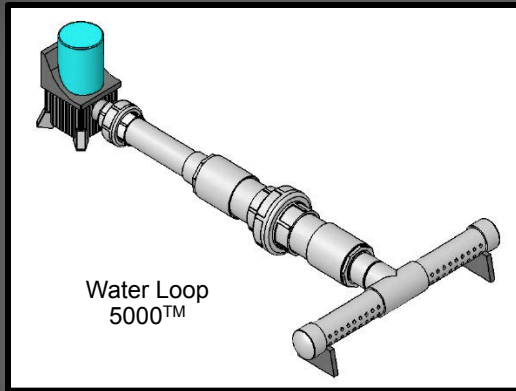




ZYLYM™

The Standard of Water Treatment for the 21st Century



WaterLoop™ technology provides extensive benefits for both municipal and commercial cooling towers.



Solutions for water conditioning

www.zylymtech.com



MADE IN USA

ZYLYM™ Tower Water Treatment

**ZYLYM™ Non-chemical Cooling Tower Water Treatment:
Saves Money, Time, Maintenance and the Environment**



This cooling tower located in Ventura California is in a very hard water area. The water delivered to this facility is 1200 μs . Before: the monthly scale that was building up in the cooling tower is pictured below left and center. They had a scale control system designed to be cleaned approximately once a month. ZYLYM™ suggested a better solution for the troublesome, constant build-up of material that needs to be manually cleaned out relatively frequently.



After the ZYLYM™ scale control unit was installed the client had the big advantage of being able to increase the TDS meter setting to 3696 μs from 1400 μs (pictured right). The ZYLYM™ allows for much more acceptable cycles of concentration and substantial water savings. The picture (lower right) shows ZYLYM™ cleaning up existing scale (time frame one month, the same as on the left but with much better scale control results). Another ZYLYM™ benefit is labor cost savings, as nothing was needed to clean out a mess of mineral build-up.



Just one month of scale accumulation, requiring manual cleaning, before ZYLYM™ was installed.



WaterLoop 2000™

Cooling Tower Treatment Assembly, Installation and Operating Parameters

Thank you for purchasing a WaterLoop 2000™ by ZYLYM™, a cooling tower scale control product. Welcome to the family of ZYLYM™ users. ZYLYM™ has been building a solid reputation since 1972 and we appreciate you joining the ever-growing list of customers.

WaterLoop 2000™ Kit

The WaterLoop 2000™ kit contains three (3) items: Sump pump, connecting pipe, and FRE-FLO™.

Assembly of WaterLoop 2000™

Assemble sump pump and ZYLYM™ on a bench top for ease of handling, using supplied equipment (some models are shipped preassembled). It is recommended that a distance of 10 pipe diameters be maintained between the outlet of the sump pump and the inlet of the ZYLYM™.

The connecting pipe is connected from the outlet of the sump pump to the ZYLYM™. Please note there is no specific directional flow to the ZYLYM™. The ZYLYM™ operates via water flow through the unit at a specific flow rate range for each size of ZYLYM™ manufactured. The ZYLYM™ model size supplied in this kit was done with information supplied by you or your staff prior to ordering.



WaterLoop System

WaterLoop 2000™ Installation Location

The ZYLYM™ should be parallel to the bottom of the cooling tower basin. Direct the flow out of the ZYLYM™ towards the suction of the tower's circulation pump. Be sure to follow all national and local electrical codes for the installation of a sump pump.

