HOW THE RIGHT GREASE INTERCEPTOR CAN HELP YOU

SAVE SPACE IN A COMMERCIAL KITCHEN

BIG DIPPER®

Trapzilla®

INTRODUCTION:
THE UNCONVENTIONAL KITCHEN

Many engineers and architects are all too familiar with this scenario: You've been tasked with designing a commercial kitchen that meets all municipal codes, including keeping FOG out of the sewage system, but you just don't have enough space.

You know all commercial kitchens are required to have grease interceptors to capture wastewater from pot washing sinks and other kitchen appliances that produce greasy effluent. You may also know that traditional grease interceptors can take up a lot of space, inside or outside.

So, what do you do when the kitchen you are designing is in an unconventional, limiting space?

It could be located:

- On land that has no outdoor space for a traditional buried grease interceptor
- Upstairs and far from a drainage system
- In a historic building that needs new plumbing to accommodate the kitchen and associated water treatment system
- In a tiny, cramped space with barely enough room for a sink, let alone a grease interceptor

How do you ensure the kitchen you're designing makes the client happy, but also meets the plumbing code and wastewater regulations?

Part of the answer lies in the type of grease interceptor you choose for your commercial kitchen design. Out of all the grease interceptors in today's market, most models can be broken down into one of three categories:

- Traditional, passive underground models
- Alternative unibody interceptors
- Point-source interceptors — automatic or passive

The trick is finding the right one for your particular tight space.

THE LIMITED-LAND SOLUTION

Perhaps the commercial kitchen you are designing needs a high-volume grease interceptor, and you know these are typically buried underground. But when you look at the building site plan, there seems to be something missing – land!

And traditional, concrete grease interceptors need land.

For more than 100 years, municipalities have relied on passive grease interceptors buried underground to keep FOG out of the wastewater system. These traditional models can hold hundreds of gallons of kitchen effluent and rely on gravity to drain wastewater into an inlet pipe and down into the interceptor.

Once inside the interceptor, grease from the wastewater floats on top and gradually forms a thick "mat." Treated water drains through an outlet pipe and into the municipal sewage system, while grease remains trapped, building up over time.

These interceptors, usually made out of concrete, may need to be replaced after 10 or 15 years due to degradation.

For commercial kitchens that are located on large enough plots of land, it may not be a problem to dig a trench 5-8 feet deep outside the building, install a concrete grease interceptor and plumb it to the kitchen.

But many kitchens don't have the space.

Just Not Enough

Here are just a few instances where concrete, in-ground grease interceptors won't work:

- A commercial kitchen might be needed for a house in a historic district so it can be rented out for weddings. Digging a large trench in the yard for a concrete grease interceptor and connecting a drainage pipe to the kitchen may not be feasible, depending historical restrictions, the age of the plumbing and other site considerations.
- In large cities, land costs are steep, so architects and kitchen planners often build vertically to make the most of every inch. A pizzeria in New York City may have to squeeze between two storefronts. Such kitchens don't have the land for a buried grease interceptor.
- A restaurant at the top of an office building would have a hard time plumbing a separate line from the kitchen to an in-ground grease interceptor!

Alternative Unibody Interceptors

Commercial kitchens that produce high volumes of grease but don't have the outdoor space for a traditional in-ground grease interceptor can still be code-compliant, thanks to innovative, alternative interceptor designs.

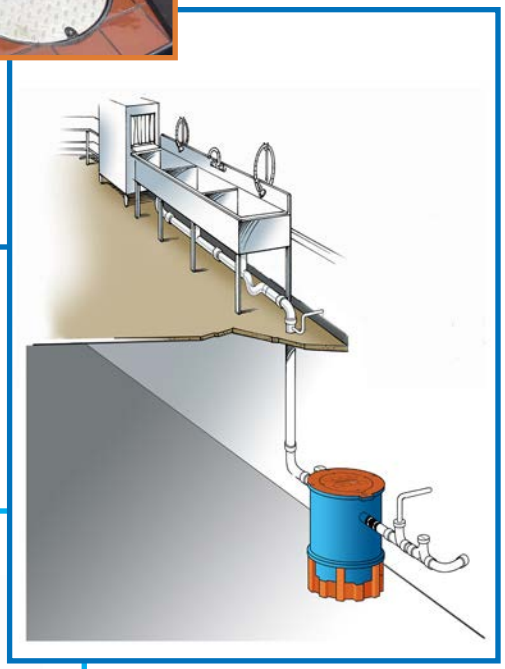
Relatively new unibody grease interceptors, such as Thermaco's Trapzilla series, are smaller and more efficient than their concrete counterparts. They don't have to be buried underground and are designed to treat 35 to 75 gallons per minute of kitchen drain water. They can be installed indoors with minimal plumbing in a number of different locations:

