aquafficiency®

Site Savings Guide

WALKING YOUR SYSTEM FOR ENERGY SAVINGS

NON-POTABLE WATER

Sometimes energy savings opportunities are staring right at us – we just don't recognize them! Take this guide with you on a tour of your non-potable / reclaim water system to help you see opportunities. And remember - **W3 isn't free!**

How much energy is consumed?

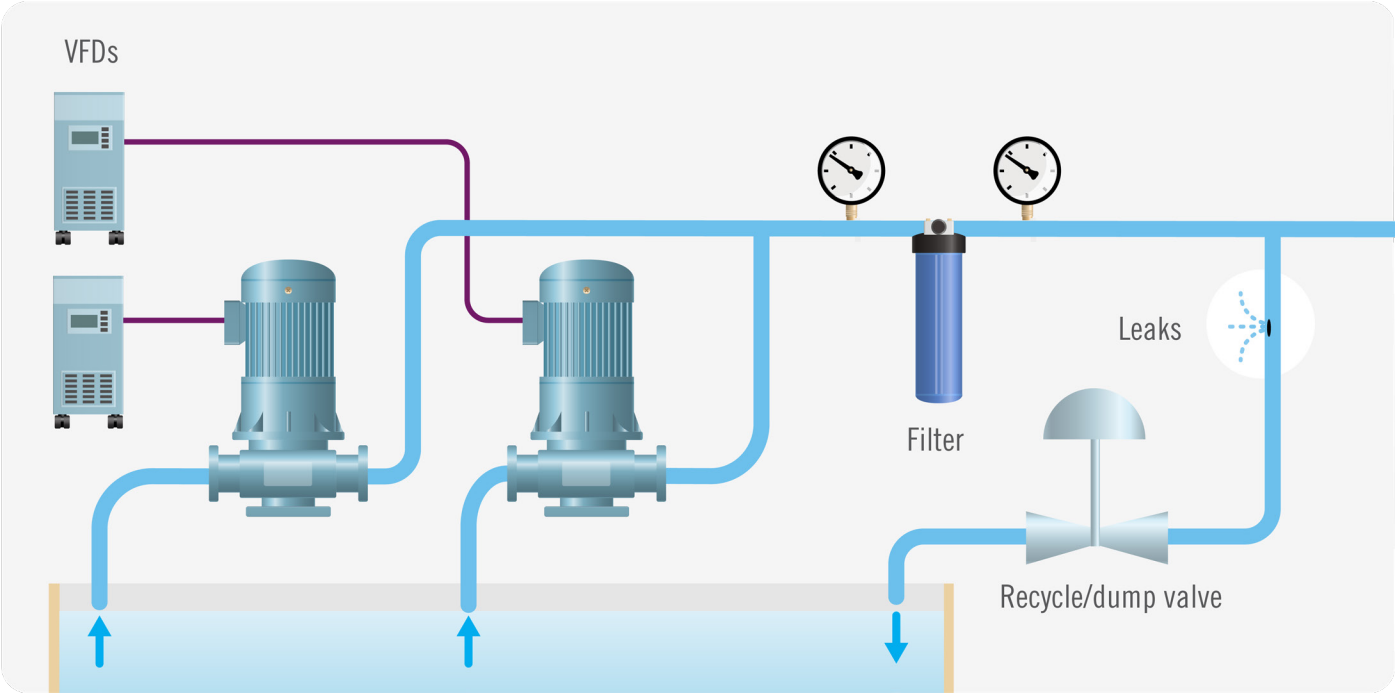
The following information will help your coach identify and quantify your opportunities

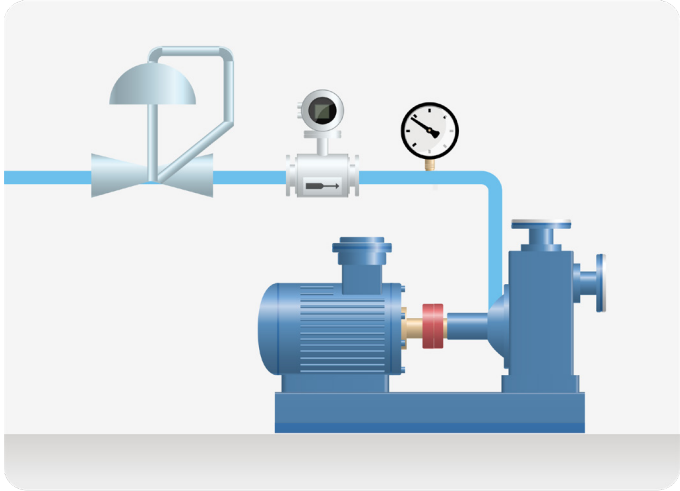
Average Flow Rate:	gpm
Average Discharge Pressure:	psi
Motor size:	hp
VFD used?	
Number of pumps:	
Number operating typically:	
What is the typical pressure drop across filter if used?	

