The Situation
Aerisa’s air purification system installation at the Santa Paula (CA) WWTP will enter its fifth year of continuous service in early 2015. This 4.0 MGD membrane filtration facility is owned by PERC Water Corporation, known for inventive facility design and state-of-the-art technology implementation. Since May 2010, Santa Paula WWTP personnel have operated the automated air ionization technology from Aerisa for the headworks and solids handling building as well as for process tank headspace. With less than 0.01 PPM of H₂S as a design criterion, the automated sensors for H₂S and other hazardous chemicals provide real-time adjustment to airflow based on readings in the building. Since the implementation of the Aerisa ionization system, the Santa Paula WWTP has consistently met its state mandated air permit requirements.

A Different Approach
Unlike legacy odor control systems that utilize carbon, chemicals or biological media to scrub air exhausted out of a building or headspace, Aerisa ionization systems supply highly ionized air with O₂⁺ and O₂⁻ ions to the application areas. These ions proactively attack the contaminants at their source, vastly improving in-area working conditions. As a second purification step, outside air may be ionized and mixed with pretreated facility air to deliver high quality exhaust. Contaminants treated through ionization include hydrogen sulfide, ammonia, amines, mercaptans, reduced organic sulfur compounds, volatile organic compounds, surface bacteria and virus.

The Aerisa ionization technology for wastewater applications is based on ions produced by an ionization tube. The tube works with single phase AC power transformed to approximately 3,000 volts. The electrical potential created by the tube, along with system airflow, creates positive and negative oxygen ions that form molecular ion clusters with highly oxidizing power. Each ionization unit comes with five tubes, with the application-specific quantity of ionizers housed in an industrial air handler.

Low O&M Expense
Ionization systems require no chemicals, water, or disposal of spent media. One Aerisa ionization unit effectively treats 500 to 1000 CFM, but only requires 50 watts of power. Since ionization systems utilize the facility volume as a reaction chamber instead of using a tank as with exhaust-only scrubbers, pressure drop is low, and the resulting fan power requirement is 75-80% less than traditional solutions.

System maintenance is relatively minimal; in general, periodic air handler filter replacement and yearly ionization tube replacement is required. Thus, operational and maintenance (O&M) costs for Aerisa air purification systems are a fraction of that for exhaust-only scrubbers.

AERISA’S TWO-STAGE APPROACH FOR ODOR ELIMINATION

Outdoors Air

Ionizes outside air

Ions

Treated Exhaust

Clean Air

Outside Air

AerSupply AHUs

INSIDE the Space

AerDuct Distributes Ions

Treated Exhaust

Ions

Clean Air

AerSupply AHUs

EXHAUST

AerExhaust AHUs

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