

# Guide #4

## Determining What Fuel Treatment System is Right for You

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### Fuel Tank Cleaning

The AXI (formerly ALGAE-X) Line of Fuel Tank Cleaning Systems offer a great degree of flexibility in meeting your specific requirements for varied types of installations or to address a particular situation. Whether you are interested in treating your personal boat, generator or equipment fuel, if you have a shop where fuel treatment is a service your customers would benefit from, if you are the maintenance manager for a company with a significant investment in diesel powered equipment, or you provide on-site emergency/back-up power and storage tank maintenance services, there is an AXI Fuel Tank Cleaning System to fit your needs and budget.



The range of AXI Tank Cleaning Systems can be divided into two broad categories of Mobil Fuel Polishing Systems and Installed Fuel Polishing Systems. Each category is further detailed into two sub-categories:

### Mobil Treatment Systems

**Portable Fuel Tank Cleaning:** This unit, the [TK-240 XT System](#), available in 12 or 24 volt, is light enough to carry in one hand, but capable of circulating fuel at a rate of 240 Gallons per Hour (GPH) to make quick work of fuel problems in small marine applications, by RV or other equipment owners, small repair shops or others that need to clean fuel tanks up to 1,000 gallons. This is also an excellent choice for a system that can easily be shared among friends at the marina.



**Mobil Treatment Fuel Tank Cleaning:** Designed and built tough for those that require a system that can be easily transported and treat the toughest fuel tank contaminations. With numerous cart mount [Mobil Tank Cleaning \("MTC"\) Systems](#) to choose from, these systems are sized to fit the tanks you treat, and with several [High Capacity \("HC"\) pallet mounted tank cleaning systems](#) for super-high circulation capabilities for very large installations, these units will allow for fast tank cleaning. These systems are ideal for the commercial for-hire tank cleaning business, for construction, trucking or other industrial companies with lots of equipment, emergency power generator service companies that service a wide region, or facility managers with many diverse fuel tanks that require periodic servicing.

## Installed Systems

**Wall Mounted Tank Cleaning:** These fuel tank cleaning units are available in both twelve or twenty-four volt, or in 115V / 60 Hz or 230V / 50 Hz configurations and in varying treatment rated systems from 1,000 gallons up to tanks of 10,000 gallons. These [Wall Mounted Systems](#) are excellent for locations where the tank cleaning unit will be located on board a main vessel, inside an existing cabinet or building and dedicated to cleaning one or possibly several stationary tanks. Many have leak detection capabilities, timers and automated operational capabilities, and options for different fuel water/separator suppliers. The systems combine programmable fully automated, high flow rate fuel conditioning with a compact plug and play design, and a small footprint.



**Automated Tank Cleaning:** Our largest capacity [Automated Tank Cleaning Systems](#) are designed for a wide range of tank capacities, and even multiple tank configurations. These units are ideal for installations out-of-doors where weather and the elements are a concern or in areas where the public must be locked out of the systems. Highly automated with remote operation capabilities, multiple tank, and are well suited for emergency facilities with large fuel storage capabilities requiring mission critical back up power such as hospitals, data and

communication centers and first responders, or for process fuel in geographic locations around the world where fuel quality is always suspect and pre-treating is required before transferring fuel from quarantine tanks.

The use of the above Tank Cleaning Systems should include the additional steps of removing water from tanks prior to use and the use of the AXI [Diesel Fuel Catalyst AFC-705](#) as detailed in [Guide #2: Fuel Treatment and Continuing Management](#).

## How the Systems Do Their Job

**Portable Tank Cleaning:** The [TK-240 Portable Tank Cleaning](#) units are best suited for either cleaning tanks that show symptoms of an existing contamination problem or have been cleaned and require periodic preventative maintenance service. This unit will treat diesel fuel, hydraulic, engine and lube oil, water and antifreeze.

A 40 mesh pre-screen is included that will require cleaning periodically if the tank has considerable existing contamination. In most instances, circulating the fuel through an [LG-X Magnetic Fuel Conditioner](#) and a fuel filter 2-4 times will do the job. For tanks with heavy sedimentation we recommend the use of the cleanable wire mesh screens (TK-083 or 084) for the initial tank cleaning. Intermediate cleaning should be done with the TK-082 15 micron water blocking filter element to remove emulsified water, and final cleaning should utilize the TK-081 10 micron particulate filter element.

The first step is always the removal of water and sludge from the tank bottom straight into an appropriate waste container. Insert the suction hose so that the end reaches the lowest point in the tank (this can also be achieved by using a straight pipe connected to the end of the hose). After that has been

accomplished, circulate the fuel through the TK system back to the tank until the appearance of the fuel is “Clear & Bright”, the filters elements stay clean, and the reading on the pressure gauge (that alerts for filter element replacement) will not rise any more.

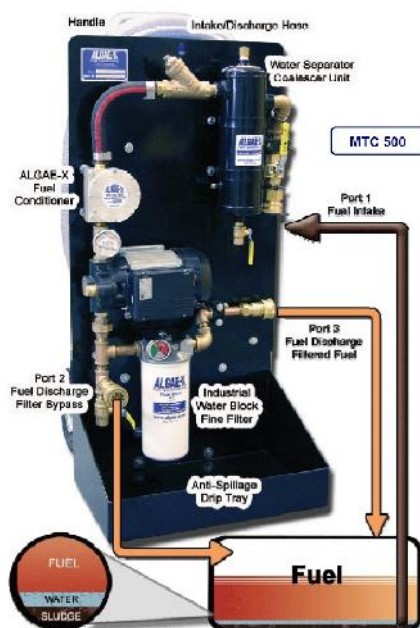
**Mobil Tank Cleaning:** [Mobil Tank Cleaning Systems](#) are designed for applications where the tank cleaning system must go to the tank or piece of equipment, do the job, and then quickly move on to the next tank or equipment. Two types of mobile tank cleaning units are available: cart mounted units and high capacity pallet mounted units.



