

HydroFLOW Case Study - Chemical Plant

Boiler and RO system optimization (Updated February 2023)



Background

The Customer

A chemical plant in Washington, USA.

The Customer's Pain Points

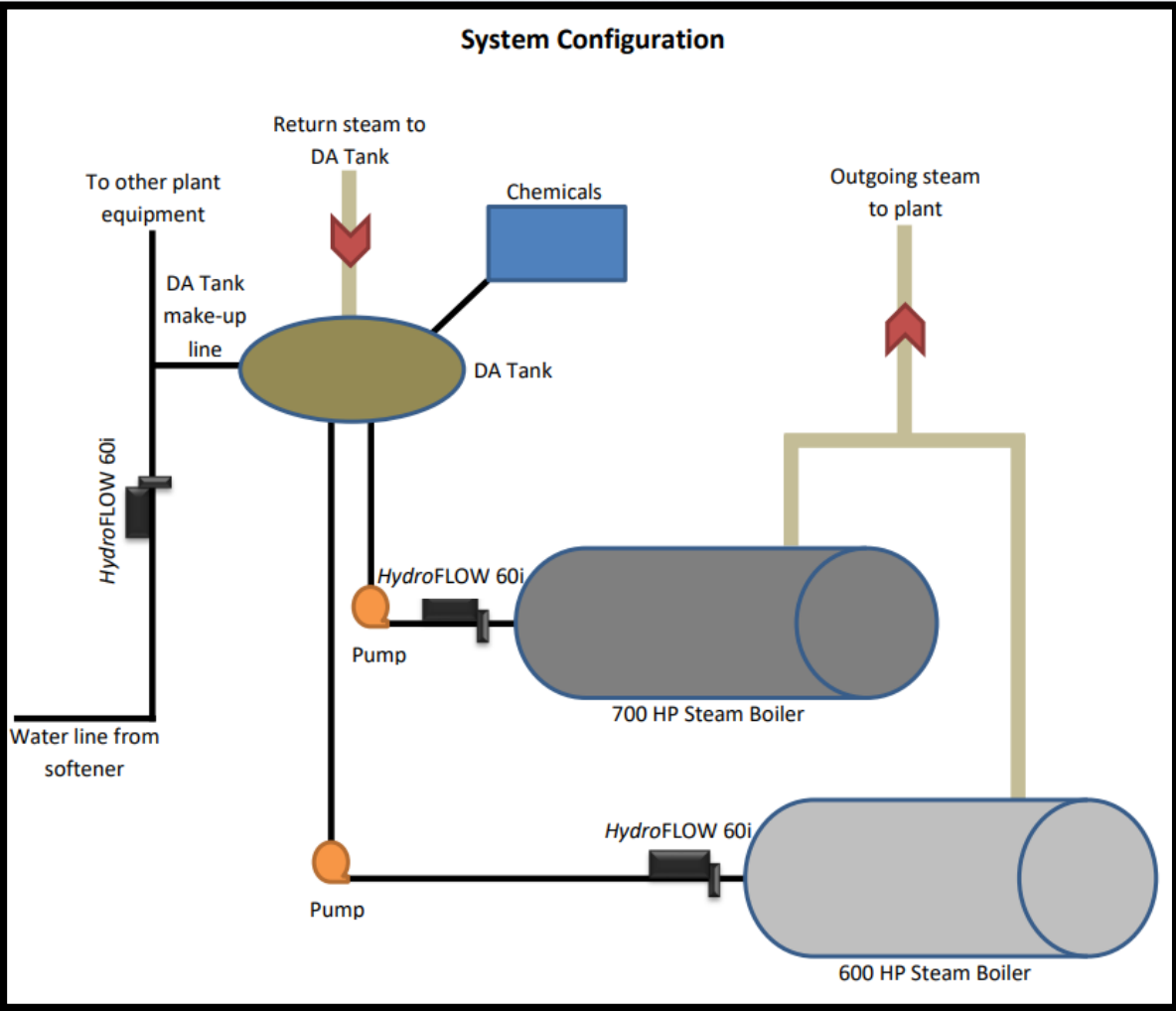
Due to excessive limescale accumulation, the 600 & 700 HP diesel steam boilers were on the verge of being decommissioned for a week in order to be acid cleaned, a process that typically costs over \$15,000. In addition, there was a strong possibility the steam boilers required replacement (\$350K each).

