

EXPERIENCE THE



DIFFERENCE

Hands-On Industrial Training Seminars

2007 Catalog Volume I

*Get the Right Training.
The Right Way!*



Safety and Compliance



National Electrical Code®



Electrical and Electronics



HVAC



Fluid Power



Telecommunications



Mechanical/Industrial Systems

The 2008 National Electrical Code® is Coming!

Are You Prepared? Details Inside.



National Technology Transfer, Inc.

Educating America's Technical Workforce®

800-922-2820 • www.nftinc.com

GSA GS02F0203P Schedule

Technical Training Seminar Table of Contents

National Technology Transfer provides the most focused, information-rich, industrial technical training available. Our training is focused in these 7 major product categories. We offer over 50 seminar subjects and conduct 1200+

seminars annually in over 35 major U.S. cities. To get more information about any of our seminars, please contact us at: **800-922-2820** or visit our website at: www.nttinc.com

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**All seminars listed in this catalog can be brought to your location!
Call 800-922-2820 to find out more about our customized On-Site seminars.**



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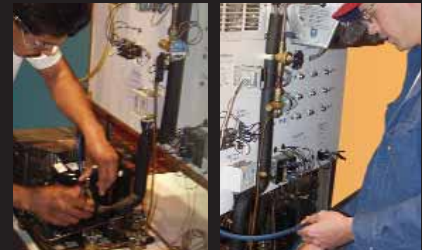
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Call us at 800-922-2820 or visit www.nttinc.com for your industrial training needs!

Get The Right Training. The Right Way.

A letter from the President:

NTT would like to thank you for your past support and patronage of our industrial training seminars. Since 1984, NTT has provided valuable industrial technical training to companies like yours. Our customers have repeatedly stated that the quality training we provide has increased efficiencies and cost savings in their workplace, and significantly advanced a culture of safety awareness.

To be successful in today's ever-changing business environment, it is essential to develop multi-tasking and cross-training skills, and the knowledge and confidence to work outside your area of direct expertise. NTT offers courses that can assist you and your company to accomplish this goal. You will find this latest NTT Industrial Training Seminar Catalog to be more robust and informative than in the past, and an important tool as you schedule your training for 2007.

We feel that NTT is truly different from other training providers and offers the best value in industrial training for several reasons:

- NTT instructors have the unique ability to build confidence in students and create an optimum classroom environment to enhance learning. In addition, NTT instructors have a passion to share their vast knowledge and experience, and the desire to continue the

high-quality tradition in their respective fields that they themselves were integral in developing.

- NTT offers "real-life, hands-on" training in many of its seminars, which is truly unique in the industrial training industry. We pride ourselves on the fact that students are given the opportunity, throughout the entire seminar, to individually practice and learn with NTT developed training equipment, so they are up-to-speed when they return to work.
- NTT's direction is focused on professionalism, character, and a personalized approach to deliver the best seminars in the industry. This is true in all aspects of NTT operations demonstrated through our instructors, seminar delivery, customer service, on-site seminars, and office staff. You can be confident that our goal is to stand by our product 100%.

We at NTT wish you and your company a successful 2007, and hope we can mutually continue to build upon our valued relationship.

Sincerely,

Michael J. Minatta, President

NTT Customer Care



NTT Public Registration Team

Behind the scenes: When you call NTT, here's some of the people you'll be speaking with, who help make the difference in your training experience.

Left to Right:
Stephanie Carlberg
Jack Calhoun
Andrea Edwards
Debi Joens
Rick Miller



NTT's Support Team

Left to Right:
Craig Robinson
Jana Weis
Stephanie Carosella
Linda Stanley
Joanne Vander Kooy
Chris Brumbaugh

NTT Contact Hours

For each day of class time, you will be awarded 7 NTT Contact Hours. At the end of every seminar, you will receive a personalized Certificate of Completion with the number of NTT Contact Hours earned. Please visit www.nttinc.com for more information.

No Sales Bias

NTT presents a completely unbiased training seminar and view of the industry. You can be confident that NTT material will be presented in a totally factual method without the inherent sales bias present in many manufacturer-sponsored and competitor seminars.

Satisfaction Guarantee

NTT stands behind its training. If you feel you did not receive the expected value from the seminar, and NTT is unable to remedy the situation to your satisfaction, we will refund your money.

Get the Right Training. The Right Way!

REGISTERING EARLY CAN SAVE YOU MONEY!

Register 45 days or more prior to the start of an NTT seminar, and take advantage of a **\$100 discount** off the cost of the seminar! It's our way of thanking you for choosing NTT as your industrial training provider! Remember to register early and save on all of your training from NTT!

We Have 5 Easy Ways For You to Register!

- **Call** 800-922-2820
- **Visit** www.nttinc.com
Download a registration form
http://www.nttinc.com/register_info.cfm
- **Fax** 800-338-8441
- **Mail** National Technology Transfer, Inc.
P.O. Box 4558
Englewood, CO 80155-4558
- **E-Mail** registrations@nttinc.com



Why NTT Delivers The Best Value in Industrial Training:

Safety...dramatically increases with a higher awareness of the hazards involved with certain tasks!

Less Downtime...occurs when machines are properly maintained, optimizing company profit!

Cross-Training...makes employees more versatile and valuable!

Confidence...leads to optimized performance!

Win-Win For Employees and Employers—A Thorough Training Experience

NTT seminars develop and enhance the skills and confidence level of employees making them more highly qualified technicians. This in turn creates increased productivity, less downtime, and cost-savings for the company. In fact, NTT's

cost per training day is lower than most competitors! Companies that invest in NTT seminars provide the opportunity for employees to continue expanding their knowledge base and troubleshooting skills.

The Best and Most Experienced Instructors—Subject Matter Experts in Their Fields

NTT instructors average more than 28 years of real-life experience and are subject matter experts in their fields. This vast experience is invaluable to seminar attendees because NTT instructors are able to make the most complex subjects understandable and build skills and

confidence in attendees. NTT instructors have written the majority of text materials and lab exercises used in seminars, meaning you will take away the same written information and guides that the field experts utilize.

Real Hands-On Training Equipment/Experience—Real-Life Equipment/Exercises

Hands-on learning experience is substantially more valuable than lecture only and show and tell seminars used by other training companies. In NTT "Hands-on" seminars, the entire class does not share a small equipment prototype.

Instead, individual attendees use training equipment designed by NTT, which simulates real-life situations to develop knowledge and troubleshooting skills.

Course Materials Authored by NTT—Customized Teaching Materials

NTT instructors have written the majority of text materials and lab exercises used in seminars, meaning

you will take away the same written information and guides that the field experts utilize.

—A Focused Learning Environment

NTT has mastered the art of maintaining a focused learning environment. By providing a non-interrupted catered lunch, students have the opportunity to contin-

ue their learning by interfacing with the NTT instructor and other attendees on real-life situations and subject matter.

—We'll Meet or Beat Your Training Objectives!

A phenomenal 99% of NTT students say that their training met or exceeded expectations as measured by confidential evaluations. Many customers let us know

how the quality and depth of NTT training had a measurable, positive effect on worker performance and confidence, and overall company operations.

—With Guaranteed Results!

We earned that position by providing our clients with the most professional, focused, value-added, hands-on industrial training, from the most respected instructors in the industry for over 23 years!

Visit www.nttinc.com/whatcustomerssay.cfm to see what NTT customers have to say about their experiences with our industrial training seminars.



