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Center for Water-Energy Efficiency

Winery Water and Energy Efficiency:
Utilizing Existing Technology to Solve New Problems

Center for Water-Energy Efficiency
University of California, Davis

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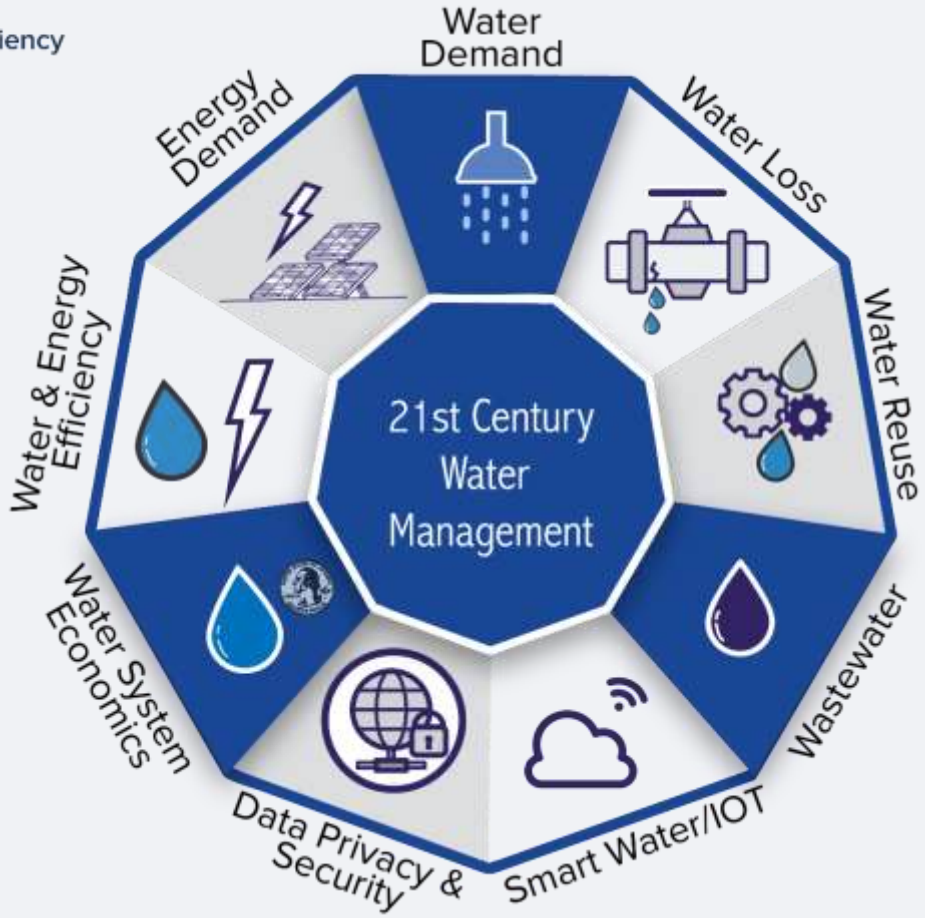

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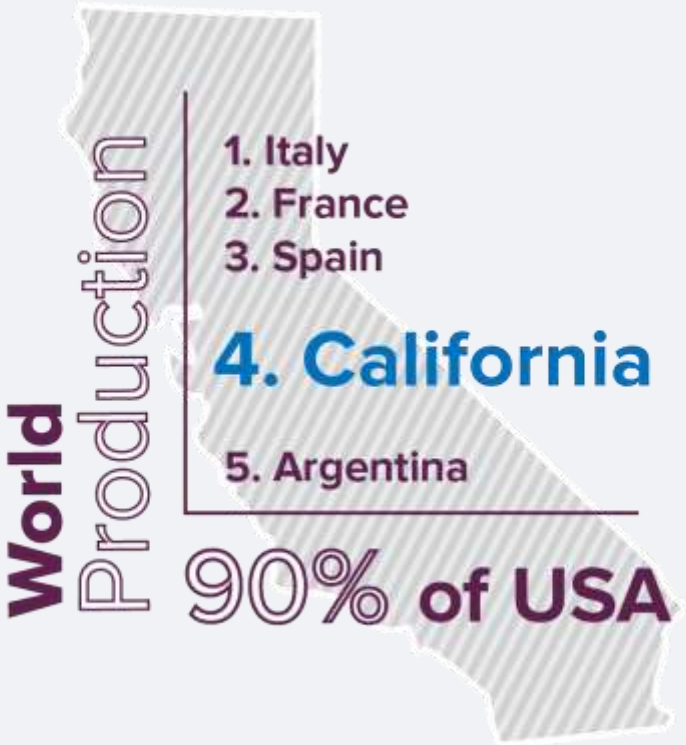

