

Vodaa

Technologies

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Our patented technology is available in two configurations. Our first configuration is designed to be installed on an existing copper or PVC pipe. The field generated by the Vodaa system penetrates the pipe and causes changes in the water in the pipe as well as the minerals dissolved in the water. The second configuration is a unit that is designed to be submerged in the water. The field interacts with the water directly and we are able to treat larger quantities of water easily with this unit.



Testing performed by Arizona State University has shown that calcium ions that are dissolved in the water interact with our field and are converted into particles that are generally 4 to 12 nanometers in diameter. The reason that this is important is that while calcium ions can create scale, calcium nanoparticles don't create scale. These particles never get large enough to see or even cause a haze or cloudiness in the water. Our field also causes small dirt particles in the water to stick together similar to a flocking agent and then these particles can be removed by filtration. The result is crystal clear water.

How do we Help



installation on hotel in Maui. The hotel was having difficulty maintaining the 3 ppm chlorine in the pool water. The onsite NEX GEN chlorinator produces 80 gallons of 12% chlorine equivalent per day, but even running nearly 24 hours per day it was necessary to add over \$1000.00 per month in chlorine granules to maintain safe levels.

The Vodaa Technologies submerged “drop-in” pool system was installed in September 2017 to stabilize the chlorine levels. Hotel staff saw immediately that the run time for the chlorinator dropped dramatically. When the next run time report was generated, the results were impressive. The chlorinator had been running an average of 58.9 minutes per hour before the Vodaa system was installed and the average is now 23.4 minutes per hour. This has provided a 60% savings in the cost of operating the chlorinator.

The pool contractor also commented that the clarity of the pool water was greatly improved. He stated “The pool always looked like someone had dumped 5 gallons of milk into the water” The pool is now crystal clear and the contractor has been able to reduce the pump flow by 50%. The Vodaa technology has increased the water clarity and reduced chlorine use at the same time.

Energy and Material Savings

1. Chlorine Generator 72,000 KWH reduction	\$20,160.00 per year
2. Chlorine granule usage reduction	\$12,000.00 per year
3. Pool pump 100,000 KWH reduction	\$28,000.00 per year
4. Total Savings	\$60,160.00 per year

Reducing the runtime of the chlorinator is saving the resort over 72,000 KWH per year which results in a cost savings of \$20,160.00 per year. There is an additional savings in salt use but we don't know the exact number at this point. The chlorine granule savings is approximately \$12,000 per year.

The pool contractor is now able to run one 15 hp pump instead of two. This saves over 100,000 KWH per year which results in a savings of approximately \$ 28,000 per year.

Total project savings is \$ 60,160.00 per year.