NFPA 70E/Arc Flash Electrical Safety 2 Days

\$799 (See Schedule Page S-1)

(ES)

Based upon current **2004 NFPA 70E Electrical Safety in the Workplace** and designed to satisfy the **OSHA Electrical Safety requirements**

This **2-day seminar** will provide **required training** for employees bound by Table S-4 of the rule, and optional training for management personnel who need to evaluate their company's safety program and the training needs of the organization's employees effectively. Table S-4 requires this training for:

- Anyone working on or near energized equipment
- Electrical and Electronic Engineers
- Electronic Equipment Assemblers and Technicians
- Electricians
- Industrial Machine Operators
- Material Handling Equipment Operators
- Mechanics and

Repairers • Maintenance/Facility Supervisors • Painters
 • Riggers and Roustabouts • Stationary Engineers • Welders
 • Training about the most current NFPA 70E standards

Meets OSHA Requirements Based Upon NFPA 70E Standards

How much do you know about:

- How current NFPA 70E standards apply to your facility
- Standards for limits of approach explained
- What constitutes an electrical hazard
- Safe installation and maintenance of electrical equipment
- Which employees must be trained

- Arc Flash Protection and Labeling
- Hot work rules
- Safe electrical work practices
- Proper lockout/tagout procedures
- The use of personal protective equipment
- Test equipment and insulated tools
- Establishing and maintaining compliance



Save Time and Money—The Arc Flash Electrical Safety Seminar is also offered in combination with **Electrical Safety For Electric Power Generation, Transmission and Distribution!** (E3H)

Electrical Safety Agenda:

- Introduction to OSHA
- Conducting Electrical Inspections
- Hazards of Electricity
- Training Requirements
- Working on Energized Circuits or Parts, Lockout/Tagout
- Electrical Work Practices
- Personal Protective Grounding
- Test Equipment
- Equipment Maintenance
- Switching and Clearing Procedures
- Clearance Distances
- Electrical Hazards in Limited Spaces
- Portable Electrical Equipment
- Arc Flash Calculations

With 3rd Day Arc Flash Calculations Workshop

\$1099 (E3S) (See Schedule Page S-1)

This Seminar has a prerequisite of attending the ES Seminar shown above.

Students attending this optional third day of the Electrical Safety 2-day seminar, will learn how to calculate fault current and incident energy levels by various methods and will learn how these values change throughout their facility. Additionally, attendees will see how changes made by the supplying utility effect the protection characteristics of their electrical distribution system. Determination of the proper PPE is based upon specific detailed descriptions of the job hazards. The complete process of Job Hazard Analysis includes:

- The notification of all effected persons
- Proper tool selections
- Detailed task descriptions
- Hot work permits
- Lockout/Tagout Procedures

Attendees will create a reference document that can be expanded on-the-job as new tasks are chronicled and analyzed. The Job Hazard Analysis process details the tasks for specific locations and proactively assigns responsibilities, procedures, and equipment for the workers and supervisors involved with electricity or electrical systems.

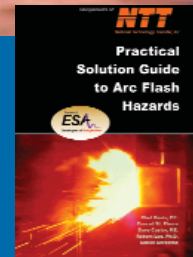
The Best Approach to Safety Is A Proactive Approach!

In 2000, 493 people died from contact with electric current according to the Bureau of Labor Statistics and a multiple of that many people have been seriously burned. The damage, in human terms, is incalculable. The damage done to the companies involved was disastrous. **A proactive model is 6 to 10 times more cost-efficient than the reactive one!**



Go to Our Web Site To Get Your FREE Electronic Copy of: A Practical Solution Guide for Arc Flash Hazard.

—A \$70.00 Value!



Electrical Safety For Electric Power Generation, Transmission and Distribution 2 Days

\$799 (See Schedule Page S-2) (HS)

Provide Safety Information for OSHA Electrical Safety-Related Work Practices **29 CFR 1910.269** —Protect Yourself, Your Employees, and Your Company!

This **2-day seminar** will provide safety training for any employees working in the following disciplines:

- High Voltage Electrician • Substation Mechanic • Line Foreman • System Operator • Apprentice • Lineman.

This seminar is ideal for management, training, and compliance personnel so they may evaluate their company's safety program and identify the specific training needs of their employees.

It covers:

- Inspection • Switching-connection and disconnection
- Maintenance of lines and equipment testing and
- Streetlight relamping

You will learn:

- Your responsibilities according to OSHA
- How to define a "Qualified" person
- OSHA training requirements
- Concepts of minimum-approach distances
- How to accomplish equipotential zone groundings
- The simplest, most effective way to create a safe work environment
- Proper use of Personal Protective Equipment



Save Time and Money with this Combination Seminar:

NFPA 70E/Arc Flash Electrical Safety with Safety For Electric Power Generation, Transmission and Distribution 3 Days

\$1099 (See Schedule Page S-1 and S-2) (E3H)

Get In-Depth Safety Training On Both Industrial Systems and Electrical Utility Systems!

This **3-day seminar** helps you meet mandatory training requirements with a single, comprehensive seminar. It combines two days of electrical safety for industrial locations with a third day for electrical utility systems. (Third day is optional.) All Qualified employees performing operations or maintenance work, or who have access to electric power generation, transmission and distribution installations must be

trained according to OSHA standards. With this seminar you'll get the training you need to reduce liability exposure and dramatically improve on-the-job safety—plus, you can do it at a **substantial savings in both time and money** as compared to taking seminars individually!

Meets OSHA Requirements Based Upon NFPA 70E Standards

In the Arc Flash Electrical Safety Seminar You will learn:

- To identify and control electrical hazards
- OSHA's "Qualified Worker" requirements
- The new NFPA 70E arc-flash requirements
- To properly apply OSHA's electrical safe work practices
- To select and properly use appropriate personal protective equipment

In the Safety for Electric Power Generation, Transmission and Distribution Seminar You will learn:

- How to develop and apply proper switching procedures
- "Equipotential Grounding" and its application on the job
- Understand the OSHA clearance procedure requirements
- The OSHA training requirements for workers having access to or working on electrical utility systems



Call 800-922-2820 to Enroll Now!

Plumbing Codes and Standards

**Learn the Requirements for Installation and Inspection of Plumbing Systems—
Assure Your Compliance with Codes and Avoid Costly Reinstallations.**

NTT's intensive 2-day plumbing code seminars address and illustrate the administration, definitions, and general regulations and practices of plumbing codes. The provisions of these codes apply to the erection, installation, alteration, repairs, relocation, replacement, addition to, and use or maintenance of plumbing systems. The seminars include training related to fixtures, faucets, fixture fittings, water heaters, water supply and distribution, sanitary drainage, indirect and special waste, vents, traps, interceptors, separators, storm drainage, and fuel and gas piping. These seminars are essential for personnel who use or are exposed to plumbing systems, and companies that employ such professionals, in order to keep up with, understand, and apply the applicable plumbing code, regulations, requirements and changes.



International Plumbing Code™ 2 Days

\$799 (See Schedule Page S-2)

(IP)

The International Plumbing Code is the result of collaboration of the members of the International Code Council (ICC): BOCA, ICBO, and SBCCI. The International Plumbing Code addresses the design and installation of plumbing systems through requirements emphasizing performance. It is designed to meet these needs through model code regulations that safeguard the public health and safety in all communities. This comprehen-

sive plumbing code establishes minimum regulations for plumbing systems using prescriptive and performance-related provisions and encourages international consistency in the application of provisions.

This NTT seminar is essential for all companies, professional plumbers, and personnel located in jurisdictions regulated by the International Plumbing Code.

Uniform Plumbing Code™ (On-Site Only) 2 Days

Call for Pricing

(UP)

The Uniform Plumbing Code was developed as a result of inconsistencies in the plumbing industry as a result of widely divergent plumbing practices and the use of many different and often conflicting, plumbing codes by local jurisdictions. The Uniform Plumbing Code is a creation of the IAPMO. In addition, this code has been developed through the collaborative efforts of ASSE, ASHRAE, MCCA, NAPHCC, NFPA, UA, WFC, and

WOC. This code establishes the standards for the protection of public health, safety, and welfare through the proper installation and inspection of plumbing systems, and is designed to provide consumers with safe and sanitary plumbing systems.

This NTT seminar is essential for all companies, professional plumbers, and personnel located in a jurisdictions regulated by the Uniform Plumbing Code.

Plumbing Standards™ 2 Days

\$799 (See Schedule Page S-2)

(PS)

The 2-day Plumbing Standards seminar was developed by NTT to cover the major aspects of both the International Plumbing Code and the Uniform Plumbing Code. Many plumbing professionals work in different states, counties, and localities, and as result, these professionals must be knowledgeable and confident with both codes. In addition, many companies have sites in vari-

ous locations which are governed by different plumbing codes.

