



Down the Pipeline

WATER SYSTEM INSPECTIONS BY SPECIALIZED DRONES



Rather than have humans enter confined spaces found within water and wastewater infrastructure, we are now entering into a new age. We are on the cusp of a rapid expansion of new drone platforms to enter these environments and remove the health risks workers normally are faced with.

Unique drones can now meet the specific demands of just about any inspection job. There are many types of drones already available on the market today. There are pipe crawling rovers that shoot live video, spot cracks, inspect welds, or even weld seams as they go.

There are submersible swimmer drones being used to inspect potable water tanks or reservoir systems, thereby eliminating the introduction of contamination.

There are confined-space flyers that can now be deployed to go in and locate collapsed sections of sewer pipe, not requiring excavation.

Drones are now being used to fly overhead along buried sewer lines and do the mapping while they record video records of manhole cover conditions.

Developers are currently exploring a future where the tech platforms can interface with one another for safer and more efficient operation. They are also working on the use of artificial intelligence tech in order to have truly automated drones.

All of this is driven by the need to keep staff out of harm's way and to provide a more efficient alternative to manpower-demanding work tasks.

DRONES BEING USED TO INSPECT WATER SYSTEMS

ODOR CONTAINMENT IN WASTEWATER 1-2

GLOBAL: MAKE BETTER USE OF EXISTING WATER 2

FLORIDA COMMUNITY PAYS HACKER TO RESTORE SERVICES 2

GLOBAL: MAKE BETTER USE OF EXISTING WATER 3

ODOR CONTAINMENT IN WASTEWATER

“What stinks?” That can be an embarrassing question asked by visitors to your workplace. Odors are generated from every phase of managing wastewater.

The first step is to reduce the production of odor

from the wastewater. Some reduction can be had through operational and housekeeping measures such as minimizing septic conditions, reducing turbulence, keeping access covers closed

Odors can also be controlled by injecting dissolved oxygen into the water. It will directly oxidize the compounds responsible for the odors.

Nitrate and iron salts can be added to chemically change the compounds (continued page 2)

ODOR CONTAINMENT IN WASTEWATER

and inactivate the compounds.

Chemical oxidation converts compounds by oxidation-reduction reactions which reduce the concentration of dissolved hydrogen sulfide. Commonly used oxidants are chlorine, hydrogen peroxide, and to a lesser degree, potassium permanganate.

The release of odorous compounds, especially sulfide, is a pH

-dependent process. It requires raising the pH of the water to at least 8.0 where sulfide gas is reduced to only 10%.

Sometimes, if the volume of air is large enough, chemical scrubbers can be utilized. One such unit creates chlorine gas which is immediately bubbled into water to create hypochlorite and then used to “scrub” odors from the foul air by

forcing the foul air to bubble up through the hypochlorite solution generated.

Other materials used to reduce odors can be activated carbon and various specialty adsorptive media.

There are a variety of ionization technologies now available that will do a similar job on removing odors from your air.

GLOBAL: MAKE BETTER USE OF EXISTING WATER

First, do the obvious that we’re not doing now. Every time it rains, we are wasting clean water unless we collect and use it.

This means increasing the number of rooftop collection units and/or subterranean cisterns. Startlingly, in many American states, it is still illegal to use captured rainwater

for one’s home. Digital technology could speed up rooftop collection and use utilizing remote monitoring.

Water distribution systems are wasteful due to leaky pipes: 20% in the average city, 60% in Istanbul. Historically 30% of Ho Chi Minh City’s freshwater supply is lost through leaks. So we must

repair the leaks in the systems.

We need to make smarter use of wastewater. Rather than continually discharging treated wastewater to rivers and the ocean, we need to reclaim and reuse as much as we possibly can.

Perhaps it is time to reforest the Sahara Desert.

(continued page 3)

FLORIDA COMMUNITY PAYS HACKER TO RESTORE SERVICES



The Riviera Beach, Florida City Council has agreed to pay \$600,000 in ransom after hackers used a virus to take down the city’s email, phones and water pump stations.

The virus came in the form of an attach-

ment that was downloaded by a city employee. Hackers demanded 65 Bitcoin— a hard to trace digital currency— valued at around \$600,000.

As a result of the hack, even utility payments had to be accepted in

person or through the US postal service. “Anything that was done online, we did not have access to,” Rose Ann Brown, a city spokesperson, told *The New York Times*.



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GLOBAL: MAKE BETTER USE OF EXISTING WATER

Such projects as the Great Green Wall Initiative, which stretches across 12 African nations and 7100 km from Djibouti to Dakar, need to be continued.

Better ecosystems mean better vegetation cover (including more trees), better soils, better surface and underground water management, better productivity of lands for better livelihoods and income of rural communi-

ties.

Grand projects to reforest the equatorial rainforests must begin so that balance can begin to be restored to our planet. People need to be re-educated in order that they will no longer abuse the land but work creatively with it.

Consider Norway's beautiful fjords. European nations nearby send their excess solar and wind

power there to pump water uphill to elevated reservoirs. When demand increases then the water is released to create hydroelectric power for those nations.

Or even Hoover Dam on the Colorado River. A plan exists to build a pump station downstream from the dam and pump water back into Lake Mead and then create more hydroelectric power. As the song lyric goes, "The times they are a-changing."