Total Dissolved Solids (TDS) Controller

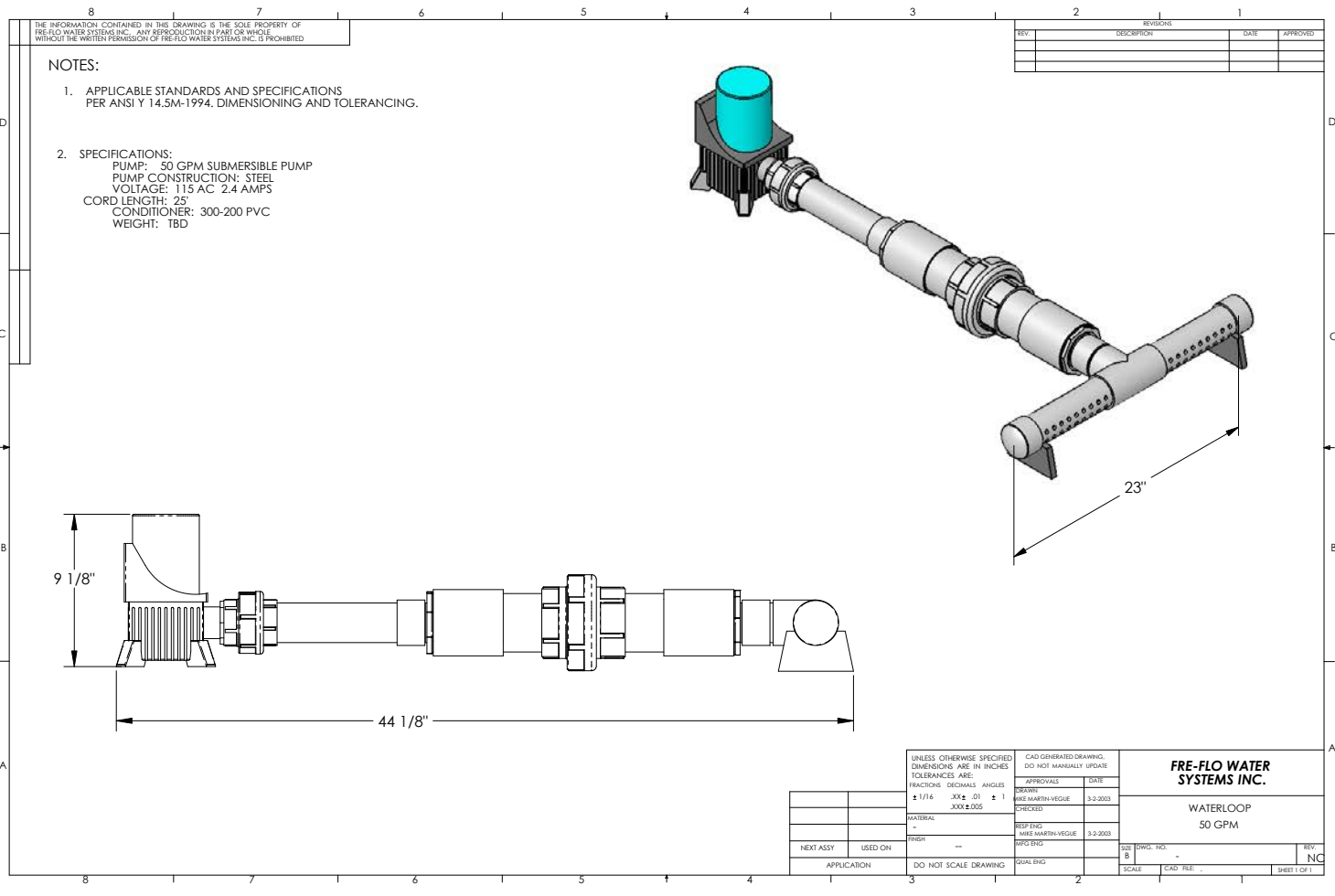
It is required that a TDS controller be installed, if one is not already installed, in the sump of the cooling tower basin. The set point for the TDS controller should be set to allow for 3 to 5 cycles of concentration for the water in the open loop of the cooling tower. A water analysis is required in order to monitor for any unusually high concentration of any element. In particular, silica can be a serious problem if found in high concentrations in the incoming feed water to the tower (this can be corrected, but it is imperative to correct this problem for the ZYLYM™ to operate correctly).

Beneficial Operating Observations

Interestingly, while the ZYLYM™ is cleaning the tower of previously built-up scale deposits, it is expected that you will see a white fog like material in the basin of the cooling tower. This fog is composed of microscopically small calcium carbonate crystals suspended in water that are formed in the ZYLYM™. By their nature, the ZYLYM™ calcium carbonate crystals cannot build up or stick to themselves the way a standard calcium carbonate does. Even if they form a sheet, they cannot hold that position and will slide off into the sump, making a white cloud in the basin. Then they will be eliminated during the blow down cycle, keeping your tower clean and free of hard scale deposits.

