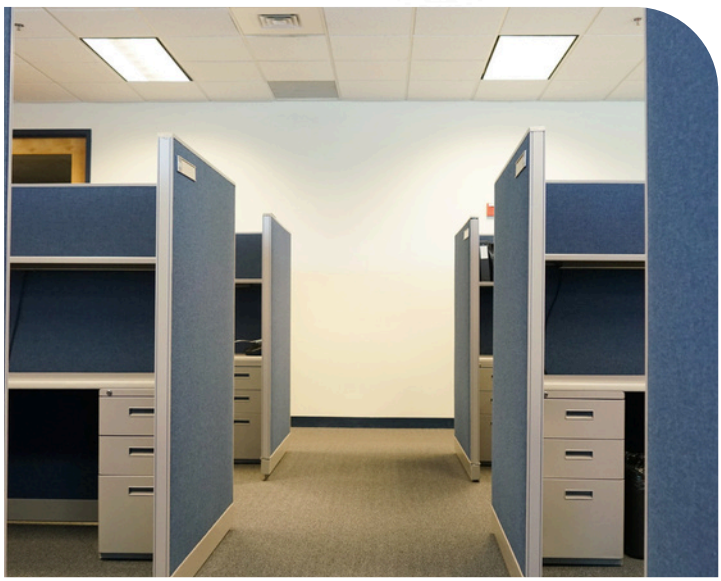
Reducing airborne chemical pollutants



HYDROXYL IL
טיהור אוויר ונטרול ריחות
SUSTAINABLE PROTECTION

Air & surface purification solutions

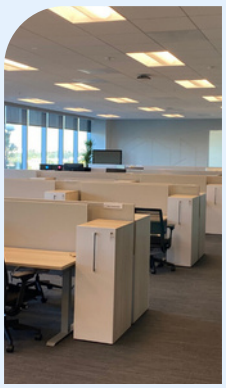
Airborne chemicals negatively impact indoor air quality.

Chemical pollutants in the air can originate from manufacturing processes, material off-gassing, livestock and poultry, organic waste decomposition, fruit and vegetable ripening, and microbial contamination. These pollutants can represent health risks for humans and animals and may generate problematic odors. Some pollutants can result in fines and/or revoked operating permits when exceeding regulatory emission limits. Hydroxyl readily and effectively breaks down airborne pollutants without a buildup of toxic intermediates, can be easily installed into existing buildings/facilities, and safely operated 24/7 in the presence of people, animals, and plants.

Pyure resolves pollutant issues across many industries:

Garbage and waste management

- Municipal solid waste facilities
- Wastewater treatment plants
- Garbage rooms in buildings



Office & hospitality

- Material off-gassing
- Mold and mildew
- Nicotine/Cigarette and cigar smoke

Manufacturing

- Chemical synthesis
- Casting, injection molding and welding
- Painting and powder coating

Agriculture

- Poultry and hog production
- Food storage
- Fruit & vegetable distribution

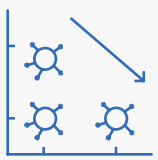
Replicating nature to deliver safe and effective cleaning.

Hydroxyl produces the same natural cleansers present outdoors in the same concentrations — ensuring effective purification of air and cleaning of surfaces in occupied spaces.

What Hydroxyl treats:

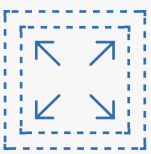
- Volatile organic compounds (VOC)
- Hydrogen sulfide
- Ammonia
- Ethylene
- Nicotine
- Methane

How Hydroxyl works:



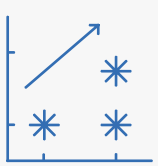
Provides superior performance in reducing microbial loads in the air and on surfaces.

Runs continuously 24/7 while treated spaces are occupied.



Treats any size space with the same efficacy.

Delivered through an existing air handling system or installed as a stand alone solution.



Increases the effectiveness of existing cleaning and sanitation protocols, and HVAC systems.

Proven to reduce airborne pollutants.

Controlled atmospheric studies assessed the impact of Hydroxyl on VOCs and the possible accumulation of chemical intermediates.

