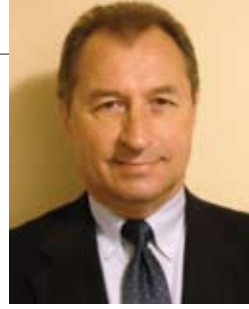

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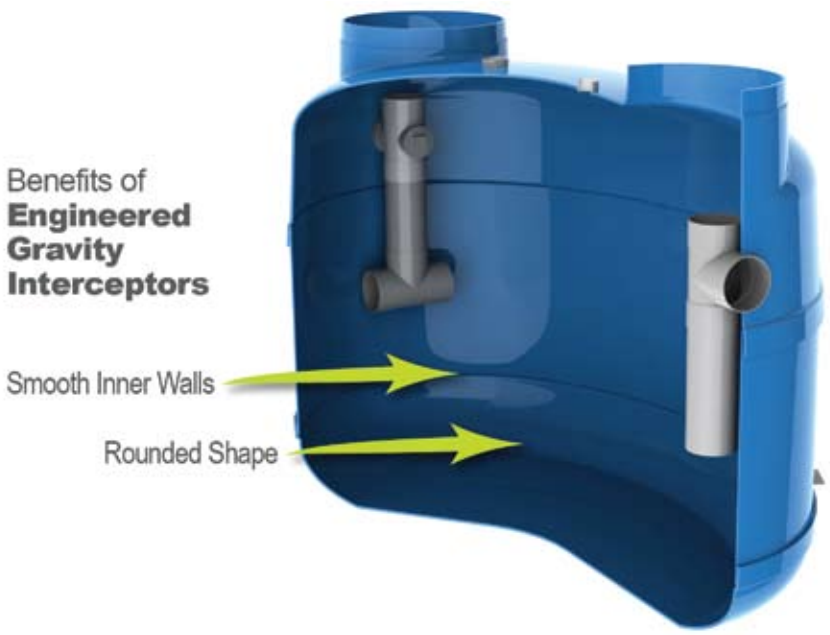
Size MATTERS

Grease trap maintenance starts with the right design.



If walls have any buildup, scrape clean to ensure maximum removal of grease, solids, and to slow bacterial growth.

Much has been written regarding how to properly maintain your grease trap or grease interceptor. Although many articles tend to concentrate on the "how to," it should be remembered that cleaning and maintenance usually can be improved if you start with the right grease interceptor design.

BACKGROUND

Gravity grease interceptors and hydromechanical grease interceptors (in kitchen grease traps) all share a common bond — they all need to be cleaned and maintained.

If your grease interceptor is working properly, it will capture and store wastewater grease, food solids and sediment. Once the holding capacity of the interceptor is reached, cleaning, pumping out and maintenance must be performed to restore it to its best operating efficiency.

Why should restaurant operators care about how their grease interceptors are maintained?

- *Cost:* Interceptors that are poorly designed, or too large or too small, or hard to clean out, or inconveniently located, will cost the pumper time, and that will cost the restaurant operator more money.

- *Odor:* Stored grease smells bad, and can impact the restaurant customers' experience when the odor is strong enough to emanate into the seating area or the parking lot. However, properly designed and sized interceptors can minimize noxious odors so that the only aroma coming from the kitchen is that of good tasting food.

- *Interruptions:* The focus of the kitchen staff should be preparing great food, not maintaining grease interceptors. A properly designed and sized interceptor maximizes the time between clean-outs, and minimizes the clean-out time when it does occur.

DESIGN

Since all grease interceptors have to be pumped out, why does design matter?

Design encompasses geometry and dimensions of the grease interceptor, as well as piping configuration, and not least, materials of construction.

Conventional grease interceptors tend to be metal or concrete boxes, placed in the kitchen or buried outside in the parking lot. These designs are prone to corrosion and deterioration due to the acidic buildup of wastewater grease and solids inside the tanks. Corrosion quickly increases, and metal walls rust and concrete becomes pitted, providing a perfect surface for grease and solids to become embedded, and creating a perfect breeding ground for anaerobic bacteria. The rotten egg gas smell which results is Hydrogen Sulfide (H2S), a by-product of the bacteria growing inside the tank.

Over time, metal can rust and corrode, concrete can corrode and crack, and failure results in costly replacement of the interceptor, with corresponding disruption to the restaurant operation: increased cost and decreased revenue.

New generation grease interceptors have advanced design criteria to optimize wastewater capture and separation efficiency, while utilizing superior materials of construction and improved geometry to simplify cleaning and prevent bacterial buildup.

