Instructors

Tom Burch, Ph.D., P.E.

Professor of Mechanical Engineering, Auburn University

David Dyer, Ph.D., P.E.

Professor of Mechanical Engineering, Auburn University

Glenn Maples, Ph.D., P.E.

Professor of Chemical Engineering, Auburn University



The instructors have a combined total of more than 100 years of experience with facilities in operation, design, testing and trouble-shooting. They have written twelve practical books detailing this experience, as well as numerous technical papers and reports. They have presented at over 500 workshops concerned with reducing facility operating costs. During this period they have gained extensive, hands-on experience in evaluating **money-saving opportunities** at hundreds of facilities. The instructors are known for their

teaching style, which combines a sound technical presentation in an enjoyable and easy-to-understand approach. The program will appeal strongly to all persons involved with facilities regardless of their educational and experience background.

REGISTRATION FORM

May	12	&	13	-	
Charleston					
Boile	r C	οι	irse)	

May 17 & 18 – Greenville Boiler Course

May 24 & 25 – Columbia HVAC Course

*Checks Payable to BOILER EFFICIENCY INSTITUTE

Fee: \$25	Check Enclos	sed*	Bill P.O. No
Credit Card: 🛛 MasterCo	ard 🗅 Visa 🗅 A	mEx	Expiration Date:
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The Boiler Efficiency Institute Presents Three, Two-Day Workshops in South Carolina For Industrial, Commercial and Institutional Facilities

Each course is worth 1.6 CEU's and 15 PDH's.

Utility Bill

Slashing You

May 12 & 13 • Charleston Boiler Course Hilton Garden Inn Charleston Waterfront/Downtown

45 Lockwood Drive • Charleston, SC 29401 • 843.637.4074

May 17 & 18 · Greenville Boiler Course

Embassy Suites Greenville Golf Resort & Conference Center 670 Verdae Boulevard • Greenville, SC 29607 • 864.676.9090

May 24 & 25 • Columbia HVAC Course Holiday Inn & Suites 8105 Two Notch Road • Columbia, SC 29223 • 803.736.5600 REGISTRATION by phone: (334) 821-3095 by fax: (334) 887-3757 or email: melanie@boilerinstitute.com

S STATUTE

Programs Sponsored by the



Visit our web site at: www.boilerinstitute.com

Proven Methods ...To Reduce Steam Plant & HVAC Costs with a Minimum of Up-Front Expenditures

A most valuable source of practical information for both technical and non-technical personnel:

- Plant and facility personnel
- Mechanical equipment operators
- Building owners/managers
- Consulting engineers
- Equipment/chemical vendors
- Utility managers
- Production managers
- A&E personnel

Program Objectives

The objectives are to develop the participant's ability to recognize cost-saving measures in a steam plant and in HVAC equipment/operation, and then to implement the necessary changes to realize these savings. The measures to be explored include low up-front cost, O&M procedures, fast payback heat recovery, cogeneration projects and equipment modification projects.

Additional objectives include showing participants the latest measurement instrumentation/techniques for measuring and improving HVAC efficiency, safety equipment/testing, cleaning, storage, etc., and updating participants on the status of existing and new refrigerants, including handling, recovery and the purchase/retrofit of new equipment.

Background

The Boiler Efficiency Institute (BEI) has presented several hundred practical workshops on plant operation improvement for reducing costs over the last 30 years. Instructors spend as much time in boiler rooms as in classrooms.

Even in today's robust economy, savings from improving equipment performance offer exceptional opportunities to improve the bottom line. Unfortunately, many managers are not exploring energy-savings opportunities because of the perception that up-front costs are too high. BEI has updated its course to address these new economic requirements. This course will show the participants how to recognize operation and maintenance changes that require little up-front cost and then what changes to make. Additionally, heat recovery and cogeneration techniques yielding fast paybacks will be explained so that the participants know what methods are applicable and how to implement these methods.

The team has no vested interest in any product. All information will be presented from an objective viewpoint based on the experience and expertise of the lecturers. BEI feels that this is an important advantage over "free" programs presented by vendors.

Program Support

The Office of Regulatory Staff-Energy Office has contracted with BEI to provide training in efficiency at three, two-day workshops. The course fee is usually \$795, but due to the support of the ORS Energy Office, these programs are offered at a drastically reduced rate of \$25 to residents and employees in South Carolina.

Each class is limited to 30 attendees, so please register early to ensure your space!

RESOURCE MATERIALS: Each participant will be provided a textbook which will serve as a valuable resource guide after attending the course. The book contains numerous charts, illustrations and background writings to make plant savings easy to master. The book costs \$25; which is the total cost of the course!

Four Ways To Register:

- 1. Mail Registration Form to BEI, 1705 Pumphrey Av., Auburn, AL 36832
- **2.** By Phone: (334) 821-3095.
- **3.** By FAX: (334) 887-3757.
- By e-mail: Send completed registration form to <u>melanie@boilerinstitute.com</u>

Whichever method you select, you will receive a confirmation of registration by email or FAX. Please call, email or FAX your registration if the course will take place in two weeks or less. **Registration Fee:** Registration fee is \$25 and includes registration, textbook, program materials, and beverage breaks. Lodging and meals are not included. A Certificate of Participation is presented to each registrant stating they earned 1.6 CEU's and 15 PDH's. Proceedings are not published.