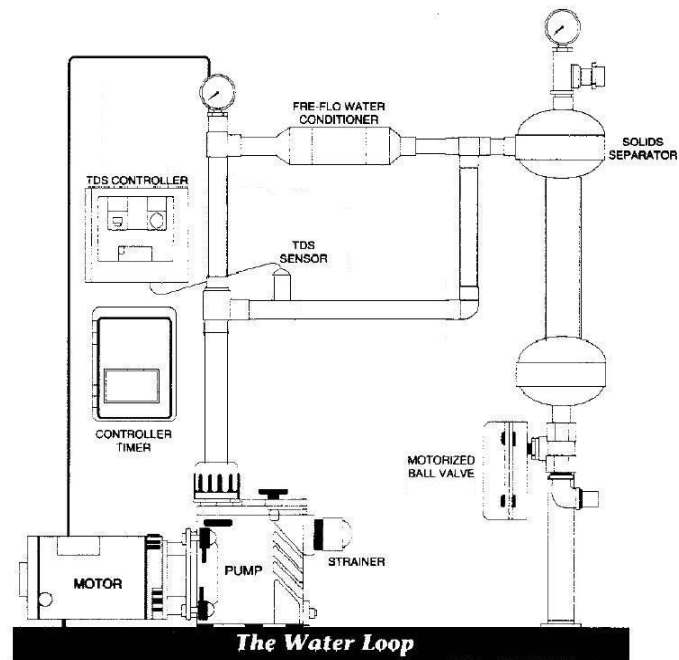


WaterLoop 50 GPM



WaterLoop Diagram

Water Loop Non-Chemical Cooling Tower Water Treatment Unit



This unit is designed to handle a maximum sump and water in process up to 9,600 gal.
For other sizes and applications please call for a quotation.



ZYLYM™ Industrial Descaling

Industrial Descaling Applications

“For over 45 years, ZYLYM™ has demonstrated success of reducing maintenance costs by controlling calcium buildup on capital equipment.”



- Water cooling towers
- Steam boilers
- Evaporative coolers
- Misting lines
- Pools and fountains

LOW INVESTMENT
LITTLE MAINTENANCE
LONG LIFE

- Water using equipment
- Heat exchangers
- Ice machines - dishwashers
- Tankless water heaters
- Pipes and spray heads

ZYLYM™ Cooling Tower Unit

The one ZYLYM™ unit for servicing two cooling towers is ZYLYM™ Model 800-400 rated at 240 to 594 GPM. Weight of the FRE-FLO™ unit is 190 lbs.

Because one filtration system is servicing the two cooling towers, only one ZYLYM™ water conditioning unit is required. The filtration pump already installed at this location on these two 600 ton BAC cooling towers is rated at 330 GPM.

For the ZYLYM™ catalytic, non-sacrificial water conditioner to work in controlling calcium carbonate scale build-up, it is necessary for the filtration system to be in operation whenever the cooling towers are in operation.

The makeup water at this sample location is 1,305 TDS. Therefore, we recommend a maximum of 3 cycles of concentration to start, or maximum TDS discharge allowable by the local Sanitation Department (use the lower number).



ZYLYM™ How It Works

CATALYTIC WATER CONDITIONING TECHNOLOGY

ZYLYM™ acts as a catalytic water conditioner that creates a soft calcium carbonate crystal. ZYLYM™ is a non-magnetic, non-sacrificial unit that comes in varying size models. Most importantly, ZYLYM™ controls scale and existing deposits and does not add anything to the water. Simply put, the ZYLYM™ works to control scale by the core of the FRE-FLO™ converting a portion of the calcium and carbonate ions that are dissolved in water into a “soft” calcium carbonate crystal, smaller than talcum powder.

SOFT VS. HARD CRYSTAL

The typical hard water scale is composed of aragonite crystals. These crystals have the familiar sand paper feel of hard water deposits. The ZYLYM™ is just changing the crystalline form of calcium carbonate. The new crystalline form is spherical (vaterite). As with any spherical shape, it is hard to build up any sort of deposit. A simple example of this would be to try and stack up some ball bearings. That is why ZYLYM™ treated water does not build up bothersome deposits.

SAME ELEMENT - DIFFERENT CRYSTALLINE STRUCTURE

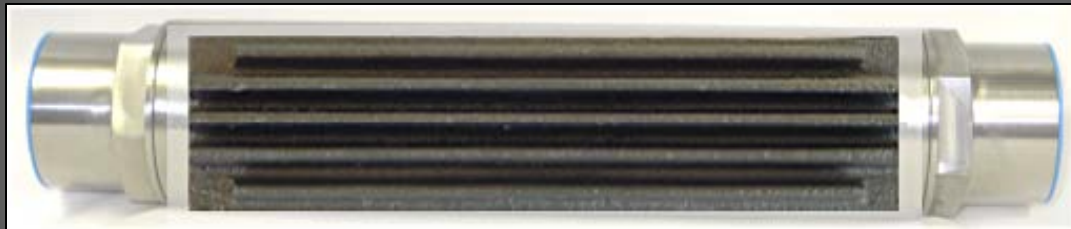
A well-known example of this duality of form is best illustrated with the element carbon. In one case, the element carbon creates the hardest substance on the planet called diamond. In the other case, with the same element carbon, a lubricant is formed called graphite. Same element, totally different structure and totally different physical properties, each are 100% carbon.



