

Demonstration of a Carbon Dioxide-Based Industrial Laundry Machine

January 2012

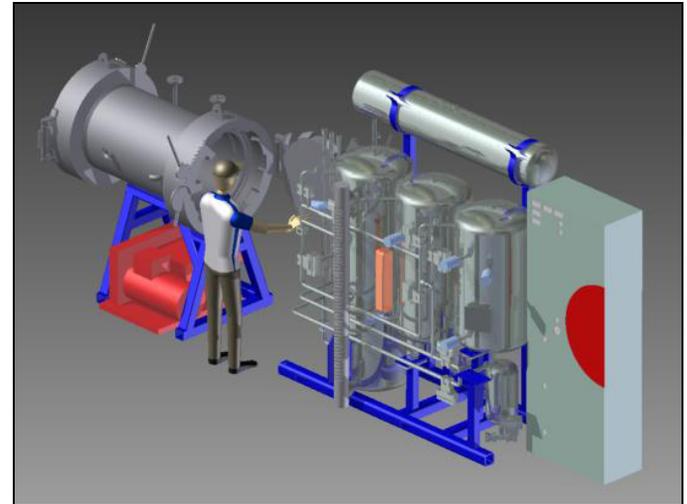
Fact Sheet

The Issue

Commercial and industrial laundry has long been one of the major water consumers, using billions of gallons of potable water each year. A typical 100 pound industrial washer consumes about 300 gallons of water per cycle and can consume over 900,000 gallons of potable water per year. On average in California, 8.35 watt-hours are used to supply, treat, consume, treat again, and dispose of one gallon of water.¹ Therefore, along with the annual water cost for the washer an embedded energy cost of over 7 million watt-hours also exists. While the industry has implemented water efficiency measures, thus far there have been no outright substitute solvents introduced which offer environmental, performance and cost benefits over water. The environmental impacts of implementing technology which does not utilize water as a cleaning solvent are enormous.

Project Description

CO2Nexus has developed a commercial prototype supercritical carbon dioxide-based laundry system for industrial and commercial laundry facilities that will reduce water consumption and significantly reduce energy usage through the elimination of the associated dryers. In order for market acceptance, the technical and commercial feasibility of a supercritical-carbon dioxide textile cleaning and disinfection machine must be demonstrated with independent verification of the energy and water savings. The demonstration site for this project is



Anticipated install layout at host site (ARAMARK Cleanroom Services)
Photo credit: CO2Nexus Inc.

the United States Veteran's Administration laundry facility in Westwood, California

This project aims to build the first commercial supercritical-carbon dioxide textile cleaning machine to document and validate:

- Real world cleaning performance.
- Machine performance and reliability.
- Benchmarking performance and cost criteria verses water based units.

PIER Program Objectives and Anticipated Benefits for California

Water conservation measures in California's industry have become an important area of research for the PIER program. This technology has the potential to eliminate the need for water and a majority of the associated chemicals used for

¹ <http://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF>

industrial textile cleaning, while also eliminating the need for the drying process.

The drying process can be electric or natural gas heaters, so this technology also reduces electricity demand and green house gas emissions.

In California, there are over 8000 facilities that could benefit from this technology such as hospitals, commercial/industrial laundry facilities, universities, hotels, and others. It is anticipated that a 5 percent market penetration of this technology can annually save over 250 gigawatt-hours, over 20 million therms, and more than 600 million gallons of fresh water.

Project Specifics

Grant Agreement Number: PIR-10-017

Recipient: CO2Nexus Inc.

City/County: Denver, CO

Amount: \$396,200

Co-funding: \$200,000 (in-kind services)

Term: October 2010 to March 2013

For more information, please contact:

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CEC-500-2011-FS-023