As you walk through your system check the boxes for savings opportunities.

1 Pump Line-up & System Checks

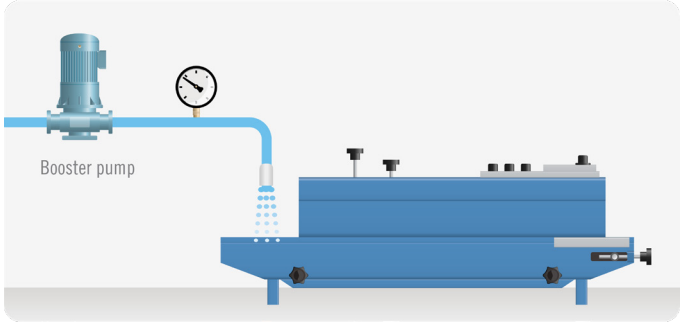
- ❍ Goal is to operate at the lowest possible pressure at the pump that gets the job done in the field.
- ❍ Can you lower the pressure seasonally or for part of each day?
- ❍ Lower flows at use points preserve pressure in the system and save energy at the pumps.
- ❍ Find and fix all the leaks out there!
- ❍ Do you use a dump valve? Right size your pumps or add a VFD.
- ❍ Is the most efficient pump used at each flow rate?
- ❍ Do additional pumps increase the flow, or do they stall each other?
- ❍ Dirty filters waste pressure. Clean them regularly. Add parallel or larger filters to avoid pressure drops.





2 Seal Water

- Adjust to minimum flow required.
- Add solenoid so seal water only runs when pump operates.
- Check PRV for proper operation. Replace/rebuild as needed.

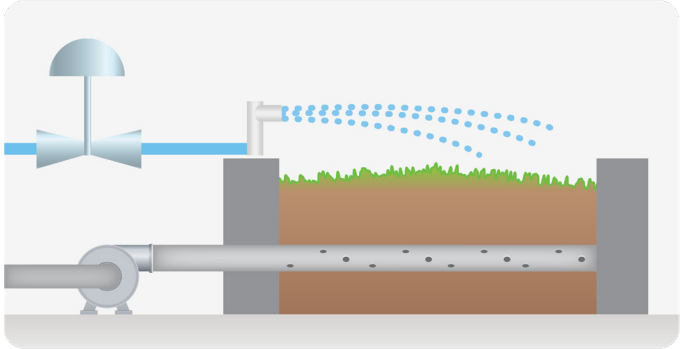


3 Solids Handling / Headworks Sprays

- Headworks and solids handling equipment often drive system pressure. Booster pumps can be used to boost only the water needed by the equipment.
- Make sure spray cycle triggers and runtimes are correct; reduce to minimum needed for reliable operation.
- Avoid large "trough flushing" flows with non-pot; use grit classifier overflow water or other gravity source.
- Select and install appropriate nozzles and orient them to maximize effectiveness.