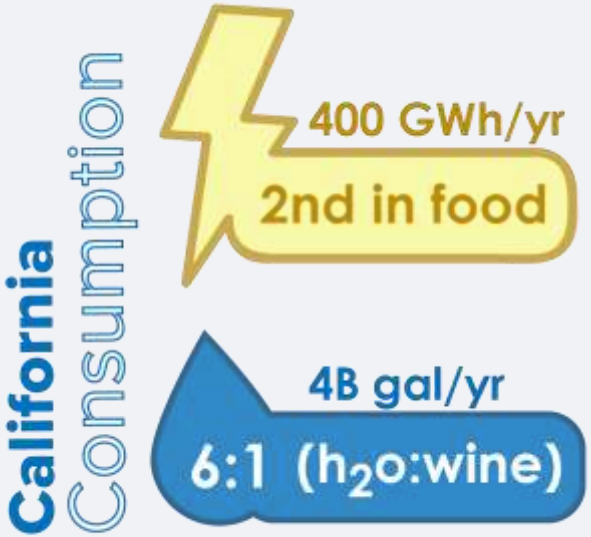

*2014 data. Running average is 85%.

California Wine Industry

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http://blog.kj.com/wp-content/uploads/2011/10/IMG_8989_CCweb.jpg

Cold Stabilization

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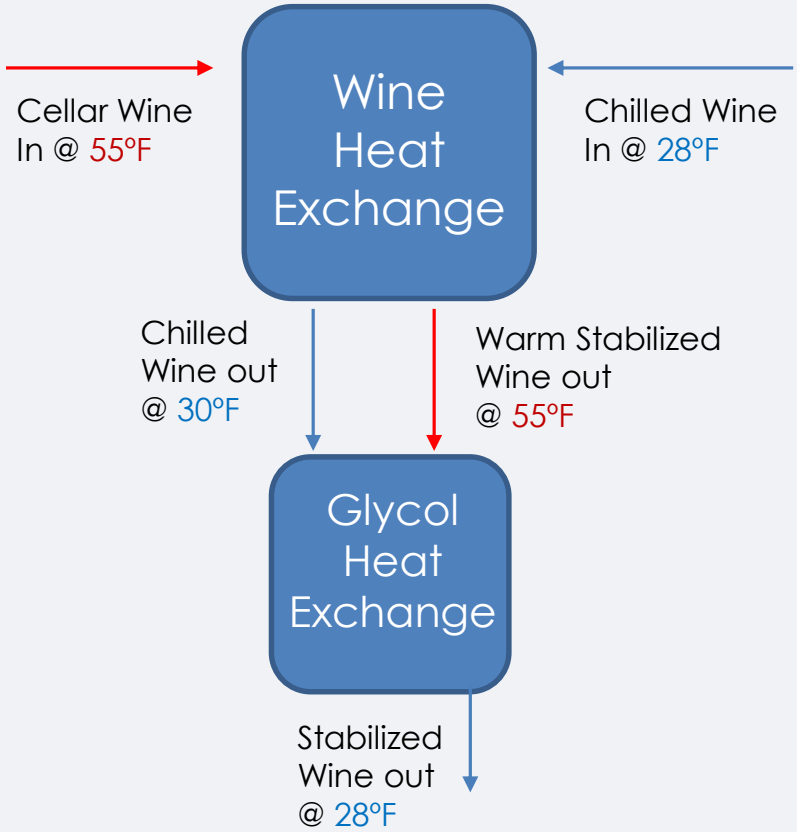

