

# Free Educational Seminar

*For PGE Commercial and Industrial Customers*

## Industrial Fan Systems

**This half-day free seminar** provides an overview of the principles of industrial fan, blower, and dust collection systems and how to save energy without reducing production.

### **This seminar will equip participants to better:**

- *Define terms related to fan systems*
- *Understand different types of fans and situations where they should be used*
- *Understand the cost of fan operation and explain the benefits of optimizing industrial fans*
- *Explain the interaction between fan curves and system curves*
- *Discuss key factors that affect fan system efficiency, including fan style, and fan controls (i.e. variable frequency drives)*
- *Identify basic measurement techniques that will assist in evaluating fan, blower, and dust collection systems*
- *Recognize the optimization potential of fan systems*
- *Determine which of their fan systems might have good optimization potential that they want to pursue*

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## Who should attend?

Decision makers who plan for new dust collection systems and industrial fans, as well as those who operate and maintain existing systems:

- *Plant, process, and energy engineers*
- *Energy managers*
- *Facility operators*
- *Maintenance managers*

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## Instructor

*Ronald G. Wroblewski, P.E., Productive Energy Solutions, LLC*

*Ron has over 25 years of engineering experience helping customers design, analyze, specify and optimize commercial and industrial energy systems. In addition to earning both a bachelors and masters degree in mechanical engineering, Ron is a highly rated trainer who applies proven principles of adult education to make his technical seminars beneficial and fun. He is the senior DOE fan systems trainer, and provides industrial energy efficiency training worldwide for the United Nations.*

**Nov. 18, 2009 • 2 World Trade Center • Portland**

## Time and Location

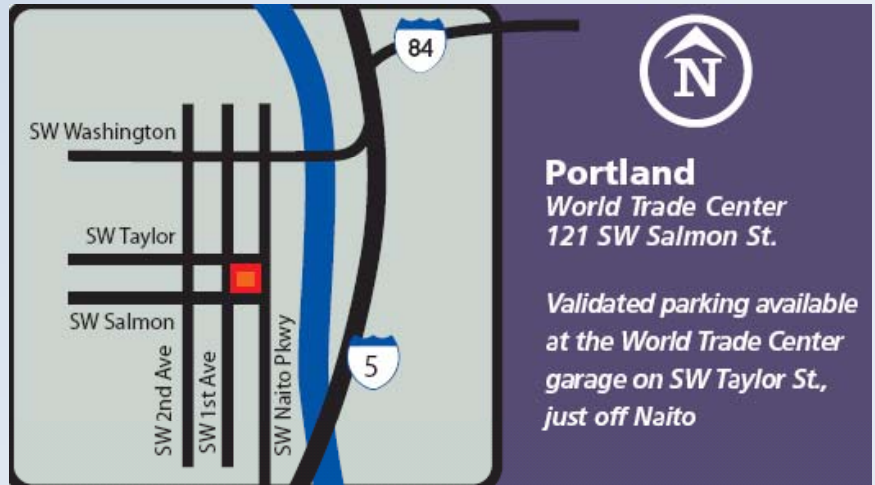
**Wed. Nov., 18, 2009**

7:30 a.m.– 12:00 p.m.

2 World Trade Center

Continental Breakfast: 7:30 a.m.

Seminar: 7:50 a.m.



## Cost

Free to PGE customers. Others are welcome based on availability of space, small fee may apply.

## Accreditation

- **Clackamas Community College:** 0.4 CEU's (continuing education units)
- Certificate of Completion that can be used towards the BOMA Certification

## Registration

RSVP is requested as soon as possible. However, we can accommodate a few walk-in registrations. To register, e-mail [PGE.Seminars@pgn.com](mailto:PGE.Seminars@pgn.com) or call **503-464-8020** and press "1" for classes.

## More educational opportunities

For more information on additional classes for PGE business customers, visit our Web site at [PortlandGeneral.com/Classes](http://PortlandGeneral.com/Classes). Classes may be added throughout the year. If you'd like to receive e-mail notices of new class offerings, e-mail [PGE.Seminars@pgn.com](mailto:PGE.Seminars@pgn.com).

### Additional classes to look forward to in 2009/2010:

- *Basics of Electricity*
- *Compressed Air Systems*
- *Chilled Water Systems*
- *Energy Champions Workshop*
- *Industrial Pump Systems*
- *Lighting Retrofits*
- *Monitoring Load Shape for Energy Savings*
- *New Trends in Lighting*



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