Select between an enclosure-based system or a skid-based system. Consult factory on the correct micron level for your application. Please note the low-cost controls option at the end of this specification.

1. FUEL FILTRATION – ENCLOSURE STYLE
2. Provide a fuel oil maintenance system that will automatically circulate and filter XXX gph of diesel fuel to obtain a final effluent particulate of less than YY microns and water removal rated to ZZ percent. The system shall be completely piped with minimal field connections required. The system will be fully automatic with programmable settings to allow the operator to select the start times, frequency, and duration.
3. Major system components
4. Filtration pump shall be an industrial duty gear pump with mechanical seal. Packing type shaft seals are not allowed. The pump shall be built with cast iron housing and steel gears; bronze, brass or aluminum housings are not allowed. Pump and motor shall be flexibly coupled and permanently aligned. All piping shall be steel piping suitable for fuel oil (diesel).
5. Enclosure shall be steel with leak proof reservoir basin to contain leakage or spillage. The basin shall be provided with a ½ drain connection with drain plug.
6. Simplex strainer shall be mounted upstream of the circulation pump. The strainer housing shall be cast iron with a stainless steel, 1/16” mesh basket.
7. Particulate filter shall be a spin-on type filter with a removable XX-micron filter; a YY-micron start-up filter element shall be included.

Please consult the factory on the required micron levels. Filter technology is changing as well are the requirements of the engine manufacturers.

1. Water coalescing and separation filter with continuous water purging to waste holding container. The water separator shall be rated at 98% efficiency to a level of 10 microns at full flow.
2. Clogged strainer detector switch and gauge.
3. Clogged particulate filter switch and gauge.
4. Water coalescer filter detector switch and gauge.
5. Pressure gages shall be 2.5” stainless steel liquid filled. There shall 2 gages, one 30” Hg – 30psi compound gage for the pump suction and one 0-50psi for the pump discharge.
6. Ventilated enclosure shall contain the entire filtration set with the exception of the chemical injection module.
7. Waste holding tank shall be stainless steel with 5-gallon storage, high level alarm switch and capped drain valve.
8. Continuous wastewater purging system factory piped to waste holding tank. Solenoid valve is used to purge the water from the coalescing filter to the storage tank.
9. Additive injection to include 30-gallon polycarbonate storage tank and diaphragm pump. The pump shall be manufactured of 316 stainless steel with drop tube and PVC foot valve.
10. A ship-loose, installed by others, control, interface and communication shall be through the UL 508A Programmable Logic Controller (PLC) control panel. The PLC shall be non-proprietary and field expandable. The local interface (HMI) shall be a touch screen. This touch screen shall permit the operator to easily configure the fuel maintenance system and to set or change parameters within the PLC such as start day and time, run duration in automatic as well as running the system in manual without opening the NEMA 4 enclosure. Remote interface and communication is with Modbus.
11. PLC
12. Up to 1280 local addresses
13. Minimum 15K memory
14. 2 comm ports, 1 dedicated to touchscreen
15. Real time clock/calendar
16. Touchscreen
17. 10” diagonal color TFT, LCD display, 64K colors, 640 x 480-pixel resolution
18. 300 NITS display brightness, user replaceable backlight
19. USB port for programming and download
20. Ethernet 10/100 base-T port for program/download & PLC communications
21. Remote Modbus Communication
22. Compact flash card slot
23. 10 Mbyte memory
24. Motor Controller Module NEMA 4 rated metal enclosure.
25. Service disconnect for the fuel circulation pump motor.
26. Hand-Off-Auto pump selector switch.
27. Pump status and alarm lamps.
28. Terminal block for all internal and field wiring connections.
29. Control power transformer (if needed).
30. Fuel Quality Testing Kit shall be provided by maintenance system provider to allow the owner/operator to draw a proper sample from storage tank and ship to lab.
31. Thief Sampler – 16oz stainless steel
32. Sounding tape – 10 m carbon steel
33. Sample test kit & shipper
34. Start-up and training shall be performed by a factory trained technician
35. FUEL FILTRATION – SKID STYLE

Typically skid style units are used when the flow rate through the filters goes above 1500 gph or if there are other special requirements like chemical injections or large waste-water storage requirements.

1. Provide a fuel oil maintenance system that will automatically circulate and filter XXX gph of diesel fuel to obtain a final effluent particulate of less than YY microns and water removal rated to ZZ percent. The system shall be completely piped and wired with minimal field connections required. The system will be fully automatic with programmable settings to allow the operator to select the start times, frequency, and duration.
2. Major system components
3. Filtration pump shall be an industrial duty gear pump with mechanical seal. Packing type shaft seals are not allowed. The pump shall be built with cast iron housing and steel gears, bronze, brass or aluminum housings are not allowed. Pump and motor shall be flexibly coupled and permanently aligned. All piping shall be steel piping suitable for fuel oil (diesel).
4. System skid base shall be provided with 3” rupture basin to contain any leakage or spillage. The basin shall be provided with a ½ drain connection with drain plug.
5. Simplex strainer shall be mounted upstream of the circulation pump. The strainer housing shall be cast iron with a stainless steel, 1/16” mesh basket.
6. Particulate filter shall be a spin-on type filter with a removable XX-micron filter, a YY micron start-up filter element shall be included.
7. Water coalescing and separation filter with continuous water purging to waste holding container. The water separator shall be rated at 98% efficiency to a level of 10 microns at full flow.

Consult the factory on the micro requirements and the availability of filters at these micron levels.