Reinforced fiberglass materials, advanced polymer composites, and even powder coated or stainless steel are being used to provide a smooth inner wall surface which is less likely to provide a surface where grease and bacteria can embed and build up, requiring costly and time consuming scraping and cleaning to restore the interior walls.

Figure 1.

Table 10-3 Gravity Grease Interceptor Sizing	
DFUs (1,3)	Interceptor Volume (2)
8	500 gallons
21	750 gallons
35	1,000 gallons
90	1,250 gallons
172	1,500 gallons
216	2,000 gallons
307	2,500 gallons
342	3,000 gallons
428	4,000 gallons
576	5,000 gallons
720	7,500 gallons
2112	10,000 gallons
2640	15,000 gallons

Improved geometry with elliptical or rounded walls rather than box corners simplifies the pumper's task by eliminating buildup in hard-to-reach corners.

One additional huge benefit is realized. As embedded grease and solids are minimized, bacterial buildup is also reduced, and odors typically associated with poorly maintained grease traps are substantially reduced, thereby improving the customer and restaurant staff experience.

SIZE MATTERS

Too Big?

Many AHJ's (Authorities Having Jurisdiction) across the country, backed by plumbing code changes, are recognizing that bigger is not necessarily better when it comes to choosing a grease interceptor. It is becoming more obvious that large grease interceptors, often exceeding 3,000- and 5,000-gallon capacities, are nearly impossible to pump out since many pumper companies only have 3,000 gallon trucks. Some

Figure 2.

HYDROMECHANICAL GREASE INTERCEPTORS

Formerly called grease traps, or PDI traps, or metal traps, these are the small units usually installed under a kitchen sink, typically 35 to 50 gallons in size. Now available in metal or plastic, these have been widely used across the country.

- Maintenance requires the removal of the lid, and scooping or suctioning out of the grease and water.
- Often, the upstream flow control orifice also needs to be cleaned to prevent clogging.
- Most of these devices also have a solids interceptor installed upstream to capture food solids — these should be cleaned daily.

The main concern with these devices is that grease has to be removed quite frequently due to the limited holding capacity.

When cleaning these units, it is important to inspect interior for rust or corrosion (in the case of metal units), and corroded or missing baffles. If corrosion is severe, complete unit replacement is needed.

AUTOMATED GREASE REMOVAL DEVICES

Similar in construction to HGI's, these units have an internal skimming mechanism that skims collected grease and pours it into a container placed or mounted on the side.

- The container must be monitored daily, and emptied as needed to prevent overflow of grease onto the kitchen floor.
- The internal skimmers have to be inspected daily or weekly, depending on manufacturer recommendations, and replaced as needed.
- The interior contents should also be emptied periodically and disposed in order to prevent internal clogging.
- Some have an internal solids interceptor or basket that should also be cleaned and emptied daily.
- The heater elements mounted inside require regular cleaning and inspection to deliver proper heat transfer.
- Instrumentation and control panels and timers should also be regularly inspected and re-calibrated if needed.
- Finally, interior surfaces should be regularly inspected for corrosion and failure, which could require complete replacement.

GRAVITY GREASE INTERCEPTORS

These come in two main varieties: (1) conventional concrete construction and (2) new generation engineered systems.

(The conventional concrete box construction is widely found across North America.)

Other than the issues of often being sized too large as discussed previously, with all the inherent problems, unless a properly sized concrete interceptor is lined with a corrosion resistant coating, corrosion will inevitably take place.

This means that pumpers must thoroughly clean and inspect the interior wall surface for cracks or corrosion. If cracks are visible, or corrosion has exposed the reinforcing metal rebar, replacement is necessary since performance of the interceptor has been compromised.

Proper pumping and cleaning of all gravity grease interceptors means following these steps:

- Pump out all contents, including grease, water and solids.
- If walls have any buildup, scrape clean to ensure maximum removal of grease, solids, and to slow bacterial growth.
- Be sure to remove buildup in corners and baffle walls.
- If objectionable odor persists, it may be necessary to blast clean and disinfect all interior surfaces.
- If available, rinse interior surfaces with clean water, pump out residue, and replace cover.

facilities saddled with even larger grease interceptors — as large as 10,000 gallons or more — are faced with the dismal task of scheduling several trucks to pump out the greasy contents, with resulting disruptions to the restaurant operation.

And it gets worse. Oversized grease interceptors tend to become septic over time, since stagnant water, grease and food solids accelerate the growth of bacteria, with its corresponding emission of Hydrogen Sulfide gas, which is unpleasant as well as harmful to humans.

Too Small?

Smaller is also not necessarily better.