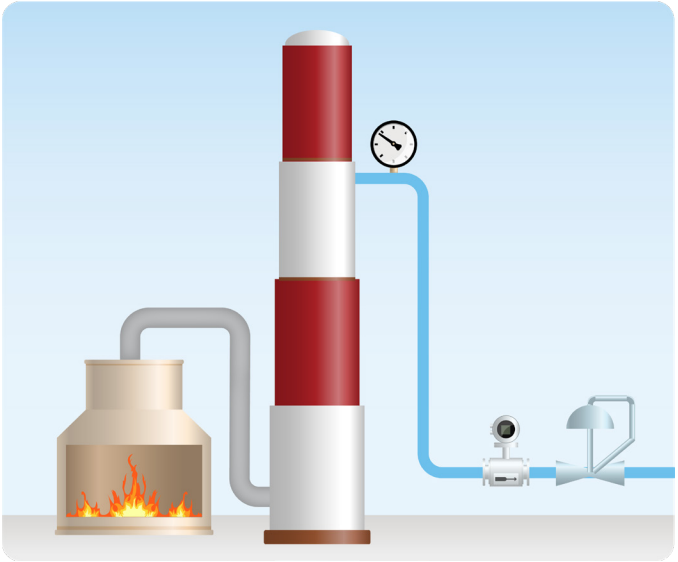
4 Bio Filter / Yard Irrigation

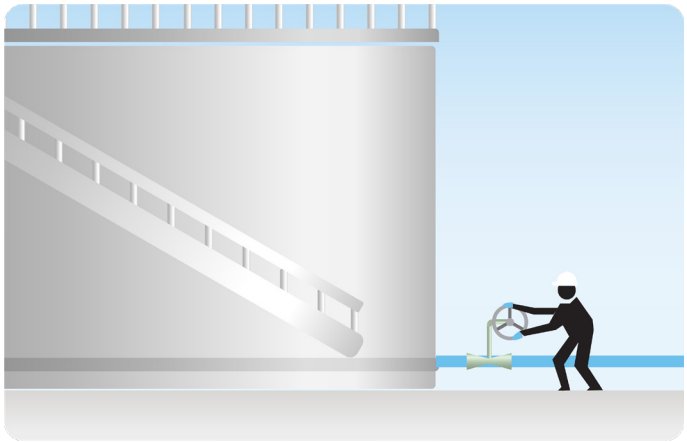
- Adjust to minimum flow required.
- Add moisture sensor in biofilter media; wet only as needed.
- Ensure sprinkler / spray is adjusted to water the target and avoid waste.
- Add timer to reduce run time.



5 Pollution Control

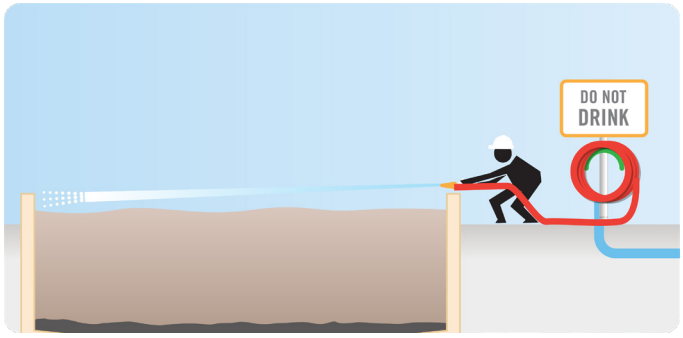
- Emission monitoring instruments and scrubbers can require high-volumes and high pressure. A small booster pump can eliminate having to run full system at high pressure.
- Reduce discharge pressure & flow to meet need.
- Add controls so that water shuts off if incinerator or source of emissions is shut off.





6 Tank Fill

- ❍ A portable, low-head, high-flow pump can be used in lieu of non-pot system water to fill tanks.
- ❍ Fill tanks when other uses of non-pot are low.
- ❍ Utilize temporary pressure boost controls to compensate for fill; return system to lower pressure when fill is complete.
- ❍ Consider equalizing tanks first through drains, then top with non-pot.

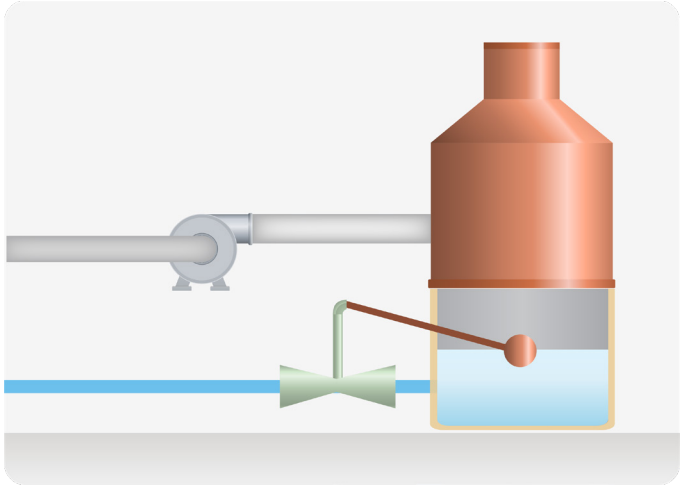


7 Hose Bibs / Washdown

- ❍ Avoid "just running" hoses. If there is a constant area of concern, set up spray system or fix the problem.
- ❍ All washdown hoses need nozzles and hand valves to be effective.
- ❍ Add pressure boost controls to boost pressure during washdown activities and return to low pressure automatically.
- ❍ If plant is not staffed at night, then no washdown will happen, and high pressure is not needed. Turn pressure up during day shift, turn down at end of day.
- ❍ Disable/disconnect heat trace systems after winter.

