NATIONAL HYDROPNEUMATIC SYSTEM

A central water boosting system that ensures water at goods pressure at all points.

By installing this system one can do away with construction of overhead tanks.

NATIONAL WATER SOFTENER PLANTS

A System that removes the heavy minerals from water and makes it soft enough human consumption.

NATIONAL WATER TREATMENT PLANTS

A System that removes contaminants like suspended solids, bacteria, algae etc. from water and makes it pure enough for drinking.

NATIONAL SWIMMING POOL EQUIPTMENTS

We design, install and commission all swimming pool equipments and provide clear water for enjoying a great swim. It can also be heated up with NATIONAL Heat Pumps.

NATIONAL R. O. SYSTEMS

The Reverse Osmosis System is used at places where is non-potable. The R. O. membrane helps in giving crystal clear water free of mineral and salts and of potable quality.

Mobile : 9892900405 / 9699869909 • Email : info@nationalheatpumps.com, sales@nationalheatpumps.com • Website : www.nationalheatpumps.com

ENERGYSAVER HEAT PUMPS

NATIONAL HEAT PUMPS PVT. LTD.

CERTIFIED ISO 9001:2008 COMPANY

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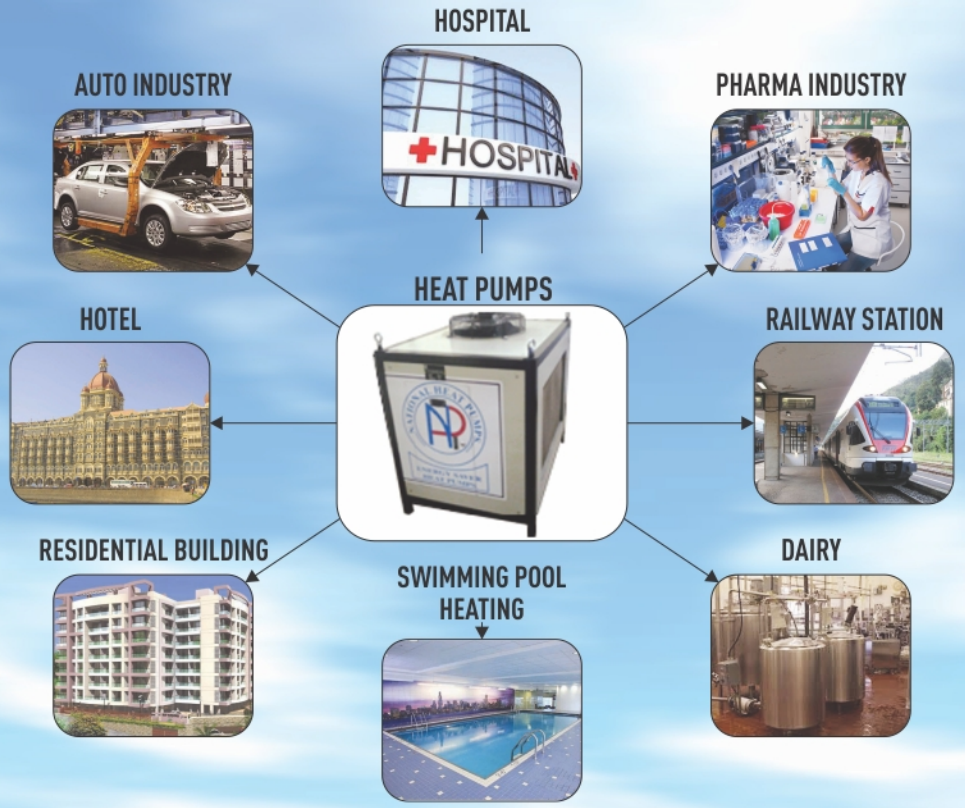
An Advanced Technological Revolution



ADVANTAGES OF USING A HEAT PUMP

- Saves energy cost up to 70%
- Easy to install and occupies less floor space.
- Allowed 80% depreciation under Income Tax Act
- Environment friendly as there are no emissions.
- Low maintenance cost.
- Can be installed anywhere.
- No government or Municipal permission required.
- Low payback period.

Repair and AMC support offered across India

Technical Specification of Heat Pump

Heat Pump Capacity	5 TR	7.5 TR	10 TR	12.5 TR	15 TR	20 TR	25 TR
Power Required to run the unit KW/hr	6	9	12	15	17	24	30
Heating output required KW	19	27	37	47	53	75	94
COP	3.17		3.08	3.13	3.12	3.12	3.13

Principles of Heat Pump

The Heat Pump is a heat recovery system. In this system, there is a working fluid that has a very low boiling point. Therefore, the fluid picks up heat from the atmosphere or water rendering the air or water chilled. The hot fluid then goes to a compressor and due to compression higher temperature is achieved. This high temperature fluid then passes through a heat exchanger where on the other side water passes and picks up the heat. Thus water is heated.

Hence, at one energy cost you get both chilled air or chilled water and hot water.

Options available:

A) **Heat Pump:**

- Air to water Heat Pump • Water to water Heat Pump
- Domestic Heat Pump

Power Supply-3 Phase 50 H_2 /440v

Ambient Air Temperature- 0°C upwards

Final Water Temperature- Swimming Pool 28°C/30°C/32°C
Others 55°C/60°C/65°C/85°C

B) **Heat Exchanger – Material of construction-**

1) Stainless Steel / Titanium /SS Copper / Copper / Molibium Alloy Capable of handling any kind of fuel.

C) **Heat Exchanger Type:**

- Shell and tube • Plate heat exchanger
- Gaskated exchanger • Coil Type

D) **Refrigerant Type:**

R134/R407C/R410A/R22

E) **Compressor Type:**

- Reciprocating • Rotary
- Scroll • Semihermatic
- Open Type

ASSUMPTION: AMBIENT TEMPERATURE 25℃, WATER HEATED UPTO 55 ℃, ΔT 30℃

DESCRIPTION		HEAT PUMP	SOLAR*		DIESEL BOILER	ELECTRICAL HEATERS	LPG
			50% ELECTRICAL BACKUP	100% ELECTRICAL BACKUP			
WATER REQUD. PER DAY		10000	5000	10000	10000	10000	10000
ENERGY / FUEL CONSUMPTION		120 KW	174 KW	349 KW	37.5 Ltrs	349 Kw	38 KG
PRESENT RATE per unit / Ltr /Kg		11.5	11.5	11.5	61	11.5	90**
Power / Ltr / Kg CONSUMPTION	PER DAY	1,380	2,006	4,012	2,288	4,012	3,420
	PER MONTH	41,400	60,174	120,349	68,625	120,349	102,600
	PER ANNUM	**496,800**	**481,395**	**481,395**	**823,500**	**1,444,186**	**1,231,200**
				962,791			
SAVINGS BY USING HEAT PUMP	PER ANNUM			465,991	326,700	947,386	734,400
CAPITAL COST OF HEAT PUMP		398,312					
PAYBACK PERIOD	YEARS			0.9	1.2	0.4	0.5

* In case of solar, 50% backup cost considered for 9 months of non solar period and 100% backup considered for 3 months of monsoon.
** - LPG 19.4 Kg cylinder @ 1750
Free chilled air / water generated by heat pump at same energy cost and 80% depreciation available not considered for pay back period