TVOC reduction after 15 hours:

↓59%

No accumulation of intermediates above background levels, including:

- Formaldehyde
- Acetaldehyde
- Other aldehydes

Hydroxyl has demonstrated significant reductions of other airborne pollutants in real-world settings:

- Hydrogen Sulfide
- Ammonia
- Ethylene
- Methane
- Non-methane hydrocarbons
- Nicotine
- Chemicals produced by fires

Case studies — Sewage treatment plant

Problem

A sludge station treating wastewater had two sludge holding locations: an open pit (low strength) and a containment tank (high strength). Both areas' hydrogen sulfide (H2S) levels were above safe limits, creating employee issues.

In the low-strength sludge pit, H2S levels were consistently in the 60 PPM range, whereas OSHA limits were set at 10 PPM.

In the high-strength sludge tank, H2S levels were above 100 PPM, sometimes peaking at over 200 PPM.

The elevated H2S levels led to offsite fugitive odors that generated frequent complaints to nearby communities, putting the facility's continued operation at risk.

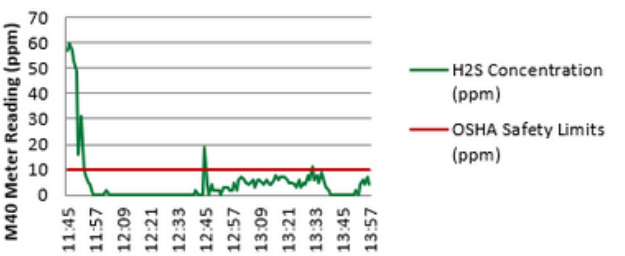
Hydroxyl impact

Hydroxyl MVP14 units were installed to treat the air above the low-strength pit and to pump oxidants into the high-strength tank. Hydroxyl treatment quickly brought H2S levels down below OSHA limits and kept them below 10 PPM.

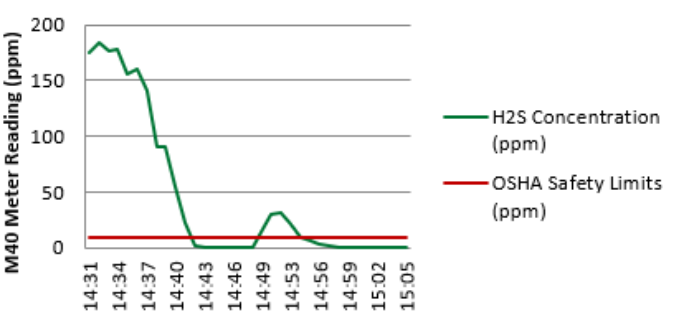
Customer benefits

The operator of the sludge station was able to run the facility safely and in full compliance with OSHA standards, with no risk to employees. The drop in H2S levels also significantly reduced the number of complaints, eliminating the risk that the facility could be shut down.

H2S Concentration with Hydroxy
Low strength Sludge from Hill



H2S Concentration with Hydroxyl
High-strength Sludge (tank)



Case studies

Fruit & vegetable distribution center

Problem

A large 200,000-square-foot distribution center received fresh fruits and vegetables from over 100 growers. Produce was being stored and repackaged before being shipped to major grocery retailers. The facility had a buildup of ethylene gas, accelerating the ripening of certain fruits and vegetables and leading to excess losses. The distribution center operator was looking for a solution to reduce ethylene levels and microbial counts on the packaging in which fruits and vegetables were shipped.

Hydroxyl impact

Hydroxyl was installed in the facility, and the ethylene levels were quickly reduced, leading to extended shelf life for sensitive produce such as apples, avocados, melons, kiwi, grapes, limes, lemons, asparagus, broccoli, and lettuce. There was also a significant reduction in microbial counts and pests accompanying the fresh produce in the packaging (random sampling).

Customer benefit

The customer reduced waste and losses due to premature ripening, which generated a rapid payback. The customer also achieved better control of pests and microbes in the center, reducing business risk.

Wastewater treatment

Problem

A wastewater treatment plant lift station in a residential area collected incoming sewage in a large tank (wet well). The wet well was consistently emitting H2S levels above 30 PPM, which resulted in problematic odors for nearby residents and eye and breathing irritation for employees and people passing nearby. The facility had tried to resolve the problem with liquid scrubbers, activated carbon, stacks, and chemical odor abatement, but none were effective.

