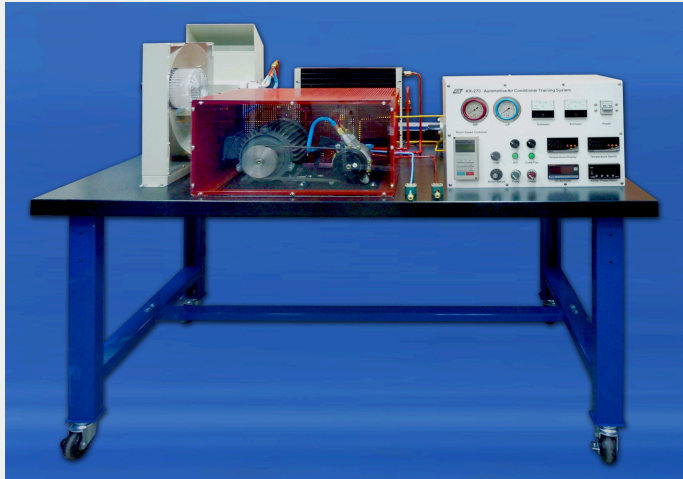


## KR-270

### Automotive Air Conditioner Training System



The structure of KR-270 is based on a real air conditioner of an automotive system. The evaporator is protected by plastic acrylic so that students can easily observe the internal structure of the evaporator. It also allows students to safely observe how fan door switches the function of air conditioner between cooler and heater when the system is operating.

The system adopts a three phase motor with varied speed to simulate the function of the engine so as to drive the air compressor. The circulating water originally heated by hot engine for heater application is completed by an Integrated heating coil.

#### ► Features

- Understanding the principle of automotive air condition system
- Understanding the components in an automotive air condition system
- Understanding the difference between automotive air condition system and building air condition system

#### ► Specifications

##### 1. Compressor

- a. Source : DC 12V
- b. Refrigerant : R-134a

##### 2. Motor

- a. Input Voltage : From Motor Speed Controller
- b. Output Power: 1.5 KW

##### 3. Motor speed controller (Inverter)

- a. Input Voltage : AC 220V, 1.5KW, 50Hz/60Hz
- b. Output Voltage : 3Ø 220 VAC, 270KVA

##### 4. Condenser

- a. Cooling type : Forced cooling
- b. Structure type : Flat tube
- c. Fan power : 12 VDC
- d. Fan size : 14"

##### 5. Evaporator

- a. Cooling type : direct expansion
- b. Structure type : Laminated
- c. Fan power : 12 VDC
- d. Fan size : 6"

##### 6. Refrigerant Controller

- a. Type : Thermostatic expansion valve
- b. Structure type : Combined

##### 7. Service Valve

- Low Pressure Service: 3/8" or 1/4" charging valve

##### 8. Pressure Gague

- a. Material : Steel
- b. Unit : Psi & kg/cm<sup>2</sup>
- c. Oil filled type

##### 9. AC Voltmeter : Range : 0~300V

##### 10. AC Ammeter : Range : 0~20A

##### 11. Digital Display

- a. 5 channels temperature display x 2
- b. 1 set temperature display : 0~200°C
- c. Watt digital meter : 0~2KW
- d. ACA digital meter : 0~10A
- e. DCA digital meter : 0~10A

##### 12. Plate Heat Exchanger

- a. Design Pressure : 3MPa
- b. Design Temperature : -196/+200 °C
- c. Heat Exchange Area : 1.080 m<sup>2</sup>

##### 13. Water Pump

- Max capacity : 16/19 L/min 2.4/3.4 m

##### 14. Water Tank

- 130(W)×400(D)×300(H)(mm)

##### 15. Dimension

- 1800(W)×900(D)×1500(H)(mm)

#### ► Experiments

##### 1. Motor speed and refrigerating capacity experiment

Understanding motor speed and refrigerating cycle of every index related

##### 2. Hot water coil exchange performance experiment

- (1) Learning water circle process and water pump performance
- (2) Learning hot water coil exchanged performance

##### 3. Maximum warm air capacity test

- (1) Understanding the change of the air property after warm up by the coil
- (2) Understanding the heat exchange performance of the hot water coil

##### 4. Automotive air conditioner mix and warm air capacity experiment

- (1) Learning the standard process of dehumidifying the air
- (2) Learning the dehumidification capacity difference during air process

##### 5. The heat recover capacity experiment plate heat exchanger

- (1) Learning plate heat exchanger structure
- (2) Calculating benefit from plate heat exchanger

##### 6. Plate heat exchanger performance experiment

- (1) Learning plate heat exchanger feature
- (2) Learning the difference of having plate heat exchanger or not

##### 7. compare the consumption power between the heat recover by the plate heat exchanger and electric heat