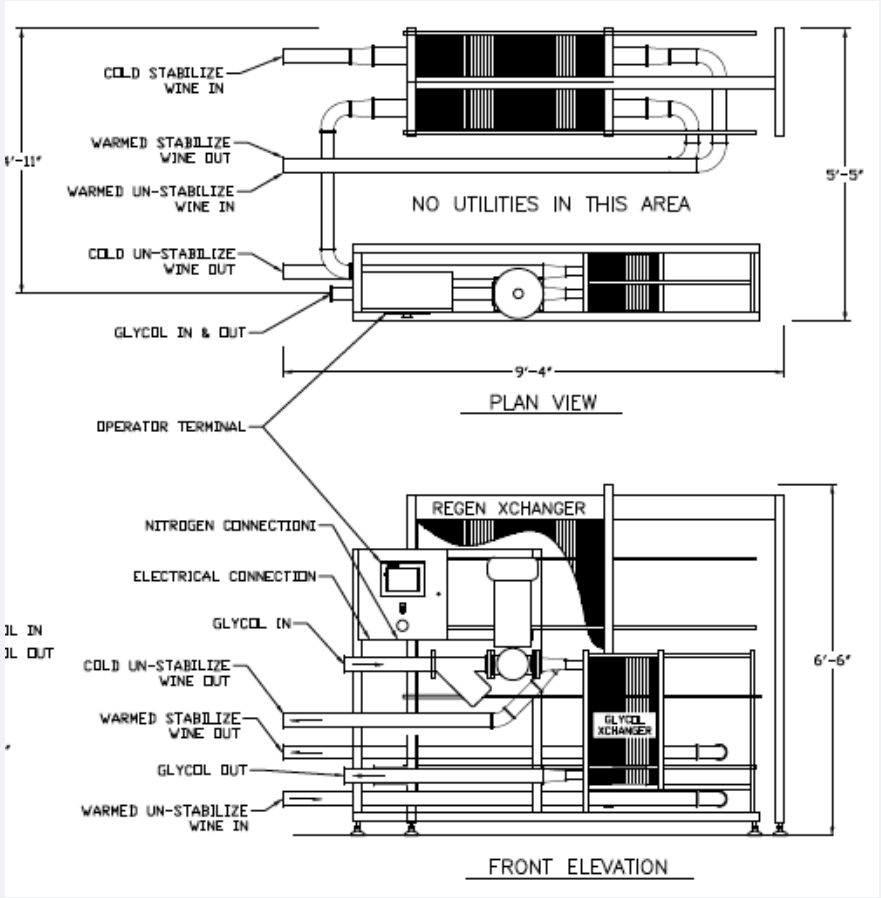

*Process Engineers Inc.

Innovative Heat Exchange

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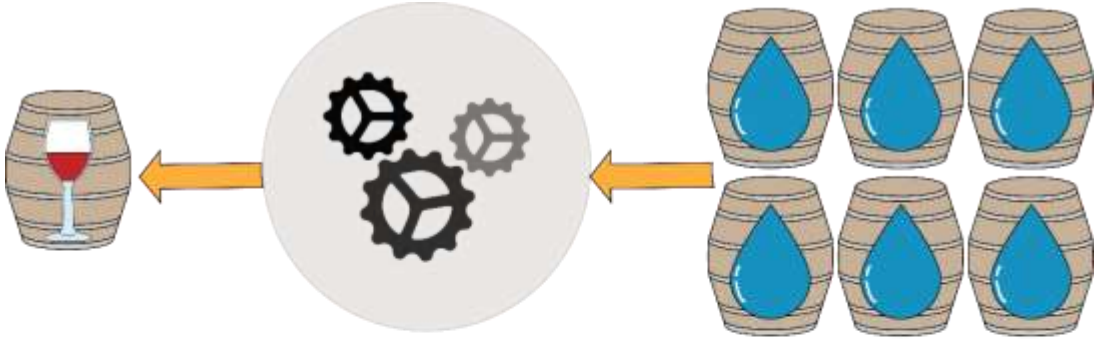
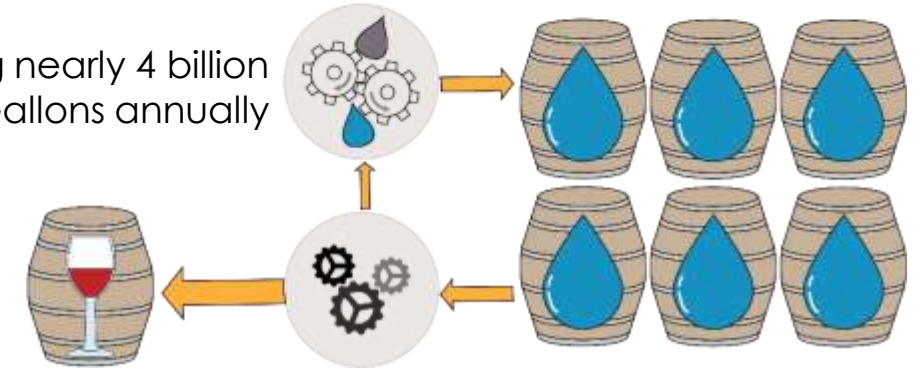
TYPICAL WINE PROCESSING



