Start Date: February 24th, 2017
Address: 4300 Hacienda Dr,
Pleasanton, CA 94588

Cooling Tower System:
2x Marley NC-756 cooling towers
1,512 tons (2x 756 tons)

Chiller System:
3x Vilter water-cooled ammonia chillers
1,600 tons (2x 400, 1x 800)

UET Reactor Sizing:
4x4 UET Reactor

The Client:

Roche Molecular Systems is a diagnostic division of Hoffman-La Roche which manufactures equipment for medical diagnostics. They focus on health care applications for physicians, hospitals, and consumers.

The Pleasanton facility used traditional chemical water treatment. They also used a salt based water softener prior to Dynamic Water's UET system in an effort to be more sustainable. They dealt with multiple issues regarding corrosion and bio-contamination. To that end, they sought out Dynamic Water to further their environmental responsibilities by eliminating chemical treatment, removing softener reject (brine) and run higher cooling tower cycles to reduce blowdown thereby saving water.

Savings Feb – Dec 2016 vs. 2017:

	2016 (Water Softener)	2017 (Dynamic Water's UET)
Cycles	8.79	22.69
Conductivity Setpoint (µS/cm)	3,500	8,500
Makeup (gallons)	2,075,635	1,882,320
Blowdown (gallons)	235,922	82,972
Chemical Treatment Cost	$19,200	$0
Salt for Softener (lbs/yr)	10,000	0

Results:

Raw numbers from 2016 (with water softener) vs. 2017 (with UET) are as follows:

	2016 vs 2017 Raw Savings	
Makeup (gal)	193,315	9%
Blowdown (gal)	152,950	65%

Scaling the heat load of 2017's cycles of concentration to match 2016's evaporation, the savings are as follows:

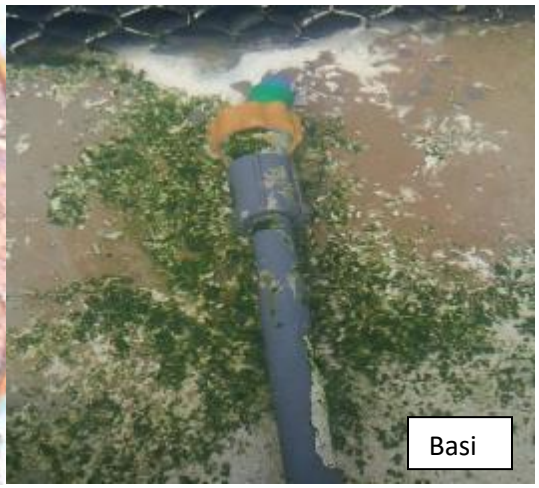
	2016 vs 2017 Scaled Savings	
Water (gal)	151,088	7% MU, 64% BD

Treatment in 2017 was done without the need for chemical treatment or salt, while also eliminating softener brine reject. Prior to Dynamic Water, Roche's Pleasanton facility had to deal with scale, corrosion, and bio-contamination issues.

Before Dynamic Water (November 2016)

Roche Molecular Systems, Pleasanton, CA

Before Dynamic Water (November 2016)



Roche Molecular Systems, Pleasanton, CA

After Dynamic Water (April 2017)

Within two months, a visible decrease in bio-contamination and scale on wet surfaces can be seen on the cooling towers.

Approach temperatures of the chiller system remained unchanged despite cycling much higher than water-softener levels without using the water softener.

Roche Molecular Systems,
Pleasanton, CA

Testimonial:

I was introduced to (DWT) Dynamic Water Solutions at the Santa Clara Facilities Expo in September 2016. What drew me to their booth was the UET (Universal Environmental Technology) Electro - chemical treatment system for cooling towers and the gathered attendees inquiring about the technology.

The person I met was Mitch Miller, DWT's National Account Manager. Mitch presented their product in full detail and without any sales pressure.

Being an engineer, I'm typically skeptical in accepting new products w/o first-hand experience in their use or knowing others that have used them. I pursued investigating in-depth about their use and customer experience. So I first visited a customer who had their system in use for ~1 year. The customer (two facilities personnel) was overly pleased with the UET performance and DWT's service. I next went online to see if there were any complaints about the product and found none. Thirdly, DWT came to our site and met with our Facilities group including our SHE (Safety, Health & Environment) and Operations and Maintenance personnel. The elimination of all our chemicals including softened water system and reduction in both water and sewer costs would help Roche in being more sustainable and what our SHE group wanted to see. Everyone was impressed; however, a couple of our technical people were skeptical.

Roche Molecular Solution and DWT signed an agreement in January 2017 and had the unit installed in late February. Well, seven months into the UET's operation, I'm proud that we are successfully using the UET. Our water is crystal clear with no evidence of scale, corrosion, or bioburden.

The UET appears to be working as intended. What I think is tremendous is DWT's 20 year warranty. I can't think of others manufacturers who feel that confident of their products to offer the same.

I highly recommend the UET for use on cooling towers and working with DWT.

Ted Schnipper
Operation & Maintenance Mgr
Roche Molecular Systems
13-Sep-2017

2017 vs. Previous Years:

Below is a table of water usage for 2015 and 2014 from February to July compared to 2017 (pre-water softener).

	2015	Raw Savings vs. 2017	
Makeup (gal)	2,666,460	784,140	29%
Blowdown (gal)	479,731	396,759	83%
Cycles	5.56		

	2014	Raw Savings vs. 2017	
Makeup (gal)	3,306,600	1,424,280	43%
Blowdown (gal)	859,373	776,401	90%
Cycles	3.85		

True to Roche's mission to sustainability, they have been increasing their water savings year by year. They have been decreasing the amount of water they evaporate despite later years showing higher temperatures.

Scaling the heat load from 2017's cycles of concentration to the previous year's yield the following results:

	2015 vs 2017 Scaled Savings	
Water (gal)	378,895	14% MU, 79% BD

	2014 vs 2017 Scaled Savings	
Water (gal)	746,525	23% MU, 87% BD

Water Composition (Averages):

	Makeup Water	Basin Water 2016 (Using softener)	Basin Water 2017 (Using DWT's UET System)
Conductivity (uS/cm)	350 - 680	3,500	8,130
pH	8.2	9.1	8.5
Total Hardness (ppm)	174	114	1800
Chlorides (ppm)	162	720	1697
Silica (ppm)	12	57	67
Iron (ppm)	0.00	1.00	0.0
Free Chlorine (ppm)	0.0	0.5	0.3

Compared to 2016's water softener, Dynamic Water's UET can cycle up much higher concentrations while more effectively treating bio-contamination and preventing scale without the use of chemicals or salt. There is no brine by-product, and function is not impeded by scale or corrosion.