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GRINDER RETROFITTING: IS IT RIGHT FOR YOUR SEWAGE LIFT STATION?

It's just past 10 on a Friday night, and the phones start ringing in the pockets of the on-call collection systems operators. It's an alarm for another pump clog at one of your sewage lift stations — the second one this week.

Does this situation sound familiar? Then it might be time to consider retrofitting a two-shafted grinder into your problem sewage lift stations. We've outlined all the steps for you, from determining if your station is a candidate, to learning how to navigate a retrofit and a rundown on the many benefits a retrofit can offer your facility.

Determining Candidacy for a Retrofit

"Every municipality is a candidate for a grinder retrofit upgrade, and every municipality has that problem pump station network," according to Troy Heimerl at JWC Environmental.

There are several qualifiers that can flag a lift station as an ideal candidate for a retrofit: an older lift station not designed for higher solids loading, outdated grinding equipment and, of course, recurring plugs in the pumps requiring manual cleaning. If these issues resonate with you, then your facility is likely a perfect candidate for retrofitting with a two-shafted grinder.

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"If a station has pumps plugging more than once a week, it's absolutely time for a retrofit," said Heimerl. "But the reality of it is unplugging a pump anytime is too much." While operators may joke that the equipment always seems to fail on Fridays, Saturdays and Sundays, Heimerl concedes, "there's a lot of truth to that. When the operators are away, the pumps always seem to fail."

A grinder can offer the manager of a sewage collections network reassurance that things will keep moving smoothly day and night, weekends included. Two-shafted grinders, like the Muffin Monster® and Channel Monster® offered by JWC Environmental, can be

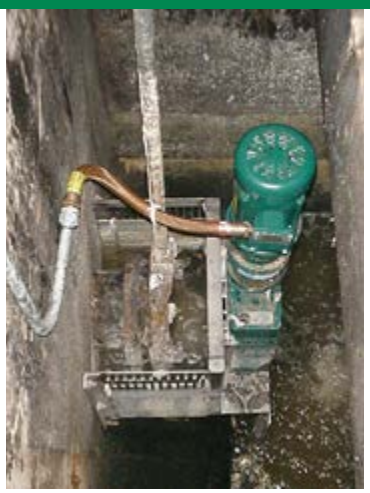
retrofitted into the system ahead of the pumps to shred debris before it creates a clog.

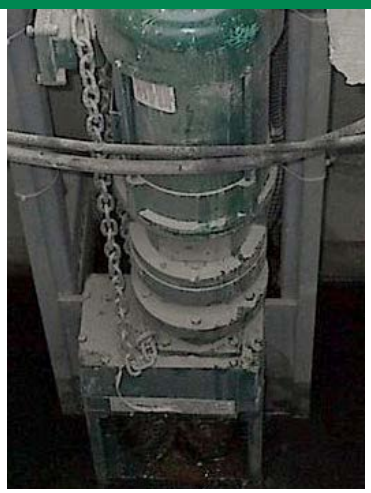
Why Retrofit With a Grinder

Many of the sewage lift stations in service today were never designed to deal with the high solids content found in today's sewage. The heavy solids loading, often from disposable wipes, will easily overwhelm traditional pumps, including solids handling pumps. Typically when operators find their pumps clogging and failing, it's due to wipes-related clogging.

"Sewage has changed, therefore the industry standard of the three-inch spherical solid that pumps were designed to pass no longer meets today's needs," said Heimerl. "The addition of a grinder is really an insurance policy. It's taking care of those items, that when they show up in the sewer system, are shocking to operators. The addition of a grinder maximizes your pump station's efficiency while curtailing overtime and unplanned maintenance costs."

Grinding wipes along with other waste before it gets to the pumps has shown to be an incredibly effective method for preventing damage, eliminating risks and reducing the time and energy costs associated with clogging. "When a grinder is in place, the wipes are shredded down small enough so they do not reweave, rope together or form cumbersome rag balls in the lift stations. They





remain in suspension and can be pumped easily," said Heimerl.

Location, Location, Location

In a perfect world, every grinder could be retrofitted within the influent pipe or channel to the lift station before sewage enters the wet well. "When the grinder can be upstream of the wet well, there aren't any pumps to maneuver around and it's a cleaner environment," said Heimerl.

In many cases, however, installing a grinder in the inlet isn't possible. "If you're retrofitting an older pump station, it is likely that no accommodations were considered in the design for installing a sewage grinder," said Michael Wolf of JWC Environmental. "In a retrofit scenario, you can't change the structure of the wet well, so you're going to have to work around a few things inside the wet well."

While space constraints are one of the major factors in a retrofit, grinders can be worked into nearly every station's configuration. A common technique when retrofitting a grinder is to mount it to the wall of the lift station's wet well in front of the influent pipe. When JWC Environmental installs a retrofit, the company's engineers design a customized stainless steel mounting frame specific to the particulars of the lift station. The engineering process takes into account space constraints, other equipment like pumps and float switches in the wet well, and making the grinder accessible for easy inspection and service.

"If it's a wet well-mounted system, we need to work within the station's confines," said Wolf. "We can do that. It's just a matter of setting expectations with the owner, so we know what's optimal and what arrangements they'll need to be aware of for the retrofit."