Over a span of 6 months, the RO system's production gradually decreases, indicating the membrane is plugging up. This left the RO system barely able to keep up with the daily demineralized water demand of some processes in the plant.



Installed Equipment - Boilers

In order to treat the entire boiler system *HydroFLOW* units were installed on the feedwater line to each boiler, and on the make-up water line to the DA tank.

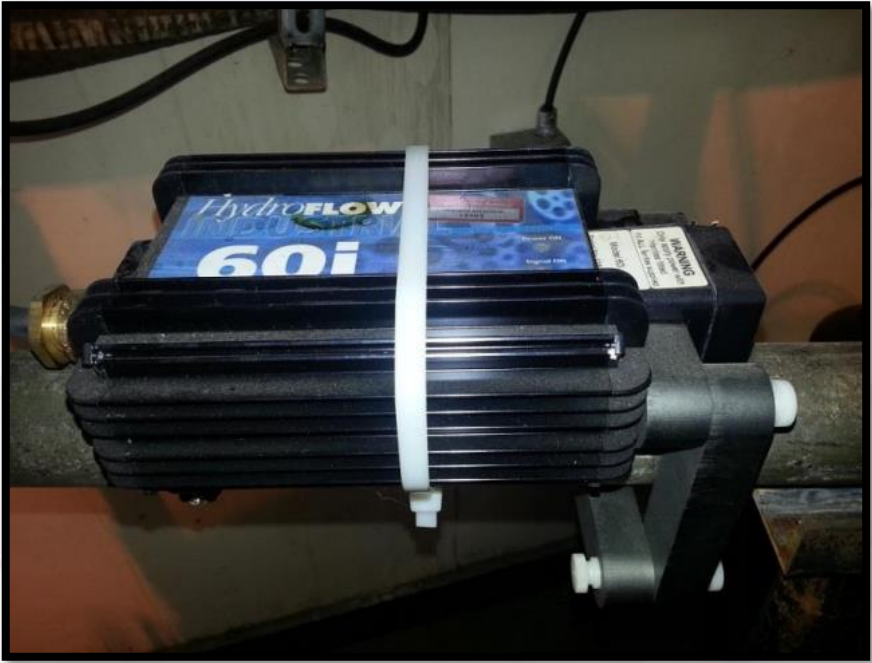
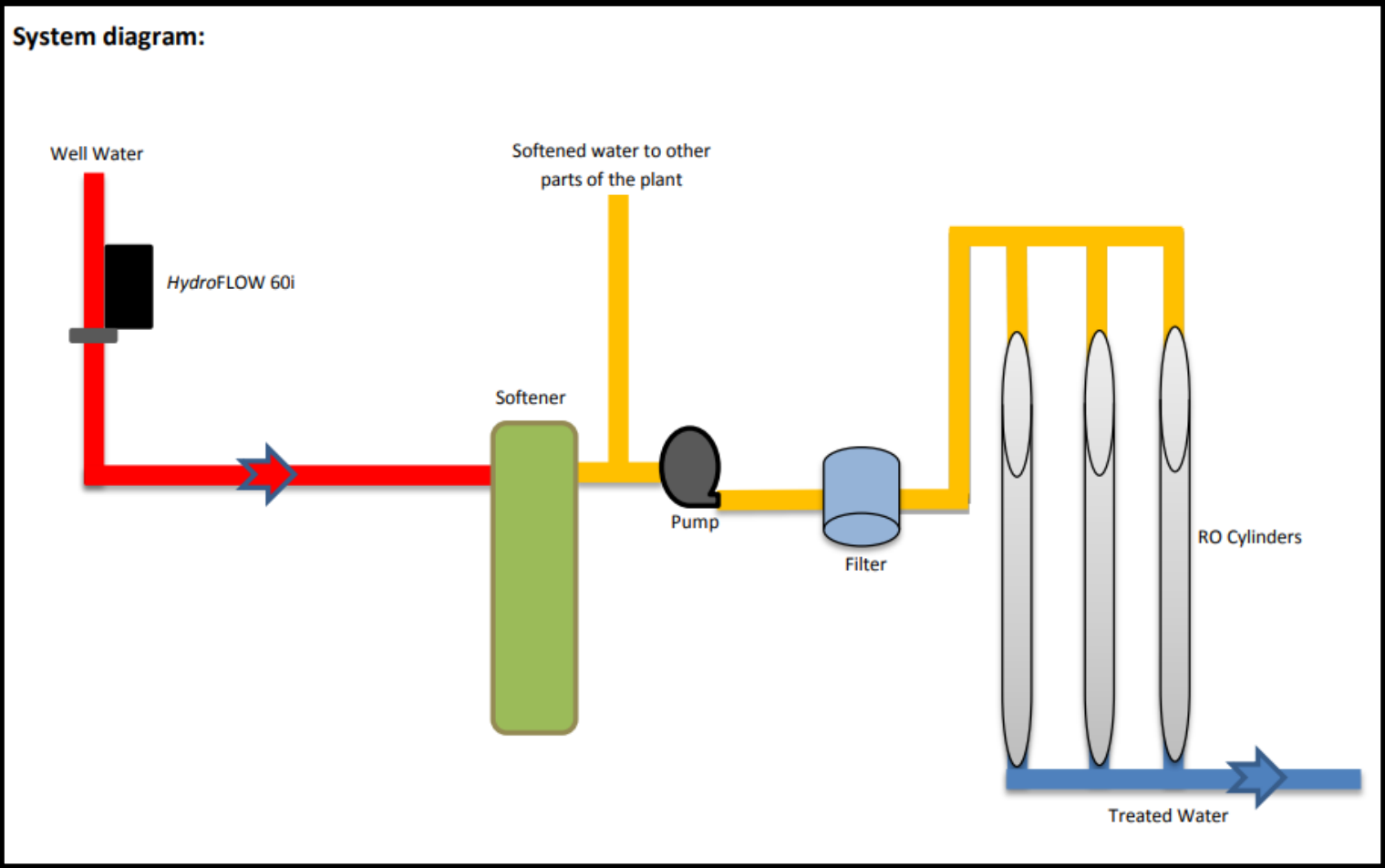