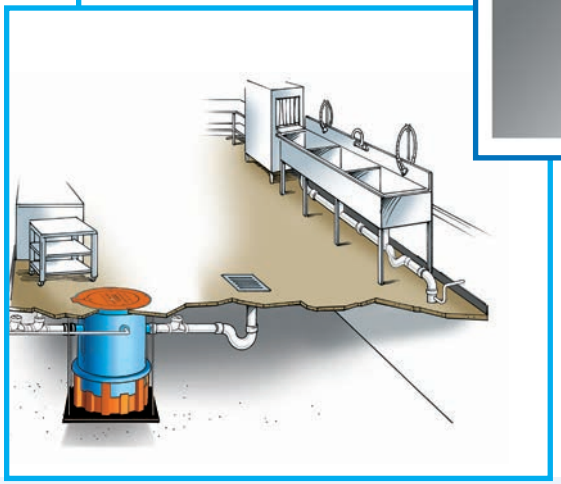
- **In the floor of the kitchen**
- **On the floor in a basement or mechanical room**
- **Between floors and ceiling in an interstitial space**

Such alternative models are lightweight and can be carried by two people and maneuvered into position easily.

For businesses that prefer to have their grease interceptors underground, unibody grease interceptors can also be buried, but require less land space than traditional concrete interceptors. For example, Trapzilla models have been installed in stairway landings behind restaurants and in small green spaces outside buildings.

If replacing a traditional grease interceptor outdoors, you may have the option of placing a smaller, alternative model inside the existing concrete structure. This saves your client time and money digging out the old concrete structure and means a new hole doesn't have to be dug — preserving the limited land area.





BIG DIPpER®

Point-source Grease Interceptors

Another choice for kitchens that simply don't have the option of installing a larger interceptor – either outside or inside – is the point-source grease interceptor. These smaller units hold less FOG, but can be set up under multiple sources of wastewater.

Point-source interceptors are usually located on the floor, under sinks or near any appliance that produces wastewater containing grease, such as commercial rotisserie ovens. The interceptors are plumbed to the water line so that kitchen effluent drains into them, where the fats, oil and grease can be separated.

THERE ARE TWO TYPES OF POINT-SOURCE INTERCEPTORS TO CONSIDER.

1 In **passive interceptors**, grease and oil float to the top, and the treated water flows out into the building's drain lines. Passive interceptors must be cleaned out regularly. Usually professional service companies do this, which means the restaurant owner incurs higher ongoing costs. Other times it may be done by an employee, but it's an unpleasant task that many kitchen workers are likely to shirk. That means the restaurant runs the risk of fines for noncompliance or the possibility of the grease interceptor filling and backing up, creating a costly, messy plumbing problem.

2 In **automatic models**, like Thermaco's Big Dipper, a skimming wheel transfers floating fats and oils to the removable grease container, which can easily be detached by kitchen staff and the grease disposed of in the trash. It's simple, easy and no trucks, contractors or special equipment is required.

THE TINY-KITCHEN SOLUTION

What if having enough outdoor space is not the problem? Perhaps you're designing a commercial kitchen to fit in a 500-square-foot area. You know the kitchen won't produce high-volumes of FOG, but there must still be room for an interceptor – it's required by law, after all. But practically every space is already accounted for by the basics:

- Dishwashing area including associated plumbing
- Dry storage for nonperishable ingredients
- Food preparation equipment storage
- Refrigerator and freezer units
- Stove, hood, and ventilation system
- Food preparation areas
- Traffic flow – space for kitchen staff to move around efficiently

Figuring out where to locate a grease interceptor in such tight quarters can be a problem. But tiny kitchen issues don't have to derail your design project. ***Point-source grease removal devices are a good solution for kitchens where floor space is limited.***

Smaller Grease Interceptors

Commercial kitchens producing less than 35 gallons per minute of drain water may be able to avoid using traditional concrete grease interceptors that must be buried underground. Automatic point-source grease interceptors, such as Big Dipper automatic grease interceptors, are designed for these kinds of indoor uses.

Automatic point-source interceptors can:

- Fit almost anywhere, including sitting unobtrusively on the floor underneath a sink.
- Be attached to a single fixture, such as a three-compartment sink, or plumbed to a wastewater line that serves multiple fixtures.
- Be emptied and cleaned easily and quickly by staff, no pump trucks required.
- Protect internal plumbing by trapping grease at its source.

Kitchen staff simply empty the grease container when it gets full.

Grease is either disposed of in the landfill, or sold for a profit to recyclers producing biodiesel — another bonus for your client.

Non-traditional Grease Interceptors

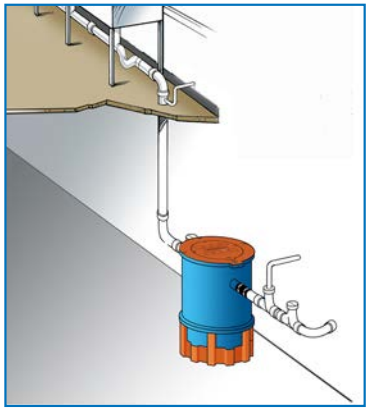
But maybe the kitchen you are designing will produce larger amounts of FOG than can be handled by point source grease interceptors. And minimal floor space means that staff can't easily access the device to clean and empty it.

