

Make Your Facility More Energy Efficient

18 Essential Energy-Saving Workshops

Process Energy Analysis

September 15, 2009 - Charlotte, NC
September 16, 2009 - Raleigh, NC

Energy Savings in HVAC Systems

September 16, 2009 - Raleigh, NC

Energy Savings in Chillers and Cooling Towers

September 18, 2009 - Raleigh, NC
November 19, 2009 - Asheville, NC

Power Quality Solutions

September 18, 2009 - Raleigh, NC

Energy Savings in Distributed Generation

October 20, 2009 - Wilmington, NC
December 11, 2009 - Raleigh, NC

Energy Savings in Cost-Effective Lighting

October 21, 2009 - Wilmington, NC
November 18, 2009 - Asheville, NC

Fundamental Energy Savings in HVAC Systems

October 22, 2009 - Wilmington, NC

Energy Savings with Energy-Efficient Motors and VSD's

November 17, 2009 - Asheville, NC

Measuring and Improving Boiler Efficiency—Basic

November 18, 2009 - Asheville, NC
December 1, 2009 - Charlotte, NC

Fundamentals of DDC

December 9, 2009 - Raleigh, NC

Measuring and Improving Boiler Efficiency—Advanced

December 10, 2009 - Raleigh, NC

DDC Controls—Specifying, Procurement and Commissioning

December 10, 2009 - Raleigh, NC

Compressed Air Systems and Management

December 11, 2009 - Raleigh, NC

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In partnership with the State Energy Office, North Carolina Department of Administration, with State of North Carolina appropriated funds, in cooperation with the North Carolina Solar Center at NC State University.



Process Energy Analysis

September 15, 2009

Piedmont Natural Gas, Charlotte, NC

September 16, 2009

McKimmon Conference & Training Center

NC State University, Raleigh, NC

8:30 a.m. - 4:30 p.m.

Why You Should Attend

By taking this seminar, you will take home information about some of the major energy consuming systems found in production facilities and review the primary factors affecting energy efficiency. You'll learn techniques of analysis, examples to demonstrate analysis methods, and calculation procedures. Energy survey techniques also will be presented as well as the main industrial systems common to manufacturing facilities including boiler, steam systems, cogeneration, compressed air, industrial refrigeration, and industrial HVAC.

Attend and You'll Learn

- Major energy consuming systems in production facilities
- Primary factors affecting energy efficiency for each system
- Techniques of analysis, examples to demonstrate analysis methods, and calculation procedures
- Efficiency improvement methods showing economic benefits of the improvements
- Energy survey techniques
- General evaluation of the system for "low cost" improvements
- Economic evaluations of more significant proposed changes to determine the "potential" savings

Who Should Attend

Plant engineers, plant operators, process/manufacturing engineers, utilities managers, professional engineers, and energy services engineers.

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Dr. Greg Harrell, P.E., C.E.M.

(see his biography on page 8)

Energy Savings in HVAC Systems

September 16, 2009

McKimmon Conference & Training Center

NC State University, Raleigh, NC

8:00 a.m. - 4:30 p.m.

Why You Should Attend

Receive an overview of common HVAC systems, lighting basics, and information on new lighting and HVAC technologies. Learn where lighting and HVAC energy is going and why. You'll be introduced to energy conservation measures and discuss evaluation methods. Learn about control and distribution of HVAC energy, and how to assess the physical condition and efficacy of your current interior and exterior lighting systems. You'll gain a working knowledge of current, cost-effective technologies for commercial and industrial lighting and HVAC applications that will help you determine potential energy and dollar savings associated with changes to your lighting and HVAC systems.

Attend and You'll Learn

- Lighting and HVAC terminology
- Lighting sources/efficiencies
- T-5 fluorescent lamps
- Dimming for HID fixtures
- Pulse-start metal halide lamps
- Reduced mercury fluorescent lamps
- Interior lighting controls (occupancy sensor, timed switches, etc.)
- Evaluation of lighting energy alternatives
- Types of HVAC duct systems (single-zone, dual-duct, terminal-reheat, etc.)
- Facility ventilation air flows
- How to determine if total system CFM is correct and balanced
- HVAC controls
- Types of refrigeration equipment
- Facility lighting and HVAC energy costs
- Basic lighting and HVAC system evaluations

Who Should Attend

Plant engineers, professional engineers, energy services engineers, and maintenance supervisors and operators who wish to gain basic knowledge of lighting and HVAC systems and energy cost savings opportunities.

