AIR CONDITIONING TEST RIG

MODEL NO: RAC.ACT

The unit consists of ducting fitted with various air conditioning components. Air flow is generated by an axial flow fan and in the air flow, heaters, cooling coil and steam humidifier connection are provided. Cooling circuit consists of a hermetic compressor, air cooled condenser, thermostatic expansion valve and evaporator (i.e. cooling coil). Measurements of various parameters for cooling cycle and heating cycle are provided and students can easily visualise and understand the basic principles of air conditioning.

Following experiments can be conducted on the unit.

a) Cooling of atmospheric air. b) Heating of atmospheric air. c) Humidification of atmospheric air.
d) Dehumidification and heating of atmospheric air. (Cooling coil acts as dehumidifier at low air flow.)

Specifications:

1) Cooling circuits - It consists of a Hermetic compressor (2/3 Ton R134a or R22); Pressure gauges for high and low pressure with safety cutoff; Thermometers for temperature measurement at various points in the cycle. Energymeter and Condensate measuring arrangement.
2) Heating circuit - Finned air heaters with stepped input control provided with energymeter for input measurement. Max. heating capacity 1500 Kcal/hr.
3) Steam generator and injector for humidification of air.
4) Anemometer for measurement of air velocity, (range 0-15 m/sec.)

All above components are connected to a duct of size 200mm. x 200mm. in which air flow is generated by axial flow fan. A technical manual accompanies the unit. Also, the unit is provided with an attractive powder coating.

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info@mechmatics.com
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REFRIGERATION TEST RIG

MODEL NO: RAC.VCR

The rig incorporates a hermetically sealed compressor provided with an air cooled condenser and an evaporator with water as a medium and heater. Evaporator temperature is kept constant by adjusting the heater and heater input is taken as refrigerating effect. With various measurements, Actual COP, Theoretical COP, Carnot COP and heat transfer coefficient in evaporator can be calculated.

Specifications:

1) Compressor-Hermetically sealed, having the capacity of 1/3 ton refrigeration. (approx)
2) Condenser - Finned tube, air cooled with fan.
3) Thermostatic expansion valve provided with solenoid valve.
4) Capillary tube of suitable length, to demonstrate operation.
5) Static Evaporator - Cooling coil immersed in water and a heater of suitable capacity
6) Rotameter for liquid refrigerant flow measurement.
7) Pressure gauges for condensing and evaporating pressure.
8) Thermometers for various temperatures of cycle.
9) Energymeters to measure compressor input.
10) Controls and safety -
    a) High and low pressure cutout.
    b) Thermostat.
    c) Overload protector for compressor motor.
    d) Ammeter to visualise proper operation of compressor motor.
    e) Filter cum drier for refrigerant.

A technical manual accompanies the unit. Also, the unit is provided with an attractive powder coating.

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VAPOUR ABSORPTION REFRIGERATION TEST RIG

MODEL NO: RAC.VAR

Refrigerating plants make use of the fact that a refrigerant evaporates at low pressure. In absorption refrigeration systems, the absorption of ammonia in the water produces this low pressure. The absorption process is driven by thermal energy, which can come for example from industrial waste heat or solar collectors to operate these systems.

Key Features

- Main system components: evaporator, absorber, boiler with bubble pump, condenser
- ammonia-water solution as working medium, hydrogen as auxiliary gas
- Adjustable electrical heater at the evaporator serves as cooling load
- Boiler is alternatively heated by electrical heater.
- Digital displays for temperature and power

System Specifications

1)	Gross volume	: 40 liters
2)	Refrigerant	: Ammonia
3)	Generator	: Electrical heater
4)	Condenser	: Natural convection type
5)	Evaporator	: Natural convection type
6)	Material of instrument	: M.S. Powder coating
7)	Supply	: 230 volts, 50 hz, 1 ph
8)	Energy consumption	: 1.07 kwh per 24 hrs.
9)	Control panel	: Digital indicators for volt ampere and temperature

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HEAT PUMP TEST RIG

MODEL NO: RAC.HP

The heat pump is a compact, self contained unit. It uses R-12 refrigerant and a hermetically sealed compressor. Both the condenser and evaporator are continuous water circulated. Flow of water in condenser and evaporator and of liquid refrigerant are measured by rotameters. Energy input to compressor is also measured and balance of heat added during the cycle and heat removed by the condenser can be checked. Also actual, theoretical and carnot COP's of system can be determined and principle of energy conservation by heat pump can also be studied. Heat transfer coefficients on coils of condenser and evaporator can also be studied.

