



Premier Water & Energy Technology, Inc., has become a recognized leader in the field of Resource Utilization and Optimization. By effectively managing water, energy, and fuel expenses as they relate to Water Treatment, we often generate more savings than a traditional Water Treatment program will cost. Our products and services have applications in industrial, commercial, and process water systems and our commitment to total customer satisfaction by providing innovative products and services is unsurpassed.

CONDENSATE RECOVERY

The **Premier Condensate Recovery System** is designed to collect and reuse water that normally goes to drain from air handlers. The system employs an accumulation tank, pump, and controls that recover condensate and use it in the condenser system.

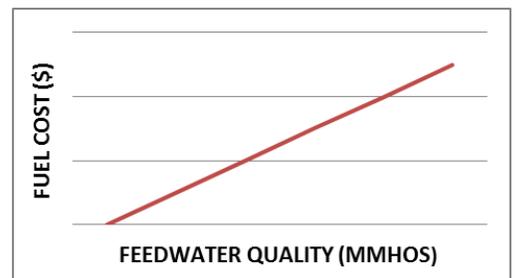
By reusing this water there is potential savings in water and sewer costs, but there is also the impact of high quality water being used in the condenser water system and the corresponding increase in cycles of concentration. Finally, the environmental benefit of conserving water accrues to those who implement the Premier Condensate Recovery System.



Location:	University	Office Park	Pharmaceutical Company
Facility Size:	435,000 ft ²	2 Million ft ²	1 Million ft ²
Annual Gallons Recovered:	9 Million	5.5 Million	3 Million
Annual Savings:	\$24,700.00	\$25,000.00	\$13,000.00
Return on Investment:	18 months	< 12 months	24 months

BOILER FEEDWATER

If you are paying for municipally supplied water and sewer services and your facility's boiler feed system(s) have not been optimized in the last few years to yield superior water quality you are likely spending significantly more on fuel than you should. Through a combination of Water Softener Optimization and/or Reverse Osmosis applications, water use can be reduced and fuel saved.



Reverse Osmosis is a system designed to remove Total Dissolved Solids (TDS) from water. Water passes through membranes that capture impurities such as Calcium, Magnesium, Potassium, Sodium, Sulfates, and Chlorides.

This higher quality of water allows boilers to operate at more cycles of concentration saving fuel, water and treatment.



Innovative Solutions Provider

COOLING TOWER MAKE UP

Optimizing the quality of the water used for cooling tower make up often results in significant reductions in water and sewer costs. Evaporation makes up the majority of the water evaporative cooling systems require. Evaporation is typically 65-85% of the total water used. "Bleed-off" constitutes the rest. The number of "cycles of concentration" the cooling system is operating at determines the exact percentage.

The key to understanding cycles of concentration is realizing the water evaporating from a system is essentially pure. It does not contain any of the impurities that were in the make-up. As this pure "H₂O" evaporates, everything that was in it stays behind in the recirculating water. Consequently, the levels of impurities in the recirculating water accumulate. If left unchecked, these impurities would continue to accumulate or "cycle" until they result in deposit formation.

Ways to combat this include operating with state of the art treatment strategies and improving the quality of the make-up water going to the cooling tower. Water Softening is often a simple way to generate savings that will yield very short return on investment.

For example, going from 2.5 to 5.0 cycles is a 100% increase in cycles of concentration and will result in a 24% reduction in water use and 20% reduction in costs. Going from 4 to 8 cycles will result in a 13% reduction in water use and approximately 9% decrease in costs. 5 cycles to 10 will yield an 11% reduction in water cost.

	@ 2.5 COC vs. @ 5 COC		@ 4 COC vs. @ 8 COC		@ 5 COC vs. @ 10 COC	
Evaporation	4,320	4,320	4,320	4,320	4,320	4,320
Bleed off	2,880	1,080	1,440	617	1,080	480
Total Make Up	7,200	5,400	5,760	4,937	5,400	4,800
Evaporation % of Make Up	60	80	75	87	80	90
Bleed off % of Make Up	40	20	25	13	20	10
Make Up Per Year (Gal)	2,628,000	1,971,000	2,102,400	1,802,005	1,971,000	1,752,000
Treatment Cost	\$ 2,945	\$ 3,113	\$ 1,726	\$ 1,995	\$ 3,113	1,664
Total Operating Cost	\$ 16,085	\$ 13,093	\$ 12,238	\$ 11,121	\$ 13,093	10,526
Total Water Reduction (Gal)		632,000 (24%)		277,000 (13%)		219,000 (11%)
Operating Cost Savings Per Year		\$2,992 (19%)		\$1,117 (9%)		*TBD

The above information is based on the following parameters:

- 100 Tons @100% Load 24/7
- 1500 gal System Volume, 100 ppm Make Up Hardness
- \$5.00/1000 Gallons Water and Sewer Cost
- \$3.00/lb Inhibitor, \$5.00/lb Biocide, \$0.10/lb Salt
- Water Softener Life Cycle Operating Cost

Careful evaluation needs to be made, and the cost and risks thoroughly understood, before a non-traditional, high cycle cooling water program is undertaken. Depending on operation costs, and system running 2, 3, or even 4 cycles seems a viable candidate for higher cycles.

COOLING TOWER BLEEDOFF RECOVERY

If you are paying water and sewer charges as they relate to your cooling tower and are not reclaiming a large portion of the water that is traditionally blown down to the sewer system, there are strategies Premier Water & Energy Technology, Inc. can provide that can significantly reduce the costs.

Premier Water & Energy Technology, Inc. has pioneered development of Blowdown Recovery Systems. These systems allow for Condenser Water bleed off to be filtered and recycled back to Condenser Water Systems. The savings that accrue from these initiatives can significantly reduce plant operating costs.