1. Clogged strainer detector switch and gauge.
2. Clogged particulate filter switch and gauge.
3. Coalesce filter detector switch and gauge.
4. Pressure gages shall be 4” stainless steel liquid filled. There shall 2 gages, one 30” Hg – 30psi compound gage for the pump suction and one 0-50psi for the pump discharge.
5. Waste holding tank shall be stainless steel base with XXX-gallon storage, high level alarm switch, and waste removal hand pump. It shall be installed on common skid with filtration system.

Larger waste holding tanks up to 100+gallon storage is available; on larger units a hand pump is usually included to allow easy transfer to a barrel to allow removal from facility.

1. Continuous wastewater purging system factory piped to waste holding tank.
2. Additive injection to include 30 polycarbonate storage tank and diaphragm pump rated. The pump shall be manufactured of 316 stainless steel with drop tube and PVC foot valve. System skid base shall be sized to accommodate storage capacity of additive tank and serve as rupture basin.
3. Control, interface and communication shall be through the UL 508 Programmable Logic Controller (PLC) control panel. The PLC shall be non-proprietary and field expandable. The local interface (HMI) shall be a touch screen. This touch screen shall permit the operator to easily configure the fuel maintenance system and to set or change parameters within the PLC such as start day and time, run duration in automatic as well as running the system in manual without opening the NEMA 4 enclosure. Remote interface and communication is with Modbus.
4. To protect against arc flash hazard during start-up, normal service, or troubleshooting that requires the door to opened while the panel is energized, the logic controller panel shall not house any power over 49 volts.
5. PLC
6. Up to 1280 local addresses
7. Minimum 15K memory
8. 2 comm ports, 1 dedicated to touchscreen
9. Real time clock/calendar
10. Touchscreen
11. 10” diagonal color TFT, LCD display, 64K colors, 640 x 480-pixel resolution
12. 300 NITS display brightness, user replaceable backlight
13. 1024 x 1024 analog resistive touchscreen
14. USB port for programming and download
15. Ethernet 10/100 base-T port for program/download & PLC communications
16. Remote internet access requiring no additional software
17. Compact flash card slot
18. 10 Mbyte memory
19. Motor Controller Module – A fully functioning, UL 508 listed motor control panel shall be provided and permanently mounted on fuel maintenance system. This panel shall contain the following components;
20. NEMA 4 rated metal enclosure.
21. Service disconnect for the fuel circulation pump motor.
22. Hand-Off-Auto pump selector switch.
23. Pump status and alarm lamps.
24. Terminal block for all internal and field wiring connections.
25. Control power transformer (if needed).
26. Start-up and training shall be performed by a factory trained technician
27. Control Sequence:
28. Manual Operation:
29. To run the filtration system at any time the operator will first put the filtration system in manual operation by pressing the “Manual” button on the touch screen. To go back to automatic timed operation the operator will select the “Automatic” button on the touch screen. Next the operator will press the “RUN” button on the touch screen which will start the system pump to run. The system will run as long as the system is in manual and run modes. The operator can stop the filtration system at any time by pressing the “Stop button on the touch screen. The system will automatically stop after 24 hours of run time. If any alarm point is detected such as a leak, clog or no flow type of alarm they system will stop. It can be restarted by fixing the problem and pressing the reset button on the touch screen.
30. If several main tanks are to be cleaned by this filtration system the operator will have to select the tank to be cleaned before placing the unit in run mode and the end switches for all tank valves will need to be in their correct position.
31. Automatic Operation:
32. To run the filtration system in automatic it will need to be placed in automatic mode at the touch screen. Before going into automatic mode, a “filtration” schedule will need to be entered into the system via the touch screen.
33. The filtration schedule is set by selecting the weeks of the year you want the system to run (1-52). The operator will be presented a screen with 52 weeks shown, they will be able to press the weeks they want to run. (4 groups of 13 buttons to represent the quarters of a year). The operator will be able to press the button repeatedly to select no tanks or 1, 2, 3, 4 for up to 1 of 4 tanks to be filtered. A zero indicated that the filtration system will not run this week. When a week is selected the “day of the week”, “hour of day,” and the “duration in hours” is show and these can be edited. When finished the operator will select the finished button to lock all the dates in storage.
34. It is possible to select tank one the first week to run on Tuesday at 8 hours for 36 hours. Tank two to run the second week to run on Wednesday at 14 hours for 24 hours. Tank three to run the 6th week, on Monday at 18 hours for 99 hours. Maximum run time is 99 hours.
35. Economical Filtration System – (Enclosed Version)
36. The economical filtration system makes use of a single filter element that handles both particulate and coalescing filtration. The system includes an inlet compound pressure gauge (2.5”) and an outlet pressure gauge. The flow switch is not included but a DP switch and gauge are provided for the single filter element.
37. Manual Operation
38. The operator will place the filtration pump in Hand (Run) and the system will run as long as in hand mode. The operator shall continuously monitor the system for clogged filters which will be displayed on the front panel. The operator can stop the filtration system at any time by moving the pump to “Off”.
39. Automatic Operation
40. The operator will set the amount of time to run via a timer on the front of the control panel (0-60 hours). After setting this time, the operator will start the filtration pump by selecting the Hand-Off-Automatic switch to Automatic. The pump will start and run till the timer reaches zero. The pump will stop if a filter DP detects a clogged filter. The operator will at that point change the filter. Once changed the operator will clear the alarm and the pump will start again assuming the pump is still in Automatic to complete the cycle.