

Reduction Biofilm Formation Using TiO₂ Coating in Water Cooling Towers

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Abstract : As a component of their heating, ventilation, and air conditioning (HVAC) system, cooling towers are used in almost all buildings. The process of transferring heat in an HVAC system involves water. To avoid pneumatic illnesses, the Occupational Safety and Health Administration (OSHA) has recommended that HVAC systems must be cleaned twice a year. To address the strict environmental requirements at the microscale, a photocatalytic coating, which is hydrophobic and antibacterial, is used. The effectiveness of water-cooling tower coating systems was examined in this study. The samples were made of stainless steel. In this system, the samples are coated with two different coatings, one with Titanium dioxide (Ti₂O₂) only and the second one with the addition of Copper. The samples were placed in a water splash zone to ensure that there was enough water surrounding them and that there was adequate airflow to prevent them from being constantly immersed. The samples were not tampered with for six months. In conclusion, the addition of copper rendered a better result as the low concentration of other elements such as slates, is observed.

Keywords : biofilm, coating, cooling tower, HVAC

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