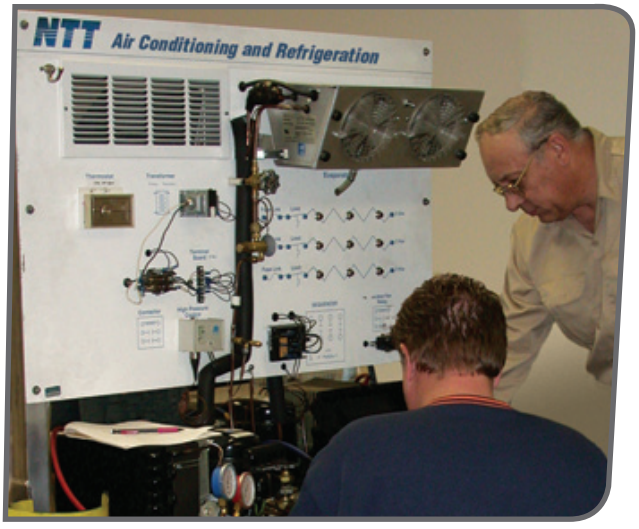
AIR CONDITIONING AND REFRIGERATION

Maintaining air conditioning and refrigeration systems is two fold. Troubleshooting and immediate action is required to repair issues as they occur. And proper preventive maintenance can lessen the frequency of the problems and lengthen equipment life.

This course helps technicians with both scenarios in a hands-on environment that simulates maintenance issues that occur in the real world. The participants practice with the test instruments used in the trade.

Service equipment such as manifold gauges, recovery machines, vacuum pumps, charging scales, leak detections and micron gauges are also used in the hands-on labs.

Upon request, we offer free 608, 410A EPA and HVAC Excellent Technician Certificate testing at the end of this class.



CLASS FORMAT:

Lab + classroom

The participant is able to "learn-by-doing" in the course; this knowledge can be transferred to the workplace.

STANDARD CLASS SIZE:

NTT recommends a class of 12 participants to obtain the best results.

NTT PROVIDES:

- 3 days (24 contact hours) of on-site instruction
- Participant textbooks and lab manuals
- Classroom consumables
- Completion certificates
- Shipping and instructor travel logistics

CLIENT PROVIDES:

- Classroom of 750 square feet or greater
- Projection screen, white board and/or flip chart(s)
- A dock facility or a forklift to unload training equipment
- A pallet jack to move the crates around after they have been unloaded may also be needed
- The equipment should be placed in the training room for the NTT instructor to test and setup prior to the start of training.

SHIPPING:

3 crates at 2,600 lbs

- 2 crates @ 38" x 52" x 81" = 1,000 lbs each
- 1 crate @ 64" x 44" x 38" = 600 lbs

AIR CONDITIONING AND REFRIGERATION

COURSE AGENDA | 3-Day, Hands-On

CONDITIONING & REFRIGERATION OVERVIEW

- Theory of refrigeration
- Compression refrigeration cycle

TOOLS AND TEST EQUIPMENT

- Gauge manifold assembly
- Electronic leak detector
- Multimeter
- Clamp-on meter

REFRIGERANTS & REFRIGERANT OILS

- Characteristics of refrigerants
- Importance of refrigeration rables
- Handling and storing refrigerants
- Section 608 of the Clean Air Act
- Regulatory requirements
- Recovery, recycling, and reclaiming

COMPRESSORS

- Types of compressors
- Principles of operation

EVAPORATORS

- Types of evaporators
- Operation of the evaporator in a refrigeration or air-conditioning system

METERING DEVICES

- Effects of capillary tube length and size
- Thermostatic expansion valves

CONDENSERS

- Types of condensers
- Operation of the condenser in a refrigeration or air-conditioning system

PIPING AND ACCESSORIES

- Tubing
- Liquid receivers
- Sight glass
- Filter driers

HEAT PUMP THEORY AND COMPONENTS

- Compressor
- Evaporator
- Condenser
- Reversing valve

HANDS-ON LAB EXERCISES

- Installing and removing a manifold gauge set
- Measuring superheat and sub-cooling
- Recovering the refrigerant from a system
- Evacuating (pulling a vacuum)
- Charging a system by weight and by superheat
- Performing a “pump-down”
- Working with service valves and Schraeder cores
- Troubleshooting