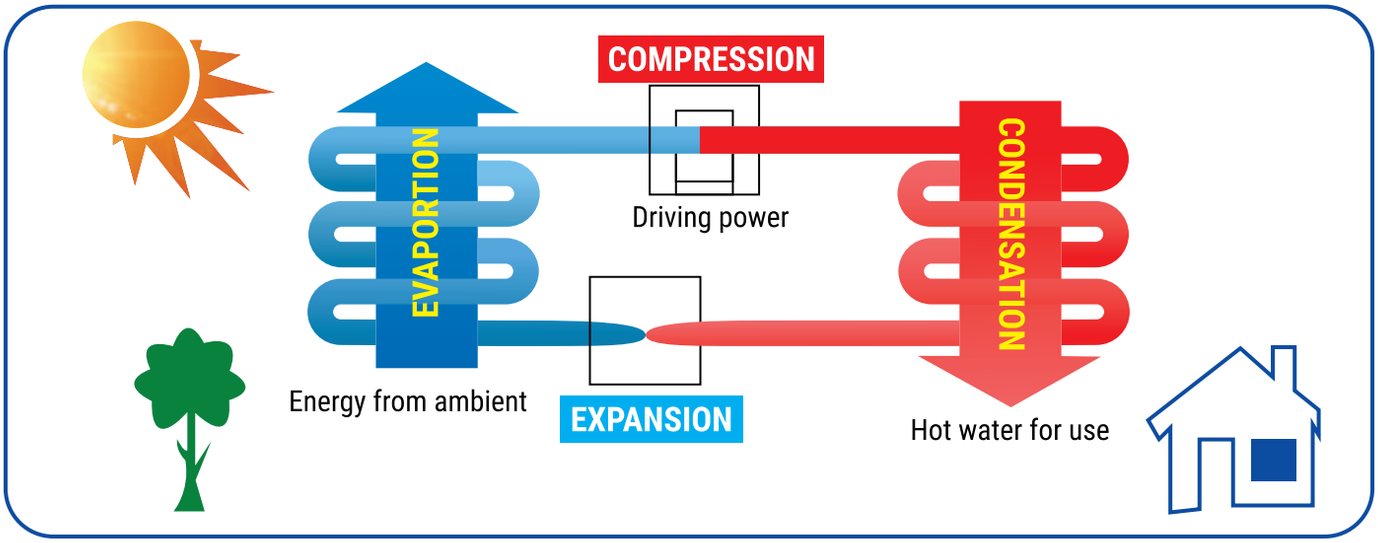
HINDAVI INDUSTRIES

Air source heat pump is manufactured by professional in state of the art manufacturing facility. Air source heat pump consists of high quality components. which are 100% indigenised and work with minimal maintenance. Most components are readily available in market, thus reducing the dependency on **HINDAVI** alone.

HINDAVI AIR SOURCE HEAT PUMP AT A GLANCE

- It saves up to 70-80% energy as compared to any conventional water heating technology.
- 100% indigenised technology. Fast and economical after sales service.
- Components selected based on the easy availability in the open market, which mean Lower product life cost and non-dependability on **HINDAVI.**
- System comes with fully charged with heating fluid (gas) and no charging at site
- Can be commissioned in few hours.
- It works on latent heat present in ambient air and produces hot water up to 60 'C.
- Heat present in atmosphere acts as a fuel.
- A plug and play device having low installation cost
- It can deliver hot water in sub-zero temperature places like himalayas Ladakh, Siachen, kargil. It can deliver hot water even from air conditioned.
- Customized design for different atmospheric temperature.
- Suitable for hard water due to coaxial & tube in tube heat exchanger
- Lowest tank heat loss as the tank insulation is designed based on the minimum ambient temperature of the year, highest wind speed of the year, the insulation density and the wind-chill effect.
- Very compact and less weight.
- Hot water is available on demand.
- Power consumption of air source heat pump in entire year is almost equal to the power consumption of solar water heater. In areas like coastal and hill stations, where the non-sunny days are more than 65 days, solar water heater power consumption is more than air source heat pump
- Consistent and almost maintenance free.
- Low sound level to avoid any noise pollution.