Hydroxyl impact

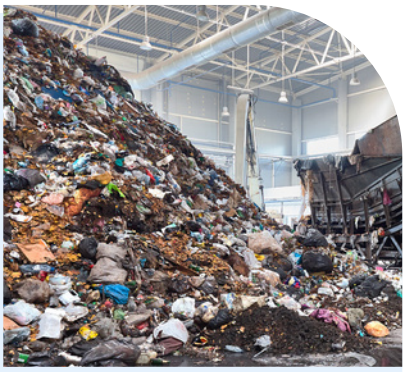
An MVP14 solution was installed and vented directly into a 2,000 cubic foot wet well. H2S was rapidly broken down at the source, leading to a rapid reduction in H2S levels, well below the 10 PPM recommended airborne exposure limit set by OSHA.

Customer benefit

The offensive odors were eliminated, and the health risks for employees and people near the facility were mitigated. Eliminating the other odor abatement systems led to reduced energy consumption, lower operating costs, and a rapid return on investment.

Case studies

Municipal solid waste facility



Problem

A large waste management facility treated all the municipal solid waste generated by a major, nearby metropolitan city. The facility was subjected to frequent complaints from nearby communities concerning odors, resulting in frequent government fines and the threat of a shutdown.

Hydroxyl impact

Hydroxyl units were installed in the waste reception area, where garbage trucks dumped incoming waste for sorting and treatment. Following the installation, the facility saw a 90% reduction in odor and a 25% reduction in total organic compound levels (TOC), leading to better compliance with government requirements and a significant decrease in complaints during peak odor periods.

Customer benefit

The facility could turn off its exhaust system at night, eliminating emissions into neighboring communities while maintaining TOC and odor levels inside the plant within acceptable limits. By turning off the exhaust system, total plant emissions were cut significantly, and the consumption of expensive activated carbon filters was reduced considerably. The payback period for the Hydroxyl system was less than a year, complaints and fines were minimized, and the risk of a shutdown was mitigated.

Chemical plant

Problem

The chemical plant was producing chemical intermediates used in pharmaceutical manufacturing. The levels of non-methane hydrocarbons in the facility were elevated, and the odor levels exceeded the maximum allowable levels set by regulatory authorities.

Hydroxyl impact

An MVP24solution was installed in the facility, which resulted in a 60% reduction in the levels of non- methane hydrocarbons. The levels fell below 1 PPM, the target set by the manufacturer. Odor levels were reduced by 99%, from readings of over 1,500 to readings below 15.

