



Innovation In Green Energy  
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## Energy Saving Conscious Establishments



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Langkawi International



Grand Hyatt KL (KLCC)



St Regis KL Sentral

Air source heat pumps can provide efficient cost space heating capacity.  
Pecol heat pump can provide up to four times as much heat as an electric heater using the same energy.

Air to Water Heat Pump Hot Water System consist:

- a) Heat absorbing unit
- b) Compressor and accessories unit
- c) Calorifier Tank

Flexibility in the installation of the heat pump system :

- Heat absorbing unit
- Compressor and accessories unit
- Calorifier can be located anywhere within reasonable distance of each other and are connected by interconnecting refrigerant copper piping. This enables the heat pump components to be located in different rooms should there be space constraints
- The capacity of the compressor depends on the rate of recovery required which also depends on the storage capacity.

# Commercial Heat Pump

## Hot Water Technology



**PECOL ENGINEERING SDN BHD** (1189842-M)  
**PACIFIC ENGINEERING SDN BHD** (8073-K)

HQ: Lot 30, Jalan 223, Section 51-A 46100 Petaling Jaya, Selangor, Malaysia.  
Tel: +603-7957 2588 Fax: +603-7958 7081  
Email: pecol@pecol.com.my Website: www.pecol.com.my

Branch: B1k D-9-6, Level 11, Menara Uncang Emas, 85, Jalan Loke Yew,  
55200 Kuala Lumpur. Tel: 03 9200 3588 Fax: 03 9200 3589

Email: sales@pecol.com.my / pecol@pecol.com.my  
Contact Number: 012-323 6388 / 012-387 9188 / 012-387 1876

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We're Here Today To Help You Save For Tomorrow

PECOL Heat Pump technology is a reverse refrigeration technology that reaches a high level of efficiency and high heat temperature of hot water. It absorbs heat from the surroundings and raises it to usable temperature for heating.

### 1) Lowest Operating and Hot Water Cost

For the same amount of water to be heated the PECOL Heat Pump provide the MINIMUM OPERATING AND WATER COST by transferring the surrounding heat instead of generating heat by electric resistance, gas and oil.

### 2) Pollution Free & Safer

PECOL Heat Pump operate with R134A refrigerant.

### 3) Practically Maintenance Free

PECOL Heat Pump is fully automatic and requires minimal maintenance.

### 4) Free Cool Air

PECOL Heat Pump generates a lot of cold air with no added cost. This large amount of cold air can be channeled to cool the laundry room, lift motor room, kitchen or for any other purpose.

### 5) Space Flexibility

The wide range of PECOL Heat Pump provide space flexibilities to ease installation at constrained areas.

### 6) Return Of Investment (ROI)

Fast ROI payback.

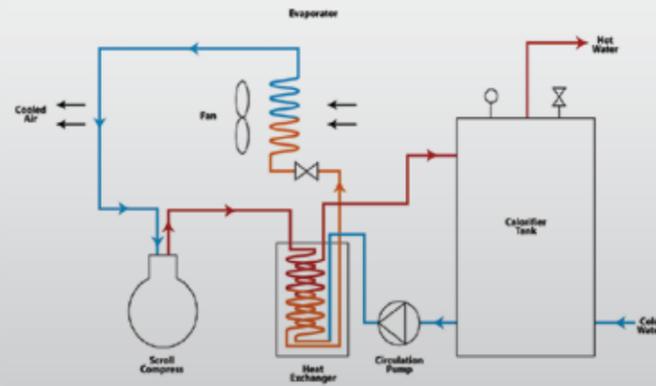
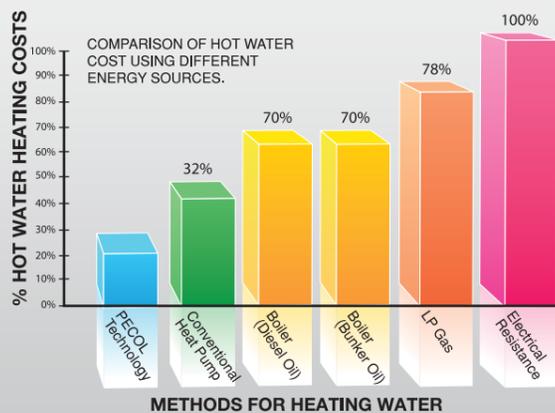
## Specification - PECOL Heat Pump