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Jeffrey Stallings, P.E. LEED AP
(see his biography on page 9)

Energy Savings in Chillers and Cooling Towers

September 18, 2009

McKimmon Conference & Training Center
NC State University, Raleigh, NC

November 19, 2009

NC Arboretum, Asheville, NC

8:00 a.m. - 4:30 p.m.

Why You Should Attend

Most large process and HVAC cooling operations are served by water chillers and cooling towers. The operation of these machines greatly affects the energy costs of the facility. To operate at the highest level of efficiency, the people in charge must understand the nature of the machines, their effects on energy bills, and costs of operation. This course will provide you with basic knowledge of industrial and commercial water chillers and cooling towers.

Attend and You'll Learn How To

- Evaluate proposed chiller selections
- Operate existing chiller plant systems at peak efficiency
- Operate multiple chillers at low cost
- Select chillers using knowledge of electric, gas, and steam technologies
- Select and operate cooling towers for peak system efficiency

Attend and You'll Learn

- The basic chiller: how it operates
- Types of chillers
- Costs of chiller operation
- Chiller pumps, pumping operations, and water flow
- Surge problems
- Condenser cooling
- Cooling tower theory
- Psychrometrics of cooling towers
- Cooling tower operation
- Types of cooling towers

- Flow to and from cooling towers (pumps)
- Preset temperatures
- Basic interrelationships of cooling towers, chillers, and water treatment

Who Should Attend

Individuals who want to learn about chiller operation and the potential for cost reduction.

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Bill Turpish (September 15)

Silas Grainger (November 19)
(see their biographies on page 9)

Power Quality Solutions

September 18, 2009

McKimmon Conference & Training Center
NC State University, Raleigh, NC

8:00 a.m. - 4:30 p.m.

Why You Should Attend

In this course you will receive a thorough explanation of power quality as it affects reliability in the workplace. "Mysterious events" that may not appear to be electrical often have an electrical origin, such as unexpected outages, sags and surges that cost companies money in damaged product, wasted product, and lost production time. The combined cost of recognized and unrecognized power quality events to both industrial and commercial entities in the U.S. is estimated to exceed \$4 billion per year. Through this class you'll become aware of ways to improve the quality of power delivery and avoid unnecessary interruptions, which will have a direct and positive impact on efficiency, process reliability, product quality and your bottom line.

Attend and You'll Learn

- How to identify power quality events and ways to overcome them including:
 - Causes of electrical transients and other electrical events
 - Recognition of power quality events within industrial and commercial facilities

- Implementing solutions to combat power quality events
- How to establish a level of proficiency that enables you to apply your new skills in the workplace and thereby improve process reliability and cut costs
- Electrical performance
- Equipment specification
- How to reduce costs

Who Should Attend

- Anyone in an industrial or commercial facility who wants to
 - improve electrical control
 - improve process reliability
 - reduce costs
- Engineers, managers, technicians and operators, including those with maintenance and supervisory roles, who have responsibility for the electrical integrity or utility costs of industrial or commercial facilities
- Professionals who are interested in, or associated with, utility cost reduction in industrial or commercial facilities

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Roger G. Lawrence, P.E., CEM
(see his biography on page 9)

Energy Savings in Distributed Generation

October 20, 2009

Piedmont Natural Gas, Wilmington, NC

December 11, 2009

McKimmon Conference & Training Center
NC State University, Raleigh, NC

8:00 a.m. - 4:30 p.m.

Why You Should Attend

Distributed generation (DG) is being employed as a means of achieving increased reliability for electrical power. This course will take you through the development, energy resources, equipment, standards, and the future of this strategy for electric power delivery. You'll be exposed to a key issue of whether there really is a new discipline associated

with DG or whether it is merely the more established concept of well-executed good system design.

