



PAN AMERICA
ENVIRONMENTAL, INC.

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ENGINEERING SPECIFICATION

GTI Series Steel Grease Interceptor

Engineering Specification

GET A QUOTE

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SPEAK TO AN ENGINEER

262.716.0105

SECTION 1.0 INTERCEPTOR SYSTEM

1.01 Configuration Details

Interceptor flow rating:	As required by the application, intermittent flow.
Flow direction:	As required by installation.
Approx. dimensions:	16'-4" long, X 4'-4" wide X 6'-0" high.
Tank construction:	304 SS, 10 ga.
Cover qty:	4
Static water volume:	1650 gallons
Grease containment:	1,200 lbs.
Disc skimmer qty:	2-4
Wiper skimmer:	1
Immersion heater qty:	4
Heater rating:	1500 W, each
Inlet diffusion box:	1
Inlet:	8" stub pipe connection via Fernco or other connection
Outlet:	8" stub pipe connection via Fernco or other connection
Sludge hopper:	3" FNPT (two provided, one at each end of tank)
Vent:	4" FNPT
Elevated tank:	To allow use of 55 gallon drums or other container for collection

1.01.1 Estimated FOG Volume

Worse case scenario:

- 640 gallons per dump (1 dump occurs every 3 hours)

$$185,000 \text{ mg/L FOG} \times .001 = 185\text{g}$$

$$\text{FOG weight per gallon} = 7.22 \text{ lbs}$$

- $640 \times 3.8 \times 185\text{g} = 449,920\text{g} \times 0.0022046 = 991.89 \text{ lbs} / 7.22 = 137.38 \text{ gallons of FOG}$

Tank operating details

Tank volume:	1666 Gallons approx.
Flow rate:	600 GPM max, intermittent
Retention time:	2.78 Minutes
Retention @ 1.5 minutes flow (427 GPM):	3.90 Minutes
Retention @ 2 minutes flow (320 GPM):	5.21 Minutes
Separation chamber volume/inch of depth:	33.86 Gallons per inch
Dump volume oil layer thickness:	$138/33.86 = 4.08$ " oil layer

The actual flow rate is unknown due to factors such as dumping mechanism, piping diameter, pipe length, elbows, velocity, length of time of the dumping event from start to finish and other unknown factors relative to the plant operation.

1.02 Performance

The GTI grease interceptor design is based on gravity separation of free fats, oils, and grease (FOG) as well as solids/food particulates and pieces originating with wastewater from institutional and commercial kitchens. The system design automatically removes grease and deposits it in an external container, which allows remote disposal and recycling with other grease by rendering companies. The design will allow recovery of nearly 100% of free-floating FOG discharged from the facility kitchen with effluent levels at or below 100ppm per EPA guidance document. System will not remove emulsified FOG unless those emulsions break prior to or within the tank.

SECTION 2.0 INTERCEPTOR DESIGN

2.01 Tank Design

Interceptor will be rectangular with removable and vapor-tight, sectional stainless steel covers, gaskets and quick release latches for inspection and maintenance. Legs with anchor bolt holes are provided.

2.02 Pre-Designed

The interceptor will be a pre-engineered, pre-assembled system designed for intermittent flows arriving as a ready to install design.

2.03 Non-Clog Inlet

The inlet connection without flanged or threaded connection is provided prior to screen basket to prevent inlet lines from clogging with grease and solids buildup.

2.04 Pre-Settling Chamber and Screening

A pre-settling chamber is provided at the inlet end of the tank with removable stainless steel screen basket(s) to capture food scraps and solids. Basket volume will be 1-2 Ft³. Screen basket will be fully removable for proper dispensing of collected solids.

2.05 Velocity Baffle

A stationary, velocity reducing under flow baffle is provided at the inlet chamber to reduce incoming flow velocity, turbulence and redistribute the flow across the tank cross sectional area in order to reduce cross sectional velocity and isolate the inlet turbulence from the grease separation section.

2.06 Grease Separation Section

A grease separation and storage chamber is provided and includes a baffled effluent outlet box that isolates effluent from the floating FOG by forcing the system flow path to enter this outlet at a subsurface location.

2.07 Water Weir Plate

An adjustable water weir plate is provided at the effluent outlet. This weir plate is vertically adjustable and will determine the operating water level in the separation chamber.

2.08 Sludge Hopper

A V-hopper shaped sludge collection hopper is provided the full length of the tank to capture settling solids. Each end of the hopper is provided with a 3" FNPT outlet, which can be valved or plugged as installation and source wastewater requires.

2.09 Immersion Heaters

Immersion heaters are provided to facilitate heating the water and will consist of:

- Thermostatic control via 316 SS probe and thermowell located in the separation chamber.
- Four Immersion heaters rated at 1500 watts each to heat the water in the interceptor to an average 110° F +/- to maintain greases in a liquid state to allow skimming.

2.10 Grease Skimmers

A multiple disc or belt grease skimming system is provided throughout the separation chamber to capture free floating liquid grease/oils and will consist of:

- Two to four skimmers are provided.
- Gearbox driven, direct drive disc skimmers for automatic removal and decant of liquid FOG. Heavy duty gearbox with TEFC motor.
- Skimmers will have 12" oleophilic and hydrophobic, polypropylene or aluminum skimming wheels or belt to operate at a minimum skimming rate of 20 lbs./hour.
- Removable stainless steel scraper bar(s) with two HDPE scraper blades with stainless steel nuts, bolts, and washers.
- Skimmed FOG is directed to outlet pipe for discharge to an external 55 gallon drum.
- Stainless steel disc shaft(s) and bracket(s) with two (2) bearings per shaft.
- FOG collection drums by others.