Specifications:

1) Compressor - Hermetically sealed, having capacity of 1/3 ton of refrigeration (approx). using R-12 refrigerant.
2) Condenser & Evaporator - Continuous flow water circulated coils with glass wool insulation outside.
3) Thermostatic expansion valves of suitable capacity.
4) Rotameter for liquid refrigerant flow measurement.
5) Rotameters for water flow measurements -2 nos.
6) wattmeter for compressor input measurement.
7) Thermometers for measurements of temperature at 4 nos. points in the cycle
8) Pressure gauges for condensing & evaporating pressure (i.e. high & low pressure)
9) Ammeter for compressor current
10) Controls and safety -
    - •Pressostat (i.e. High/low pressure cutout
    - •Overload protector for compressor
    - •Filter cum drier for refrigerant.
    - •Fan for compressor cooling.

A technical manual accompanies the unit. Also, the unit is provided with an attractive powder coating.

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WATER COOLER TEST RIG

MODEL NO: RAC.WC

'THE WATER COOLER' Test Rig enables students to study and understand Vapour Compression Cycle, its components, principle and working. All the components are mounted on rigid steel frame. The trainer consists of a hermetically sealed compressor, forced convection air-cooled condenser, filter / drier, flow meter, expansion device and coil wound type evaporator. Separate pressure gauges are provided to record suction and discharge pressures and digital temperature indicators for various temperatures.
The refrigerant used is R-134 which is environment friendly.

The water cooler consists of an insulated stainless steel tank around which evaporator tubes are wound and soldered. The tubes are made of refrigerated grade annealed copper tubes. This is a direct expansion type evaporator. The heat absorbed by the refrigerant is passed through water which is continuously flowing.

Specifications:

1. Water Cooler: Blue Star / Voltas Or Equivalent Make
2. Water Storage: 30 Liters
3. Refrigerant : R-134 A
4. Outer Body : Stainless Steel
5. Inner Tank : Stainless Steel
6. Compressor : Hermetically Sealed
7. Make: Emerson Climate Technologies Ltd. Or Equivalent Make
8. Condenser : Forced Convection Air Cooled
9. Condenser Fan Motor : 1/20 Hp X 1400 Rpm; Induction Type
10. A Technical Manual Accompanies The Unit. Also, The Unit Is Provided With An Attractive Powder Coating.

