HVAC and Odor Control for Wastewater Facilities

August 14–16, 2012
Madison, Wisconsin

- HVAC load calculations
- Air distribution and space pressurization
- Heat recovery
- Confined spaces, H2S, methane, chlorine
- NFPA 820 and hazardous area classifications
- Chemical scrubbers, carbon adsorption
- Biofilters, biotrickling filters
- Chemical additives
- Air dispersion modeling
- Examples from across the U.S.
HVAC and Odor Control for Wastewater Facilities
August 14–16, 2012 in Madison, Wisconsin

Benefits of this Course
A strong knowledge of HVAC and odor control is an important asset for wastewater professionals. Confined spaces, hazardous gases, ventilation, safety codes, NFPA classifications, air-handling equipment, and many other HVAC issues are critical topics in the field of wastewater collection and treatment. In addition, the potential for nuisance odors, either continuous or intermittent, is a significant problem that can plague wastewater treatment and collection systems. This course, taught by a team of industry experts, will cover fundamental principles of HVAC and odor control together with technologies, practices, and lessons learned from across the United States.

Topics
- Heating and cooling load calculations
- Industrial fans, heating and ventilating equipment
- Air distribution and space pressurization
- Heat recovery
- Confined spaces
- Hydrogen sulfide, methane, chlorine, and other gases
- NFPA 820 and hazardous electric classifications
- Testing, adjusting, balancing, and controls for HVAC
- Corrosion prevention
- Odor control and air pollution control technologies
- Chemical scrubbers
- Carbon adsorption systems
- Biofilters and biotrickling filters
- Chemical additives
- Air dispersion modeling
- Operational problems
- Examples from across the United States

Who Should Attend
This course is designed for:
- Wastewater engineers, managers, and operators
- Consulting engineers
- Federal agency and regulatory staff
- Others who want to learn more about ventilation and odor control for wastewater treatment and collection facilities.

About Your Instructors
Neal Forester, PE is a mechanical engineer with the Water Business Group in CH2M HILL’s Corvallis, Oregon design center. He is a mechanical engineering graduate of Oregon State University and a licensed professional engineer in multiple states. His field of specialized knowledge and practice is HVAC, fire protection, and odor control systems design; troubleshooting problems in existing HVAC and electrical systems; HVAC system commissioning; wastewater process design; and HVAC air and water testing and balancing.

Philip Wolstenholme, PE is a vice president and national practice leader for odor control and biosolids drying at Brown and Caldwell. Based in Atlanta, he has completed studies and designs of odor control projects for many clients across the USA. He is a contributing author for the McGraw Hill Odor Control Handbook and a member of the Water Environment Federation Air Quality Committee, and he has conducted many wastewater industry seminars for engineers and operators. Mr. Wolstenholme is a graduate of the Imperial College, University of London.

David Maletich is a national manager at The New York Blower Company. Mr. Maletich has more than 21 years of experience adapting fans to various industrial and municipal applications. His experience includes fan and blower equipment for projects and facilities across the US, and he has presented fan seminars on various topics at the Industrial Ventilation Conference, ASHRAE, OSHA, and consulting engineering firms.

Ned Paschke, PE directs water and wastewater engineering and management courses at the University of Wisconsin-Madison. Ned has 30 years of professional water engineering experience as a manager, educator, and consultant, and recently served as a Fulbright Specialist in Ukraine. Prior to joining the university, Ned was Director of Engineering for the Madison Metropolitan Sewerage District and a hydraulic engineer at Harza Engineering Company (now MWH Global) in Chicago.
HVAC and Odor Control for Wastewater Facilities
August 14–16, 2012 in Madison, Wisconsin

Course Outline

**Tuesday, August 14**

8:00 Welcome, Introductions, Course Overview—Ned Paschke

8:20–4:15 HVAC Systems for Wastewater Facilities—Neal Forester
(with morning breaks at 9:30 and 10:45, lunch break at noon, afternoon breaks at 2:10 and 3:25)

- Heating and cooling load calculations
  - energy modeling and simulation
  - degree day calculations
  - bin data calculations
  - design criteria
  - special facilities
- Heat recovery opportunities
  - air-to-air heat exchangers
  - heat and enthalpy wheels
  - heat pipes
  - air-to-water loops
  - heat pumps
  - alternative heat sources
- Industrial air distribution
  - duct construction
  - materials
  - installation
  - ventilation effectiveness
  - ductwork dos and don’ts
- Fans for industrial facilities and processes
  - propeller
  - forward curved
  - backward inclined
  - airfoil
  - radial
  - system effect
  - installation
- NFPA 820 and hazardous electric classifications
- NEC area classifications

**Wednesday, August 15**

8:00–10:30 HVAC Systems for Wastewater Facilities (continued)—Neal Forester
(with break at 9:15)

- Other topics in wastewater HVAC
  - testing, adjusting, and balancing for HVAC
  - HVAC controls
  - space pressurization
  - common operational problems in HVAC systems
  - introduction to odor and air pollution control

10:30 Break

10:45–4:15 Odor Control for Wastewater Facilities—Philip Wolstenholme
(with lunch break at noon, afternoon breaks at 2:10 and 3:25)