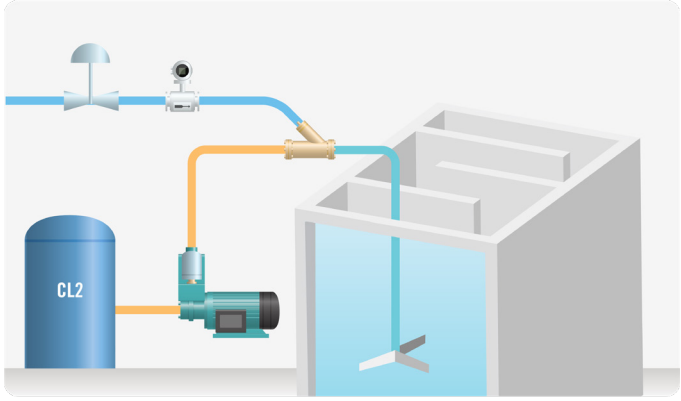
8 Odor Control

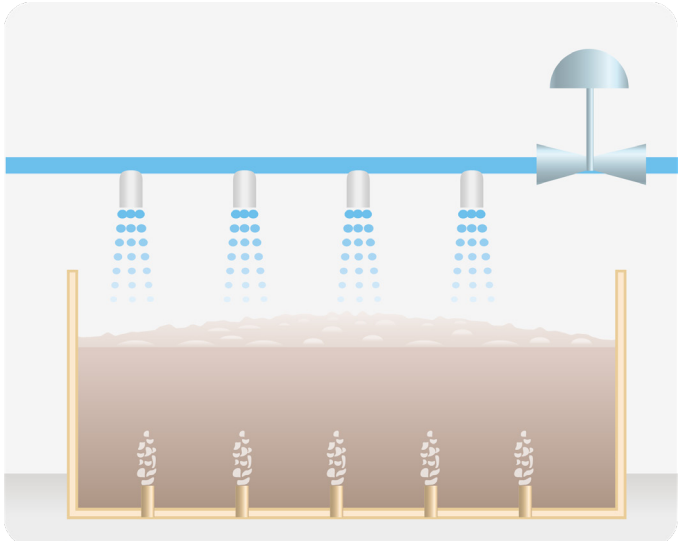
- ❍ Install float valve or other level control device rather than constant overflow for odor scrubber make up water.
- ❍ No reason for high pressure water here; upsize pipe if the top-off time is not fast enough or reduce depth between high and low level setpoints.
- ❍ While you're here: are the scrubber pumps throttled? Consider resizing or adding VFD. Is the scrubber fan dampered? Resheave to reduce flow and open damper.



9 Carry Water

- ❍ Carry water can be low, low pressure. Consider a separate, low-head pump.
- ❍ Monitor flowrate and adjust to match the CL2 solution concentration used.
- ❍ Would discharge manifold eliminate need for flash mixer?



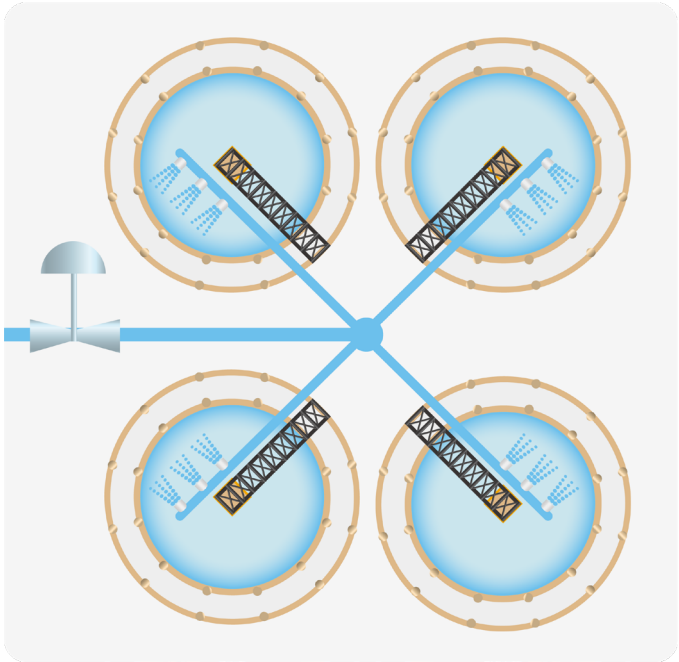


10 Foam Suppression
(at channels, tanks, etc.)

- ❍ Foam suppression can be effective with very little water if the right nozzles are used.
- ❍ Consider running foam suppression on solenoids or auto cycle valves, half of the system at a time (e.g. north side of channel, then south side).
- ❍ Blank off nozzles that aren't doing any useful work. Lower flow = lower energy!

11 Clarifier Scum Sprays

- ❍ Clarifier sprays can run a few minutes every hour and do the job. Add solenoid valves and stagger the cycles so only one clarifier spray bar runs at a time.
- ❍ Put spray bar control valves where operators can easily reach and adjust. Reduce flows to minimum needed.



What did you find?

1 write down what you find

2 take a photo of each page with your phone

3 send to your coach

FACILITY

YOUR NAME

ENERGY SAVINGS OPPORTUNITIES