Customer benefit

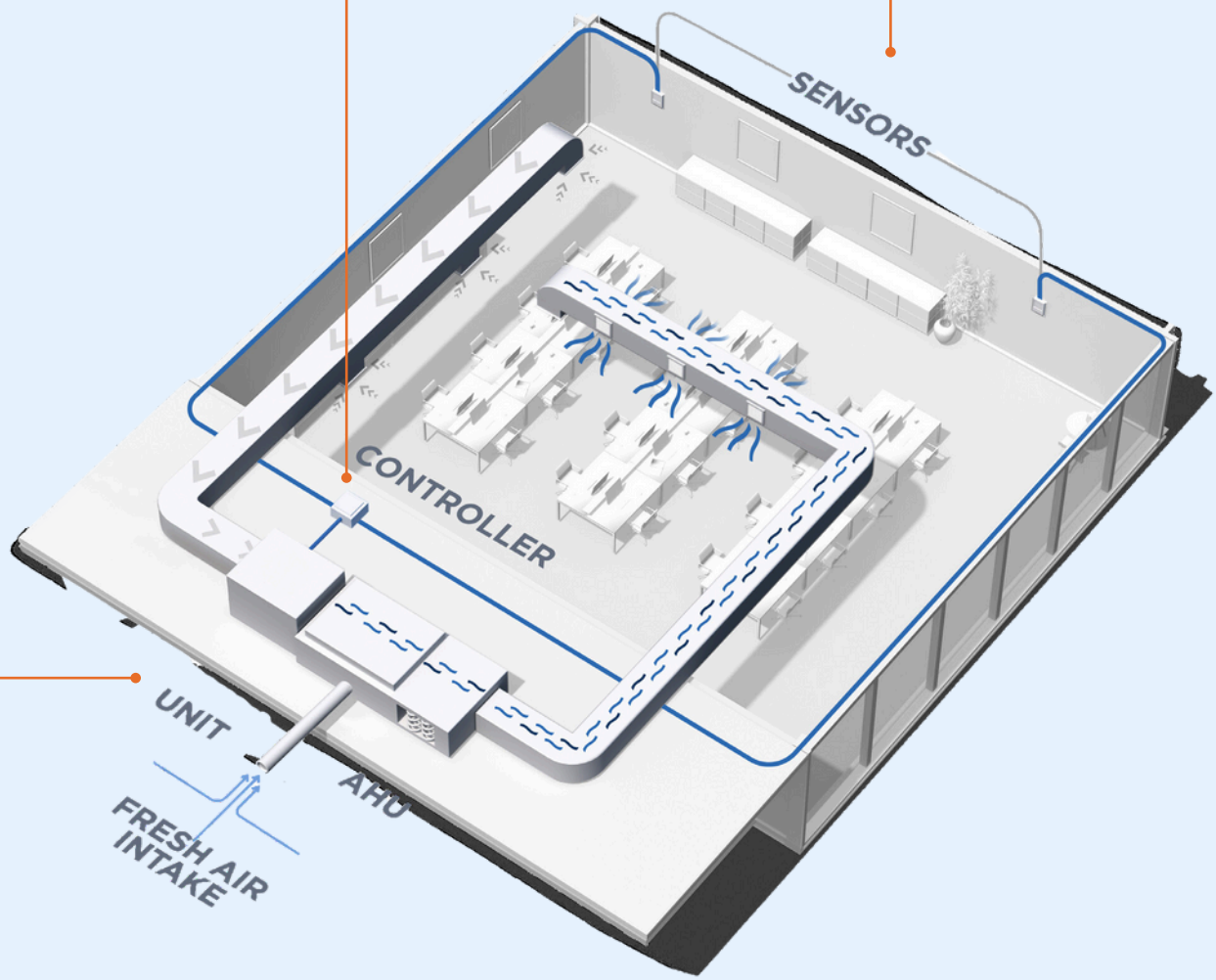
The facility improved working conditions for employees and ensured compliance with regulatory standards. Odor complaints from nearby residents were eliminated, mitigating the risk of additional fines.

Optimized air quality.

Our completely scalable and sensor driven systems offer customizable controls and helpful data analysis to measure and optimize performance. The Hydroxyl system continuously adjusts as the demand for purification changes over time, ensuring optimal safety, performance, and energy efficiency.

Controller responds to sensor readings and modulates the Pyure device to treat the real-time air quality.

Sensors provide real-time reading to controller.



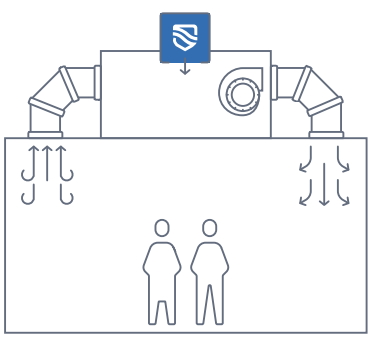
Hydroxyl unit works with single or multiple air handling systems.

Hassle free installation

Hydroxyl solutions can be installed with or without an air handling system.

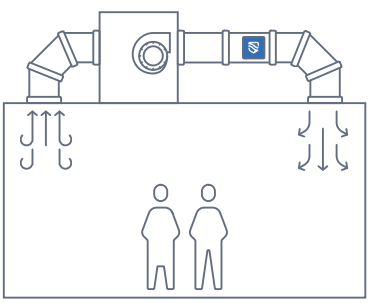
Centralized air handling

- Large rooftop units
- Large indoor units



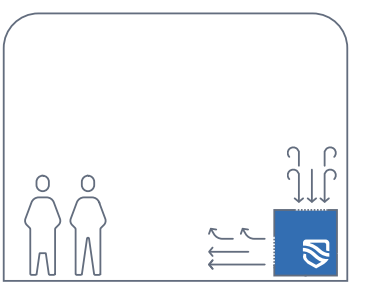
Decentralized air handling

- Smaller units inserted in ducts throughout the building
- Wall mounted units where there is no ductwork



No or limited air handling

- Large stand alone units with blowers
- Portable, stand alone units
- Wall mounted units



Hydroxyl makes maintenance easier.

