

For a schedule of open enrollment classes or to bring this training to your plant or facility, contact us @

1-877-97-TRAIN

www.AmericanTrainco.com

Troubleshooting

HVAC Controls & Air Distribution™

► **"Very informative...as good as it gets."**

John Hartman - Waterloo Local Schools

College Credit & Testing Available with this Course

This course now carries American Council on Education (ACE) College Credit Recommendations.

- Maximize HVAC comfort and efficiency
- Reduce dependence on outside service contractors
- Keep the people in your building happy!



DAY 1 - Control Basics, Troubleshooting & Testing

DAY 2 - Practical Solutions for Air Distribution

- New Convenient Format - Attend either one or both days!
- This seminar can also be presented at your facility for larger groups
- Reserve Your Space Now! **CALL 1-877-97-TRAIN**

Or check us out online at **www.AmericanTrainco.com**
for a complete listing of all seminars coming to your area

"..excellent course, easy to follow."

Gary Jackson - Electrician
LE Rader Center

Troubleshooting

HVAC Controls & Air Distribution™

PURPOSE OF TRAINING

Providing comfort to the people in your building is what this seminar is all about. And whether you are blowing heated or cooled air, keeping the temperature consistently comfortable for them is dependent upon you properly managing your HVAC electrical controls and air distribution systems. So we've designed this course to help you do just that. During this seminar students will learn how to "control" their controls, and how to use fundamental air distribution principles for achieving consistent HVAC comfort and efficiency in buildings, plants and facilities.

TRAINING OUTCOMES

Upon completion of this course students will receive a training certificate and .8 Continuing Education Units for each day attended (1.6 credits for two days), indicating that the student has learned to:

1. Identify a problem as being Electrical, Mechanical or an Air Distribution issue
2. Understand the basics of electricity as it applies to HVAC systems
3. Read HVAC ladder diagrams and wiring diagrams
4. Troubleshoot line voltage and low voltage problems
5. Properly test operating controls and safety controls
6. Troubleshoot air conditioning & heat pump systems
7. Specify the correct air handling equipment required for the job
8. Properly size HVAC air ducts
9. Determine how many CFM's are needed for your system
10. Determine air mixture condition at the cooling coil
11. Understand the benefits and disadvantages of "short cycling"
12. Control noise problems
13. Avoid air conditioning drafts
14. Test air handling equipment

And to be 100% certain you get the training you need, students are encouraged to bring control and wiring diagrams or case studies from their own facility! If you have a unique problem or situation, just let our instructor know. If he can't help you with your specific problem, we'll refund your money – guaranteed!

TEACHING PHILOSOPHY

"Real World Training...for Real World Needs", is not just our slogan, but also our mission statement. At American Trainco, we approach our students as if they were our own employees. We instruct and guide them in practical knowledge that allows them to immediately go back to their workplace and apply what they have learned. Our instructors are seasoned veterans with years of real world experience, and the students who attend our seminars often get more from a few days of training than an entire year of reading textbooks or watching videos. How do we know? They tell us.

Anyone can teach theory, but there simply is no substitution for experience. What sets American Trainco apart is our ability to communicate that experience to our students. As one attendee told us at the end of his two-day training course, "I think I can go back to work now and teach the veterans a thing or two."

Mission accomplished.

ABOUT OUR INSTRUCTORS

All American Trainco instructors are required to have a formal education and real world work experience. They need to be leaders in their field. We don't hire field people without teaching experience, and we don't hire teachers without field experience. They must have both. And since attendees critique the instructor at the end of each class, a positive and enjoyable learning experience is virtually guaranteed.

CERTIFICATES-TESTING-COLLEGE CREDIT

After completion of this seminar students will receive a Certificate of Completion and 1.6 CEUs (Continuing Education Units) approved by the Maintenance Training Association of the Americas. Students may also elect to take the MTAA Certification test associated with this topic. Those seeking college credit recommendations must attend both days of this course and successfully pass the MTAA Certification test. This course is recommended by ACE for 1 college credit hour. Transcripts are available through American Trainco.

HIGH QUALITY PRESENTATIONS

Black and white transparencies never made it in the door at American Trainco. From the start we demanded that all our presentations would be lively, attractive, crisp and clear. Our instructors use state-of-the-art computers, projection equipment and software to bring you a high quality visual experience. And our books are designed with the maintenance person in mind too. We know that they don't always have a lot of time to read volumes of literature so our manuals are quick and to the point, providing students the same charts, descriptions, pictures and bulleted items they'll see during the presentation.

