

Free Educational Seminar

For PGE Commercial and Industrial Customers

Industrial Pump Systems

This free half-day seminar provides an understanding of motors, pumps and variable-speed drives that can reduce energy use and improve process control in systems with varying loads.

This seminar will equip participants to better:

- *Define terms related to pump systems*
 - *Explain what a pump is and how it works*
 - *Discuss what a pump system includes*
 - *Discuss why it is important to improve pump system performance*
 - *Review the various types of pump systems and pumps*
 - *Identify opportunities for pump system improvement*
 - *Explain what measurements will need to be taken*
 - *Discuss potential options to improve pump system performance*
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Who should attend?

Decision makers who want to improve their knowledge of electric motor drive systems, pumps, and drives:

- *Business owners and leasing agents*
 - *Plant, process, and energy engineers*
 - *Facility managers*
 - *Operational Managers*
 - *Electrical and mechanical engineers*
 - *Maintenance technicians*
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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.

March 3, 2010 • Wilsonville Training Center

Time and Location

Wednesday, March 3, 2010

7:30 a.m. - 12:00 p.m.

Continental breakfast beginning at 7:30 a.m.

Seminar beginning at 7:50 a.m.

Wilsonville, Clackamas Community College,

PGE Corporate Training University Campus

Directions

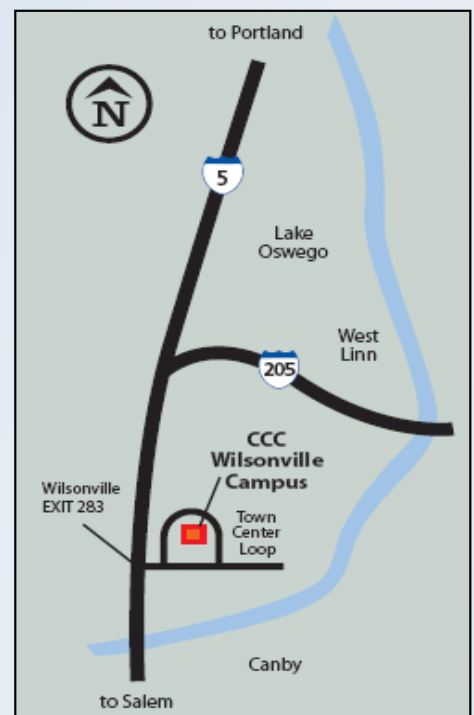
From 1-5 Southbound: Take 1-5 South to Exit 283.

Turn left at light onto Wilsonville Road, go to fourth stop light and turn left onto Town Center Loop East.

From 1-5 Northbound: Take 1-5 North to Exit 283.

Turn right at light onto Wilsonville Road, go to third stop light and turn left onto Town Center Loop East.

Clackamas Community College (CCC) – PGE Corporate University Campus - Look for the “PGE/PacifiCorp” sign.



Cost

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

Accreditation

- Clackamas Community College: 0.4 CEUs (continuing education units)
- IFMA: Qualifies for four CFM maintenance points
- BOMA: Certificate of Completion that can be used toward 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 or call **503-464-8020** and press “1” for classes.

More Educational Opportunities

Visit our web site at 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.

Additional classes to look forward to in 2010:

- *Chilled Water Systems*
- *Compressed Air Systems*
- *Energy Champions Workshop*
- *Industrial Fan Systems*
- *Solar Photovoltaic Systems*
- *Solar Thermal (Hot Water) Systems*



Portland General Electric



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