Hot Tubs and Spas

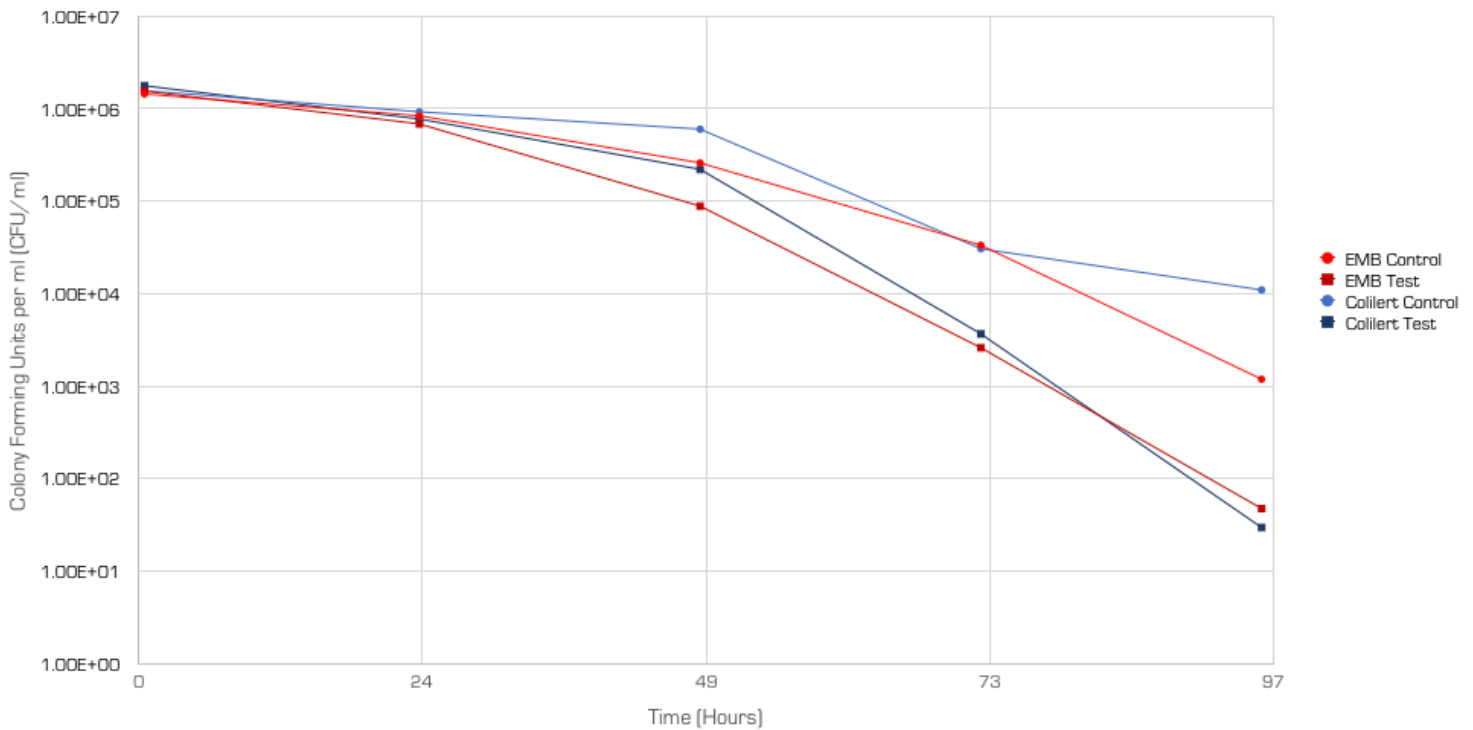
Vodaa Technology is also available for Hot Tubs and Spas. Controlling scale and stabilizing chlorine and bromine makes operating Hot Tubs and Spas easy. The labor involved will be reduced and the biocide used will be reduced.

Bacteria Control

Vodaa Technology has been tested by the University of Arizona to determine the effectiveness in controlling bacteria in water. In a test that measured the effectiveness against E-coli, a 99% reduction in 96 hours was achieved. This is not sterilization, but is considered a bacteriostat.

A bacteriostat **stops bacteria from reproducing, while not necessarily killing them.** This effect has been seen in many applications that use Vodaa Technology. One application is a 3000 ton cooling tower that cools a 24 story building in downtown Phoenix Arizona. The make-up water to this system contains about 0.5 ppm chlorine. This would normally not be enough to control bacteria in a cooling tower, but the Vodaa Technology has a synergistic effect with the chlorine. Our technology stabilizes the chlorine and reduces the evaporation of the chlorine into the air, giving it more time to work. The following table shows bacteria test results from a state certified lab over several years. The same effect is also seen in water features, hot tubs, spas and pools.

Vodaa Technologies Microbial Assessment (EMB and Colilert)



Bacteria Data

Date	Bacteria Levels
9/15	47 mpn/ml
12/15	30 mpn/ml
3/16	56 mpn/ml
6/16	360 mpn/ml
9/16	110 mpn/ml
1/17	62 mpn/ml
3/17	39 mpn/ml
6/17	26 mpn/ml
9/17	39 mpn/ml
11/17	37 mpn/ml
3/18	51 mpn/ml

Data from Voda application in Phoenix Arizona