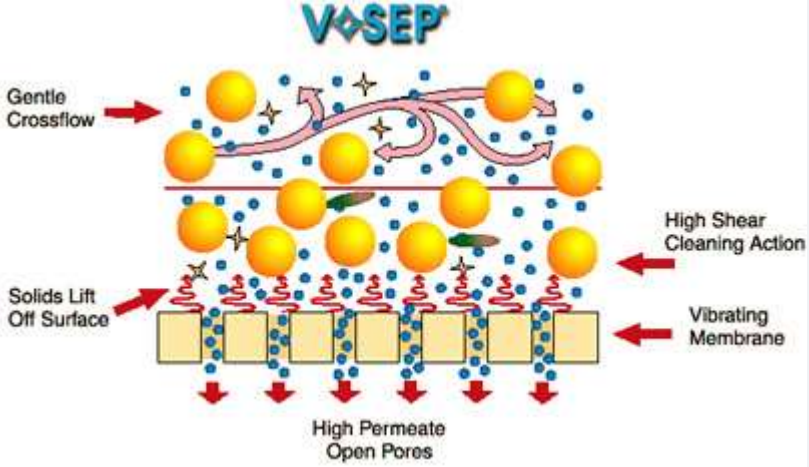
WITH INDOOR WATER REUSE

Saving nearly 4 billion Gallons annually



Water Reuse Potential

- VSEP - Vibratory Shear Enhanced Process
- Efficient reverse osmosis system
- 90% clean water recovery



http://www.vsep.com/technology/index.html

*New Logic Research

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EPIC PROJECTS
ENERGY INNOVATION

CALIFORNIA ENERGY COMMISSION

Winery Water and Energy Savings

The Issue

California is the fourth largest producer of wine in the world. The California wine industry is a significant water consumer and is the second largest consumer of electricity among the food and beverage industry. As the wine industry and its associated water and energy use continue to expand, efficiency technologies will become increasingly important. Water supply is limited and energy bills will become a larger portion of operating costs if not contained. Water reuse and novel heat recovery can significantly decrease fresh water use in wine production while decreasing energy use, but data on technical and economic feasibility is limited.

Project Innovation + Advantages

This project is testing two energy and water saving technologies at a winery facility in northern California. The first technology is a water treatment and reuse system to recycle wastewater for indoor barrel washing. The second is a wine-to-wine heat exchanger for the cold-stabilization of white

Two Technologies to Achieve Water and Energy Efficiency in the Wine Industry

BENEFITS

The project focuses on full-scale technology demonstrations of two water and energy saving technologies for the wine industry. The water treatment and reuse system uses reverse osmosis to treat water to potable standards for barrel washing with an estimated water use reduction of 90 percent. The second technology significantly reduces the amount of energy used to stabilize the white wine.

CEC Grant

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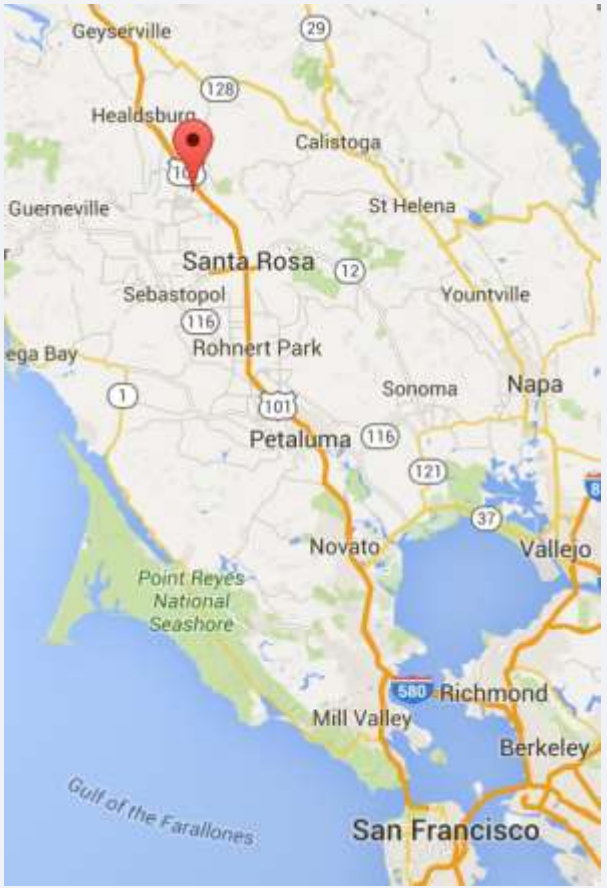
Large Bottling/Racking Facility:

- ~2% of California's production
- 13 MG wine/year
- 5.5 M cases/year



Santa Rosa, CA

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Projected Savings	
Electricity	203,451 kWh/yr
Natural Gas	27,743 therms/yr
Cost	$ 49,429/yr
Emissions	473,116 lbs CO_2e/yr

