

Changing the Environment with Natural-gas Forklifts and Variable-speed Fan Motors

The environment at Duckwall-Pooley Fruit Company is changing. The 80-year-old pear-packing business in Odell, Oregon is improving air quality, reducing energy costs, increasing production efficiency and delivering higher-quality product all at the same time. These changes help Fred Duckwall, who has managed this family-owned business for a decade, stay on top of the demand for high-quality Pacific Northwest pears.

Compressed natural-gas forklifts and variable-speed fan motors in refrigerated pear-storage facilities are at the heart of these changes, which give the company a competitive edge at a lower cost. "We have to live with these decisions day in and day out," says Fred. "Investments like these have to provide a financial return along with the other benefits."

The Duckwall Company was founded in 1918 by Fred's grandfather, John C. Duckwall. A merger with Pooley Packing in 1971 formed Duckwall-Pooley Fruit Company. The business regularly employs some 40 people, swelling to over 100 to meet seasonal pear storage and packing demand. Washington and Oregon together produce more than 75 percent of U.S. pears, and Duckwall-Pooley exports pears to more than 40 countries on five continents, with more than a third of its product going overseas. So Duckwall-Pooley has to remain competitive with price and quality.

To help meet this challenge, Fred Duckwall has been adopting the latest efficiency and quality control standards. As a result, he not only has reduced his company's operating costs but has improved its work environment.

For example, rather than drastically increasing the exhaust ventilation in his packaging facilities to reduce carbon-monoxide and nitrogen-oxide levels, Fred chose to reduce them at their source by converting 10 of his 24 forklifts to run on natural gas. The natural-gas forklifts not only cost less to operate, they reduce carbon-monoxide



Fred Duckwall with one of his new natural-gas-powered forklifts.

OREGON OFFICE OF ENERGY

625 Marion St. NE,
Suite 1
Salem, OR 97301-3742

503-378-4040

Toll-free:
1-800-221-8035

Fax:
503-373-7806

Web site:
energy.state.or.us

emissions by more than 80 percent. And an on-site compressor and filling station allows the operator to refuel at his or her convenience without having to change fuel tanks.

The cost of natural gas for each forklift is between \$600 and \$700 per year — about \$900 less than regular gasoline or propane. This savings, combined with the Oregon Business Energy Tax Credit,* will repay the \$75,000 cost of the forklift conversions and fueling stations in less than 10 years.

Complementing the improved air quality in the packing building are reduced air speed and enhanced nitrogen content and temperature control in refrigerated storage buildings. Maintaining uniform temperature and managing evaporation and aging are the keys to high-quality fruit. Refrigeration evaporator fans inside the cooled buildings typically circulate air constantly, but studies have shown that these fans don't have to run constantly or at high speeds to maintain ideal and uniform temperatures. The solution: variable-speed fan controls. Variable-speed controls reduce the amount of heat from fan motors in the refrigerated space, saving energy, and the lower air speeds reduce evaporation, keeping fruit fresher and closer to its picked weight.

The Industrial Assessment Center at Oregon State University's Department of Mechanical Engineering helped identify the variable-speed drive opportunity for Duckwall-Pooley. The \$300,000 project resulted in energy cost savings of \$57,000 per year. Again, Duckwall-Pooley is taking advantage of the Oregon Business Energy Tax Credit to help offset the cost, claiming the 35 percent as they file their taxes over five years — 10 percent for each of the first two years and 5 percent a year for three subsequent years. The tax credit reduces the simple payback on this project to just over three years. After his cost savings pay for the variable-speed fan controls, Fred will have more capitol to reinvest in additional energy-saving and business improvements.

Spending time with Fred Duckwall at his plant makes it clear that he is open to different perspectives and knows how to calculate risk. He shows that an important part of running a great business is managing its environment.

To learn more about energy efficiency opportunities, alternative fuels or tax and financing incentives for Oregon businesses, contact:

Oregon Office of Energy
625 Marion Street NE
Salem, OR 97310
1-800-221-8035 (in Oregon)
503-378-4040
Fax: 503-373-7806
energy.state.or.us

Oregon Industrial Assessment
Center
Oregon State University
Batcheller Hall 344
Corvallis, OR 97331-2405
541-737-3004
greg.wheeler@orst.edu

Oregon Manufacturing Extension
Partnership
29353 Town Center Loop East
Wilsonville, OR 97070
503-650-7350
<http://www.omep.org>

**Alternative fuels projects are eligible for a 35 percent dollar-for-dollar credit against State of Oregon corporate excise taxes owed. In this case, NW Natural accepted the tax credit on Duckwall-Pooley's behalf and gave the company a cash incentive equivalent to the tax credit.*