Alternative interceptor models can still provide a solution. Remember that many lightweight, unibody interceptors such as Trapzilla hydromechanical grease interceptors:

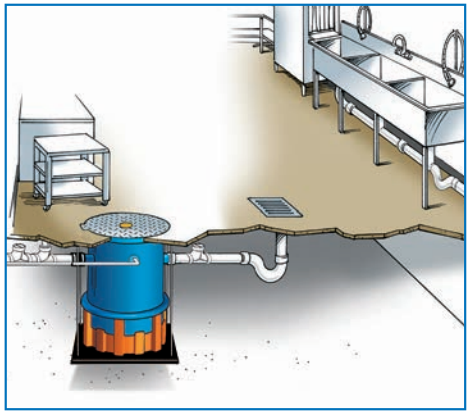
- Can be embedded in the floor of the kitchen.
- Can sit on the floor in a basement or mechanical room.
- Can be positioned between floors and ceiling in an interstitial space.
- Are smaller and require less space to install and maintain than traditional grease interceptors.

So, even if the kitchen itself allows no room for a grease interceptor and there's no room outside to bury one, you still have options.

Innovative grease interceptors with smaller footprints leave commercial kitchen designers with more room for the perfect kitchen that will delight their clients.



TZ-600-SSA installed
Indoors & Above-Ground



TZ-600 installed Indoors & Hanging Between Floors using HA-400/600. Shows optional FTCA-36 Aluminum Cover with 4" Brass Cleanout

GETTING THE NUMBERS RIGHT

Space is a big factor in choosing the best grease interceptor for the unconventional kitchen you are designing. So is how much grease the kitchen will produce, because you must ensure that your client will comply with municipal pretreatment codes.

Study the restaurant's menu to see which foods are high grease-producers. You know fried and fatty foods will produce more FOG than cold sandwiches. **Seasonal changes may also affect grease output, with colder months possibly requiring more hot meals, such as roast chicken.** In the summer, customers may prefer more salads. Bottom line? Design for the highest expected grease output throughout the year.

Hot and Cold Problems

Most traditional in-ground grease interceptors can hold 750 or 1,000 gallons of total liquid volume. Municipal regulations usually require pump outs long before they fill that volume. Their design leads to losses in separation and retention efficiency.

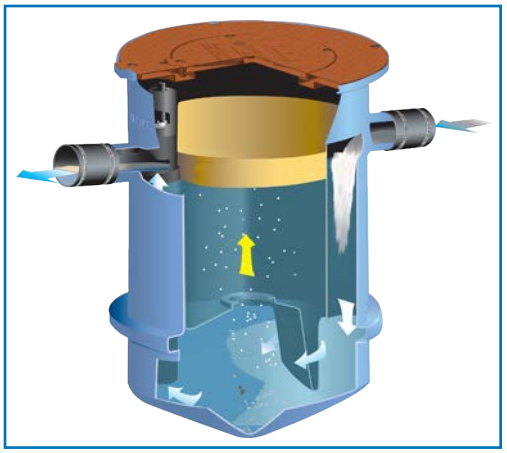
Thermal inversion often occurs when traditional interceptors reach 25 percent capacity. Trapped water cools and sinks, pulling the bottom layer of the grease "mat" down with it. Grease can escape through the outlet pipe and into the sewer system. Because of this, **traditional interceptors lose efficiency well before they're full and must be pumped out to avoid grease leaks.**

Alternative hydromechanical, unibody interceptors like Trapzilla have horizontal baffles that counteract thermal inversion and keep trapped grease and water separate. They can store much higher amounts of grease and solids — in some cases up to 90% of their volume — before needing to be emptied.

For example, a Trapzilla model with a 95-gallon liquid capacity can hold 86.6 gallons of grease before needing to be emptied. A traditional concrete interceptor may have 1,000 gallons of volume. but it can only hold 250 gallons of grease -- just 25% of its capacity. Knowing how much grease an interceptor will actually hold — not just its total volume — makes it easier to decide which model is best for your client.

Corners also affect grease capacity. Grease and solid waste can build up in the corners of traditional concrete or metal interceptors and are difficult to remove — especially if the interceptor is buried deeply. This can reduce the efficiency of the overall unit and increase how often it must be pumped out. It can also increase the rate of degradation and shorten the interceptor's life span.

Alternative designs, such as Trapzilla's, have curved components and no corners or other hiding places where bacteria and waste can accumulate.



RESOURCES

Grease interceptor sizing tool
http://thermaco.com/sizing

Information about sizing a kitchen:
http://yourbusiness.azcentral.com/national-average-size-restaurant-kitchen-29446.html

Calculating grease interceptor requirements:
http://thermaco.com/blog/how-to-size-grease-trap-for-commercial-kitchen/

Safe kitchen design:
http://www.shfm-online.org/CMS/Resources/bok/facilities/hospsafedesigncomkitchen.pdf

Have a particularly tough kitchen design problem? Call Thermaco at 800-633-4204. Our staff will be happy to help you figure out what grease interceptor will take up the least amount of space and keep your client's kitchen compliant with local wastewater regulations.