Hotel Reservations/Seminar Location: Seminar participants are responsible for making their own hotel reservations. Make your hotel reservations early to assure availability of space.

Seminar Hours: Plan to arrive at 7:45 a.m. on the first day of the seminar for signin. Seminar hours are 8:00 a.m. to 5:00 p.m.

Cancellation, Substitution and Transfer Policy: If you are unable to attend the course for which you have registered, you can substitute another person in your place or transfer your registration to another course without penalty. No refunds for no shows or cancellations made less than 7 days before the course begins.

Workshop Outlines Steam Plant Improvement HVAC

FIRST DAY (Begin at 8 a.m.) REGISTRATION & WELCOME

OVERVIEW OF PROGRAM

Background and Scope · Economics of Energy

BOILER TYPES

Firetube and Watertube · Hot Water Generator Electric · Steam Generators Gas Turbines and Diesels/Waste Heat Boilers

COMBUSTION CONTROLS

Types • Adjustment Techniques Automatic Trim/Variable Speed Drives

REDUCING COSTS VIA OPERATIONS/MAINTENANCE

Tune Burner/Combustion Controls

Optimize Fuel-Firing Conditions • Choose Correct Fuel Keep Fireside and Waterside Clean • Optimize Blowdown Reduce Radiation and Purge Losses in Oversized Boilers Optimize Steam Pressure • Optimize Boiler Loading Optimize Fuel Atomization • Maintain Traps Eliminate Condensate Losses Optimize Deaerator Performance

REDUCING COSTS VIA HEAT RECOVERY

Conventional Economizer Direct Contact Heat Recovery · Air Preheat Blowdown · Boiler Room Heat · Vent Condenser

REDUCING COSTS VIA COGENERATION

Steam Turbine Cogeneration Diesel and Gas Turbine Cogeneration

SECOND DAY

WATER QUALITY PROGRAM

Properties • Problems and Water Treatment Determining Types and Amounts of Treatment

MEASUREMENT

Boiler and Combustion Efficiency • Trap Condition Makeup and Blowdown Rates • Others

SUMMARY OF FIELD DEMONSTRATION

Calculation of efficiencies, energy savings, economics

MAINTENANCE AND OPERATION

Reference Data · Computerized Maintenance System Preventative Maintenance · Record/Data Keeping Safety Requirements/Testing · Communication Cleaning · Storage

PROGRAM DIRECTOR:

Melanie W. Knause, Boiler Efficiency Institute P.O. Box 2255 • Auburn, AL 36831-2255 • Phone (334) 821-3095 FAX (334) 887-3757 • e-mail melanie@boilerinstitute.com

FIRST DAY (Begin at 8 a.m.)

REGISTRATION & WELCOME

OVERVIEW OF PROGRAM

Reducing Maintenance Cost • Reducing Operating Cost Meeting Comfort Requirements • Meeting Air Quality Standards

REFRIGERANT STATUS

Environmental Effects • Phase Out of Conventional Refrigerants New Refrigerants/Equipment Recovery, Handling, Storage of Refrigerants

DESCRIPTION OF HVAC GENERATING SYSTEMS

(Operation/Advantages/Disadvantages) Generating Equipment • Absorption chillers • Thermal storage • Centrifugal chillers • Boilers • Roof-Top units • Cooling towers • Evaporative cooling

WAYS TO REDUCE HVAC GENERATING COSTS

Heat Recovery · Reduce Scale & Corrosion Improve Characteristics of Working Fluid Load Management · Select Optimum Prime Mover/Fuel Reduce Electrical Cost · Power factor correction · Demand charges · Metering · Variable speed drives · High efficiency motors Improve Turbine Performance · Fouling · Back pressure · Throttle control Raise Chilled Water Temperature Control Chilled Water Flow Rate Improve Cooling Tower Performance

SECOND DAY

DESCRIPTION OF HVAC DISTRIBUTION SYSTEMS

Distribution Systems

- · Single zone · Variable air volume · Thermal reheat
- · Fan coil · Multizone · Others · Dual duct
- Control Systems
 - · Conventional · EMS · OAM/TC

WAYS TO REDUCE HVAC DISTRIBUTION COSTS

Control Outside Air · Control Ventilation · Insulate Balance Air Handling Systems

- Reduce End Use
 - External load reduction Night-time set back Thermal storage
 - Recirculation of internal heating/cooling
- Avoid Simultaneous Heating/Cooling Others
- Instrumentation \cdot Water and Air Quality \cdot Maintenance

WATER QUALITY

Chilled Water · Condenser Water · Boiler Water/Steam

MEASURING & SOLVING INDOOR AIR QUALITY PROBLEMS

Identifying Indoor Air Quality Problems Eliminating Indoor Air Quality Problems Complying with new ASHRAE Ventilation

MEASUREMENT OF HVAC SYSTEM PERFORMANCE

Load and Efficiency

 \cdot Cooling towers \cdot Motors \cdot Fans \cdot Chillers \cdot Pumps \cdot Heat exchangers

BALANCING

Water Side and Air Side • Instrumentation Techniques for Balancing Efficiently