1. 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, multi-tank filtration, or interior systems.

1. Provide a fuel oil maintenance system that will automatically circulate and filter approx. 1800 gph of diesel fuel to obtain a final effluent particulate of less than or equal to 1 microns and it will be equipped with a water detection cartridge. 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.
	1. ACCEPTABLE MANUFACTURERS
		1. Proven Controls, LLC
2. Major system components
3. Filtration simplex 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 close 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. The Y-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 a Parker dual hand bolt-on type filter with a removable 10-micron filter & 1 micron to follow directly after, a set of micron start-up filter element shall be included.

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. **Included With Fuel Oil Alternate #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.

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. 1. Continuous wastewater purging system factory piped to waste holding tank.

\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. Control, interface and communication shall be through the UL 508 Programmable Logic Controller (PLC) control panel. 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 BACnet or Modbus.
2. 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.
3. PLC
4. Up to 1280 local addresses
5. Minimum 15K memory
6. 2 comm ports, 1 dedicated to touchscreen
7. Real time clock/calendar
8. Touchscreen
9. Full-color HMI touchscreen
10. A variety of 4.3” to 15” models with widescreen (model dependent) ensures the right fit for virtually any application
11. 16M colors
12. USB port for programming and download
13. Ethernet 10/100 base-T port for program/download & PLC communications
14. Remote internet access requiring no additional software
15. Compact flash card slot
	* 1. Type A adheres to USB specification 2.0
16. 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;
17. NEMA 4 rated metal enclosure.
18. Service disconnect for the fuel circulation pump motor.
19. Hand-Off-Auto pump selector switch.
20. Pump status and alarm lamps.
21. Terminal block for all internal and field wiring connections.
22. Control power transformer (if needed).
23. Start-up and training shall be performed by a factory trained technician
24. Control Sequence:
25. Manual Operation:
26. 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.
27. 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.
28. Automatic Operation:
29. 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.
30. 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.
31. 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.