Cart Mounted mobile tank cleaning units are available in capabilities of 8, 15 and 26 gallons per minute. Choose the unit that best suits the size tank you expect to treat most and, considering the length of each treatment is three to five times the capacity of the tank being treated, which dictates length of time (man-hours) you wish to dedicate to the cleaning of each tank. Consider, however, that the larger MTC 3000 system utilizes larger suction and return hoses, and some tank filler neck openings may not accommodate the two hoses.

The MTC is a three-stage mobile fuel conditioning and tank cleaning system. It efficiently removes sludge and water from fuel and oil tanks, restoring and optimizing fuel quality in the same operation. The system is designed as a “fuel/oil dialysis system” that circulates and cleans fuel/oil by pumping it from the tank, processing it through the MTC unit and back into the tank. The system can also be used to clean fuel or oil by pumping it from one tank through the MTC unit into another tank and/or suitable container.

The MTC System processes fuel or oil by pumping it from the tank through the clear intake hose attached at Port 1, through the oil-water-sludge separator/coalescer and then the AXI [Magnetic Fuel Conditioner](#).



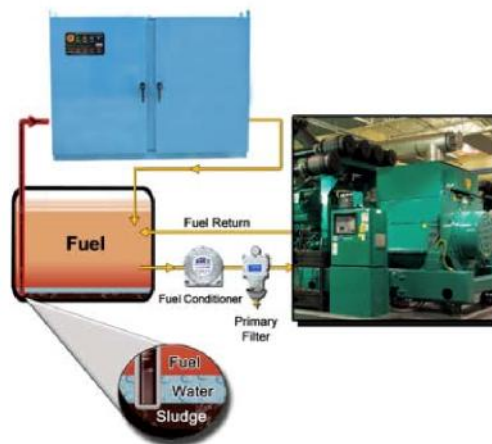
The discharge hose can be connected to either Port 2 or Port 3. Port 2 is used in the first phase to pump water and sludge from the tank bottom into a holding tank to allow sludge and water to settle for disposal. Phase 2 sends the fuel directly back to the tank. When the process no longer separates water and sludge from the oil-water-sludge separator/coalesces, the discharge hose is relocated to Port 3. This move adds the spin-on filter element into the system allowing for use of water block and fine filter elements to remove fine particulates and emulsified water from the fuel before routing the fuel back to the tank. Ports 1, 2 and 3 are equipped with Quick Disconnect Couplings that easily connect to the matching couplings on suction and discharge hoses.

The High Capacity (“HC”) pallet mounted systems operate in a similar fashion as the cart mounted MTC Systems but operate at 50, 90, and 150 gallons per minute, more appropriate for tank installations over 10,000 gallons. The HC systems have more robust components that will remove heavily contaminated tank installations with inexpensive “sock” type pre-filters and use a similar three phase system to clean and polish the fuel. For

badly contaminated tank installations with a lot of sludge and debris, adding the [PF-10 or PF-30 Pre-Screen and Pre-Filter Vessel](#) before the MTC eases removal of sludge, protects the MTC pump components and reduces the cost of disposable filter elements.

See the [Guide #5: Cleaning a Fuel Tank](#) for a detailed description of the tank cleaning process with the PTC, MTC, and HC Tank Cleaning Systems.

**Installed Systems:** The [Wall Mounted Systems](#) and the [Automated Tank Cleaning System](#) operate in the same manner as the above portable/mobile units, but as they are dedicated for use to one or more tanks, they do not tend to become involved with severe cleaning, although their components are configured to handle anything put to them.



A protocol is established to assure periodic steps are taken to assure the fuel is always in pristine condition when the fuel is needed, whether for process fuel or for when the lights go out. Each time fuel is taken on, the System should be used to assure that the entire tank of fuel is in pristine condition. Periodic checking of tank bottom for water is advised, and if water is found it should be removed immediately. Although the [Wall Mounted](#) and [Automated Systems](#) are usually configured to operate as a separate “loop” system not tied in with the main fuel of fuel to the emergency power generator, they can be configured to be switchable between multiple tanks as well as treat fuel kept available for immediate use in day tanks. Periodic circulation can be put in place manually or scheduled through the timed or automated control modules.

Control is the catch phrase with these Installed Systems. They can be as simple as timers that are manually controlled when an operator is ready for a treatment to occur. Or they can be set to circulate the fuel at periodic intervals determined by experience, and controlled from a remote location. Leak detection, flow interruption detection, water sensors in fuel/water separator filters, and filter high pressure or vacuum detection can all trigger system shut down and emergency warnings, including the sending of email to give notification of a system event.



### **Conclusion**

***When the lights go out, it is too late to clean your tanks.*** AXI treatment systems can give you confidence that when your equipment, emergency power system, process fuel demands or your sailboat requires reliable, clean fuel, that will provide efficient and cost effective operation, you will have it.

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