This NTT seminar is essential for all companies, professional plumbers, and personnel located in jurisdictions regulated by both the International Plumbing Code and the Uniform Plumbing Code, or are not exactly sure as to the regulating body.



National Fire Alarm Code™ (NFPA 72) 3 Days

with NICET® I and II 2 Days

(FA5N)

\$1599 (See Schedule Page S-2)

Improve system reliability and achieve maximum safety and compliance!

This intensive 5-day seminar has been designed to thoroughly examine all of the key aspects of the National Fire Alarm Code, including fundamentals of fire alarm systems; minimum requirements; required documentation; location and spacing requirements, choosing the right detectors; environmental factors in

smoke detection, plus inspection, testing and maintenance. The seminar also focuses on HOW to use the various codes that govern fire alarm system design and installation. The knowledge gained in this three day seminar will be able to be directly related to the NICET examination elements.



Hands-on National Fire Alarm Code Agenda—3-Days \$1099

Fundamentals of Fire Alarm Systems

- Terminology and definitions
- Phases of a fire hazard
- Primary and secondary power supply requirements
- Determining proper sizes for batteries and battery chargers
- System operation and compatible components
- Required documentation

Fire Warning Equipment for Dwelling Units

- Minimum and suggested detection requirements
- Use of household vs. protected premises fire warning equipment

Protected Premises Fire Alarm Systems

- Circuit designations and repetitive deficiencies
- DC, SLC, and NAC circuit installation requirements and pitfalls
- Component location requirements
- Coordination with other related systems

Supervising Station Fire Alarm Systems

- Available signal transmission methods
- Classification of protective signaling systems

Initiating Devices

- Principles of operation of the various automatic detectors
- Choosing the right detector for the right location
- Installation points and repetitive deficiencies
- Proper spacing requirements
- Requirements of concealed detectors
- Environmental factors in smoke detection
- Smoke detection for air duct systems
- Detectors in high air movement areas

Notification Appliances for Fire Alarm Systems

- NFPA, ADA, and UFAS requirements for notification appliances
- Notification appliance location requirements

- Determining proper wire sizes
- Repetitive deficiencies

Inspection, Testing, and Maintenance

- Who is responsible for testing
- Required documentation and certification
- Proper testing techniques of initiating devices
- Required testing of notification appliances
- Testing of system wiring

The relevancy of the Fire Alarm Code® to other NFPA codes, such as NFPA 13, NFPA 20, NFPA 70, and NFPA 101.

Take each course separately or SAVE \$300 by taking these courses TOGETHER!

With the increased requirements of NICET certification by Authorities Having Jurisdiction, it is important to make sure Technicians are thoroughly trained and prepared to get the proper certification!

NICET® I and II Certification Preparation Agenda—2-Day Lecture \$799

NICET® Background

NICET® Level I Element Review:

Core Elements Including

- Basic fire alarm systems
- NFPA standards
- Basic wiring
- Device and components
- Periodic tests
- Basic electricity
- Metric units and conversions

Noncore Elements

- Basic working drawings
- Basic mathematics
- Installation practices
- Basic communication skills

Special Elements

- Plans, specifications, and contracts

- Basic physical science
- Fire warning equipment for dwelling units
- Basic individual safety
- First aid procedures

NICET® Level II Element Review:

Core Elements Including

- Fire protection plans and symbols
- Basics of system layout
- Electrical installation standards
- Basic fire alarm signaling systems
- Supervision and supervisory services
- Detection methods
- Detector spacing
- Power supplies
- System acceptance and periodic tests

Noncore Elements

- Construction plans
- Specifications and cost estimates

- Contracts and building codes
- Insurance authorities and their requirements
- Governmental agencies
- Protective premises fire alarm systems
- Auxiliary fire alarm systems
- Supervising station fire alarm systems
- Central station fire alarm systems

Special Elements

- Emergency voice/alarm communications systems
- Signal processing
- Surveys for fire alarm and detection systems
- Fire alarm system maintenance
- Fire alarm system wiring
- Emergency evacuation signals
- Combination systems



Call 800-922-2820 to Enroll Now!

The 2008 National Electrical Code® change is coming.... Are You Prepared?

Schedule Your 2008 NEC Training with NTT Now and Save Money!

Lockout/Tagout Requirements and Procedures (On-Site Only) 1 Day

Call for Pricing

(LO)

**This Seminar Presents OSHA's Basic "Hazardous Energy Control" Program and More!
Provide Engineering and Administrative Controls (Lockout/Tagout) for Your Staff.**

This 1-day seminar discusses the methods used to protect employees from injury due to the inadvertent release of hazardous levels of energy. Lockout/Tagout provides an in-depth look at the regulatory standard addressing Lockout/Tagout. This seminar is designed to

meet and exceed the safety training requirements defined in the OSHA Control of Hazardous Energy standard paragraph 29 CFR 1910.147 and the Lockout/Tagout procedures of 29 CFR 1910.333 Selection of Work Practices.

Life Safety Code® NFPA 101 (On-Site Only) 3 Days

Call for Pricing

(LS)

Complying with the Code Saves Lives!

This 3-day seminar is a must for Building Inspectors, Building Managers, Facility Engineers, Safety Inspectors, Code Enforcers, Engineers, Architects, Building Owners and Insurers, Building Product Manufacturers including Fire Suppression and Alarm

Systems, and anyone in a building-related field. This seminar addresses specific requirements that directly influence the safety of people protection of property and equipment.

OSHA 10 or 30-Hour Safety Training (On-Site Only) 2 or 4 Days

Call for Pricing

(OS4H)

**Learn How to Design and Implement Employee-Protection Programs—
Avoid OSHA Violations and Penalties...Reduce Insurance Costs**

**Get Your OSHA
Compliance Card!**

This 2-day or 4-day seminar will provide the information necessary to inform and train employees properly, plus design and implement employee-protection programs.

Natural Gas Safety (On-Site Only) 3-Days

Call for Pricing

(NG)

**Learn about the Operational and Safety Procedures for Facilities that Utilize Natural Gas—
Improve Reliability, Increase Safety and Save Fuel!**

This intensive 3-day seminar addresses general safety practices in both outside distribution systems and inside equipment piping. It will help you understand the codes and standards as applied to natural gas usage in commercial and industrial facilities.

Learn about Leak testing, Materials of Construction, Attachment methods, Lock/Out and Blanking requirements, Corrosion control as well as venting requirements in this thorough and comprehensive seminar.

Confined Space Entry (On-Site Only) 1-Day

Call for Pricing

(CS)

Learn to Develop and Implement an Effective Confined Space Program and Avoid OSHA Penalties!

This intensive 1-day seminar will benefit employees who have identified permit-required spaces and must develop a written program for identifying and evaluating hazards, preventing unauthorized

entry, and establishing safe entry procedures. This includes Safety Personnel, Maintenance Personnel, Facility Managers, Supervisors and personnel who might work in confined spaces.



2005 National Electrical Code® 3 Days with Grounding and Bonding of Electrical Systems 2 Days

\$1599 (See Schedule Page S-3 and S-4)

(EC5G)

With This 5-day Seminar, Get a Solid NEC® Foundation—Protect Yourself from Harm... Your Clients and Workers from Fire, and Your Company from Potential Liability and Fines!

Learn the Requirements for Grounding and Bonding according to the 2005 NEC® and How to Avoid Grounding Problems!