Attend and You'll Learn

Background and explanation for the popularity of DG

- IEEE, UL, FERC latest publications
- Conventional fuel sources and economic trends
- Renewable fuel sources
- Conversion equipment
- Future trends in energy conversion
- Economics for the new distributed resources
- New behavior for the distribution system
- Safety considerations
- Discussion of local DG issues

Attend and You'll

- Review the current issues associated with the delivery of electrical energy particularly associated with FERC and IEEE Standard 1547 (recommended standard for the connection of distributed resources)
- Review renewable energy sources and the equipment systems associated with renewable energy sources
- Consider the impact that DG resources have on the conventional distribution system

Who Should Attend

- Anyone in an industrial or commercial facility who wants to
 - improve electrical control
 - improve process reliability
 - improve process security
 - reduce costs
- Engineers, managers, technicians and operators, including those with maintenance and supervisory roles, who have responsibility for the electrical integrity or utility costs of industrial or commercial facilities
- Professionals who are interested in, or associated with, utility cost reduction in industrial or commercial facilities

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

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Instructor

Roger G. Lawrence, P.E., CEM
(see his biography on page 9)

Energy Savings in Cost-Effective Lighting

October 21, 2009

Piedmont Natural Gas, Wilmington, NC

November 18, 2009

NC Arboretum, Asheville, NC

9:00 a.m. - 4:00 p.m.

Why You Should Attend

In this course you will receive a solid review of light sources with updates on new technologies, color, basic lighting layout for uniform light distribution, light source and fixture comparison, energy codes and standards, energy cost savings opportunities, and economic analysis.

Attend and You'll Learn

- What is lighting?
- Different types of lighting and how they are used
- Lighting basics
- Electrical energy costs of lighting
- Energy-efficient lighting and how to reduce your costs
- Lighting layouts and parameters
- How to analyze your lighting costs
- How to evaluate a new lighting layout
- Where to seek help for lighting considerations
- Basic system evaluation

Who Should Attend

Plant maintenance personnel and operators, plant engineers, and consulting engineers.

Attend and You'll Receive

- 6.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Robert L. Henderson, LC, CLEP
(see his biography on page 9)

Fundamental Energy Savings in HVAC Systems

October 22, 2009

Piedmont Natural Gas, Wilmington, NC

8:30 a.m. - 4:30 p.m.

Why You Should Attend

By attending this seminar you will take home a valuable basic overview of common HVAC systems. Energy conservation measures are introduced and evaluation methods are discussed.

Attend and You'll Learn

- Basics of HVAC processes
- How and why HVAC systems consume energy
- Energy-saving opportunities of HVAC air systems
- Energy-saving opportunities of cooling systems
- Energy-saving opportunities of heating systems
- Exhaust air systems and waste heat recovery
- HVAC controls basics and how to reduce energy use
- Maintenance of HVAC systems to save energy

Who Should Attend

HVAC maintenance supervisors and operators wishing to gain basic knowledge of HVAC systems and HVAC system energy cost savings opportunities.

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Herbert W. Stanford III, P.E.
(see his biography on page 9)

Energy Savings with Energy-Efficient Motors and VSD's

November 17, 2009

Arboretum, Asheville, NC

8:30 a.m. - 4:30 p.m.

Why You Should Attend

Electric motors are probably the most ignored pieces of equipment in manufacturing facilities. Do you, as a matter of policy, replace all failed motors with

energy efficient motors? You will learn when it is and is not economically feasible to do this. You'll take back a wealth of valuable information for applying and operating variable speed drives for energy cost savings.

Attend and You'll Learn

- Current motor parameters
- How to improve your system for energy savings, cost savings, and quality control
- Computer programs for economical motor replacement
- Electric motor theory
- Electric motor operating costs
- What is an energy-efficient motor?
- Computerized motor surveys
- Motor maintenance
- Types of motors
- Variable speed drives-what they are and how to analyze for energy application
- Energy-saving drive equipment
- Cogged "V" belts, etc.
- Energy losses of oversized motors

Who Should Attend

Plant maintenance personnel and operators, plant engineers, and consulting engineers.

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Roger G. Lawrence, P.E., C.E.M.
(see his biography on page 9)

Measuring and Improving Boiler Efficiency—Basic

November 18, 2009

PSNC, Asheville, NC

December 1, 2009

PNG, Charlotte, NC

9:00 a.m. - 4:00 p.m.