Model		PHM3	PHM5	PHM7.5	PHM10	PHM15	PHM20	PHM25	PHM30	PHM40
Compressor Rating	kW	2.25	3.75	5.62	7.5	11.25	15	18.75	22.5	30.0
Heating Capacity	kW/Hr	9	15	22.5	30	45	60	75	90	120
	Btu/Hr	30708	51180	76702	102360	153540	204720	255900	307080	409440
Cooling Capacity	kW	6.6	11.0	16.4	21.9	32.6	43.2	52.2	62.1	82.8
	RT (tons)	1.8	3.1	4.6	6.2	9.3	12.3	14.8	17.6	23.5
Max Running Current	Ampere/ 3 Phase	10	11.9	14.5	16	22.9	28.5	40	48	60
Heating COP		4								
Refrigerant		R134A								
Square Model	Dimension L X W X H (mm)	1067x890x483	1220x1169x760		1372x1169x900		1372x1169x1060			
	Unit Weight (kg)	160	210	260	300	330	400			
Vertical Model	Dimension L X W X H (mm)		1220x600x1473		1372x600x1778		1372x600x1982	2032x600x1651		2030x635x1982
	Unit Weight (kg)		195	245	275	315	375	515	550	675

Note: Pecol Water to Water Heat Pump using chiller condenser water as heat source can be made to requirement. Special capacities and dimensions other than shown above can be made to requirement. Specifications are subject to modification without prior notice.



### HOW PECOL SAVES MONEY



## Calorifier Capacity

Model	Capacity Litre (Gal.)	Outer Container Dimension (mm)	Empty Weight (kg)	Loaded Weight (kg)
PACHM100	454 (100)	ø700 x 1700	142	597
PACHM200	908 (200)	ø1000 x 1800	256	1165
PACHM300	1362 (300)	ø1000 x 2500	331	1695
PACHM400	1816 (400)	ø1400 x 1900	408	2226
PACHM500	2270 (500)	ø1400 x 2300	464	2736
PACHM600	2724(600)	ø1400 x 2700	531	3258
PACHM700	3178 (700)	ø1700 x 2000	602	3784
PACHM800	3632 (800)	ø1700 x 2400	649	4285
PACHM900	4086 (900)	ø1700 x 2600	696	4787
PACHM1000	4540 (1000)	ø1700 x 2800	753	5298
PACHM1200	5448 (1200)	ø2000 x 2500	1130	6585
PACHM1500	6810 (1500)	ø2000 x 3000	1270	8088
PACHM2000	9080 (2000)	ø2000 x 3800	1951	11042

Note: Special capacities and dimensions other than shown above can be made to order.

## The PECOL calorifier:

- 1) Allow the system to meet period of high peak hot water demand.
- 2) Provide hot water temperature stratification required by the heat pump for efficient operation.
- 3) Properly sized capacity with correct thermostat differential setting prevent short cycling.

## PECOL commercial calorifier

Adequate storage capacity is official to maximise the Pecol heat pump water heater system performance, water is circulated between the storage tank and the heat pump unit by the built in PECOL circulating pump.

The water is heated approximately 8°C each times it passes through the heat pump unit. The tank temperature gradually rises until the set point of the thermostat control is reached and the heat pumps automatically shuts off.

## Note: Pecol also support Water to Water System

### Designing for maximum coefficient of performance (COP) and trouble free maintenance

The COP of heat pump depends on a number of factors :

- 1) The temperature range of heat pump
- 2) The type of refrigerant used
- 3) The temperature approach on evaporator and condenser
- 4) The power gearing of the compressor

Class	Range of Temperature Difference	COP
I	18°C	5.0 - 8.0
II	33°C	3.3 - 5.0
III	43°C	3.0 - 3.5

As a general rules, the higher the temperature range, the lower the COP