



# MAINTENANCE TROUBLESHOOTING INTERNATIONAL LLC

ACR-302

Hands-On Training Center: 2860 Ogletown Road, Newark, DE 19711  
 Corporate Offices & Mailing Address: 2917 Cheshire Road Wilmington, DE 19810  
 Phone/TXT: 302.593.2698 (Frank)  
 Email: Frank@mttroubleshooting.com Website: www.mtroubleshooting.com

## ACR-302 AIR CONDITIONING AND REFRIGERATION FOR FACILITIES MAINTENANCE

Created to bring students up to speed in their skills and knowledge as quickly and safely as possible to perform basic servicing and troubleshooting of air conditioning and refrigeration associated with commercial buildings. The practical, common sense approach used in this course makes it perfect for novice technicians and experienced HVAC technicians alike. Anyone who needs to understand the basic operation, maintenance, and troubleshooting of air conditioning and refrigeration systems for commercial or residential locations will benefit. Since 80% of AC& R problems are electrically related, the section on electrical troubleshooting is unique to this course and not offered elsewhere.



### Electrical Troubleshooting AC&R

- Transformers
- Circuit protection
- Motor basics for single and three phase systems
- Capacitors, starters, thermostats
- Motor controls

### Temperature and Pressure

- Measuring temperature and pressure
- The Gas Laws

### Basic Refrigeration Cycle

- Refrigeration systems and components
- Evaporating and Condensing units
- Suction accumulator
- Filter driers

### Refrigerants

- Halide refrigerants
- Refrigerant numbering system
- Refrigerant cylinder codes
- Selecting a refrigerant

### Refrigerant Recover and Recycling

- The Clean Air Act
- Refrigerant leaks
- The three "Rs" - Recover, Recycle, Reclaim
- Record keeping
- Certification requirements
- Recovery procedures
- Recycle equipment

### Zeotropic Blends

- Pure refrigerants, mixtures and blends
- Temperature-pressure card
- Retrofit procedures

### Troubleshooting Refrigerant Problems

- Moisture, air and contaminants
- Leak detection

### Working with Controls and Valves

- Check valves, solenoid valves, EPR valve
- Controlling head pressure

### Flow Controls

- AEV, EPR, and TEV
- Capillary tube system
- Hot gas and other by-pass valves

### Compressors

- Types of compressors
- Adding refrigerant oils to compressors
- Oil separators
- Determining compressor efficiency

### Smart Decision Making

- Making a replacement vs repair decision
- Should you do the work or send it out?
- Life expectancy of critical parts
- Locating items for obsolete" equipment

### Hands-On 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

### CLASS FORMATS AVAILABLE

- MTI Hands-On Center \$995/person
- ZOOM Interactive (Not available)
- On-Site (Your Location) Ask for Quote  
Quick Quote Available in 48 hrs.

### CLASS DURATION

2-days, 15 hours of instruction  
50% Hands-On

**Class Details:** Each student will receive class books, work activity sheets, self-test progress evaluations, as well as questions from the instructor to make sure they understand the material presented. It is expected that an attendee will leave the class with the basic knowledge of the subject and possess new found skills to better equip them when they return to their job. A certificate suitable for framing will be issued to each attendee who successfully completes the course. Call, email or check the website for the next time this course is scheduled at the MTI training center. On-site sessions? Request a quick 48-hour turnaround quote. Revised: 01/08/2021