

FlowMark Disinfection Systems

How FlowMark DS Systems Work

The FlowMark Water Treatment Disinfection System is classified as an Advanced Oxidation Process. Oxygen is split into singlet oxygen atoms as it passes through a lamp chamber containing a specific wavelength UV lamp. The oxidizing gas is introduced to the cooling tower water via Diffusers or Venturi injection. The singlet oxygen atoms interact with water molecules forming hydroxyl and oxygen radicals which trigger various chemical reactions, oxidizing contaminants including minerals and bacteria. In addition, some oxygen radicals join with water molecules (H₂O) to form a measureable residual of Hydrogen Peroxide (H₂O₂), a trusted long lasting, nontoxic biocide.

Wikipedia Definition of Advanced Oxidation Process (AOP)

Advanced oxidation processes (abbreviation: AOPs), in a broad sense, refers to a set of chemical treatment procedures designed to remove organic (and sometimes inorganic) materials in water and by oxidation through reactions with hydroxyl radicals ($\cdot\text{OH}$). In real-world applications of water treatment, however, this term usually refers more specifically to a subset of such chemical processes that employ ozone (O₃), hydrogen peroxide (H₂O₂) and/or UV light.

AOPs rely on in-situ production of highly reactive hydroxyl radicals ($\cdot\text{OH}$). These reactive species are the strongest oxidants that can be applied in water and can virtually oxidize any compound present in the water matrix, often at a diffusion controlled reaction speed. Consequently, $\cdot\text{OH}$ reacts unselectively once formed and contaminants will be quickly and efficiently fragmented and converted into small inorganic molecules .



Oxygen O₂ Proper UV Spectrum Ozone O₃ Water H₂O = Water (H₂O) with Ozone (O₃) and Hydrogen Peroxide (H₂O₂)