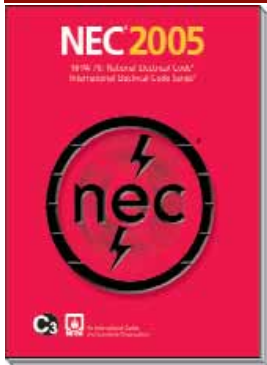
The National Electrical Code in the first three days:

- Understand the format and scope of the NEC
- Effectively apply the NEC to real life problems in your company
- Understand the significance of recent changes to the 2005 Code

And if you attend the next two days of Grounding and Bonding you will also learn:

- Requirements for grounding, installation and maintenance of electrical systems.
- How to amplify the NEC requirements for grounding
- The purpose of grounding and bonding

2005 National Electrical Code Agenda—3 Days \$1099



You will learn:

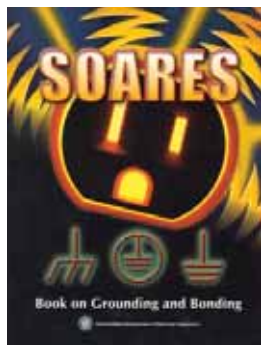
- The NEC® requirements for grounding
- The purpose of grounding and bonding
- Grounded and ungrounded electrical systems
- How grounding conductors are properly identified
- Distinguishing between neutral and grounded conductors
- Methods for grounding electrical systems
- Clearing ground faults and short circuits
- new classifications in hazardous areas that have been updated for combustible dusts, ignitable fibers, and flyings, and much more!

A 2005 Code Book, plus a Cross-reference Bookmark For Attendees!

For the Best Value Take These Two Essential Seminars Together and Save \$300!

Look for the **NEW 2008 NEC® Code Seminars** from NTT coming Fall 2007!

Grounding and Bonding of Building Electrical Systems Seminar Agenda—2 days \$799



In This Seminar You'll Learn:

- When and where ground-fault protection equipment is required by the NEC.®
- The grounding requirements for building services.
- The requirements for installation and maintenance of electrical systems in hazardous (classified) locations.
- How to select and size conductors for different applications, physical environments, and layouts. in hazardous (classified) locations



NEC® 2005 code book cover reprinted with permission from the National Fire Protection Association, Quincy, MA 02169, ©2004 NFPA • SOARES book cover used by permission of IAEE

Look for the **NEW 2008 NEC® Code Changes Seminars** from NTT coming Fall 2007!

2005 National Electrical Code® Changes (On-Site Only) 2 Days Provides You With Keys to Understanding Changes to the 2005 NEC®

(NU)

Call for Pricing

Attendees get a complete review of the changes made to the 2005 NEC®, including many new, and deleted rules. We will teach you how to find the rules that apply to your facility, and will answer

your specific code questions. In addition, restructured, new articles, and how they apply to your facility will be covered. Plus much, much more!

NEC®

Call 800-922-2820 to Enroll Now!

Basics of Industrial Electricity with Safety Awareness 3 Days

HANDS-ON

\$1099 (See Schedule Page S-5)

(EY)

Learn the Nature and Applications of Industrial Electricity—**Cross-train Nonelectrical Tradespeople!**

This comprehensive **3-day Hands-On seminar** has been designed to teach your nonelectrical personnel the basic nature of electricity in the workplace. Theory is explained in simple, easy-to-understand terms without complex mathematical equations. Key concepts are reinforced with practical Hands-On activities. This gives students a firsthand feel for real-world applications. Attendees will gain valuable experience using electricity in an industrial setting and understanding its function in an electrical circuit. Electrical safety issues are also covered.



You will learn:

Fundamentals

- Electricity in simple terms
- AC and DC voltage and current
- Electrical safety
- Transformer operation
- Effective use of the multimeter and what measurements really mean
- Generator action and principles

- Troubleshooting electrical circuits, plus much more

Applications

- Electrical terminology
- Timers, contactors, and motor starters
- Motor operation, AC and DC
- Relay operation

Troubleshooting Electrical Control Circuits **HANDS-ON**

with Safety Awareness 3 Days \$1099 (See Schedule Page S-5)

(MC)

Learn to Wire, Operate, and Troubleshoot a Circuit Before Noon on Day 1 and **Sharpen and Improve These Skills With Continued Hands-On Training!**

During this **3-day Hands-On seminar**, you will spend approximately 70% of the time actually working at a troubleshooting station with circuits that are identical in every respect to motor control circuits in your plant. There is no lengthy discussion of electron theory, magnetism, or any other basic subject in this seminar.

It is devoted almost exclusively to teaching Hands-On troubleshooting, using the simple circuit and gradually becoming more complex. You will leave with only the material you need, and NTT's Hands-On instruction makes it easier to retain your new skills far into the future.

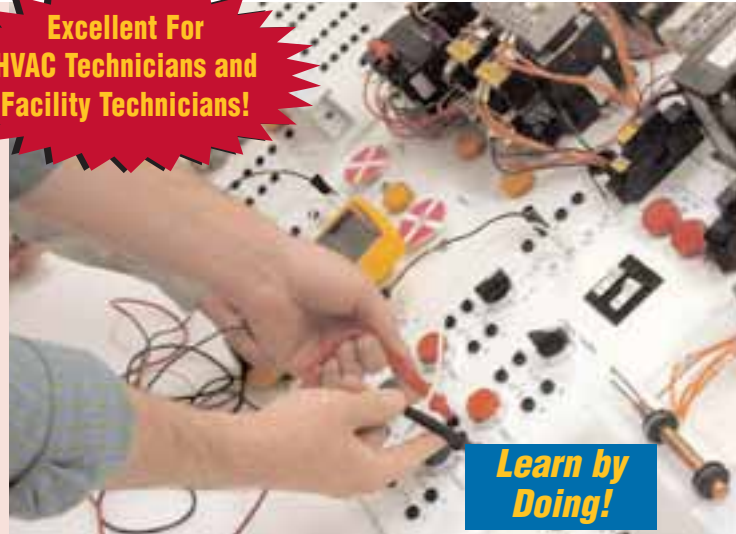
You will learn:

- Practical, useful troubleshooting techniques that can be put into immediate use in the plant
- Precisely identify circuit faults using simple, quick and proven troubleshooting techniques with confidence
- About common circuits for controlling pumps, air compressors, hydraulic systems, heating and air conditioning systems, etc.

Excellent For HVAC Technicians and Facility Technicians!

Partial Agenda:

- Electrical and Multimeter Safety • Electrical schematics
- Mapping control circuits—ladder diagrams • Logical circuits • Basic electrical principles • Transformers
- Disconnecting devices • Control elements—switches and loads • Ground fault protection • Motor overload protection • Logical, sequential troubleshooting suggestions



Basics of

Industrial Electricity/ 2 Days \$899

Troubleshooting Electrical Control Circuits 2 Days \$899

with Safety Awareness

\$1499 (See Schedule Page S-5)

HANDS-ON

(EYMC)

Learn the Nature and Applications of Industrial Electricity and How to Wire, Operate, and Troubleshoot a Circuit—All in One Combination Seminar!

By popular demand, this new 4-day hands-on combination seminar was developed by NTT to provide 2 related subject matters in 1 seminar. This seminar is an important and valuable part of training for you and your company. Receive training on both subjects at this seminar and **save time and money**. Compare this NTT "real-life, hands-on" seminar to lecture-only training offered by our competitors and see the substantial savings we offer.

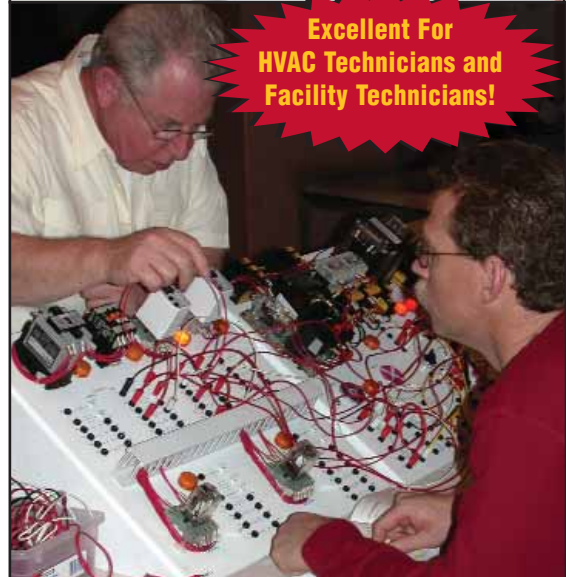
***New Combination Seminar
Beginning June 1, 2007!***

***Take each course separately or
SAVE \$300 by taking these courses TOGETHER!***

You will learn:

- Basic Theory
- Safe Electrical Work Practices
- Generators and Transformers
- Multimeters and Test Equipment
- Electricians' Tools
- Solid-State Devices
- Lighting and Heating
- Common Control Circuits
- Common Circuit Problems and Diagnosable Symptoms
- Protective Devices
- Conductors and Raceways
- Common Wiring Devices
- Troubleshooting Techniques
- How to Avoid Downtime and the Resulting Lost Profits

Learn by Doing!