It's important to recognize that a perfect station doesn't exist — both in terms of space and flow rates. "We design the grinder for average daily flow, which will do an excellent job 99% of the time," said Heimerl. To prepare for the troublesome 1% flow that falls outside the daily average, Heimerl suggests an overflow bar rack, which serves as backup during heavy storm flow events. "Overflow bar racks are an excellent way to account for unexpected rain events without having to install an oversized grinder."

Another scenario that can present itself is a lift station wet well that is just too small for any additional equipment beyond the pumps. In these situations, a simple grinder vault can be added upstream of the wet well in the influent pipe. One option for this is a pre-fabricated fiberglass reinforced polyester (FRP) manhole with a grinder already installed. These ready to install solutions, like the Muffin Monster Manhole® from JWC, minimize the engineering and constructions costs while still solving the problems at the pump stations.

Often when retrofitting, prior equipment components can be reused. If you're replacing an outdated grinder with upgraded technologies, like a Wipes Ready® grinder from JWC, the installation will take advantage of existing infrastructure. "If we're replacing an older grinder, whether ours or a competitor's, we would be able to utilize all of their components, such as existing frameworks and controls," said Heimerl.

The In's and Out's of a Retrofit

Once you've determined your pump station is in need of a retrofit and discussed the idea with an experienced representative, heed this advice from Wolf: "Take a deep breath."

While the actual retrofit should be simple, it's important to pay attention to the details of the process.

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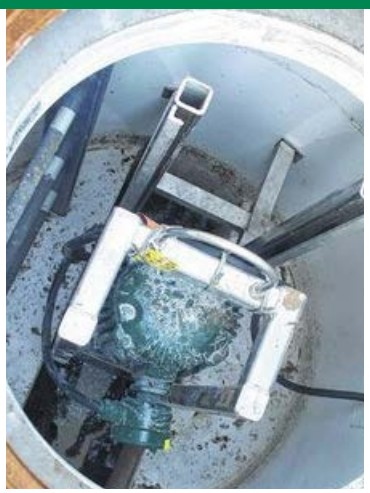
Wolf advises collections operators to ensure they are following along with every step of the retrofit. While planning the retrofit, it's important for operators to take notes about what flow expectations are being used in sizing the grinder and what type of equipment fits their budget so they can reference them later. It's also imperative that operators work with their suppliers to set clear expectations for the retrofit so there aren't any surprises during the process.

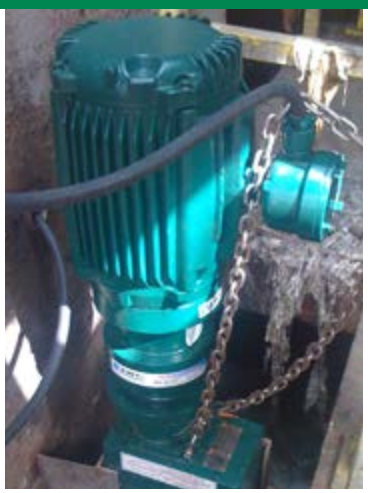
Of course, it's also important to have a good relationship with a trusted supplier and to be aware of the maintenance required once the retrofit is complete. "While operators will still need to do the typical yearly maintenance on the grinder, the maintenance on the pump that the grinder is protecting decreases dramatically," said Wolf. "Using a company, like JWC, who has an extensive support network can be very useful when considering what your maintenance needs will be."

A Typical Retrofit

Replacing a 25-year-old grinder from a defunct company, an older grinder incapable of grinding up wipes, or adding that first grinder to a lift station experiencing too many pump clogs are all common retrofitting situations. No matter the reason for the retrofit, the process follows a standard course.

"We take a look and see what size the inlet channel or pipe is. We check to see what flow rates the downstream pumps to be protected are rated for, and we make some sizing decisions based these inputs," said Wolf. "Once we've sized the grinder, we'll discuss





options for flow rates that are above average, and often install an overflow bar rack to account for any unusual rain events. We also evaluate motor options, controls and unique site considerations."

Once the strategy is finalized and the equipment is ready, the team will come in for installation. "The installation process is quick," said Heimerl. "Often we'll have the old piece swapped out and our Muffin Monster will be up and running in less than a day."

And once that grinder is up and running, your station is on its way to reduced maintenance and improved operational efficiency.

"Every time a customer comes to us with a problem lift station and we retrofit in a grinder, the clogging problem is gone the day after installation," said Heimerl. "It really is!"

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JWC Environmental, a Sulzer Brand, is a world leader in solids reduction and removal systems for municipal, industrial, and commercial applications. Our solutions include our legendary Muffin Monster® and Channel Monster® sewage grinders, Auger Monster® all-in-one headworks, Monster Wash Press and Monster Separation Systems®, Monster Industrial shredders, and IPEC industrial screens to solve unique wastewater processing situations. We partner with our customers to help them run efficient and compliant wastewater treatment operations as well as solve challenging size-reduction problems in industrial processes. JWC Environmental is headquartered in Santa Ana, California and has a global network of representatives, distributors and regional service centers to meet local customer needs. More information on JWC Environmental is available at www.jwce.com

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