AIR SOURCE HEAT PUMP WORKING CYCLE



EVAPORATION

Ambient air is drawn in to the unit. It warms the refrigerant which turns to gas at very low temperature.

COMPRESSION

The gas is compressed which raises its temperature and pressure.

EXPANSION

Liquid refrigerant passes through an expansion valve, reducing its pressure and temperature.

CONDENSATION

Warm high pressure vapour enters the heat exchanger producing hot water.

ADVANTAGES OF HINDAVI INDUSTRIES

- Made in India, made for Indian design and product
- Air source heat pump capacity 50 LPH to 3000 LPH
- All component are selected considering the easy availability at all India
- Local Partner, a solution provider
- Possibility of customization for special requirements.
- Compact size
- Highly efficient way of water heating COP 3.5-4
- Independent of sunlight, hence functional in any climatic conditions.
- Easy Installation & BMS Integration Possible

GREEN TECHNOLOGY

- Air source heat pumps have were low carbon emission
- We provide heat pump only with pure & eco friendly refrigerants.
- Heat pumps can be installed standalone to serve hot water requirement, or they can be easily integrated with existing technology may it be solar system,LPG boiler or diesel boiler etc.

STRUCTURE & BODY

- Compartmental design to differentiate hot & cold side refrigeration cycle
- Distinct Fan-Coil Unit & Distinct heat exchanger compartment for water heating to prevent internal heat loss.
- All panels facilitated opening from all sides for ease of service, accessibility
- Customize / Industrial body options available

CONTROL SYSTEM

- HP- Condenser side High pressure protection
- LP- Evaporator side low pressure protection
- Sequential start of compressor having some time delay include after pump & fan start time to ensure heat exchanger are flooded with water & air before compressor starts.
- Phase-Phase Leak/phase sequence protection to po prevent compressor damage. voltage-under/ over voltage protection
- Defrost- Evaporator side frosting protection by virtue of hot gas bypass through solenoid valve.
- Distinct error indicator for easy prompt service solution.

HEAT EXCHANGER

- Finned tube evaporator with hydrophobic coated A1. fine to avoid moisture / condensate accumulation
- Plate type heat exchanger - compact & highly efficient for applications where water hardness is controlled under 200-250ppm
- Shell & tube / tube in tube crossflow heat exchanger-effiecient & easily serviceable where water hardness not controlled & beyond 200-250 ppm
- Coaxial Heat exchanger effiecient & easily serviceable where water hardness not controlled & beyond 200-250 ppm

HEAT PUMP MODELS

MODEL	CAPACITY LPH	INPUT KW	OUTPUT KW (Heating Capacity)	POWER SUPPLY	SIZE (In MM)	WEIGHT (In kg)
HHP 50 LPH	50	1	3.6	230V/50Hz/1Ph	760X540X310 (L/W/H)	38 kg
HHP 100 LPH	100	1.3	4.5	230V/380V/ 50Hz/1Ph/3ph	760X540X310 (L/W/H)	42 kg
HHP 150 LPH	150	1.8	6.5	230V/380V/ 50Hz/1Ph/3ph	760X540X310 (L/W/H)	42 kg
HHP 200 LPH	200	2.5	8.0	230V/380V/ 50Hz/1Ph/3ph	760X540X310 (L/W/H)	45 kg
HHP 250 LPH	250	3.0	10	380V/50Hz/3Ph	760X665X350 (L/W/H)	45 kg
HHP 300 LPH	300	3.3	12	380V/50Hz/3Ph	1040X690X435 (L/W/H)	52 kg
HHP 500 LPH	500	5.0	18	380V/50Hz/3Ph	1040X690X435 (L/W/H)	95 kg
HHP 700 LPH	700	7.2	26	380V/50Hz/3Ph	1040X1135X435 (L/W/H)	116 kg
HHP 1000 LPH	1000	10	36	380V/50Hz/3Ph	1210X985X640 (L/W/H)	150 kg
HHP 1500 LPH	1500	14	52	380V/50Hz/3Ph	1210X985X640 (L/W/H)	180 kg
HHP 2000 LPH	2000	20	72	380V/50Hz/3Ph	1829X1069X1372(L/W/H)	230 kg