*Assuming 13 M/gal wine processed annually

Photo by Jackson Family Wines

Wine-to-Wine Heat Exchanger

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Winery Water Life Cycle

Recycle + Reuse Barrell Wash Water

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Projected Savings		
Fresh Water Use	90%	1,417,500 gal/yr
Electricity	63%	42,450 kWh/yr
Energy Cost	63%	$5,000/yr
GHG Emissions	63%	31,000 lb/yr

Recycle + Reuse Barrell Wash Water

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Contact info:

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kcolmos@ucdavis.edu

Thank you

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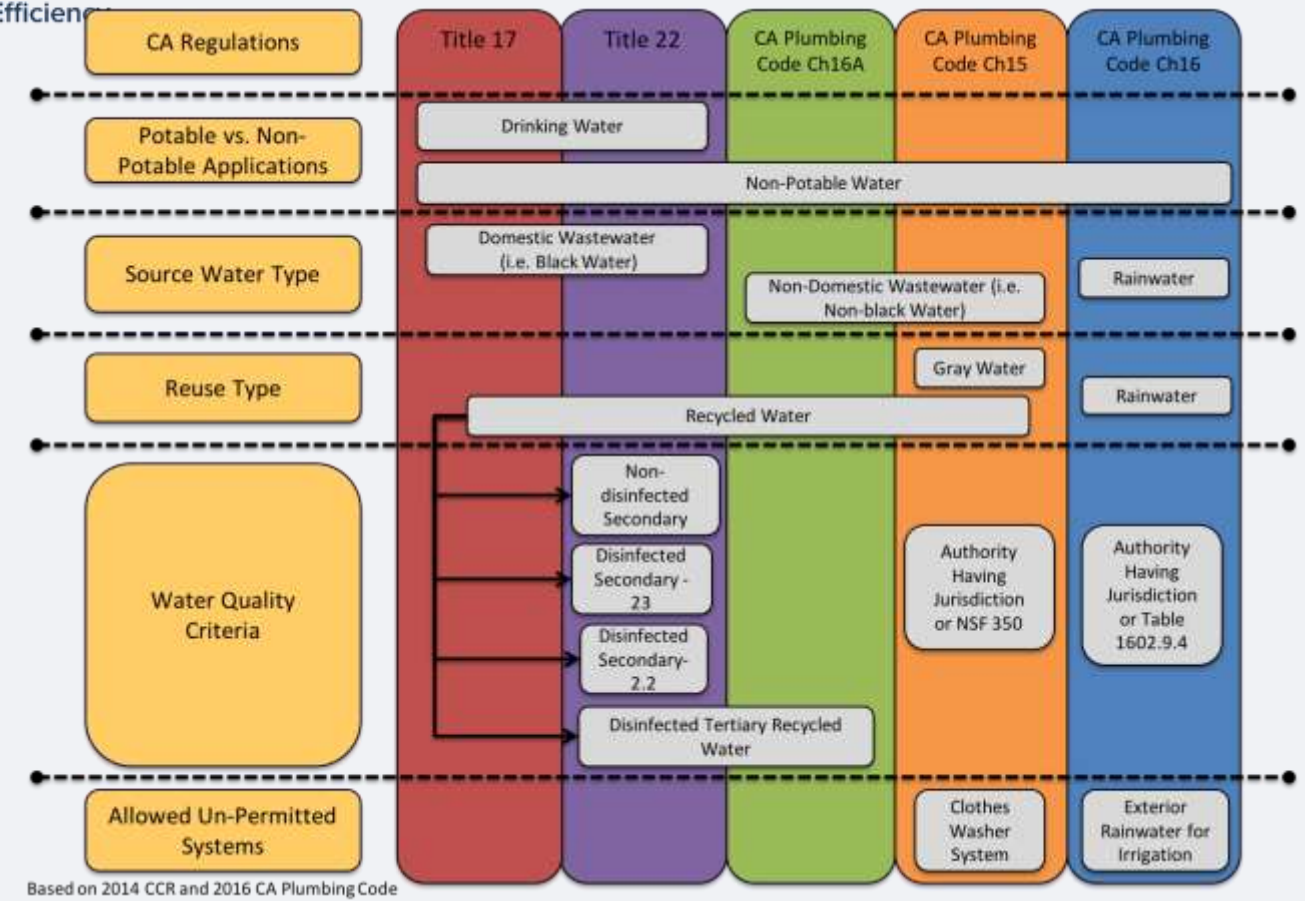

Based on 2014 CCR and 2016 CA Plumbing Code

Policy is the Barrier to Implementation