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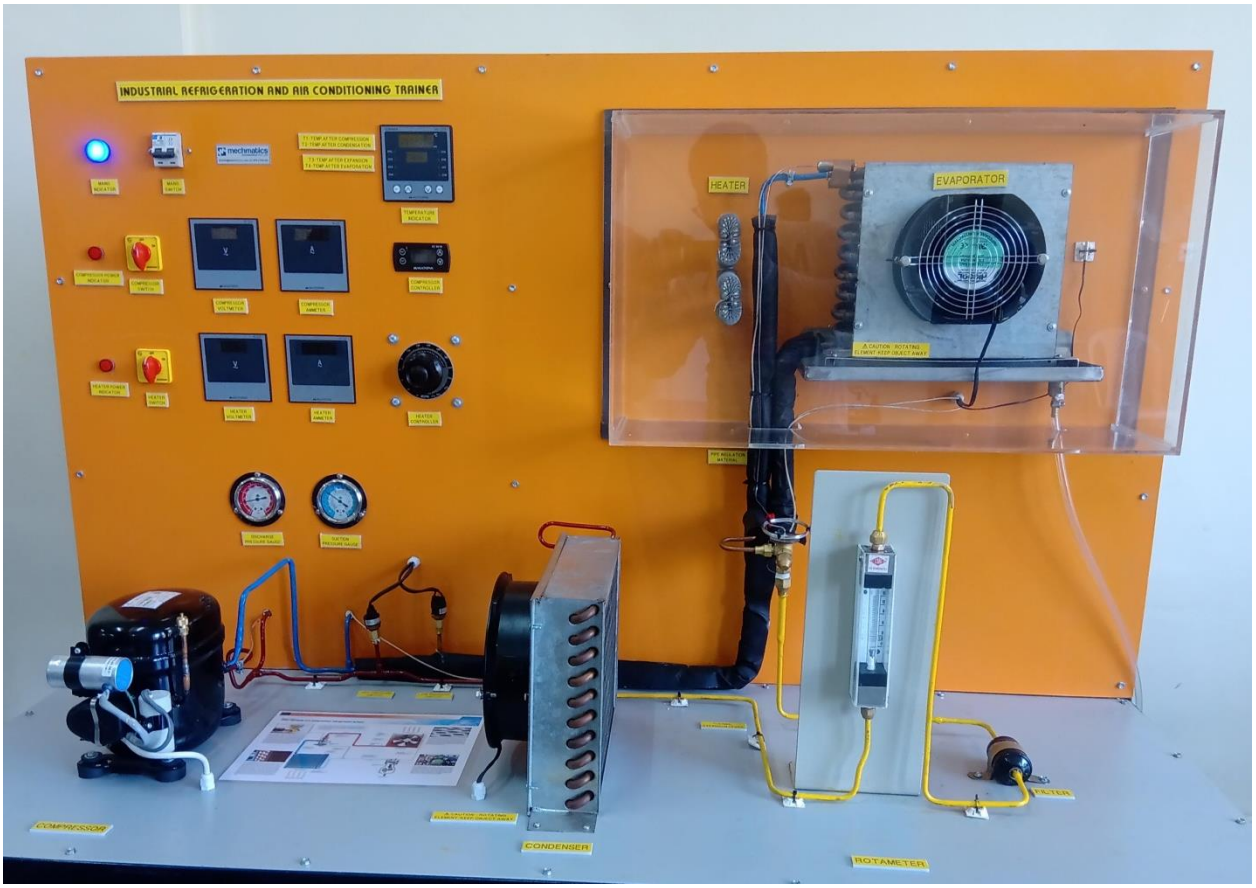
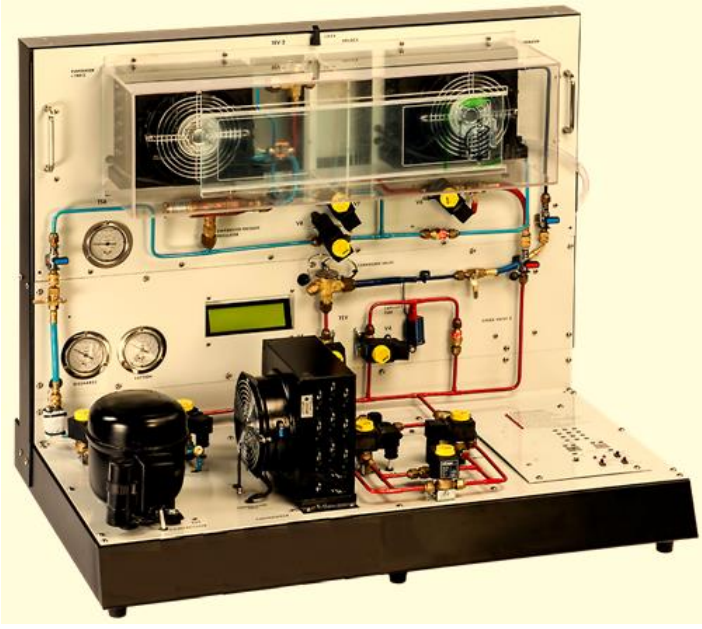
INDUSTRIAL AIRCONDITIONER AND REFRIGERATION TRIANER

MODEL NO: RAC.IAC



DESKTOP TRIANER AIRCONDITIONER AND REFRIGERATION

MODEL NO: RAC.DAC



** In the interest of continued improvements to our products, we reserve the right to change specifications without prior notification.*

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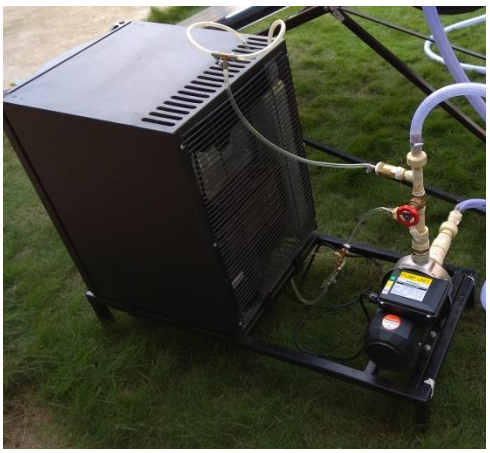
THERMOELECTRIC REFRIGERATION TRAINER (PELTIER)

MODEL NO: RAC.PELT

SOLAR ENERGY BASED VAPOUR ABSORBTION REFRIGERATION

MODEL NO: RAC.SVAR



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