Why You Should Attend

This program will provide you with a working knowledge of the operation of firetube and watertube boilers in industrial, commercial and

institutional establishments. The course will focus on the significant variables that affect boiler efficiency and the practical techniques and instrumentation for measuring these variables to yield a higher efficiency. You will learn the most cost-effective ways to implement efficiency improving techniques for both oil and gas fired units, as well as coal and wood fired applications. The goal is to establish a level of proficiency that will enable you to apply your new skills for improving boiler efficiency in your own plant.

Attend and You'll Learn

- Direct and indirect methods for determining boiler efficiency
- Major factors affecting efficiency
- Avoiding incomplete combustion
- Value of boiler tune-ups
- Techniques for improving boiler efficiency
- Reducing major heat losses
- Heat recovery opportunities
- Prioritizing energy savings options

Who Should Attend

Boiler operators, plant engineers, and people responsible for the maintenance, operation, and supervision of industrial/commercial/institutional boilers and steam systems.

Attend and You'll Receive

- 6.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Herbert M. Eckerlin, Ph.D.
(see his biography on page 9)

Fundamentals of DDC

December 9, 2009

McKimmon Conference & Training Center

NC State University, Raleigh, NC

8:00 a.m. - 4:30 p.m.

Why You Should Attend

As a participant in this program, you will learn about critical issues in the specification of HVAC control systems and will include a basic description of DDC control system concepts. You'll hear specification and procurement challenges along

with non-traditional solutions and we'll discuss the commissioning process with a focus on DDC controls and energy efficiency.

Attend and You'll Learn

- Control system architecture
- Input/Output types and functions
- Sensors and instruments
- Loop control
- Specification of control system architecture, supervisory functions, programming, communication protocols
- Vendor submittals
- Commissioning process
- Essential commissioning tasks
- Commissioning resources and responsibilities
- Commissioning documentation

Who Should Attend

Supervisors, engineers, facilities managers, maintenance personnel, and technicians responsible for designing, specifying, commissioning, and operating HVAC control systems; and those interested in expanding their knowledge of digital controls.

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

J. Jay Santos, P.E.
(see his biography on page 9)

Measuring and Improving Boiler Efficiency—Advanced

December 10, 2009

McKimmon Conference & Training Center
NC State University, Raleigh, NC

9:00 a.m. - 4:00 p.m.

Why You Should Attend

By attending this program you will receive a thorough explanation of the operation of firetube and watertube boilers and the significant variables that affect their efficiency. You will learn the most cost effective ways for improving a boiler's efficiency for a variety of fuels including oil, gas, coal or wood firing. Special emphasis will be given to identifying

the parasitic losses associated with different fuels, thus providing a basis for better fuel purchase decision-making. Another feature will be a focus on air quality issues, including NOx reduction and Title V permitting process. The goal is to establish a level of proficiency that will enable you to apply your new skills for improving boiler efficiency in your own plant.

Attend and You'll Learn

- Boiler efficiency calculations
- Fuel-combustion relationship
- Stack loss efficiency
- Heat recovery opportunities
- Cold-end corrosion
- Water treatment to reduce blowdown
- Effect of parasitic losses and fuel selection
- NOx emissions and air permits

Who Should Attend

Boiler operators, plant engineers, and people responsible for the maintenance, operation, and supervision of industrial/commercial/institutional boilers and steam systems.

Attend and You'll Receive

- 6.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

Herbert M. Eckerlin, Ph.D.
(see his biography on page 9)

DDC Controls—Specifying, Procurement, and Commissioning

December 10, 2009

McKimmon Conference & Training Center
NC State University, Raleigh, NC

8:30 a.m. - 4:30 p.m.

Why You Should Attend

This program will focus on critical DDC specification issues and include a generic comparison of controls products. The instructor will discuss procurement challenges, along with non-traditional solutions. Also included will be a discussion of the overall commissioning process with a focus on DDC controls.

You Will

Review guidelines that will assist you, the end-user, in selecting, commissioning and operating your system to achieve maximum benefit.

Attend and You'll Learn

- The importance of commissioning
- Design phase tasks
- Construction phase tasks
- Various approaches to commissioning
- Test procedures
- The use of the DDC system in commissioning activities

Who Should Attend

Technicians, maintenance personnel, supervisors, engineers responsible for designing, specifying, commissioning, and operating HVAC controls systems and those interested in expanding their knowledge of digital controls.