**Excellent For
HVAC Technicians and
Facility Technicians!**

Ask Our NTT Sales Team How Our Combination Seminars Can Save You Money!

Throughout our catalog you will find several seminar topics that are offered back-to-back. We've paired them together to provide you with opportunities to learn more about related topics and **save money!** Call us to find out which combination seminars might be right for you or your crew!

Not one training provider out there can match the quality, scope, and value of NTT training. You can be sure that you will get the information you need to improve job performance and save money. You get the best value for your training dollars in the industry when you train with NTT!

Contact us at (800)922-2820 or visit www.nttinc.com to find out more about combination seminars today!

Call 800-922-2820 to Enroll Now!



Fundamentals of Programmable Logic Controllers 3 Days with PLC Automation Systems 2 Days

HANDS-ON

\$1699 (See Schedule Page S-5)

(PC5AP)

Learn How To Turn An HMI/PLC System Into A Troubleshooting Tool!

New State-of-the-art Training Stations!



During this **5-day seminar**, you will spend approximately 60% of the time actually working with various programmable controllers in a small group, learning to program, solving elementary and then more complex problems, and troubleshooting.

While the PLC is designed for machine control, operator interfaces (OIs, or human machine interfaces—HMIs) can integrate with a PLC to access information about the machine, and can significantly reduce trou-

bleleshooting time by programming the HMI to be a well thought, real-time troubleshooting tool. Students spend about 60% of the time involved in hands-on exercises programming the PLC, configuring and setting up screens, control devices, alarms, fault logs, and much more on the HMI.



Fundamentals of Programmable Logic Controllers Agenda—3-Days \$1099

PLC Architecture

- Rack, power supply, processor, I/O
- Smart modules
- Communication networks
- Programming tool—software

Input and Output (I/O) Systems

- I/O interfaces - voltages
- Data transfer from module to processor
- Number of I/O per module
- Analog data vs. digital data
- Sizing system requirements

Ladder Logic vs. Relay Logic

- Ladder diagrams vs. ladder logic
- Sensor and load connections to the PLC
- Rungs and instructions

Troubleshooting and Diagnostics

- Configuring communications
- Debugging and diagnostic tools

Relay-Type Instructions

- Examine if open/closed
- Output energize, output latch/unlatch
- Differences between instructions and field devices (on/off vs. open/closed)

Addressing, Data Memory, and Scan Time

- I/O address relation to module location
- data memory—integer binary
- Register memory vs. bit-wise memory
- I/O, memory, and rung scan process

Additional Instructions and Associated Bits

- On-delay/Off-delay timers, control bits

- Counters, and control bits
- Moving data
- Math instructions
- Comparison instructions

Hands-on Application Exercises

- Motor start/stop circuits
- Trapping random faults, signaling alarms
- Tank-level controls
- Sequence-controlled conveyors
- Batch control processes
- Troubleshooting communication problems
- And much more!

Take each course separately or SAVE \$300 by taking these courses TOGETHER!

These two seminars can pay for themselves by reducing unscheduled downtime!

PLC Automation Systems Agenda—2-Days \$899

Modern Systems Overview

- PLC and HMI system
- PLC communication networks
- Programming, troubleshooting and diagnostic tools

Human Machine (Operator) Interfaces (HMIs) and SCADA systems Overview

- Suggested HMI design guidelines
- HMI to PLC communication options
- HMI/PLC development process
- HMI to PLC database layout

Human Machine (Operator) Interfaces (HMIs) Exercises

- Create structured data tables in PLC and HMI
- Create operator screens

- Identify HMI/PLC communication parameters
- Design digital control elements—push buttons and indicators
- Bar scales and analog control elements
- List files and alarming methods
- Program real-time faults, and alarms

I/O Bus Networks Overview

- Interface and communication options
- Byte wide, bit wide, and process networks
- Wiring, power, and termination methods
- Communication modules
- Bus network addressing
- Determining the right network for your application

Networking/Communication Exercises

- Configure communication modules
- Wiring connections
- Troubleshooting network problems

- Ladder logic control of networked remote I/O
 - Interface network with HMI
- #### Diagnosing Networks
- Troubleshooting network errors
 - Cabling, connection, and power faults
 - Network analysis tools



Variable Frequency Drives 3 Days

\$1099 (See Schedule Page S-6)

HANDS-ON

(VS)

Save Money in Energy Costs! Improve Reliability and Extend the Life of Your Drives With Proper Installation and Maintenance.

The purpose of this 3-day seminar is to thoroughly examine this exciting technology: how it works, where it may be effectively applied, various types of Variable Frequency Drives, operations, maintenance, and troubleshooting considerations, potential benefits, and applications. Learning about VFD technology is ideal training for Electricians, Maintenance Mechanics, Service Technicians, Plant Engineers, and HVAC Specialists who want to improve their knowledge base, expand their job capabili-

ties, and increase their earning potential.

Rotating equipment consumes 50% of the total electrical energy generated in this country. Current estimates indicate that 65% of this total is consumed by centrifugal or flow related applications such as pumps, fans, blowers, and compressors. Variable drive technology offers a cost-effective method to match driver speed to load demands and represents a state-of-the-art opportunity to reduce operating costs and improve overall productivity.

**Train on Drives
From Two of the Industry's
Top Manufacturers!**



In This Intensive 3-Day Seminar You will learn: **Learn by Doing!**

- Electrical and power transmission basics
- AC induction motors
- Operation, setup and maintenance of VFD
- Bypass Systems
- Energy saving techniques
- How to program drive parameters
- Troubleshooting and fault handling
- Speed, torque and horsepower relationships related to variable frequency drives
- The effects of running motors at very low speed, above base speed and varying speeds
- Improve reliability and extend the life of your motors and drives with proper installation and maintenance

Hands-On lab exercises include:

- Scopemeter monitoring of voltage and frequency
- Adjusting and programming drive parameters
- Manipulating external drive control wiring
- Deciphering fault diagnostics AND correcting problems
- Using the drive diagnostics to troubleshoot

Electric Motors (On-Site Only) 2 Days

Call for Pricing

HANDS-ON

(EM)

Maintain and Troubleshoot the Performance of the Electric Motors You Work Around Every Day!

This 2-day Hands-On seminar includes demonstrations with live electrical circuits, covering everything from basic operational theory to the actual operation of various types of AC and DC motors. No prior electrical experience is required for this seminar.

You will learn: **Learn by Doing!**

- How electric motors operate
- What types of AC and DC motors are commonly used
- Identification and construction of motors
- How to connect a multiple speed motor for operation
- How to connect a dual voltage motor for operation
- and Much, Much More!

Electric Motors Agenda

| | | |
|--------------------|------------------------------------|---------------------------------|
| Basic Motor Theory | National Electric Code® and Motors | Maintenance and Troubleshooting |
| Nameplate Data | Single-Phase Motors | Motor Selection |
| Three-Phase Motors | DC Motors | |



Call 800-922-2820 to Enroll Now!

Introduction to Instrumentation and Process Control 3 Days

HANDS-ON

\$1099 (See Schedule Page S-6)

(IA)

**Training Process Control Personnel Can Save You Time and Money—
Become More Efficient at Troubleshooting and Calibrating Process Control Equipment!**



During this **3-day Hands-On seminar**, you'll spend approximately 40% of the time actually working with various instruments and controllers. Seminars are segmented into small groups so you get plenty of firsthand instruction learning to program, connect input/output devices, solve elementary and then more complex problems, and troubleshoot. With the recent industry trend toward downsizing, adding this ability to your multiskill set will make you more valuable and increase job security at the same time.

