

Case Study:

Grease Trap Test

11/01/10

Location;

Waffle House

Pensacola Florida

11/01/10

Test Conducted by:

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On November 10, 2010, 4 Grease interceptor tests were conducted at 4 separate Waffle House Restaurant's located in Pensacola Florida. These tests were conducted to determine the effectiveness of grease removal and digestion by installing the DO2E Grease Digester and traditional chemical additives. The Little John Grease Digester was installed in test sites 1 and 2 and the patented formula FC 100 was applied to test locations 3 and 4.

Waffle House Restaurants have a scheduled pump out of their grease traps every 60 days. The average cost to pump out a small 1250 gal. Grease trap is \$350.

Two of the test used Chemical grease dispersant provided by FOG Free Technologies and the remaining 2 locations used NO chemical Additives.

These tests were conducted to determine the following:

- 1) Grease Removal
- 2) Grease build up in the discharge lines
- 3) Cause and Effects of residual chemicals
- 4) Reformation of Grease in the Traps
- 5) Grease build up in downstream lift station
- 6) Effectiveness of chemical additives

There were 2 - 1hp Little John Grease digesters placed in each of the first two grease traps. One was placed in the primary chamber and the other placed in the secondary / discharge chamber leading to the lift station.

All 4 lift stations were cleaned 24 hours prior to testing using the Little John Digester designed specifically for lift stations. 100% of all Fats, Oils, & Grease were removed from each station prior to testing.

Test Results:

- 1) Test 1 & 2 were conducted using the 1 hp Little John Grease Digester only. No chemicals were added.

At test site number One, the grease digesters (both from the primary & secondary chambers) was removed after 8 hours of continuous operation and the other unit at test site number 2 remained in operation for 7 continuous days.

Within 2 hours of installation of the Digesters at both locations, all fats, oils, grease, and solids in the primary and secondary chambers were immediately emulsified.

The final test results were similar in nature, with the exception of the bacterial growth found in the 2nd grease trap were significantly higher. This is believed to be the direct result of continuous oxygen injection into the primary chamber and secondary chambers, reduction by oxidation of harsh cleaning chemicals, and large solids and grease particles broken down into much smaller particles, creating a more conducive environment for the bacteria to thrive in.

This is a direct result of a three stage digestion processes created by the Little John Grease Digester, all happening at the same time.

The Little John Grease Digester operates on the principles of Contact Time vs. Retention Time, utilizing existing stratified chemicals continuously discarded to immediately break down Fog and concentrated solids. Traditional chemical and bacterial treatments rely on, "RETENTION TIME".

Contact time, Super Accelerates the digestion process!

The DO2E Digestion Processes are: Mechanical, Biological & Chemical

- 1) ***Mechanical digestion; A Passive system with "No" moving parts. The Little John Grease Digester breaks down the solids into tiny particles by continuously driving these solids against stationary ridges or blades at 15 to 20 feet per second. These now tiny particles are much easier for the bacteria to consume, allowing them to be metabolized at a much faster rate.***
- 2) ***Biological Digestion of fats, oils, grease and other concentrated solids; the Little John Digesters operates with a continuous flow of low pressure high volume warm fresh air. The digester injects a continuous flow of warm oxygen into the septic tank or lift station, creating a constant and stable environment for bacteria to grow and reproduce.***
- 3) ***Chemical Digestion; the Little John Grease Digester is designed to operate without the use of chemical additives; we accomplish the chemical digestion process by continuously mixing the existing cleaning chemicals that are continuously discarded every 6 to 8 hours. (Soaps, dish detergents, degreasers, floor strippers, and drain openers to mention a***

few). Normally the presents of these harsh chemicals either kills, or prevents the essential bacteria from growing and reproducing. Due to the specific gravity of most cleaning chemicals being heavier than water, the chemicals are found to stratify and settle on the bottom of the grease trap or lift station while the FOG rises to the surface. The Little John Grease Digester continuously blends these chemicals with the FOG, further breaking them down until the chemicals are eventually oxidized and become inert. The “Little John Grease Digester” actually Super Energizes the bacteria with a continuous charge of warm oxygen, increasing their resistance to the harsh chemicals. This process allows us utilized the chemicals to their fullest to break down the heavy fats, oils, and grease while reducing the continuous exposure of these harsh chemicals to the bacteria.

These are the Critical and key components used to accelerate the break down fats, oil, grease and solids found in grease traps, lift stations and commercial and residential septic tanks.

- 2) A scope was placed in all 4 inch discharge lines leading from the secondary chamber in the grease trap to lift station which pumped to the local municipal gravity line.**

Upon initial inspection, there was significant grease build up in the all lines.

The second grease trap location where the Digester was allowed to run continuously for 7 days resulted in significant reduction in grease build up in the 4 inch discharge line while test site 1 where the digester ran for only 8 hours showed little if any reduction in line build up.

- 3) Initial test results showed extensive chemical build up in both the primary and secondary chambers in all 4 test locations.**

Residual chemicals found in tests site 1 where the Little John Grease Digesters was installed and operated for 8 hours, were reduced by 90%. Test site number 2 where the digester was allowed to operate continuously for 7 days, the residual chemicals were non detectable.

- 4) In test site number 1, the grease build was starting to reoccur on the 14th day and by the 30th day; a light film covered the entire grease trap in both the primary and secondary chambers. In test site number 2, there was no reoccurrence of grease by the 14th day. Grease did not start to reappear until the 30th day and by the 45th day; there was a thin film across the primary chamber only. The secondary chamber remained clear.**

- 5) After 45 days, there was no reoccurrence of grease or solids build up in either of the 2 lift stations leading to the municipal gravity lines. Prior to testing, these stations were pumped and cleaned every 60 to 90 days. The only water source feeding these stations are the grease traps, all other waste water produced was gravity fed directly to the local municipal lines.**

- 6) There were no Chemical additives applied to test sites 1 and 2.**

FOG Free Test results:

A chemical additive, FC 100 provided by FOG Free Technologies was applied to test sites number 3 and 4. FC 100 is patented grease dispersant with added bacterial agents. It is designed to break down grease into smaller consumable particles and enhance the bacterial count in the grease trap or lift station.

At test site number 3, the chemical solution was administered by pouring 5 gallons of FC 100 into the grease trap at one time. No agitation was administered.

At test site number 4, 1 gallon of FC 100 was added to the grease trap every week for 4 weeks. No agitation was administered.

Results:

- 1) After 45 days, 25% Grease reduction in both stations was evident*
- 2) Grease build up in the 4 inch discharge lines was unaffected*
- 3) Residual Chemicals were still in concentrated form*
- 4) NA*
- 5) Grease build up had reoccurred inside the lift station*
- 6) The FC 100 chemical additive appeared to be working as indicated. The effectiveness of the FC 100 requires a longer retention time and does not require the use of agitation. There was a significant increase in the microbial bacteria growth in both grease traps.*

****After 45 days, we installed the Little John Grease Digester into test site number 4. Within 2 hours, all grease was removed. The Digester was allowed to operate for 7 days. 30 days later an inspection was completed on the grease trap, discharge lines and the adjoining lift station. There was no evidence of grease accumulation in the grease trap, lift station or the discharge lines. A final inspection was conducted 60 days later and found minimal grease build up in the grease trap, lift station and discharge lines.*

Conclusion:

FC 100 combined with the Little John Grease Digester together provided optimum treatment for the grease traps, lift station and discharge lines.