

NEWS ARTICLE

ENTREPRENEURS - THE OZONE SOLUTION

Purfresh aims to capitalize on E. Coli scare stories by cleaning up fruits and vegetables

*By Kerry A. Dolan, Forbes Magazine
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David Cope, Chief Executive of Purfresh, strides past two dozen packers plucking Anjou pears off a conveyor belt at Diamond Fruit Growers in Hood River, Oregon. The pears get a disinfectant bath in water with up to five parts per million of ozone, which kills viruses (like the ones that cause hepatitis) and bacteria (like *E. Coli* and *Salmonella*).

Ozone on a food processing line? It has two things going for it and one big one against. The first advantage is that ozone can be made on the spot (from air) with an electrical discharge, so it does not have to be trucked to the user. The other is that it vanishes within seconds, leaving no toxic residue. The disadvantage is that it has a bad name. In urban air ozone is a component of smog, which damages lungs.

Purfresh sells an ozone generator, a refrigerator-size cabinet that enables packers to produce ozone on site for cold-storage rooms, produce sprayers and washing tanks, like Diamond Fruit's.

Before the Food & Drug Administration approved ozone for food processing in 2001, Purfresh survived by selling generators used to purify the water that goes into health and beauty aids (Neutrogena

facial creams, Colgate toothpaste). The company also signed up PepsiCo (nyse: PEP - news - people), which in 1997 tapped Purfresh to disinfect bottled water. Coca-Cola (nyse: KO - news - people) signed on in 2001.

Purfresh lost roughly \$4 million in 2007 on \$10 million in revenue, but Cope, 47, says a flood of new food-industry clients will put the company in the black in 2008. Foodborne pathogens are responsible for at least 325,000 hospitalizations and 5,500 deaths each year in the U.S., the Centers for Disease Control & Prevention estimates.

Chlorine is often used to disinfect produce but leaves behind carcinogenic by-products. "Ozone would be a much better option," says Michael Doyle, director of the Center for Food Safety at the University of Georgia in Griffin.

So far Purfresh has signed up 70 fruit and vegetable packers as clients. At Orchard View Farms, a cherry grower in The Dalles, Ore., Vice President Brenda Thomas raves about switching to ozone from chlorine, to clean cherries. Ozone keeps the stems from turning brown so quickly. Another plus: "We used to have to leave the doors open because some workers were so sensitive to the chlorine," she says.

At Avuil Fruit, an apple and cherry grower in Orondo, Wash., operations manager Walter Hough says the company used to lose up to 20% of its fruit to mold and spores as it sat in cold storage for up to eight months. Pumping ozone gas into four of its storage rooms reduced the loss

from decay to below 2% in 2007. Hough is placing an order with Purfresh, which recently switched to a rental system for the generators, for 27 more ozone cabinets. Hough will pay \$100,000 a year for this. That doesn't include the electric bills, which will run to \$2,000 a year.

Purfresh was created 12 years ago by Lee Ditzler, a Bay Area entrepreneur with an engineering bent and two decades of experience in the ozone industry. By 2003 he had an unfocused mix of customers, including Coca-Cola, some groundwater remediators and the Bronx Zoo in New York.

It took interest from outside Purfresh to put the company on a faster track. Warren Weiss, a partner at a Silicon Valley venture capital firm, Foundation Capital, followed the company for nearly a year after hearing about it at an investment forum in 2004. He was intrigued by the company's work with Sunkist, its first produce client, which began using ozone on its lemons. In December 2004 Weiss' firm and angel investor Frederick Grauer together put in \$6.1 million for half of the company, when revenue was less than \$1 million.

Weiss recruited Cope as chief marketing officer. Cope, who has a bachelor's degree in chemistry and biochemistry, had spent two decades in sales and marketing, first at IBM and then at several Silicon Valley software startups, one of which counted Weiss as an investor. He immediately got to work cold-calling produce packers in California, Oregon, Washington and Chile known for their interest in new technology.

"This is really where Silicon Valley meets the Central Valley," says Cope, who took over as chief executive of the Livermore, Calif. Company in September 2006 and holds a 5% to 10% stake in it. Ditzler, whose stake is less than 1%, left three years ago. He now runs InvenX, another ozone-generator company.

Cope plans to introduce a slew of new products. Last year the company introduced an ozone generator to be attached to refrigerated shipping containers. It is supposed to reduce decay in fruit that is transported long distances it takes 40 days, for instance, to ship apples and grapes from Chile to Hong Kong. Using sensors and global-positioning satellites, customers can check temperature and humidity in the containers. If the power goes off, the shipper gets an e-mail alert.

And for the first time Purfresh is branching beyond ozone. It recently rolled out a liquid product called Eclipse that helps protect fruit from getting sunburned, which discolors produce and can destroy it. Eclipse, which is meant to be sprayed on apples, cherries and other fruit four to ten times a season, is made with microcrystalline calcium carbonate, the nontoxic white powder that's on the outside of chewing gum. Four rounds of spraying costs \$250 an acre.

With all these stories to tell, and a brash prediction from Cope that Purfresh can hit \$500 million in sales by 2012, the company recently raised another \$25 million of venture funding led by Stamford, Conn. hedge fund Chilton Investment. This puts the value of the company at \$105 million. Says Cope: "After renewable energy, this is the second leg of clean technology: food and water safety."

An Apple a Day ...

Americans think eating fresh fruit and vegetables helps keep them healthy. Sometimes produce makes them sick.

\$2.5 billion The annual cost of illness caused by salmonella in the U.S.

2004 The year an ozone-cleaned public swimming pool, the nation's first, opened in Fairhope, Ala.

89% Chile's share of total U.S. plum imports.

3 The number of people who died from E. coli-tainted spinach in the fall of 2006.

Sources: U.S. Department of Agriculture; City of Fairhope, Ala.; Chlorine-Free Products Association; Produce Marketing Association; U.S. Food & Drug Administration.



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