You will learn:

Learn by Doing!

- How to troubleshoot process controls, including sensors, transmitters, controllers, and final elements
- How the various instruments measure temperature, pressure, flowrate, level and position, pH, weight and density
- What causes errors in instruments, and how to reduce and troubleshoot them
- Differences between open and closed loop controls, feedback and feed forward controls, PLC, DCS and stand-alone controllers
- How analog signals are produced, processed, and protected from noise
- What Proportional, PI, and PID control strategies are
- How to calibrate transmitters and tune controllers

Electrical Print Reading From Construction to Control (On-Site Only) 2 Days

Call for Pricing

(SCL)

Learn To Interpret Architectural Electrical Drawings Electrical Blueprints, Diagrams, and Schematics!

This **2-day seminar** provides the skills you'll need to interpret electrical drawings properly. You'll interpret the various diagrams and schedules in a typical construction project, examine prints for errors and NEC® compliance and much more!

You will learn:

- Read and interpret architectural electrical drawings, known as construction blueprints
- Understand electrical specifications
- Employ the applications and ratings of electrical devices and components
- Identify National Electrical Code® (NEC®) requirements for electrical systems
- Identify real equipment with schematic symbols
- Examine basic electrical concepts such as voltage drop, conductor fill, short-circuit analysis, kVA ratings, service calculations, and more

Maintaining Building and Facility Electrical Systems (On-Site Only) 2 Days

Call for Pricing

(BF)

Learn to Design, Modify, and Maintain Building and Facility Electrical Systems

In this **2-day seminar** you will learn how various building electrical components work and how systems are designed. Learn how to size conduit and wire for power and lighting loads in accordance with NEC® standards.

Basic Electronic Circuits (On-Site Only) 3 Days

Call for Pricing

HANDS-ON

(IE)

Learn to Install, Maintain, Spec, and Manage Electronic Control Equipment More Effectively

This **3-day Hands-On seminar** will deliver a thorough understanding of installing, programming, maintaining, buying, and/or specifying electronic control equipment. This class is an excellent preparation for variable speed drive training.

Tuning DDC/Process Control Loops (On-Site Only) 2 Days

Call for Pricing

HANDS-ON

(PR)

Learn to Optimize Your Process with Proper Setting and Tuning of DDC or Control Loops—

In this **2-day Hands-On seminar**, participants will learn basic control terminology and definitions, (i.e. proportional band, integral and derivative.) and understand the process characteristics that become the basis for tuning the DDC or process controller.



When those other training providers advertise their Hands-on training, be sure to ask them: How MANY hands, and what exactly are they on?



All Training Is *Not* Created Equal!

**Get the Right Training.
The Right Way!**



With NTT you **won't** experience overcrowded and stripped down equipment. You will get high quality training materials, and hands-on opportunities to reinforce your learning.

When you want breakthrough industrial training that really makes a difference in employee performance, and systems efficiencies, you have to use the right training provider. If you want a results driven industrial training experience, NTT is the industrial training powerhouse! Not one training provider out there can match the quality, scope, and value of NTT training. Respected

industry expert instructors give you all the relevant information you need to improve job performance and save money. You get a thoroughly focused learning experience—and that's why, for over twenty three years, NTT has been the nation's leading industrial training provider with an astonishing 99% customer satisfaction rating!



For more information, call us today at 800-922-2820 or visit us at www.nttinc.com

Call 800-922-2820 to Enroll Now!

Air Conditioning and Refrigeration 3 Days and Principles of Heating Applications 2 Days **HANDS-ON**

(HVAC)

\$1699 (See Schedule Page S-7)

The Critical Information You Need to Maintain HVAC Systems Safely and Efficiently!

During this 5-Day seminar you will learn:

- Air-Conditioning and Heating principles
- New refrigerant blends—including R-410a
- Refrigeration system operation
- Heating system wiring and troubleshooting
- Energy conservation measures
- How to legally recover, recycle, and reclaim refrigerants
- Troubleshooting AC and Refrigeration system electrical and mechanical problems

You'll Want To Attend This Seminar If You Are:

Anyone who deals with refrigeration, air conditioning, or heating on a regular basis, including *Maintenance Technicians, Service Technicians, Building Managers, Apprentice HVAC Technicians, and personnel interested in acquiring new skills.*

The seminar is also perfect for those who require a refresher course, or want to expand their capabilities through crosstraining.

Save Money On Energy!

This seminar will provide valuable tools to help reduce your energy costs!

What would you save in fuel costs with a 1% rise in efficiency?

AC; HV and HV5A seminars qualify for NATE® Continuing Education Credits!



NTT-trained students average a 90% pass rate on the EPA Certification Exam!

Air-Conditioning and Refrigeration Seminar Agenda—3-Day \$1099

Thermodynamics

- Laws of thermodynamics
- Heat transfer theory
- Heat and temperature measurement
- British thermal unit
- Sensible heat, latent heat, specific heat, superheat
- Gas laws
- Pressure/temperature/volume relationships

Refrigeration Theory and Systems

- The refrigeration cycle, change of state of refrigerant
- “Follow the Heat”—heat transfer within the refrigeration system

Metering Devices

- Capillary tube
- Thermostatic expansion valves

Refrigerants

- Refrigerants—new blends, azeotropes and zeotropes
- Refrigerant oils
- Refrigerant recovery, recycling, reclamation
- EPA Clean Air Act, Sect 608 Regulations

AC and Refrigeration System Service

- Service equipment and procedures
- System start up
- System troubleshooting

AC and Refrigeration Systems

- Package units and unitary systems
- Heat pumps
- Refrigerated display cases
- Walk-ins
- Ice machines

Air Conditioning and Refrigeration Components

- Compressors
- Condensers
- Evaporators
- Metering devices
- Valves and piping
- Auxiliary components

FREE EPA 608 or 410A Certification Exams Included!

Certification Exams



Principles of Heating Applications Seminar Agenda—2-Day \$899

Gas Fired Heating Systems: Design and Operation

- Gas fuels and combustion theory
- Gas regulators, valves, burners
- Heat exchangers
- Pilot safety controls: thermocouples, standing pilot, direct spark
- Glow-coil ignition, hot surface ignition
- Safety devices and controls

Gas Fired Heating Systems: Maintenance and Troubleshooting

- Combustion efficiency
- Troubleshooting ignition problems
- Preventive maintenance procedures

Controls and Control Systems

- Thermostats
- Anticipators

Psychrometrics (Study of Air)

- Comfort, humidity, humidification, dehumidification
- Wet-bulb and dry-bulb temperature, relative humidity
- Psychrometric chart and air movement
- Fans, centrifugal and axial
- Filter design, selection, and maintenance



Take each course separately or **SAVE \$300** by taking these courses **TOGETHER!**

Electrical Components of HVAC Systems

- Electrical fundamentals
- Electrical Safety Awareness
- Electrical diagrams
- Electrical test equipment
- Electrical troubleshooting
- Electrical system components

Maintenance and Troubleshooting of Rooftop Units

- Fault occurrence
- Scheduled and typical maintenance
- Early detection and diagnosis of problems
- Troubleshooting techniques

This Seminar Pays For Itself Many Times Over Through Reduced Operating Costs!

Boilers 3 Days

\$1099 (See Schedule Page S-6)

HANDS-ON

(BO)

Training for a Safe Efficient Operation of Commercial and Industrial Boilers Really Pays Off! What Would You Save in Fuel Costs With a 1% Rise in Efficiency?

Starting at the introductory level with a discussion of boiler components, language and key operating criteria, this intensive, practical **3-day Hands-On seminar** utilizes customized training stations to enhance and reinforce the understanding of the critical set-up and operating features of this equipment. The seminar concludes with a summary

discussion of the essential operating features followed by a thorough presentation regarding preventive maintenance tips and practical troubleshooting considerations.