Installed *HydroFLOW* equipment



Installed Equipment - RO

A *HydroFLOW* unit was installed on the water line feeding the RO system.



Results - Boilers

- Within a few days, soft chunks of scale and “putty” (wet calcite crystals) began washing out via blowdown. Blowdown frequency was increased to every 2-hours during the initial 3-month cleanup.
- The water softener was bypassed less than a month after installation, which led to acceleration in the removal of scale from the system.
- Within 2.5 months, the stack temperature of each steam boiler reduced from approximately **650°F** to **400°F**, indicating a significant efficiency increase.
- Within 2.5 months, fuel consumption went down from **400** to **275** gallon per day, which translates to \$190,000 annual savings. This led to a ROI of roughly 3 months!



Limescale purged from boilers

“I’m very pleased with *HydroFLOW*’s results. Instead of dreading it, I’m actually looking forward to the next state inspection!” - Maintenance Supervisor

Results - RO

- A significant improvement in the production water flow rate was achieved within two weeks. Exceptional improvement was attained as soon as the water softener was bypassed; end of day water levels in the holding tank increased dramatically.
- Within a few weeks, production capacity went up from 12,000 to 18,000 gallons per day.
- The increased flow rate kept the production water quality within plant's requirements.
- The return on investment was roughly 2 years.



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West

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