



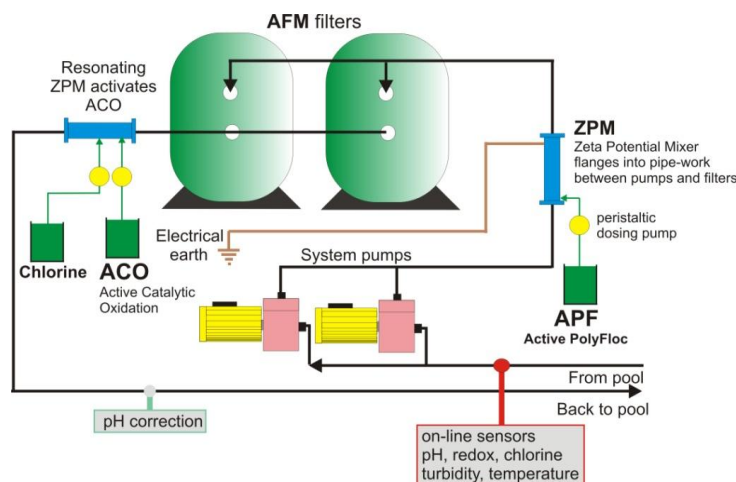
Disinfection without chemicals

- Acts as an injection point for coagulants such as PAC or APF (Active PolyFloc)
- Acts as an injection point for ACO (Active Catalytic Oxidation) nano-particles
- Amplifies the performance of coagulants to remove 50% more organics
- Reduced organic levels means up to 50% lower chlorine by-products
- Reduced organic levels means less chlorine consumed
- Reduced chlorine consumption means less pH correction chemicals
- Lower organics means less food for bacteria to grow in the system
- ZPM will cavitate the water and provide a degree of disinfection log 2
- ZPM should be used for extra protection against cryptosporidium oocysts
- Resonator amplifies system performance and aids mixing and catalyses ACO

ZPM Zeta Potential Mixer is manufactured by Dryden Aqua from 100%, 316 grade stainless steel. The ZPM amplifies coagulation and flocculation reactions to make the suspended solids larger and easier to remove by the filters. A ZPM unit should always be used prior to filters and as an injection point for flocculants such as APF. Continuous coagulation and flocculation must be used to insure physical removal of cryptosporidium oocysts, giardia, nematodes and dissolved organics. The Dryden Aqua ZPM unit makes the process much more efficient especially when combined with AFM (Active Filter Media) and APF we can essentially eliminate chlorine by-products such as THM's.

Coagulation and flocculation reactions are greatly enhanced by the addition of chemicals that drop the Zeta Potential such as APF. In the case of swimming pools and water supplies, over 80% to 90% of the loading on chlorine is from dissolved organics. The ZPM zeta potential mixer in combination with APF will drag most of the dissolved organics and pollutants out of the water and turn them into particles that can then be removed by the filters. The ZPM unit in combination with APF will also flocculate very small solids including the 4 micron oocyst of cryptosporidium. It is not possible for filters to remove oocysts without flocculation, the ZPM unit makes the removal process more efficient and effective than just injecting the flocculants into a pipe, or immediately before the pumps. ZPM units are all fitted with two 1/2" female threaded connection to facilitate injection. The ZPM unit is also fitted with a 50mm female threaded socket (except 2" unit) to accept the Dryden Aqua resonator to make a ZPMr. The resonator is used after the filters with ACO in recycle system such as swimming pools, or before the filters in drinking water or single pass systems.

Most particles in water including bacteria have a negative charge, dissolved organics also have a negative charge. On passage through the Dryden Aqua ZPM some of the electrons giving the negative charge will be rubbed off and sent to ground via the earth. When some of the particles and organics change from negative to a positive electrical charge, the opposite charges attract to promote coagulation of dissolved organics and flocculation of the coagulated particles.



Swimming pool schematic

| Product code | Flange size | | Flowrate 0.3 bar Cubm/hr | Flowrate 0.5 bar Cubm/hr | Flowrate 1.0bar Cubm/hr |
|--------------|-------------|-----|--------------------------------|--------------------------------|-------------------------------|
| 9.14.218 | 2" BSPm | 2" | 15 | 20 | 30 |
| 9.14.219 | DN65 | 2½" | 20 | 30 | 45 |
| 9.14.220 | DN80 | 3" | 36 | 50 | 75 |
| 9.14.221 | DN100 | 4" | 60 | 80 | 120 |
| 9.14.222 | DN150 | 6" | 90 | 120 | 180 |
| 9.14.223 | DN200 | 8" | 120 | 160 | 240 |
| 9.14.224 | DN250 | 10" | 150 | 200 | 300 |
| 9.14.225 | DN300 | 12" | 180 | 240 | 360 |

Dryden Aqua can now control disinfection and water clarity without the use of oxidising agents. ZPMr is used as the injection point for chlorine or Dryden Aqua ACO active catalytic oxidation. The ZPMr makes the water treatment process and chemicals more effective. However even without chemicals the ZPMr changes the hydrogen bonding of the water and makes it much more difficult for bacteria and algae to survive in the water.