You will learn:

- Boiler construction features and essential components
- Flame safeguard and burner component details
- How to read wiring and programmer diagrams
- How boilers, burners, and programmers integrate
- Common failure modes and what to do to prevent them
- Preventive maintenance considerations and how to establish a proper PM program
- Advanced troubleshooting and problem solving skills

Partial Agenda:

- Operator responsibilities • Boiler types and construction
- Codes and standards • Operating and safety • Controls
- Flame safeguard • Fuels • Combustion systems • Combustion theory and tuning • Water treatment • Plant operations
- Maintenance and repairs • Many Hands-On exercises
- Schematic wiring diagrams • Plus much more!

Chillers 3 Days

\$1099 (See Schedule Page S-8)

HANDS-ON

(CW)

Structured Enough for HVAC Techs, Yet Broad Enough for Building Superintendents. Learn the Latest Techniques for Optimizing Your Chilled Water System.

The Only Hands-On Chiller Training Available!

Whether you maintain and service HVAC systems, chillers, or cooling towers, or oversee all the functions of a facility, it is imperative that the water-cooling system operates at maximum efficiency. This **3-day Hands-On seminar** will provide you with the skills and experience necessary to keep your system functioning at optimum performance. You'll also get up-to-date information on the latest technology so you will understand all of the available options for maintaining your system at peak performance.

You will learn about:

- Different types of chillers
- Compression and absorption machines
- Cooling towers: operation and maintenance
- Chilled water system operation
- Water quality standards and treatment for chilled water and towers
- Effective operation, troubleshooting, and maintenance practices
- Gain increased understanding of chiller design
- Improve your interface with chiller maintenance service companies
- Prevent catastrophic failures by establishing more effective monitoring
- Avoid water treatment problems
- Glycol (antifreeze) systems

Agenda:

- Chiller Types: Construction and Operation, Compressions, Absorption (Refrigerant Used, Compressors, Purge Units) • Condensers (Air Cooled, Water Cooled) • Chilled Water System (Pumps, Temperatures, Flow Rates, Water Chemistry, Terminal Units, Glycol Fluids) • Condenser Water Systems • Cooling Towers: Types, Designs, and Operation • Heat Exchangers
- Thermal Ice Storage

**FREE EPA
608 or 410A
Certification Exams
Included!**



Call 800-922-2820 to Enroll Now!

Hydraulics Training and System Troubleshooting 4 Days

\$1399 (See Schedule Page S-8)

(HY4T)

What Does a Single Hour of Unscheduled Downtime Cost You?—Learn What You Need to Know About Hydraulics and System Troubleshooting Technology!

Whatever your fluid power applications, this 4-day Hands-On seminar will increase your knowledge of basic hydraulics, make you a better

troubleshooter, and lower maintenance costs. Training stations and Hands-On lab groups of 3 people or less give you valuable personal instruction.



Do You Know What You Need To Know About Troubleshooting Your Hydraulics Systems?

- You have no pressure in your system. Where would you look?
- You have no fluid flow. Where would you look?
- Which measurement instrument detects true cavitations?
- What could be the cause of a frequently blown shaft seal on a hydraulic pump?
- What causes excessive high pressures?
- What could be the cause of excessive high fluid temperature?

If you can't answer all of the questions above, you will benefit from this seminar!



You will learn:

- Basic hydraulic components, how they work, and their function in a hydraulic circuit
- How to reduce downtime
- How to read hydraulic schematics
- Basic skills needed to be an effective hydraulic troubleshooter
- To work safely with industrial/mobile hydraulic systems components
- To make minor repairs by understanding the operation of various components
- To implement a preventive maintenance program to reduce premature system failure, plus much more

Partial Agenda:

- Principles and laws • Principles of operation
- Pressure controls • Flow controls • cylinders
- Fluids • Directional controls • Hydraulic motors
- Pipe/tubing/hose • Transmission lines/fittings
- Auxiliary devices • Velocity and sizing • Pumps
- industrial/mobile hydraulic applications
- Troubleshooting

Hydraulics System Troubleshooting Exercises

- Basic troubleshooting requirements
- Principles of fluids and fluid flow
- Principles of motion and force
- New vs old systems
- What do we mean by failure?
- Diagnostic equipment
- Noisy pumps, cavitations, aeration
- No system pressure
- Low or erratic system pressure
- No movement of actuator
- Slow or erratic operation of actuator
- System running hot
- Noise control
- Common cylinder problems
- Common cylinder circuit problems
- Solenoid failure
- Leakage control
- Hydrostatic transmission trouble-shooting guide and much more!

Centrifugal Pumps 3 Days

\$1099 (See Schedule Page S-8)

HANDS-ON

(PTH)

Understand Centrifugal Pump Technologies—Learn How to Reduce the Amount of Electricity it Takes to Run Your Pumps!



This intensive, Hands-on **3-day seminar** is valuable for workers from a variety of disciplines. Consulting Engineers will learn the inside information on why and how pumps are designed. Design Engineers will learn more about the total picture of designing pumps than they could in 20 years of experience. Plant and Maintenance Personnel will learn why pumps work and what causes pump problems.

You will learn:

- About pump performance
- How to read pump curves
- How specific speed governs pump designs
- What suction specific speed is
- The real design differences between major pump types
- To understand the real importance of system curves
- What recirculation is
- The importance of shaft deflection
- Calculation of energy costs
- Exactly what makes up a pump's total discharge head requirement
- Pump terminology
- Proper installation of pumps
- How to care for bearings
- Proper methods for starting up a new pump
- Troubleshooting methods for mechanical seal failures
- What causes wear
- How to deal with air entrainment
- The difference between closed and open pumping systems

The **Centrifugal Pumps Seminar** is also available **On-Site only** in a 2 day lecture format.

Electro-Pneumatics Training (On-Site Only) 3 Days **HANDS-ON**

Call for Pricing

(PNE)

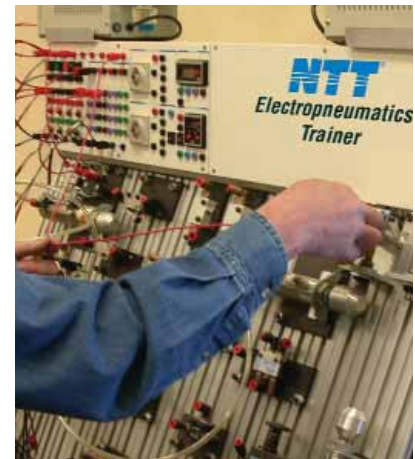
Over Thirty Real-World, Hands-On Exercises Will Help You Learn How to Install, Maintain, and Troubleshoot Pneumatic and Electropneumatic Automation Systems!

You will learn:

- About all basic components of a pneumatic system, how they work, and their function within the system
- How to read pneumatic and electropneumatic schematics
- To develop the basic skills needed to be an effective pneumatic system troubleshooter
- Repairs and implementation of preventive maintenance programs to reduce premature system failure, and more!

This powerful 3-day Hands-On interactive training program will introduce you to the real world of pneumatic and electropneumatic control and power transmission. You will learn the full scope of compressed air production, preparation, and distribution. Through Hands-On learning, you will learn to apply simple gas laws, reading of symbols, and understanding of component technologies.

Any engineering, maintenance, operations, or management personnel who directly or indirectly come into contact with fluid power control and systems. Improve your understanding and become aware of how to install, maintain and troubleshoot, buy or specify fluid power equipment.



Pneumatics Training—(On-Site Only) 3 Days

Call for Pricing

HANDS-ON

(PN)

Get the Skills You Need to Repair, Maintain, and Troubleshoot Pneumatic Systems and Components!

This 3-day Hands-on seminar will introduce the participants to the real world of pneumatic control and power transmission.

Learn about compressed air production, preparation, and distribution.

This seminar will enable you to successfully install, maintain, and troubleshoot pneumatic systems.

You will learn:

- Introduction To Pneumatics
- Air Compressors
- Pneumatic Conditioning Devices and Piping
- Actuators
- Pneumatic Control
- Quickly isolate problems
- Predict/prevent untimely failure
- Reduce downtime
- Approach preventive maintenance

Call 800-922-2820 to Enroll Now!