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

J. Jay Santos, P.E.

(see his biography on page 9)

"Course provided realistic views of real world options. There were good design techniques for efficient systems."

—Mark Lail, Senior Facilities Engineer, Corning Cable Systems, Hickory, NC

Compressed Air Systems and Management

December 11, 2009

McKimmon Conference & Training Center, NC State University, Raleigh, NC

8:00 a.m. - 4:30 p.m.

Why You Should Attend

The Compressed Air Challenge (CAC) developed a training workshop to help you evaluate industrial compressed air systems and apply proven techniques to reduce your operating costs and improve your productivity, product quality, system reliability, and competitiveness. The Department of Energy has

adopted this training for its workshop directed at improving industrial compressed air systems. This introductory course will teach you how to achieve cost savings of 15-25% through more effective production and use of compressed air. You will learn the basics about energy efficiency factors for compressed air systems with an emphasis on considering the system as a whole instead of only individual components. You will also become familiar with the important indicators and characteristics of potential energy reduction opportunities.

Attend and You'll Learn

- The benefits of improving compressed air system performance
- Key terms
- How a compressed air system works
- The current cost of compressed air for your plant
- How to measure and create a baseline
- The basic approach for cutting costs
- The impact of different compressor control types
- Steps for proper system operation, maintenance, and point of use accountability
- How to create a compressed air system management action plan

Who Should Attend

Plant maintenance personnel and operators, plant engineers, and consulting engineers.

Attend and You'll Receive

- 7.0 Engineering Professional Development Hours (PDHs)
- A networking luncheon
- A Certificate of Attendance

Instructor

James Parker

(see his biography on page 9)

Meet Your Instructors

Herbert M. Eckerlin, Ph.D.

Dr. Eckerlin is professor of mechanical and aerospace engineering at NC State University. He has tested and analyzed hundreds of boilers as part of the Nationwide Boiler Efficiency Test Program sponsored by the American Gas Association. Dr. Eckerlin has lectured on this subject to a wide array of audiences and is a nationally recognized course leader for industry and commerce. He is founder and director of the North Carolina State University Industrial Assessment Center and has received numerous awards for his contributions to energy efficiency and renewable energy, including the AGA "Hall of Fame," the NCSEA "Hall of Fame," the NC State University Alumni Association Outstanding Extension Service Award," the "NC Sustainable Energy Champion," and many others.

Silas Grainger

Mr. Grainger has 40 years of field service and equipment application experience serving industrial and commercial customers. He has 30 years of experience in HVAC, process cooling, controls, and energy management applications and has provided solutions for customers in North Carolina for over 20 years.

Robert L. Henderson, LC, CLEP

Mr. Henderson joined Progress Energy's corporate headquarters in 1977; his current duties as a Project Lighting Specialist include providing technical support to internal and external customers. He has served in various capacities on the local, regional, and North American levels for the Illuminating Engineering Society of North America. He served three terms as section president, and has served as a member of the Education Committee and Long Range Planning Committee. Mr. Henderson has earned three Edwin F. Guth Awards of Merit for lighting design. He currently holds the LC (Lighting Certified) and CLEP (Certified Lighting Efficiency Professional) lighting credentials and serves as a member of the CLEP board of review.

Roger G. Lawrence, P.E., C.E.M.

Mr. Lawrence has 28 years of experience in the design, manufacture, and field application of variable speed drives and uninterruptible power supplies. He has provided innovative and cost effective solutions for the following industries: pulp and paper; water and waste water; electric utility power plant; gas pipeline; textiles; slashing, weaving, and dyeing; plastics; spinning, molding, and extruding rubber metals; food; and pharmaceutical. Mr. Lawrence has presented numerous workshops on drives and power quality and published IEEE papers on these subjects. He has a B.S.E.E. from Imperial College in London, an M.B.A. from Mercer University and is a registered professional engineer in NC, FL, GA, and TX.

James Parker, P.E., C.E.M.

James Parker has more than 28 years of work experience in energy and facilities management. He joined Schneider Electric in 2006 in Total Energy Control, Power Management Organization and is engaged in development and implementation of energy cost reduction projects. Prior to arriving at Schneider Electric, Jim's professional experience includes: Director, Energy & Facilities Management Program at NC State University's Industrial Extension Service; Senior Energy Applications Engineer for a major Southeast electric utility; with expertise in large high-speed rotating equipment serving various industries such as power generation, fuels and petrochemical, mining and metals processing, food processing and refrigeration, wind tunnels and much more. Jim is a past Region II Vice President of AEE and a lifetime member of the organization. He is also past Region V Vice President of AFE (Association for Facilities Engineering).