SWIMMING POOL AIR SOURCE HEAT PUMP

In India, till date there was no efficient and cost effective way to heat a swimming pool, although, desired temperature rise is not so high, it has to be at a comfort zone. To overcome this problem, **HINDAVI** has introduced swimming pool air source heat pump

SWIMMING POOL HEAT PUMP MODELS

MODEL	INPUT KW	OUTPUT KW (Heating Capacity)	POWER SUPPLY	SIZE (In MM)	WEIGHT (In kg)
HSHP13KW	3	13	230V/380V/ 50Hz/1Ph/3ph	1040X690X435 (L/W/H)	80 kg
HSHP18KW	4.2	18	380V/50Hz/3Ph	1040X690X435 (L/W/H)	95 kg
HSHP27KW	6.4	27	380V/50Hz/3Ph	1040X745X435 (L/W/H)	100 kg
HSHP35KW	8.3	35	380V/50Hz/3Ph	1040X1135X435 (L/W/H)	135 kg
HSHP45KW	10.7	45	380V/50Hz/3Ph	1040X1135X435 (L/W/H)	140 kg
HSHP54KW	12.8	54	380V/50Hz/3Ph	1210X985X640 (L/W/H)	180 kg

ADVANTAGES

- Very low operating cost due to high system COP up to 3.5 to 5 24 hours heated pool.
- No need to run filtration pump to heat up pool during non-filtration hours.
- Available in the range for swimming pool of capacity 20,000 ltrs to 6,00,000 ltrs for larger swimming pool, number of models can be arranged in conjunction.
- System performance can be further improved by additional pool covers.
- Very compact as compare to Solar Pool Heater
- Safe as compare to LPG as well as electric pool heater
- Non-polluted as compare to diesel fired pool heater
- Can be used for jacuzzi also.
- Selection based on the minimum ambient temperature of the year and the highest wind speed of the year.
- Utmost care is taken to reduce the initial investment based on the heat up load (to heat up pool initially) and the Heat Surface Load (To maintain desired pool temperature please contact us to understand pool heating theory).
- Modified design can be used for pool heating and cooling, best suitable for Indian climatic conditions to enjoy the swimming round the year.

CALCULATION OF CURRENT OPERATING COST:

EARLIER FUEL COST, SAY ELECTRICAL COST IS RS S/KWH, NOW RS, X /KWH,
CURRENT OPERATING COST: (X X EARLIER OPERATING COST) / EARLIER FUEL COST