ZYLYM™ "Is not a magnet"

LAMINAR VS. TURBULENT FLOW

The ZYLYM™ non-magnetic unit creates a turbulent flow situation within its housing. The resultant turbulence allows the individual dissolved calcium ions to contact the proprietary blend of metals of the ZYLYM™ core. In the standard laminar flow situation, most of the calcium ions would never contact the metallic core. This is why the ZYLYM™ unit is sized based on flow. A corollary developed by ZYLYM™ WATER SYSTEMS, INC. to illustrate this concept is that bigger is not better. In fact, if the ZYLYM™ is oversized it will not work.



ZYLYM™ " Is not a filter"

ZYLYM™ is **not a filter**. It does not remove anything. Instead, it does crystallize calcium carbonate into a different spherical structure. It is not a magnet or temporary fix and is not a water softener. Water softeners remove beneficial calcium and magnesium.



Softeners replace these elements with an increase in water sodium levels or potassium , which is harmful to plants, soil and sewers.

ZYLYM™ uses no electricity, has no wires and no grounding. It is not a sacrificial anode and is a chemical-free process.



ZYLYM™ Major advantages

1. ZYLYM™ is a non-chemical technology that works harmoniously with nature. The ZYLYM™ unit does not put anything into the water, nor does it take anything out of the water. It changes the form of hard, crusty calcium carbonate scale to a soft, very tiny spherical structure, so smooth it stops sticking to surfaces. The change in form vastly changes the function of calcium carbonate and the condition of the water.
2. ZYLYM™ water conditioning lasts. The scientifically advanced ZYLYM™ treated water provides a tremendous advantage of remaining conditioned permanently, maintaining the condition in the water of calcium carbonate keeping its new soft, smooth form (instead of reverting back to the hard scale deposits that clog up whatever surfaces they encounter).



ZYLYM™ Applications

Areas of Application

1. **Agriculture** - increases the productivity and quality of crops.
2. **Grass** - reduces soil compaction and improves turf in golf courses, parks and lawns.
3. **Evaporative Cooling** - eliminates scale build-up without use of
4. chemicals. **Cooling Towers** - Water Loop 2000™ system using ZYLYM™ controls scale in cooling tower treatment, normally with less than 2-3 year
5. payback. **Industrial Applications** - keeps injection molds and die heads scale-free, operating at design specifications.
6. **Boilers and Heaters** - in low-pressure boilers (<200 psi) ZYLYM™ eliminates scale build-up and extends useful life.
7. **Food Service** - applications include beverage machines, icemakers, steamers, combi ovens, dishwashers, etc.
8. **Institutions and Homes** - provides “conditioned water” without use of chemicals, at far lower cost.



ZYLYM™ Return On Investment = Rapid Life Expectancy = Decades*

* Units last decades w/ periodic maintenance

The ZYLYM™ return on investment for 45 years has consistently been from 3 months to 2.8 years. Having considerable economic value to users, the ZYLYM™ pays for itself in a very short period of time. It is noteworthy that ZYLYM™ irrigation and industrial units last for decades with typically only minor periodic maintenance. ZYLYM™ also saves money in beneficial ways such as:

- A. Less “down time” of machinery for maintenance, reducing labor, repair, and lost productivity costs.
- B. Non-chemical descaling allows for longer life of equipment.
- C. By using less water.
- D. Providing more profits.
- E. Environmentally friendly approach (with no chemicals).