Little impact on existing handling system

- Minimal increase in airflow resistance
- Virtually no extra wear and tear
- Marginal impact on energy consumption

Low frequency maintenance and a system that helps clean

- Annual replacement of UV optics and sensors
- Periodic cleaning of filters (frequency depends on the dust and oil concentrations in the air)
- Reduces the frequency and intensity of duct decontamination

Controlled solutions.

Designed to treat even the largest of spaces, our controlled solutions work with new and existing air-handling systems. Sensor-driven with customized controls that respond to real-time data.

Hydroxyl IDI

A versatile solution that fits into the ductwork of any air handling system. Connect with more IDI units to increase the treatment area.

TYPE: Indoor, inline with HVAC
NOMINAL TREATMENT AREA: 3,000* sq ft

Hydroxyl MVP14

Integrates into a new or existing air-handling system where space is limited and provides more cleansing power than induct systems.

TYPE: Indoor, inline with HVAC
NOMINAL TREATMENT AREA:up to 75,000* sq ft
BLOWER: optional

Hydroxyl MVP24

A heavy-duty unit built with a reinforced shell suitable for outdoor applications.

TYPE: Rooftop, inline with HVAC
NOMINAL TREATMENT AREAup to 200,000* sq ft
BLOWER: optional

Hydroxyl MVP48

Our most powerful system, the MVP48™ purifier is ideal for the largest installations.

TYPE: Indoor, inline with HVAC
NOMINAL TREATMENT AREAup to 450,000* sq ft
BLOWER: optional

MVP controller system

Controllers modulate purifiers based on feedback from the sensor system, creating an efficient method of treating pollutants in the space.

Sensor system

Air sensors placed throughout the environment send readings to the sensor system which provides constant real-time feedback to the control system.

Non-controlled solutions.

The simplest to install, our non-controlled products can be added to air ducts, wall mounted or plugged into a standard outlet. Switch them on for instant air purification and surface cleaning in small to medium size environments.

Hydroxyl Mini

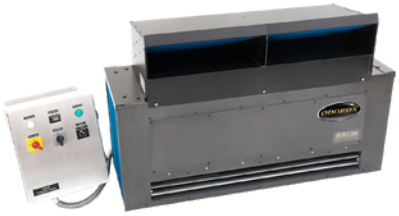
The Mini series is designed to fit in with its small proportions, modern design and low noise levels. This makes it ideal for cleaning and deodorizing air in offices, waiting rooms or any other small commercial space.

TREATMENT AREA: up to 500* sq ft

Hydroxyl IDU

The IDU purifier is a duct mounted purifier that is easy to install and requires only an electrical connection for operation.

NOMINAL TREATMENT AREA: 2,000* sq ft (model dependant)



Hydroxyl HRC06

The HRC06 purifier is wall mounted and can modulate its output to purify and deodorize commercial and industrial applications.

TREATMENT AREA: up to 6,600* sq ft

Hydroxyl Slimline

A rugged purifier with a durable exterior beneficial for public spaces and commercial or industrial installations that require a portable or wall-mounted unit.

TREATMENT AREA: up to 900* sq ft

Hydroxyl Boss

Designed for tough environments, the Boss purifier is suited to applications like remediation following fire or water damage. It's also ideal for areas with frequent movement and contact.

TREATMENT AREA: up to 2,500* sq ft

Hydroxyl G9

By adding an external fan to provide greater air movement, the Hydroxyl G9 purifier is ideal for spaces that have been affected by smoke, flooding, wastewater, and other air pollutants.

TREATMENT AREA: up to 3,250* sq ft

Let’s discuss a solution tailored to your needs or plan a trial.

At Hydroxyl, we’re dedicated to finding the right solution for solving your challenges and delivering the outcomes you need.

Get in touch to find out more about how we can help.

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SUSTAINABLE PROTECTION

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