POWER CONSUMPTION OF DIFFERENT WATER HEATING TECHNOLOGIES

Model Number	Volume	HEAT PUMP (HP)	Electric Geyser (EG)	Evacuted Solar Tubes		Fire Wood	H.S.D	Furnace oil	L.D.O	L.P.G	C.N.G
				Solar Water at	for 60 ^{0}C		Excluding water circulation pump energy consumption				
	LTR	KW	KW	C	kW	kg	Ltr	Ltr	Ltr	Kg	Kg
HHP100	500	6.5	25.44	55	8.16	20.37	2.30	2.218	2.214	2.65	2.35
HHP150	750	9	38.15	55	12.24	30.56	3.45	3.328	3.321	3.97	3.52
HHP200	1000	13	50.87	55	16.32	40.74	4.60	4.437	4.428	5.30	4.69
HHP250	2000	25	101.74	55	32.63	81.49	9.20	8.873	8.857	10.60	9.38
HHP300	3000	35	152.61	55	48.95	122.23	13.80	13.310	13.285	15.90	14.07
HHP 500	4000	44	203.49	55	65.27	162.98	18.40	17.747	17.714	21.20	18.76
HHP 700	5000	57	254.36	55	81.58	203.72	23.00	22.183	22.142	26.50	23.45
HHP 1000	10000	110	506.72	55	163.16	407.45	46.00	44.367	44.284	53.00	46.91
HHP 1500	20000	207	1017.43	55	326.33	814.89	92.01	88.734	88.568	105.99	93.82
HHP 2000	40000	420	2034.86	55	652.65	1629.78	164.01	177.467	177.136	211.98	187.63

ASSESSMENT OF HOT WATER GENERATION TECHNOLOGIES

PARAMETERS	RENEWABLE ENERGY		CONVENTIONAL ENERGY				
	HEAT PUMP (HP)	SOLAR WATER HEATER (SWH)	ELECTRIC GEYSER (EG)	LPG FIRED HEATER (LPG)	DIESEL FIRED HEATER (HSD)	WOOD FIRED HEATER (HSD)	PIPPED NATURAL GAS (PNG/CNG)
Efficiency up to / Net Calorific Value	400%	80%	85%	58%	85%	20%	87%
Primary Fuel	Ambient Air	Sunlight	Electricity	L.P.G.	Disel	Firewood	Firewood
Energy Saving	up to 80%	80%	N.A.	N.A.	N.A.	N.A.	N.A.
Space Requirement - % of SWH	1 to 4%	Huge	N.A.	1 to 4%	1 to 4%	1 to 4%	1 to 4%
Space for 40000 Ltr/day	3.4 sq.m	960 sqm	N.A.	2-3 sq.m	3 sq.m	3 sq.m	3 sq.m
Sunlight dependency	No	Yes	N.A.	N.A.	N.A.	N.A.	N.A.
Climatic Conditions Independency	Yes	No	N.A.	N.A.	N.A.	N.ÄA.	N.ÄA.
By-product	Cool Air	N.A.	N.A.	Polluted Air			
HOT WATER GENERATION DURING							
Rain / Fog / Cloud / Snow fall	Yes	No	N.A.	N.A.	N.A.	N.A.	N.A.
Night	Yes	No	N.A.	N.A.	N.A.	N.A.	N.A.
Coastal / Region Efficiency	Increases	Decreases	N.A.	N.A.	N. A.	N. A.	N. A.

APPLICATIONS OF HEAT PUMPS

Hotel

Hospital

Industrial

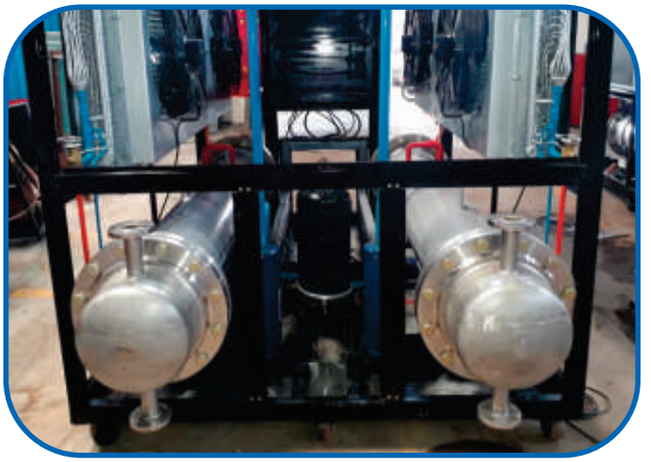
Building

Swimming Pool

Bungalow

OUR INSTALLATION SITE

OUR INSTALLATION SITE



AUTHORISED DEALERS

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