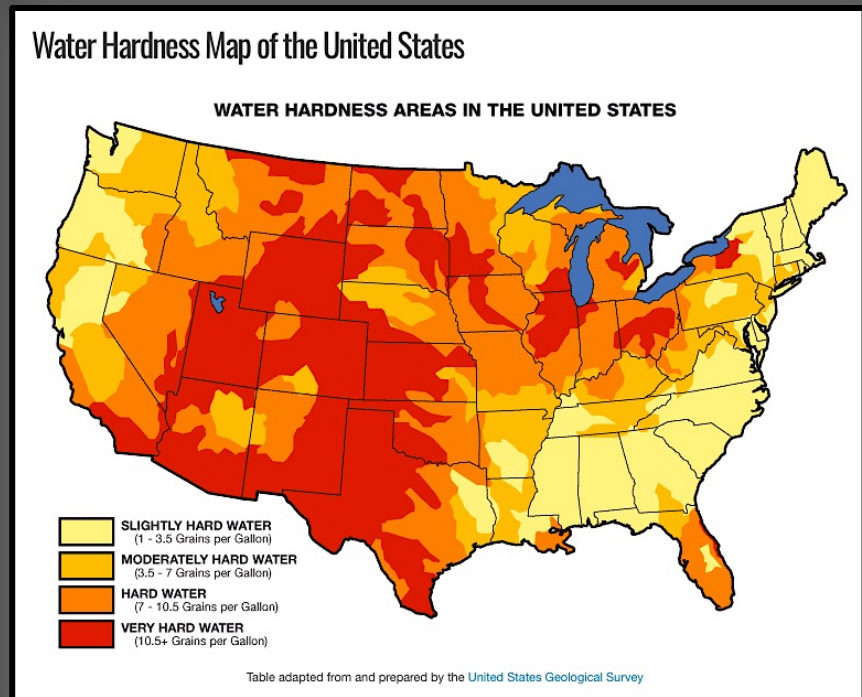


ZYLYM™ Water Hardness Map

Scale reduces the life of equipment

ZYLYM™ is **not a water softener**. Water softeners remove beneficial calcium and magnesium, replacing those elements with an increase in sodium or potassium chloride levels, which can be harmful to people, plants, roots, soil, and sewers.

Scale can reduce the life of equipment, raise the costs of heating the water, lower the efficiency of electric water heaters, and clog pipes.

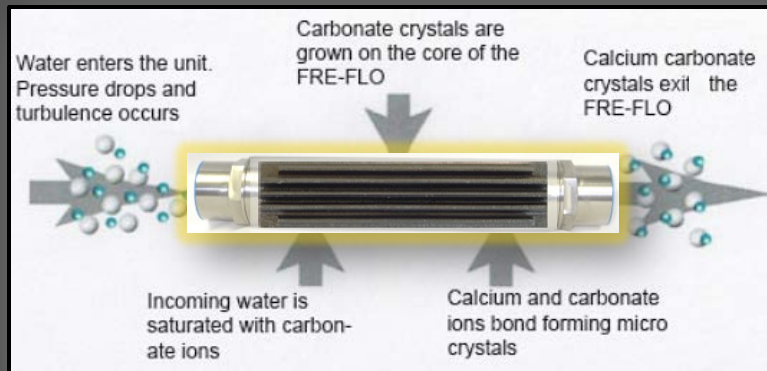


Water hardness is the amount of dissolved minerals in the water.

ZYLYM™ Flow Capacity

.1 GPM - 4,500 GPM

Diagram of system and sizing chart



Model # (Stainless Steel Housing)	Water Flow Range GPM	Water Flow Range LPM	Connection Female NPT	Welded or Threaded Coupling
063-025	0.1 to 1.1	0.4 to 4.2	1/4" NPT	n/a
100-050	0.4 to 2.3	1.5 to 8.7	1/2" NPT	n/a
125-075	2.2 to 4.7	8.3 to 17.8	3/4" NPT	n/a
150-100	4.3 to 7.5	16 to 28	1" NPT	n/a
200-125	7.3 to 16	28 to 61	1-1/4" NPT	Select W or T
250-150 (W or T)	15 to 35	57 to 132	1-1/2" NPT	Select W or T
300-200 (W or T)	36 to 53	136 to 201	2" NPT	Select W or T
400-250 (W or T)	50 to 108	189 to 409	2 1/2" NPT	Select W or T
500-300 (W or T)	105 to 250	397 to 946	3" NPT	Select W or T
800-400	240 to 594	908 to 2,249	n/a	4" W
1000-600	480 to 800	1,817 to 3,028	n/a	6" W
1000-800	750 to 1,500	2,839 to 5,678	n/a	8" W
1400-1000	1,500 to 2,500	5,678 to 9,464	n/a	10" W
1400-1200	2,500 to 4,500	9,464 to 17,034	n/a	12" W

Please note the **non-sacrificial, non-magnetic** core comes in different sizes for specific water flow rates, starting at 0.1 gallons per minute (gpm) and increasing to 4,500 gpm.

