

A Handy Tool For Wet Well Maintenance: Cutting Through The FOG

Blame our fast food diets or restaurants' negligence for what's going down the drain. Whatever the cause, fats, oil, and grease (FOG) accumulation has become a pervasive problem for wastewater treatment plant collection systems. They congeal in lift stations, clogging wet wells with a foul, organic, mass that gums the works and requires extensive, expensive, and sometimes perilous, cleaning efforts.

[Reliant Water Technologies](#) understands the toll that FOG can take on a treatment plant. Jim Dartez, the company president, participated in a Q&A with Water Online to discuss the problem and a device they've introduced to resolve these problems in lift stations — the Wet Well Wizard.

How pervasive is the presence of FOG in our wastewater systems?

FOG collects in the wet wells of lift stations in all wastewater collection systems in every town or city. It is visually recognizable as a mass of floating grease often called a "FOG cap." It is found especially in lift stations near apartment buildings and restaurants where people have a tendency to cook with grease. This floating "cap" can be many feet thick and cause numerous problems in the lift station. It usually has to be cut out by arduous labor and/or vacuumed out with vacuum trucks — often several times per week at some lift stations.

What are the typical problems associated with a FOG congested lift station?

The primary problem we associate with a lift station is odor due to the collection of wastes, both sanitary and chemi-



The **Wiz**



2 ½ feet of FOG in a wet well



24 hours later

cal, that accumulate in the wet wells. The odor comes from a buildup of hydrogen sulfide caused by the anaerobic microbial buildup and chemical makeup of the water in the wet well.

The second significant problem is physical debris, such as condoms, tampons, tampon sleeves, plastic bags, and rags. These require manual or vacuum cleaning and can cause damage to the wet well pumps in submersible pump installations, or the vacuum intake capability of self-priming above-ground pumps.

Finally, there is the grease cap problem as noted above, which adds to odor problems.

Why do these problems continue to prevail?

Because there is no way to "strain" the above mentioned contaminants from their sources of the collection system.

While grease traps are required at restaurants, they are commonly not maintained correctly and the FOG released always exacerbate the collection system problems.

What about a lack of oxygen causes hydrogen sulfide to accumulate in the wet well?

Hydrogen sulfide in sewers builds up due to the anaerobic digestion of organic matter in wet wells and water trapped in low spots in the collection system pipes. The Wet Well Wizard injects so much dissolved oxygen into the confines of the wet well water that two things happen: First, the anaerobes in the water become aggressive aerobes, which break down the organic matter in the water more quickly, releasing non-corrosive gases; and second, the oxygen added to the water by the Wizard causes a reaction between oxygen and hydrogen sulfide to produce odorless sulfate, [which is also not corrosive](#).

How bad can odor really get from FOG buildup? Is it possible for a treatment system to violate any regulations or laws strictly from generating foul smells?

Lift station hydrogen sulfide gases can be harmful and actually kill operators that do not take precautions during maintenance work. The problem is hydrogen sulfide asphyxiation. There are U.S. Department of Health & Human Services regulations that protect workers against this problem. There is also a large number of customer complaints associated with “street drain” hydrogen sulfide odors.

Can you provide some detail into the interaction between the cleaved bubbles produced by a Wet Well Wizard and semi-solids?

There is a distinct visual and effect comparison between slow moving, fine bubble aeration methodologies that are common in other wet well aeration technologies compared to the very aggressive, tumbling, cleaved bubbles that are aggressively ejected from the dorsal end of the Reliant Wet Well Wizard.

These very aggressive spinning bubbles emitted from the Wiz rise with such a vicious velocity that they quickly cut through and homogenize grease caps of any thickness. See the pictures that Water Online has on our [Wet Well Wizard brochure](#).

What advantages provided by the Wet Well Wizard add up to a ROI?

The wastewater collection system is actu-

ally the beginning of the wastewater treatment process, but due to the problems (chemical and bacterial) in the lift station wet wells, one potential advantage has never been utilized. We have proven that we can raise the dissolved oxygen in collection system water to over 3 ppm. At present it is a theory, but we have an engineering firm running tests to prove the theory. If Wizards are used on all lift station wet wells throughout a given system, the following will be experienced by the collection system and wastewater plant operations, most of which will provide a return on investment:

1. Odor masking chemicals will not have to be used in lift stations.
2. Other very expensive air scrubbing technologies at lift stations will not have to be utilized.
3. Labor for cleaning grease caps, with or without vacuum trucks, will be eliminated and maintenance labor will be reduced.
4. Operator safety will be enhanced.
5. Continual complaint calls from citizens concerning odors at lift stations and sewer drains will end.
6. The water entering the wastewater plant will be clear, odor-free, and highly oxygenated, with an abundance of pre-digestion — all of which will improve the operations of the plant itself by providing odor-free

water into the headworks (often the source of the worst odor found in the entire plant), thus reducing the odor in clarifiers and open tanks, increasing the dissolved oxygen of the water entering the aeration basin, and decreasing the amount of costly dissolved oxygen generation required in this bio-process.

Many customers actually go to the wastewater treatment plant’s operations superintendents to help them pay for Wet Well Wizards because they know that the product will assist the plant processes. To date, categorizing the collection system as a collaborative wastewater process to the plant has not been highly regarded. This is mainly due to the other solutions for lift station problems, which are known for not working or being too expensive to incorporate.

What’s the realistic maximum lifespan of a lift station pump if the Wet Well Wizard is installed?

The Wizard technology is too new to know this number, but everyone expects it to increase pump life and decrease pump maintenance.

How difficult is Wet Well Wizard installation and how does that compare to implementing other potential solutions?

Installation will take about 30 to 45 minutes per Wizard installed, depending upon the design of the lift station and the preparedness of the installation staff, including the electricians. ■