Resonator for ZPM

The resonator fits into the female threaded socked Dryden Aqua ZPM unit.

The resonator is a high frequency very powerful transducer that shakes the water at a molecular level. The frequency and power of the resonator generates nano-bubbles by extreme cavitation of the water, the bubbles are further sub-divided by the cavitation action of the ZPM.

Nano bubble have a high degree of stability and are attracted to the surface of particles such as viruses, bacteria, fungal spores and protozoa or the surface of organic molecules. On touching a solid surface the nano-bubbles collapse to release energy directly onto the cell membranes. This has the effect of disinfecting the water without the use of chemicals. When a nano-bubble collapses on an organic molecule, the energy released will oxidise the molecule.



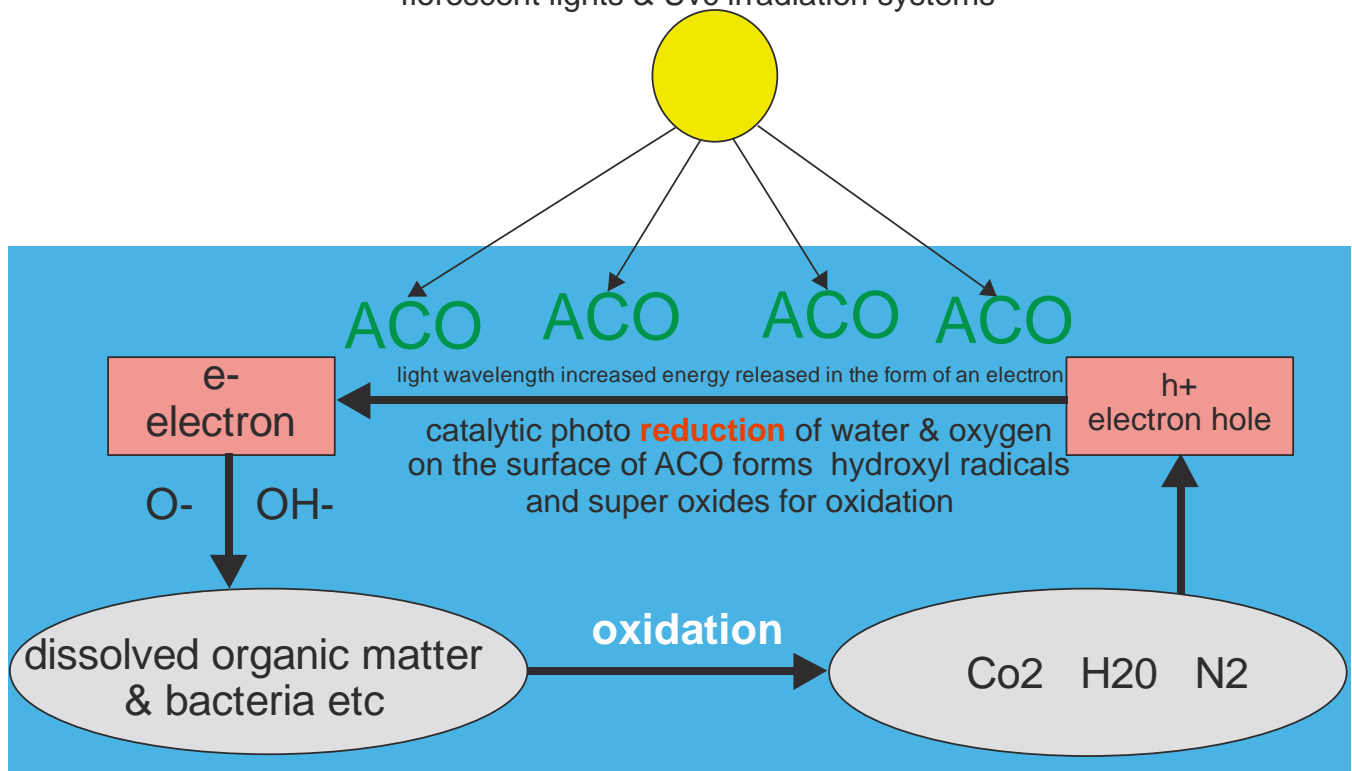
Any nano-bubbles that do not collapse will auto destruct after a few seconds.

When ACO (active catalytic oxidation) product is injected into the ZPM unit, the nano particles of titanium dioxide react with the nano-bubbles from the resonator. The ACO acts as a catalysts powered up by the resonator to dissociate water molecules into super oxides and hydroxyl radicals. These free radicals are also very short lived, but they will oxidise dissolved organics and help to disinfect the water.

The zeta potential of the water is shifted into a high negative state which drops the surface tension and makes to make it extremely difficult for bacteria to survive in the water, yet there are no chemicals in the water. The system has changed the way water molecules relate to each other, also referred to as the hydrogen bonding. The water remains in this state for many hours and sometime days and will continue to self disinfect.

Light or ZPMr

sunlight, out-doors
through windows or even
flescent lights & Uvc irradiation systems



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