Across the country, foodservice establishments continue to face tightening grease management requirements as communities implement new grease ordinances.

Many facility managers, faced with the need to install or upgrade their grease interceptor in order to stay in regulatory compliance, choose to install smaller metal grease traps (Hydromechanical grease interceptor) under the sinks.

These devices, usually 35 to 50 gallons in size, can capture and store limited amounts of grease, but not food solids, and usually require daily or weekly cleaning to prevent the rated holding capacity from being exceeded, followed by non-compliance and costly fines.

What started as an initial cost-saving tactic compared to the purchase of a larger gravity grease interceptor then becomes a nightmare for kitchen staff to maintain — or means costly weekly pump-outs by a pumper company.

Others choose newer technology, AGRD's (Automated Grease Removal Devices), which maintain a compact footprint and are designed to skim collected grease into an exterior grease holding container.

Although they are smaller than gravity grease interceptors, maintenance can become somewhat daunting.

- Skimmer mechanisms require daily and weekly maintenance.
- Heater elements and instrumentation can require ongoing calibration and additional maintenance.
- The exterior container has to be monitored and emptied regularly to keep it from overflowing onto the kitchen floor.
- The metal exterior can present an employee heat hazard when the heater elements cycle on.

Right Size!

The way to prevent pumping issues and exorbitant maintenance is to get the correctly sized grease interceptor system.

All kitchen fixtures that can contribute greasy food waste should be counted, and by calculating the peak flow from each fixture, and taking into account enough time for the waste water to separate from the greasy waste and food solids, the right size for the grease interceptor can be calculated.

Plumbing codes can help with this exercise. The Uniform Plumbing Code, starting in 2006, provides a handy chart *(see Figure 1)*, which outlines values of total DFU's (Drainage Fixture Units) to calculate the corresponding size for the grease interceptor.

Grease interceptor manufacturers and suppliers can also provide assistance in working with design engineers to determine the correct size.

By getting the size right, the problems with bacterial and odor buildup are minimized, and pumpers have a more manageable size to pump out.

MAINTENANCE

Once the best design has been chosen, the right size has been calculated, and the grease interceptor purchased and installed, the FSE (foodservice establishment) owner is responsible for proper maintenance of the grease interceptor to prevent unacceptable discharge of grease and solids into the sewer system or septic field.

In order to stay in compliance, maintenance means pumping out and sometimes additional cleaning of the grease interceptor.

So what does proper maintenance look like? For that answer, the different types of grease interceptors should be considered: HGI's (Hydromechanical Grease Interceptors), AGRD's (Automated Grease Removal Devices) and GGI's (Gravity Grease Interceptors). *(See Figure 2.)*

PREVENTIVE MAINTENANCE

Grease interceptor maintenance is critical to optimizing waste grease management and maintaining regulatory compliance, but the FSE manager can decrease maintenance costs by starting in the kitchen.

By practicing best practices for grease management, the load on the grease interceptor can be substantially decreased, lowering pumping and maintenance costs.

• Kitchen staff should be trained to dry wipe all utensils, containers and vessels that come in contact with grease before rinsing and washing.

• Use of degreasers, detergents, cleaners and disinfectants should be optimized and minimized to ideal levels to maintain cleanliness and reduce waste. Most of these chemicals tend to emulsify the grease, which keeps it suspended in the water, making it difficult if not impossible to capture and separate in the interceptor, leading to non-compliance and fines.

• Dry wiping floors before wash down can also decrease waste load on the grease interceptor and save on maintenance and pumping.

• Make sure fryer grease is segregated and stored, and never dumped in the sink or down the drain.

• Ensure that floor drains and filters are in place, to prevent extra solids from entering the interceptor.

• Work with your pumper and the AHJ to establish a proper pumping schedule.

• Task the pumper to inspect the grease interceptor and report any deterioration. ◆

SUMMARY

Wastewater grease management requires proper maintenance to insure compliance, but it starts with the interceptor design.

Today's market offers new grease interceptor designs that more effectively capture and store grease and food solids, while utilizing better materials of construction to prevent deterioration, corrosion, cracking and eventual failure and replacement.

FSE owners and facility managers should work with the local regulators, design engineers, and grease interceptor manufacturers to insure that the grease interceptor is also sized appropriately for their facility, in order to deliver compliance, minimize maintenance, and prevent severe bacterial buildup and harmful odors and gases.

Proper grease interceptor design, sizing and maintenance — backed by a well-trained kitchen staff practicing best kitchen management practices — will free up the restaurant owner, management and staff to deliver the best client experience; and, it's good for the environment. — *Sivano Ferrazzo*

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