2.11 Rotary Wiper Skimmer

A Rotary Wiper Skimmer is provided to remove high liquid oil volumes per these features:

- 304 SS wiper shaft assembly either helical or straight with neoprene or other rubber wipers.
- 304 SS beach plate located at the effluent end of the tank with integrated collection chamber and gravity outlet on sidewall of tank.

- Skimmer end and drive end shafts provided with UHMW bearings.
- Direct drive gearmotor drive with inverter duty TEFC motor located on outside of tank
- Controls with variable speed in MCP

2.12 Access Platform (NOT PROVIDED WITH THIS QUOTE, CONTACT US FOR QUOTE IF REQUIRED)

A steel constructed walkway or local platform is provided on one side of the tank the full length of the tank. Construction shall be A36 carbon steel with external coating in Safety Yellow. Handrails, ladder or stair access, decking, kick plates and self-closing access safety gate are provided. Walkway is supported by legs. Design will follow OSHA requirements.

2.13 High Grease Drum Monitor (OPTIONAL, NOT PROVIDED WITH THIS QUOTE)

A high grease drum monitoring system is provided and consists of the following:

- Two (2) high level sensors for two drum monitoring
- High level alarm lights on MCP door to alert operator to condition

2.14 MCP

The sub systems provided with this quotation will include controls that will be integrated into one, centralized Master Control Panel (MCP). The MCP will provide the following controls:

- Skimmer drive motor manual/automatic on/off with HOA switch based on adjustable timers
- Rotary Wiper Skimmer drive motor VFD control with speed knob on door
- Heater system manual/auto on/off with HOA switch for manual and automatic on/off based on temperature controller.
- Door mounted, programmable temperature controller with LED display
- Timers for skimmer/heater on and off time
- Feed pump HOA controls
- Power disconnect provided
- LED lights, metallic 2 & 3 position switches, all 22 mm.

MCP power required: 480V/3pH/60Hz

Control power: 115V/1pH/60 Hz.

Enclosure: NEMA 4, steel construction, ANSI 61 grey enamel coating.

Fusing: Circuit breakers

Disconnect: Heavy duty isolating breaker provided with 230/460V installations

Designed per: UL508, NEC

Conduit: Liquid tight

Wire: THHN

Logic: Relay, non-PLC

- Alternate NEMA4X, 304 SS enclosure can be provided, see itemized cost page 1.

2.15 Feed Pump

A feed pump system is included to transfer flow from the intermediate holding tank and consists of the following:

- Boerger lobe pump ships loose for installation near holding tank (pump purchased by the prepared foods manufacturer)
- Pump performance: 50 GPM @ 50' TDH
- Controls in the MCP
- (2) level switches for installation in customer's holding tank, ships loose for installation by customer.

2.16 Holding Tank Recommendations

These comments are for customer to consider when providing the holding tank.

- Design tank close to largest dump volume, maybe 5-10% over the 640 gallon volume or other volume if plant expansion could occur.
- Provide one or two 2" FNPT half coupling in tank for retrofit of a 2" plug style immersion heater for future use.
- Pump suction fitting per feed pump suction requirement.
- Level switch cable passage fitting top of straight sidewall, 3/4" FNPT full coupling.
- Provide top mount bracket for retrofit of a mixer for future use.

It may be necessary to install an immersion heater if timing and outside temperatures can change water contents temperature sufficiently to coagulate or solidify FOG.

It may be necessary to add a mixer if FOG ever needs to be resuspended or coagulated masses need to be broken up or other circumstances require mixing.

2.17 Field Technician

A Field Technician can be provided per itemized cost page 1. per Diem is \$1150.00 + expenses.

Itemized cost provides:

- (1) Field Technician for 1 day on site
- Air travel
- Local transport
- Room & board
- per Diem

SECTION 3.0 SUBMITTAL PACKAGE

3.01 Submittal Approval Package

Upon receiving an order Pan America Environmental will engineer and produce a Submittal Approval Package, which allows you the customer to review and change or keep aspects of the system detailed in this quote. The submittal package provides the following at a minimum:

- General arrangement drawings, 2D, 3D, plan, end, sectional, detail and other views
- Hydraulic profile
- Electrical schematics
- Control panel physical layout
- Process/control narrative (where project size is applicable)
- Component datasheets
- Component cutsheets

Options

- P&ID
- Structural, seismic, wind load, lifting lug review, anchorage and/or other PE review calculations
- Design sizing PE calculations and/or calculations of any other types
- Testing review and implementation during fabrication and assembly, i.e. NDT, NDE, radiographic, x-ray, ultrasonic, magnetic particle exam, others
- Piping testing per desired standards, i.e. ASME B31.1 power piping, ASME B31.3 process piping
- Rigging and lifting guide, drawings and/or procedures and methods
- WPS, ITP, PQR, PMI, others
- Mill certificates

Revisions

The submittal package is provided with a maximum of Two (2) revisions of 10% maximum each. This quote does not include open ended, continuous revisions until approval is given. This submittal package does not allow: R&D review and design/redesign projects, pre-submittal before or after order placement to attain approval from the end user before order is placed or honored by Buyer, engineers/consultants and/or other parties involved with this project.

Engineering Only

The quotation does not provide “Engineering Only”. The engineering is part of the system cost and is provided to give direction and final understanding as to what is being provided to you in the system design. The quoted and submitted system is a PAE product and PAE will not produce drawings for you to build, license, bid out or produce and/or market as your product for your or any other entities use.

Specifying a GTI Series Steel Grease Interceptor for your project?

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