

Case story | H<sub>2</sub>O Engineering

# H<sub>2</sub>O Engineering uses **Danfoss high-pressure pump** to make fine wine even better in Napa Valley

**SMALL**

pump design reduces entire system and saves expensive fittings and pipes.

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The winemaking process is as old as human civilization, but that doesn't mean nothing has changed in the last 9,000 years. In today's intensely competitive high-end market the art and science of viticulture has reached new heights, and vineyards commonly use advanced equipment to help give their wine unique character.

H<sub>2</sub>O Engineering provides customers with a broad range of water treatment technologies and does not shy away from a new challenge. So when a California winemaker approached the company with a project to develop and build an RO system to help shape its wines, the company was quick to respond.

**The challenge: Design a reverse osmosis system that is simple to operate, quiet to use, and easy to move around the winery**

Good wine depends on a great array of factors. Some of these, like the weather, the winemaker has no influence on. Others are carefully controlled and can make the difference between mediocre and marvelous vintages. Increasingly, vintners use RO both to concentrate the "must" and to fine-tune blends.

"Our client, a high-end winery in Napa Valley, needed a better RO system," says Brendon Shearin, water process engineer at H<sub>2</sub>O Engineering. "They had been using a setup with a dual-piston plunger pump and huge pulsation dampeners. It vibrated so badly, with a noise level so intense, that staff had to use earplugs to be in the same room. The customer also wanted to simplify operation of the system and make it smaller so it could be moved around the cramped quarters of their winemaking cave."

**The solution: A plug-and-play ultra-high-pressure RO plant built around a Danfoss PAH pump**

H<sub>2</sub>O Engineering designed a skid-based, all stainless steel system that is much smaller than its predecessor. In addition to the onboard CIP system, custom ultra-high pressure RO membranes and PLC/HMI control panel, the new system operates at several voltages so it can work anywhere in the winery.

At the heart of ultra-high-pressure configuration is a Danfoss PAH 32.

“I was familiar with Danfoss’s axial pump technology from my previous company,” explains Shearin, “so we decided to take a closer look at a PAH pump. It’s quiet and small, doesn’t need pulsation dampeners, and requires fewer stainless fittings and pipes. With this pump, the size of the entire system could be seriously reduced. What’s more, it uses the pumped medium – in this case grape juice or wine – as the only lubricant. This makes it ideal for food and beverage applications, with zero risk of cross-contamination.”

**The results: A satisfied customer – and the potential for many more**

Whereas standard SWRO takes place between 800 – 1,200 psi, the new ultra-high-pressure RO system runs at up to 1,500 psi. This, along with permeate volume, timed cycle and brix controls enable the winery to fine-tune processes more precisely than ever.

“The customer is really happy with our solution,” smiles Shearin, “and so are we. The noise level is now below the OSHA threshold for hearing protection. Plug-and-play simplicity combined with transparent process controls and small footprint really boost the usability factor. And because maintenance is simple and we were able to save on some expensive fittings and pipes in this all-stainless configuration, the total costs of ownership are quite competitive. We believe the system has good market potential in both the winemaking and other food and beverage industries.”

See a short film about the new ultra-high-pressure system for wineries at  
<http://www.youtube.com/watch?v=YCitQyxzy3s&sns=em>



*About H<sub>2</sub>O Engineering*

*Based in San Luis Obispo, California, H<sub>2</sub>O Engineering, Inc. specializes in ozone remediation, water treatment, system integration and automation. With customers both in the US and internationally, H<sub>2</sub>O Engineering is a full-service resource for drinking water, water reuse, water treatment, and soil and groundwater remediation. See more at [www.h2oengineering.com](http://www.h2oengineering.com).*

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