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Article about ozone applications in Cooling Towers

OZONATION OF COOLING TOWER WATER

One of the primary functions of indoor air quality is being certain that the capacity of the air conditioning system has enough capacity to take care of the present functions of a building. The ductwork system must deliver that conditioned air to the location that needs cooling or heating. The air handling system must deliver the air that the ductwork system needs. The refrigeration system needs a thorough inspection by an expert air conditioning engineer to be certain that the unit delivers the building demands.

Most cooling towers today are being treated with chemicals, chlorine, bromine, etc. To prevent a chemical build up, water has to be drained from the cooling tower. This drainage represents about 50% of the water used by the cooling tower. Since no blow down is needed when ozone is used, there is no sewage charges.

On the average cooling tower the temperature increases in the water going from the cooling tower to the condenser and back is only 10 degrees F. This is not big enough difference to bond the fouling material to the inside of the condenser tubes. The adhesive holding the fouling material in the condenser tubes is BIOMASS.

Ozone destroys BIOMASS by oxidation, therefore the fouling material is released. By releasing the fouling material, the head pressure is reduced from 110 degrees F to approximately 98 degrees F. At 98 degrees F head pressure the increase in compressor capacity will increase by approximately 6% to 10%. The total plate count (of microorganisms) in a chemical treated tower will be about 1,000,000 where as in an ozone treated cooling tower it will be less than 100.

The ozonated cooling tower as a MONEY MACHINE in that it reduces the water used by the cooling tower by 50%, eliminates the blow down thereby eliminating sewage charges, eliminate the cost of chemicals. In addition to these actual savings the power consumption of the refrigeration units has been reduced by approximately 10% to 20% and increased the compressor capacity by approximately 6% to 10%. These are large savings.

The cost of an ozone installation is usually written off in about one year.

The large wooden cooling towers that you see on large buildings have some additional problems. If chlorine or bromine is used to treat the cooling tower water, there units will develop into chloramines or bromamines which will cause wood to odeligmification. The other biodeteriation are caused by bacteria in the wood. Since ozone is such a good biocide, ozone can almost eliminate this problem over time.

We should also state that wooden cooling towers have to be rewooded every 12 to 15 years.

The average wooden cooling towers are usually in many sections, the repair work is also done in sections. If a four section cooling tower would have one of the sections rewooded, the cooling tower capacity would be reduced by 25%. Normally, this would reduce the plant or building capacity by 25%. Since the repairs could take from 3 months to 3 years, depending on the size of the section, the loss of production could be great.