Fiber Optic Training 3 Days

\$1099 (See Schedule Page S-8)

HANDS-ON

(FB)

Maintain Your Own Fiber Optic Network and Learn the Skills to Minimize Network Downtime! —Optional ACES Certification Exam Available!

This powerful 3-day Hands-On seminar is designed for you to take control of your communications optic networks. The objective is met by using state-of-the-art test equipment and a Hands-on approach that makes retaining material far easier!

You will learn:

Fiber Optic Essentials

- Introduction to fiber optics
- The components of fiber optic systems
- Optical transmitters: LEDs and lasers
- Safety rules and procedures for working with fiber optics
- Singlemode and multimode systems
- Bandwidth: optical
- Attenuation and return loss

“Hands-on” Exercises

- Fiber optic safety procedures/practices
- Inspect multimode fiber optic connectors for quality
- Build and inspect Hotmelt™ multimode ST connectors
- Build and inspect epoxy multimode SC and ST connectors
- Use a power meter and light source to evaluate fiber circuits
- Build and test a mechanical splice
- Practice OTDR operations and testing



Learn by Doing!

PLUS: You have the option to take the ACES exam for Certified Fiber Optics Installer!

Visit Us On-line and Be Sure to Check Out:

• **NTT's On-line Bookstore:**

www.nttinc.com/Bookstore.cfm

You'll find books by our industry expert instructors on a variety of subjects vital to your maintenance, repair and operations concerns, along with popular titles from other industrial technical publishers. Get the information you need from NTT!

• **NTT's Skills Assessment Tests**

Test your knowledge on a variety of industrial topics. See if you know what you need to know to operate at peak performance! Just go to www.nttinc.com Click on "Resources" in the left hand column and follow the link!



Welding Principles, Practices and Procedures 3 Days

\$999 (See Schedule Page S-9)

WT)

Understand the Complete Range of Welding Practices and Procedures— Increase Your Proficiency and Broaden Your Capabilities with the Information You Gain!

This intensive **3-day seminar** provides a one-of-a-kind opportunity for welding operators, technicians, and supervisors to learn more about the maintenance process. The focus is on applied metallurgy, welding process applications, and related safety. This comprehensive lecture seminar is ideal for improving the skills

and on-the-job expertise of a wide range of personnel including: inexperienced welding operators, experienced welding operators in management positions, and anyone else working in a plant or equipment maintenance position where welding repairs are required.



You will learn about:

- Shielded metal arc welding
- Gas metal arc and flux cored arc welding
- Gas tungsten arc welding
- Oxy-acetylene welding, flame cutting and gouging
- Air carbon-arc gouging
- Plasma arc cutting and gouging
- Welding and cutting safety (meets OSHA standards)
- Troubleshooting weld defects
- Controlling weld quality
- Understanding metals
- Repair welding principles
- Repair welding procedures
- Equipment preventive maintenance

**Hands-On and AWS D1.1
Certification Available
For On-Site Seminars!**

Principles of Bearings and Lubrication (On-site Only) 2 Days

Call for Pricing

(LR)

This Seminar is a Must-see for Anyone Who has to Specify, Purchase, Install, Maintain or Repair Bearing Based Systems

This **2-day seminar** can provide great economic returns for Facility Maintenance Personnel by dramatically decreasing their reliance upon outside resources. By increasing understanding of different bearing systems, including their function, load tolerance, and lifespan, personnel can anticipate maintenance requirements, to reduce unnecessary system downtime and inferior performance. This seminar will cover bearing internal clearances, proper mounting methods, bearing duplexing, the importance of shaft bore fits on mounted and unmounted bearings and the proper use of bearing adapter mounts. The proper timing, selection and application of lubricants and many other vital topics will be covered in this seminar.



Call 800-922-2820 to Enroll Now!

Mechanical Drives/Power Transmission (On-Site Only) 3 Days

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(MD)

Learn to Properly Install and Maintain Mechanical Drives—Increase Operating Efficiency, Reduce Unscheduled Downtime, and Lost Production Time!

This intensive 3-day Hands-On seminar has been designed to thoroughly examine all of the common mechanical drives including belts, chains, and gears. You'll also learn the role of proper lubrication, bearings, proper alignment and fastening techniques, troubleshooting, the spotting of the symptoms of failure, and selection of the appropriate

remedy. The Mechanical Drives seminar offers an excellent cross-training opportunity for Plant and Process Engineers, Maintenance Mechanics and Supervisors, Machinery Designers, and Field Service Personnel.

Learn by Doing!



Shaft Alignment (On-Site Only) 2 Days

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HANDS-ON

(SA)

Learn the Full Range of Alignment Methods to Help You Keep Equipment Operating Longer with Lower Repair Costs!

This intensive 2-day Hands-On seminar will provide you with the working knowledge to achieve alignment on two-shaft systems (i.e. motor and pump) and will emphasize the overall alignment process. You'll learn to accurately align any type of

machinery in a variety of ways. Since there are advantages and disadvantages to each system, you'll receive instruction on each method, where each is best applied, as well as an understanding of the various techniques for measuring and correcting misalignment.

Fundamentals of Industrial Hoisting and Rigging (On-Site Only) 1 Day

Call for Pricing

(HG)

Learn the Science of Hoisting and Rigging—Protect Yourself and the Materials You Handle

This 1-day seminar can be customized to your specific needs. Depending on the materials your team transports, you can focus on aspects of rigging safety, calculating the weight of the load, common hitch types, common sling types, ropes, locating the

load's center of gravity, gaining a mechanical advantage, and more. Plus: get a copy of the *Industrial Hoisting and Rigging* text, and Newberry's 128-page *Handbook for Riggers*—two great reference resources for future use!

What customers say...

"Excellent course! It brought out many needed improvements. I would highly Recommend this course to other colleagues and industry managers. Thanks so much!"

—George D. Fox, Philadelphia, PA

"One of the most enjoyable seminars I've attended (and I attend 2 or 3 a year). Very professional Instructor and staff! Facility very comfortable. I will definitely attend more NTT seminars in the future and highly recommend them to others!"

—Tim Hildreth, Denver CO

"Everything presented was relevant and beneficial to my work and electrical license hours. I want to see this offered to my colleagues."—Boeing employee

"This was the best seminar I have participated in with 33 years in the maintenance field. High quality instruction combined with high quality hands-on is the way to go!"

—Tom Moffit, Pittsburgh, PA

"I have attended many training classes before, but not one that taught me as much as this course. This will benefit me greatly at work. I was very impressed with the instructor's knowledge and the training materials. Thanks!"

—Mark Robertson, San Marcus, TX

"This was my second NTT workshop and I'm signed up for a third. The hands-on equipment is the best and quickest way to learn. I look forward to the next seminar!"—Ron Adams, San Diego, CA

Would you like to see more customer comments?

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The NTT On-Site Sales Team

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Left to Right:
Rick Miller
Blake Wilson
Pam Winker
Leslie White
Debi Joens
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Boilers: A Technical and Operational Workshop (BO) Feb 27–Mar 1 '07

Arc Flash Electrical Safety (ES)
Feb 26–27, '07

Arc Flash Electrical Safety/Electrical Safety for Generation, Transmission and Distribution (E3H) Mar 27–29, '07

Fiber Optic Training Mar 27–29, '07

Electrical Safety for Electric Power Generation, Transmission (HS)
Apr 3–4, '07

2005 National Electrical Code®/ Grounding and Bonding (EC5G)
Apr 9–13, '07

Introduction to Instrumentation and Process Control (IA) Apr 24–26, '07

Plumbing Standards (PS)
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Chillers and Chilled Water Systems (CW) June 5–7, '07

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June 4–8, '07

Hydraulics and System Troubleshooting (HY4T)
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Troubleshooting Electrical Control Circuits (MC) Jul 10–12, '07

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July 17–19, '07

Boilers: A Technical and Operational Workshop (BO) July 24–26 '07

Air Conditioning and Refrigeration and Principles of Heating Applications (HVAC)
July 23–27 '07

Fundamentals of Programmable Logic Controllers and PLC Automation (PC5AP)
July 30–August 3, '07

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