WHO SHOULD ATTEND

This course is designed for anyone working on HVAC controls and air distribution systems, or who are responsible for keeping comfortable working or living conditions in their buildings. Attendees come from a wide variety of industries, skill-levels, company sizes and educational backgrounds. This course is also great for cross-training technicians who work in multi-craft environments! So if you're not sure if you will fit in or will benefit from these classes, don't worry – you will – as long as your work involves HVAC!

People who will benefit from this seminar include anyone working in...

Commercial Buildings
Schools
Hospitals
Manufacturing Plants
Research Facilities
Government Buildings
Office Buildings
Multi-Family Buildings
... or any other facility with an HVAC system.

UNAFFILIATED and NON-COMMERCIAL

Unlike some training experiences, you won't get a sales presentation at an American Trainco seminar – all you get is an honest, commercially unbiased education. We do not engage in the practice of selling or promoting other company's products or services, so you know that by attending one of our seminars, your time and money is well spent.

C O U R S E O V E R V I E W

DAY 1

HVAC CONTROL BASICS, TROUBLESHOOTING & TESTING

OVERVIEW

HVAC system problems can be divided into three major categories - Air Distribution, Electrical or Mechanical. The part that causes most service headaches is the electrical portion, and most of that can be traced back to control problems. So day 1 of this seminar concentrates on overcoming the most common service problems encountered in HVAC systems by teaching students to understand, troubleshoot and test HVAC Electrical Controls.

During this seminar, students will learn the basics of electricity including Ohm's law and how simple series and parallel circuits are used in HVAC systems. They will learn how to troubleshoot both line voltage and low voltage in their systems. They will learn how to identify an electrical problem and determine a solution for it by testing both operating controls and safety controls. Specific situations unique to air conditioning and heat pumps will be discussed as well. Students leaving after the first day of this seminar will be confident in their HVAC electrical control knowledge and armed to go back to their workplace to immediately apply what they have learned!

DISCUSSION TOPICS

1. Basic Electricity
 - a. Basic Electricity & Ohm's Law
 - b. Meters & Tools for Taking Electrical Measurements
 - c. Electrical Circuits
 - i. Series
 - ii. Parallel
2. Control Circuits
 - a. Schematics
 - b. Ladder Diagrams
 - c. Developing Wiring Diagrams
3. Controls
 - a. Overloads
 - b. Relays
 - c. Contactors
 - d. Control Transformer
 - e. Starting Relay
 - f. Defrost Timer
 - g. Thermostat
 - h. High Pressure Control
 - i. Low Pressure Control
 - j. Oil Pressure Control
4. Troubleshooting
 - a. General Troubleshooting Techniques
 - b. Common Problem Areas
 - c. Commercial Air Conditioning
 - d. Heat Pump Control
 - e. Pump Down Cycle

DAY 2

PRACTICAL SOLUTIONS FOR AIR DISTRIBUTION

OVERVIEW

Many common problems found in HVAC systems are relatively easy to correct, but are often overlooked. These problems are not electrically related at all, even though many times we can get tricked into thinking they are. Yet a non-electrical problem can be as frustrating to find and fix as an electrical one, and may be even more discomfoting to the people who have to live with it. So the second day of this seminar concentrates on the most often overlooked and ignored problems in HVAC systems – the “V” in “HVAC” – or ventilation, air distribution and air balancing!

We have all heard the complaints of “too hot”, “too cold”, “not enough air” or “I feel a draft”. So in this second day of the seminar students will learn how to solve the problems that cause people to say these things. Students will learn how to handle a problem like when one area is cooling, but another is not; why 400 cfm per ton is important and why it is used; how refrigerant piping affects air conditioning performance; how to determine proper blower and duct sizes for your system; what to do when you have an undersized duct; what causes noise in a system and the tricks you can use to control it; how to troubleshoot and perform tests on air handling equipment, exhaust fans and air make-up equipment; how to properly balance an air system for ideal comfort – and so much more. The primary goal of this day is to help you minimize the complaints heard from the people working or living in your building. Once completed, students leaving this class will have all that they need to handle any complaint that may come their way.

