



MU158: Effective HVAC Maintenance & Troubleshooting

Training Description:

The Effective HVAC Maintenance & Troubleshooting training course is designed to equip participants with the skills, knowledge and practical experience needed to maintain, troubleshoot and optimize heating, ventilation and air conditioning systems. HVAC systems are critical for ensuring indoor comfort, air quality and operational efficiency in commercial, industrial and residential facilities. This course provides participants with a comprehensive understanding of system components, control strategies, refrigeration cycles, airflow management and energy efficiency techniques.

This intensive training course combines theoretical instruction with hands-on workshops, practical demonstrations and real-world case studies to ensure participants can apply maintenance procedures and troubleshooting methods effectively. Participants will gain expertise in preventive maintenance, fault diagnosis, system optimization, energy management and safety compliance. Emphasis is placed on practical solutions to improve system reliability, reduce downtime and extend equipment lifespan.

By the end of the training course, participants will be able to perform preventive and corrective maintenance, troubleshoot complex HVAC problems, optimize energy consumption and ensure safety compliance. The course strengthens technical competence, problem-solving skills and confidence in handling HVAC systems. Participants will also gain the ability to interpret technical diagrams, apply advanced diagnostic tools and contribute to operational efficiency and sustainability in their organizations.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Understand HVAC system components and their operation
- ✓ Perform preventive maintenance on heating, ventilation and air conditioning systems
- ✓ Troubleshoot common HVAC problems and failures
- ✓ Apply refrigeration cycle knowledge for diagnostic purposes
- ✓ Optimize airflow and temperature control for system efficiency
- ✓ Implement energy-saving and cost-effective strategies
- ✓ Ensure safety compliance and proper use of PPE
- ✓ Use tools and instruments for testing and diagnostics
- ✓ Interpret system schematics, wiring diagrams and control logic
- ✓ Develop maintenance schedules and operational improvement plans

Training Designed for:

This training course is intended for HVAC technicians, maintenance personnel, facility managers, building engineers and operators. It is also suitable for mechanical engineers, energy managers and professionals responsible for building systems performance and energy efficiency. Organizations aiming to improve HVAC reliability, reduce energy costs and maintain comfort and safety standards will benefit from enrolling staff in this course.

Training Requirement:

"Hands on practical sessions, equipment and software will be applied during the course if required and as per the client's request."

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

HVAC SYSTEM FUNDAMENTALS

❖ Understanding Core Components

- Overview of HVAC systems: types and applications
- Components of HVAC systems: compressors, condensers, evaporators, fans and ductwork
- Refrigeration cycle and heat transfer principles
- Airflow, ventilation and indoor air quality
- Safety procedures and use of PPE
- **Workshop:** Identifying system components and operation
- **Case Study:** Analyzing HVAC systems in commercial or industrial facilities

DAY TWO:

PREVENTIVE MAINTENANCE TECHNIQUES

❖ Ensuring Reliability and Longevity

- Routine maintenance procedures and checklists
- Cleaning, lubrication and inspection of key components
- Filter replacement, coil cleaning and airflow adjustments
- Monitoring system performance and energy efficiency
- Troubleshooting minor operational issues proactively
- **Workshop:** Performing preventive maintenance on HVAC components
- **Case Study:** Preventive maintenance planning for facility systems

DAY THREE:

TROUBLESHOOTING HVAC SYSTEMS

❖ Diagnosing Common Problems

- Identifying symptoms and root causes of failures
- Electrical and mechanical troubleshooting techniques
- Refrigeration and cooling system diagnostics
- Control systems, thermostats and sensors troubleshooting
- Common HVAC faults: airflow, temperature, pressure and noise issues
- **Workshop:** Hands-on troubleshooting exercises
- **Case Study:** Resolving HVAC system faults in real scenarios

DAY FOUR:

ADVANCED DIAGNOSTICS AND ENERGY EFFICIENCY

❖ Optimizing HVAC Performance

- Advanced testing and diagnostic instruments
- Measuring airflow, temperature, pressure and refrigerant charge
- Energy management and cost reduction strategies

- Optimizing system efficiency through controls and scheduling
- Upgrading and retrofitting HVAC systems
- **Workshop:** Energy efficiency diagnostics and corrective actions
- **Case Study:** Implementing energy-saving measures in HVAC operations

DAY FIVE:

SYSTEM OPTIMIZATION AND BEST PRACTICES

- ❖ Ensuring Sustainable HVAC Operations
 - Maintenance planning and record-keeping best practices
 - Safety, regulatory and environmental compliance
 - Enhancing occupant comfort and indoor air quality
 - Continuous improvement in system performance
 - Integrating automation and smart building technologies
 - **Workshop:** Developing an HVAC optimization action plan
 - **Case Study:** Long-term HVAC maintenance and troubleshooting strategy
- ❖ Course Conclusion
- ❖ POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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