# Consolidated Metco: Casting an energy efficient future

BY ALEX PEKALSKI AND JONATHAN LYLES
Oregon Office of Energy

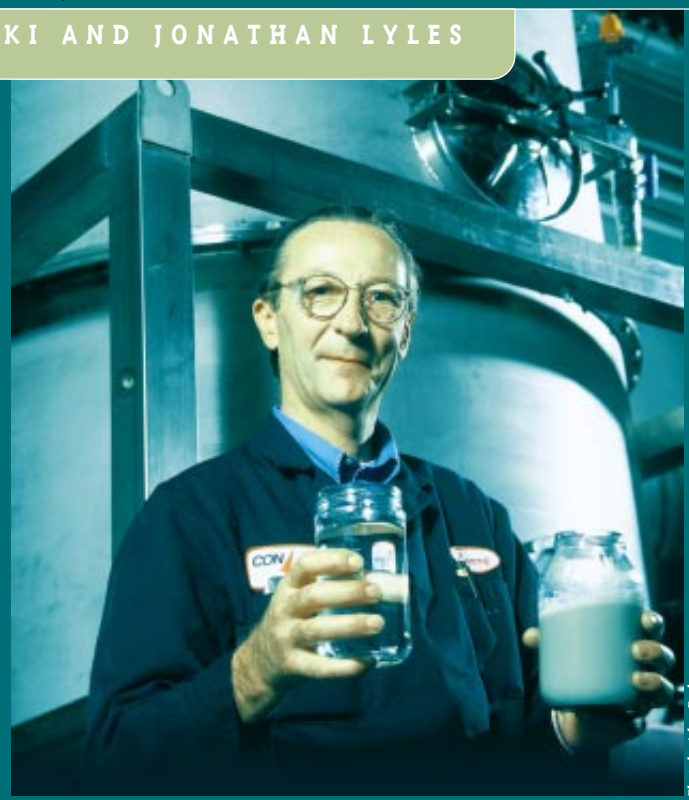

Photo by Adam Bacher.

Consolidated Metco Clackamas Facilities Manager Larry Burnett stands by the company's new heat pump vacuum evaporator that is saving the firm $25,000 in energy costs and nearly 800,000 gallons of water a year. Burnett is holding the evaporator products - a clean distilled water stream and concentrated waste product. Consolidated Metco earned a 35 percent tax credit from the Oregon Office of Energy for its investment.

Ten minutes spent glancing through a foreign technical journal paid off substantially for Consolidated Metco and Facilities Manager Larry Burnett. Burnett saved his firm $25,000 in energy costs and nearly 800,000 gallons of water a year. The Clackamas site of Consolidated Metco manufactures aluminum die cast products for the transportation industry.

What caught Burnett's eye in the Italian trade journal that produced such savings? An advertisement for a heat pump driven vacuum evaporator.

The technology immediately interested Burnett. It has been used in Europe for several years, but never before for this purpose in North America. He knew his company supported using the most advanced and cost-effective processes in the industry. Further research and discussion with Ernie Nimister, manager of Environmental Compliance and Safety for Consolidated Metco, convinced Burnett that he was on to something. The heat pump vacuum evaporator could address the company's growing concerns about energy and maintenance costs of the existing evaporators, water use, and cooling solution recovery.

Consolidated Metco was using natural gas evaporators to concentrate waste mold release compounds, vibratory solution, and metal cutting fluids in its metal casting facility. These traditional evaporators required excessive maintenance, were hefty consumers of energy, and lacked water recovery.

The new evaporator system takes combined waste machining, mold release, and vibratory waste fluids and evaporates it in a vacuum. It uses a highly efficient heat pump to heat the waste at a lower temperature in a vacuum. The waste is boiled at 70 - 90° F and the heat of the steam is recovered by the heat pump and used to boil the incoming water. Wastewater concentration of 20:1 is easily attainable in this application and 30:1 is possible under some conditions.

There is a great advantage in boiling off the waste at a low temperature and avoiding the maintenance and inefficiency created by high temperature fouling of boiler heating tubes. The products are a clean distilled water stream and concentrated cutting solutions or debris at one-third of the energy expenditure of the previous evaporators.

What seemed too good to be true gets even better. The ultra-clean distilled water is introduced to the evaporative cooling tower as make-up water, significantly reducing headaches for water treatment. Burnett says mineral buildup inside the cooling tower and on the heat exchange surfaces of the water distribution systems is greatly reduced, too.

Consolidated Metco's new heat pump vacuum evaporator is saving the company nearly 90 percent of the expense of managing its previous systems. At a cost of $187,000 and an energy savings of $25,000 a year, the vacuum evaporator will pay for itself in just energy savings alone in about seven years.

A 35 percent Business Energy Tax Credit from the Oregon Office of Energy made this expenditure fit the company's capital investment criteria in a very tight and competitive market. The dollar-for-dollar credit against state of Oregon taxes owed amounted to $65,500 and reduced the simple payback period to less than five years. The project's return on investment is better than 20 percent.

Consolidated Metco has a proven track record when it comes to investing in good resource decisions. The firm also installed an aluminum cuttings and chip recycling (melting) system that included a cutting fluid recovery system about a year ago at its Portland Rivergate facility. It allows the company to reuse over 160,000 pounds of coolant each year and to reintroduce the aluminum cuttings and chips into products on site. It used to sell the aluminum chips and shavings offsite while others profited from separating the cutting solutions and recovering the aluminum.

Nimister said Consolidated Metco is determined to stay globally competitive by being thrifty with its energy and other resource uses. "Using everything that comes into our plants efficiently is good business," he said.



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