J. Jay Santos, P.E.

Mr. Santos is a principal and co-founder of Facility Dynamics Engineering. Facility Dynamics is active in commissioning, controls design, controls master planning and Fault Diagnostic software. He has directed the development of DDC/control master plans for numerous institutions and organizations. These plans deal with procurement issues associated with DDC controls and typically include standardized approaches to system sequences, documentation and specifications. He teaches DDC courses for the University of Wisconsin, NC State University, and the PGE Energy Center in San Francisco. He has also developed an Advanced Commissioning Course focused on teaching the skills necessary to functionally test HVAC systems and controls in the field. Mr. Santos also developed the DDC on-line website for the Iowa Energy Center. He is member of the HPAC Engineering Editorial Advisory Board, as well as ASHRAE's Professional Development and DDC Guideline Committees.

Jeffrey M. Stallings, P.E. LEED AP

Mr. Stallings is a registered Engineer in N.C. and S.C. He is the owner of Stallings Engineering, P.C., Design-Build Director and co-owner of Gwyn Electric, Plumbing, Heating and Cooling Company Inc. He has 30 years of various engineering and consulting positions and projects including energy efficient HVAC design, indoor air quality, indoor pool HVAC, air pollution control, clean room design, maintenance, and project management. He is a member of ASHRAE and USGB and a teacher at the Industrial Ventilation Conference. Jeffrey is currently studying Hybrid Natural Ventilation Systems.

Herbert W. Stanford III, P.E.

Herbert Stanford is a 1966 graduate of NC State University with a B.S. in mechanical engineering. He is a registered Professional Engineer in North Carolina, South Carolina, and Maryland. He retired as President of Stanford White Associates Consulting Engineers, Inc. in 1998, but remains of counsel to the firm he founded in 1977. Currently, Mr. Stanford is actively engaged in investigative and forensic engineering, teaching, research, and writing within a broad range of topics relative to heating, ventilating, and air-conditioning (HVAC) systems, equipment, and components and provides consulting services. Mr. Stanford is a member of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). He is the author of *Analysis and Design of Heating, Ventilating, and Air-Conditioning Systems*, a text on the evaluation, analysis, and design of building HVAC systems and *Water Chillers and Cooling Towers: Fundamentals, Application, and Operation*.

William J. Turpish, P.E., C.E.M.

Mr. Turpish has over 25 years experience in energy and gaseous fuels consulting and equipment application for utilities and industrial clients. He is the President of W.J. Turpish and Associates, P.C. His background includes service with a large natural gas utility, a state regulatory agency and various consulting firms. He specializes in HVAC and process cooling studies Chiller and cooling tower evaluations, engine driven chiller applications, industrial and Institutional energy studies, gaseous fuels and gas utility consulting and accident investigation. William has provided studies and services for major clients and utilities in the US and abroad. He has participated in over 30 plant surveys for major oil companies in the US, Canada, and other foreign countries. He has conducted over 50 Chiller and Cooling Tower Studies for the North Carolina Department of Commerce, Energy Division through the Industrial Extension Service at N.C. State University.

Course Schedules and Locations

Check-in will begin 30 minutes prior to the start time of the class. You will receive a map, cancellation policy, and hotel information with your confirmation by e-mail.

Luncheons and refreshment breaks are included in the registration fee.

Depending on your Internet service provider and/or your personal e-mail settings, e-mails from NC State University in regard to this registration process may be considered unsolicited and not be delivered to your "in-box." If you do not receive an e-mail confirmation from NC State University, please check your spam file if you have one, or you may contact us at **919.515.2261** with any questions about your registration status.

Credits You Can Earn

Individuals satisfactorily completing a course will be eligible for Professional Development Hours (PDHs) for each day of instruction. For more information on PDHs and how to obtain your record, please visit our website at ContinuingEducation.ncsu.edu or call **919.515.2261**.

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- Energy Savings in Chillers and Cooling Towers September 18, 2009 \$199 EICCTF10
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