DISCUSSION TOPICS

1. Determining and Improving Air Flow
 - a. 400 cfm per ton
 - b. How many square feet per ton?
 - c. Air mixture at the cooling coil
2. Exhaust Air
 - a. Positive pressure
 - b. Negative pressure
3. Make-Up Air
 - a. Positive pressure
 - b. Negative pressure
 - c. Conditioning the make up air
4. Troubleshooting the Air Distribution System
 - a. Temperature difference across the coil
 - b. Balance in the system
 - c. Short cycling
 - d. Duct sizing
 - e. Noise
 - f. How to use a Ductulator

SEMINAR AGENDA

7:30 am	Registration
8:00 am	Class Begins
12:00 - 1:00 pm	Lunch (on your own)
4:30 pm	Class Ends

SEMINAR FEES

\$490 Each Day \$980 Both Days

NO RISK REGISTRATION & MONEY-BACK GUARANTEE

If you're not sure you'll be able to attend this seminar, you can still make a reservation to hold your space in class. While payment is due prior to the start of the seminar, you may choose a full refund or credit for cancellations made at least 24 hours in advance. Student substitutions can also be freely made at any time prior to the start of the seminar. Refunds will not be issued for registered attendees who fail to show up and have not given a notice of cancellation. In the rare event that you do not receive the expected value after attending our seminar, simply notify us in writing of your reasons and your money will be promptly refunded.

IN-HOUSE TRAINING

You can bring this or any other maintenance training program directly to your facility. Simply give us a call, tell us what you're looking for, and we'll provide you a quote. We also provide custom training for courses not listed in this brochure.

Call **1-877-97-TRAIN** and ask for Dan or Adam, or email AdamC@AmericanTrainco.com, or visit us on the web at: www.AmericanTrainco.com

OTHER SEMINARS

American Trainco presents a variety of maintenance training seminars throughout the country on a regular basis. Contact us to find out more about the training courses coming to your area, including:

- **Basic Electricity for the Non-Electrician™**
- **Electrical Troubleshooting**
- **Air Conditioning & Refrigeration**
- **Boiler Operation, Maintenance & Safety™**
- **Arc Flash Protection & Electrical Safety™**
- **2008 National Electrical Code®**

And 20+ other courses in the following areas:

- **Electrical / Electrical Controls**
- **HVACR**
- **Mechanical**
- **Facility & Plant Management**
- **Fluid Power**
- **Pumps / Piping**
- **Codes / Standards / Safety**

Troubleshooting HVAC Controls & Air Distribution™

For a schedule of open enrollment classes or to bring this training to your plant or facility, contact us @

1-877-97-TRAIN

www.AmericanTrainco.com

“A practical & straight-forward training experience”

SEMINAR FEE

\$490 Each Day \$980 Both Days

FIVE EASY WAYS TO REGISTER:

- 1) **Internet** www.AmericanTrainco.com
- 2) **Fax** (303) 531-4565
- 3) **Phone** Toll Free 1-877-97-TRAIN 1-877-978-7246 or (303) 531-4560
- 4) **Mail** this form to: American Trainco, Inc. P.O. Box 3397 Englewood, CO 80155
- 5) **E-mail** the information requested on this form to: Sales@AmericanTrainco.com

Primary Contact/Authorizing Supervisor: Name _____
 Title _____ Company Name _____
 Address _____
 City _____ State _____ Zip _____
 Phone _____ Fax _____ Email _____

“One of the best instructors I’ve had in the 20 years of being in the field.”

John Frascas - President CJJT Consulting

Seminar Attendees:	Name	Title	E-Mail	Seminar City

ATTEND		
Day 1	Day 2	Both Days
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Billing Information (Please fill out this section only if the "Bill To" name and address is different than the Primary Contact above.)

Individual's Name _____ Title _____ Company Name _____
 Address _____ City _____ State _____ Zip _____
 Phone _____ Fax _____ Email _____

Other Seminars Coming To Your Area!

- Basic Electricity for the Non-Electrician™
- Electrical Troubleshooting
- Air Conditioning & Refrigeration
- Boiler Operation, Maintenance & Safety™
- Arc Flash Protection & Electrical Safety™
- 2008 National Electrical Code®

And 20+ other courses in the following areas:

- Electrical / Electrical Controls
- HVACR
- Mechanical
- Facility & Plant Management
- Fluid Power
- Pumps / Piping
- Codes / Standards / Safety

Call 1-877-97-TRAIN, or visit www.AmericanTrainco.com to get your complete schedule today!

Payment Method:

- Visa
- MasterCard
- Discover
- American Express
- Check Enclosed
- Bill Purchase Order #:

Card Number: _____
 Expiration Date: _____
 Name on Card: _____
 Signature: _____
 (Make payable to: American Trainco, Inc.)



PO Box 3397
Englewood, CO 80155



PROMOTION CODE

X05