- Getting to know odor
  - an odor quiz
  - sulfide generation and the sulfur cycle
  - H₂S
  - organic sulfur compounds
  - nitrogen compounds
  - volatile organic acids
  - aldehydes and ketones
  - the odor wheel
- Ventilation regulations and safety considerations
  - NFPA 820
  - occupied and unoccupied spaces
  - confined space safety considerations
- Overview of odor control issues and solutions
  - for collection systems
  - for pump stations
  - for treatment plants
- Corrosion
  - mechanisms
  - solutions
- Chemical dosing
  - chemical selection and doses
  - chlorination, hydrogen peroxide, caustic slugging
- Collection of odors
  - pump stations
  - covered processes
  - equipment
- Chemical scrubbing
  - packed bed chemical scrubbers
  - system components
  - operating considerations
- Carbon adsorption
  - carbon selection
  - mass transfer zones
  - horizontal and radial designs
- Biofilters
  - biodegradation
  - media options
  - system design
  - packaged biofilters
- Biotrickling filters
  - system design
  - media
  - recirculation and once-through
- Two-stage systems
- Comparison of technologies and engineering solutions
  - pros and cons
  - capital cost, complexity, footprint, operating cost

Thursday, August 16

8:00–10:30 Operation and Maintenance of Fans, Blowers, and Odor Control Equipment—David Maletich
(with break at 9:15)

- Fundamentals
- System effects
- Sound and density considerations
- Operating considerations
- Maintenance practices

10:30 Break

10:45 Class Workshop Exercise

Attendees will use the principles learned in the course to analyze and solve problems in HVAC and odor control

12:00 Lunch at the Pyle Center

1:00 Final Adjournment

Some modification of individual speaker time slots may occur during the course.

Companion Course Opportunity—Enroll in Both and Save!

Safety Practices in Wastewater Collection and Treatment
August 13, 2012
Madison, Wisconsin
Course #N456

Come early and attend this additional one-day course focused on critical safety issues in the wastewater treatment and collection industry.

See course details at epd.engr.wisc.edu/printN456.

Enroll in both course #N429 and course #N456 and receive a discount from the combined enrollment fee. See enrollment page.

Earn PDH, LU, CEU

By participating in this course, you will earn 18 Professional Development Hours (PDH) or 1.8 Continuing Education Units (CEU).
Four Easy Ways to Enroll

Internet:

http://epd.engr.wisc.edu/webN429

Phone:

800-462-0876 or 608-262-1299 (TDD 265-2370)

Mail to:

Engineering Registration
The Pyle Center, Dept. 107
702 Langdon Street
Madison, Wisconsin 53706

Fax:

800-442-4214 or 608-265-3448

Course Information

- Please enroll me HVAC and Odor Control for Wastewater Facilities
  Course #N429, August 14–16, 2012 in Madison, WI Fee: $1,285
  Discount for early enrollment: Save $100 when you enroll prior to July 14.
  Fee prior to July 14: $1,185
- Please enroll me in Safety Practices in Wastewater Collection and Treatment
  Course #N456, August 13, 2012 in Madison, WI Fee: $425
- Please enroll me in both courses: Combined fee: $1,495 (includes both courses)
  Save $215.

Personal Information

(Please print clearly.)

Name _____________________________ Title _____________________________
Company __________________________ Address __________________________
City/State/Zip _______________________
Phone (_____) _______ Fax (_____) _______
E-mail _____________________________

Other Courses of Interest

See our website for complete course lists and details:
epd.engr.wisc.edu

Safety Practices in Wastewater Collection and Treatment
August 13, 2012, Madison, Wisconsin
Course #N456

Wastewater Treatment Plants: Processes, Design, and Operation
September 25–27, 2012, Madison, Wisconsin
Course #N136

Essentials of Hydraulics for Civil Engineers and Designers
October 2–4, 2012, Madison, Wisconsin
Course #N164

Sanitary Sewer and Collection System Engineering
December 4–6, 2012, Madison, Wisconsin
Course #N239

Upgrading Your Sanitary Sewer Maintenance Program
March 18–19, 2013, Madison, Wisconsin
Course #N453

Wastewater Pumping Systems and Lift Stations
March 20–22, 2013, Madison, Wisconsin
Course #N452

Nutrient Removal Engineering: Phosphorus and Nitrogen in Wastewater Treatment
April 23–25, 2013, Madison, Wisconsin
Course #N473

Additional Enrollees

Name _____________________________ Title _____________________________
E-mail _____________________________
Card No. _____________________________ Expires _____________

Billing Information

- Bill my company
- P.O. or check enclosed (Payable in U.S. funds to UW–Madison)

Cantholder's Name _____________________________
Card No. _____________________________
UW# _____________________________

Need to Know More?

Call toll free 800-462-0876 and ask for:

Program Director: 
Ned Paschke, PE
Direct 608-263-4705 paschke@engr.wisc.edu

Program Associate: 
Gail Geib
Direct 608-262-5566 ggeib@engr.wisc.edu

General Information

Fee Covers: Notebook, course materials, break refreshments, lunches, and certificate. Course notes are distributed only to course participants.

Cancellation: If you cannot attend, please notify us by one week before the course, and we will refund your fee. Cancellations received after that date and no-shows are subject to a $150 administrative fee. You may enroll a substitute at any time before the course starts.

Course Location
The Pyle Center, 702 Langdon Street, Madison, WI 53706.
Telephone: 608-262-1122

Accommodations
We have reserved a block of guest rooms (rates starting at $89, including continental breakfast and free wifi) at Lowell Center, 610 Langdon Street, Madison, WI. Reserve a room online at epd.engr.wisc.edu/lodgingN429 or call 866-301-1753 or 608-256-2611. Room requests after July 16 will be subject to availability. Other fees and restrictions may apply.

We have reserved a second block of guest rooms (rates starting at $115, including shuttle) at Madison Concourse Hotel and Governor’s Club, One West Dayton Street, Madison, WI. Reserve a room online at epd.engr.wisc.edu/lodgingN429 or call 800-356-8293 or 608-257-6000 and indicate that you will be attending this course under group code 229621. Room requests after July 24 will be subject to availability. Other fees and restrictions may apply.