

**Product Name :** " HEAT PUMP WITH DUAL MODE EVAPORATOR "  
**Product Code :** " R.A.C 14 "

DEMO



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**Description :**

## **HEAT PUMP WITH DUAL MODE EVAPORATOR :-**

### **AIM:-**

Energy balance for water and air operation

- Cyclic process on the p-h state diagram
- Effect of cooling water inlet temperatures and oil cooler

### **INTRODUCTION:-**

A heat pump is a device that extracts heat from a source and transfers it at a higher temperature. While all mechanical cooling systems are technically heat pumps, in HVAC terms, "heat pump" is reserved for equipment that can heat for beneficial purposes, rather than equipment that only removes heat for cooling. Dual mode heat pumps can provide either heating or cooling, while heat-reclaim heat pumps provide heating. An applied heat pump requires competent engineering for the specific application as opposed to the use of a manufacturer-designed unitary heat pump. The distinction between some models and applications can be rather fuzzy.

Heat pumps provide an important amplification of temperature that simple heat exchangers can not do. For example, efficient heat exchangers can preheat water or air up to 2 to 5°F of the temperature of the heat source - but never as hot as or hotter than the waste heat source. If a higher temperature is required, then a heat pump or a combination of heat exchanger and heat pump must be used.

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Most heat pumps used in HVAC applications today use a vapor compression cycle, similar to that used in a household refrigerator or home air conditioner and use an electric motor driven compressor, a condenser and an evaporator. Dual mode heat pumps include some form of cycle reversal where heating and cooling effects can be switched. Compressors can vary from small hermetically sealed units to large centrifugal machines. Industrial processes can be served by either this closed-vapor compression cycle, or by an open or mechanical vapor recompression or MVR cycle. Typical waste heat sources include outdoor or exhaust air, condenser or cooling tower water, well or other ground or surface water and heat rejected from industrial processes. The selection of the source depends on several variables such as suitability, availability, cost, and temperature. Where the source availability and the useful heat needs are not coincidental, thermal storage on either the hot or cold side should be considered.

### **TECHNICAL SPECIFICATION:-**

This compact bench top unit comprises components that are commonly used in industrial systems. A special feature of this system is that the evaporator can be operated with either water or air. A hermetic compressor with integrated oil cooler creates the refrigerant flow in the system.

#### **Specification**

1. Air-to water heat pump as bench top unit.
2. Evaporator can be operated with either water or air (plate heat exchanger, finned tube evaporator).
3. Hermetic piston compressor with integrated oil cooler.
4. Coaxial condenser.
5. High/low pressure shut down (pressostat).
6. Temperature sensors with display and selector switch.
7. CFC-free refrigerant R 22.
8. 230V, 50/60Hz, 1 phase.
9. Hermetic compressor
10. Water-cooled evaporator: 1kW,
11. Air-cooled evaporator: 1kW, finned tube type
12. Coaxial condenser: 2kW.