



PNEUMATICS CONVEYING SYSTEMS ENERGY MANAGEMENT

December 1, 2010

7:30 am until 4:30 pm
NorthWestern Energy
1501 North River Road
Black Eagle, MT 59414

Cost: \$299*

*Tuition is **waived** for employees of companies that are NorthWestern Energy electric customers—limit of one employee per Large USB Choice Customer. Due to limited class size and limited opportunities to provide this training in Montana, the number of representatives from any single organization may be limited; a waiting list will be developed if needed. Northwestern Energy customers, please enter the following discount code when registering online: **NWEN**.

This training is valued at \$800

0.7 Continuing Education Units through Washington State University may be made available for this training

Class size is limited to 25 attendees

Key Learning Objectives

- Discuss design examples
- Understand segregation mechanisms and solutions to segregation problems
- Learn about the material flow process
- Evaluate options available for pneumatic conveying systems
- Conduct troubleshooting methods

Who Should Attend

Process, production, and maintenance engineers, as well as others involved in bulk materials handling from the following industries:

- Food processing, bulk storage, and pulp and paper
- Biotechnical, biochemical, chemical, and fermentation
- Pharmaceuticals and cosmetics
- Mining/mineral and plastics processing

Agenda

- 7:30 Registration (breakfast provided)**
- 8:00 Morning Session**
- ♦ Economics: pneumatic conveying vs. other methods
 - ♦ Material properties and the affect on conveying
 - ♦ Types of systems: vacuum vs. pressure and dilute vs. dense
- 11:30 Lunch (provided)**
- 12:30 Afternoon Session**
- ♦ Phase diagrams: energy required vs. phase diagram
 - ♦ Designing for minimum energy usage
 - ♦ Air supplies: fans, blowers, compressors and their affect on energy
 - ♦ Material separation: cyclones and filters
- 2:00 Break**
- 2:15 Afternoon Session Continued**
- ♦ Feeding devices and their energy requirements: venturi, rotary feeder, gate lock, screw feeder, and pressure pots
 - ♦ Conveying line orientation and affect on energy: diverter valves, couplings, and bends
- 4:00 Summary and Evaluation**
- 4:30 Adjourn**

Course Description: This training will provide attendees the skills and knowledge necessary to optimize existing pneumatic conveying systems or specify reliable systems to meet conveying requirements. Systems design, operation, component selection, advantages and disadvantages, and other characteristics of different conveying systems will be discussed.

Instructor: Paul Solt is a principal consultant at Pneumatic Conveying Consultants, in Allentown, Pennsylvania. His diverse experience derives from more than 50 years of experience installing and troubleshooting pneumatic conveying systems. He is well-known for his column, "Pneumatic Points to Ponder," which has been appearing in *Powder and Bulk Engineering* magazine three times a year for the past 19 years. The author of several patents for pneumatic conveying devices, he holds a B.S. degree in mechanical engineering from Lehigh University.



Co-Sponsoring Organizations

NorthWestern Energy
Washington State University Extension Energy Program
Bonneville Power Administration
Northwest Food Processors Association

This training is provided by Paul Solt. For more information: pccsolt@enter.net, (610) 437-3220

Northwest Regional Industrial Training program is coordinated and funded by the Northwest Energy Efficiency Alliance (NEEA), a private non-profit organization funded by Northwest utilities, the Energy Trust of Oregon, and Bonneville Power Administration. NEEA works in collaboration with its stakeholders and strategic market partners to accelerate the sustained market adoption of energy-efficient products, technologies, and practices. NEEA's market transformation efforts address energy efficiency in homes, businesses, and industry.

How to Register

Registration deadline is November 17, 2010

To register online: www.regonline.com/17neea-industrialtraining

Phone, fax, email, or mail the registration form below to:
 Phone: 888-720-6823

Fax: 503-525-4800

Email: industrial-training@industrial.nwalliance.org

NEEA Industrial Training c/o Ecos
 309 SW 6th Ave #1000
 Portland, OR 97204

Please make checks payable to NEEA Industrial Training c/o Ecos#2300

Questions

Visit www.nwalliance.org/participate/calendar.aspx or contact the training center at 888.720.6823 or industrial-training@industrial.nwalliance.org

Registration Form: Please register me for the **Pneumatics Conveying Systems** training on **December 1, 2010:**

_____		_____		_____	
First Name	Last Name	Title	Phone/Fax		
_____			_____		
Company Name		Utility Provider	E-mail Address		
_____			_____		
Address			Please indicate special diet needs		
_____			<input type="checkbox"/> Vegetarian		
_____			<input type="checkbox"/> Other _____		
City	State	Zip	_____		
Participation approved by: Supervisor name _____			E-mail _____		

Payment Options

Please enclose a check with this registration form and mail to the above address. If paying by credit card or purchase order please call 888-720-6823 or fax registration form to 503-525-4800.

I authorize NEEA Industrial Training c/o Ecos to charge my Visa/MasterCard in the amount of _____
 _____ Expiration date ____ / ____

Card holder name (please print) _____ Address associated with card _____

Authorized Signature _____ City _____ State _____ Zip _____

Cancellation Policy: Full refund of training cost if attendance is canceled by **November 17**; half refund thereafter.