

# Model FTI-20A



## Engineering Specifications Automated Diesel Fuel Maintenance System When a Submersible Pump Replaces the FTI Pump Single Diesel Fuel Tank Up To 60,000 Gallons

### 1. Description

- A. Diesel fuel storage tank shall be equipped with an **FM APPROVED**, and **NFPA EQUIPMENT COMPLIANT** automated fuel maintenance system.
- B. Filtration system shall remove particulates to 1 micron and water to 99.5% from stored diesel fuel.
- C. Fuel stabilizer shall be added to the diesel fuel in storage.
- D. Fuel biocide shall be added to the diesel fuel in storage.
- E. **Modbus RTU RS485 communications included.**

### 1. Flow Meter and Flow Control Valve

- A. Inline flow meter: Anodized aluminum body.
- B. Flow control valve: Stainless Steel

### 2. Filtration Shall Consist of:

- A. Stage 1: 100 wire mesh, 149 Micron strainer. (spin on filter)
- B. Stage 2: 10 micron particulate removal. (spin on filter)
- C. Stage 3: 3 micron particulate removal. (spin on filter)
- D. Stage 4: 1 micron particulate removal. (element type)
- E. Stage 5: Water separation to 5 PPM. (element type)

### 3. Filter Replacement Kit: FRK-20A (Kit includes filters listed below.)

- A. FL-50-100M – 1 ea.
- B. FL-70-10N – 1 ea.
- C. FL-70-03N – 1 ea.
- D. FL-FBO-60336 – 1 ea.

### 4. Controller Specifications

- A. Control panel shall be UL 508.
- B. Siemens 1200 Series PLC, UL/CSA/CE/FM approvals.
- C. Siemens CB1241 RS485 Module (**Modbus Module included**)
- D. Motor contactor: UL/SA/CE approvals.
- E. Motor overload: UL/SA/CE approvals.
- F. Terminal block: 26 Amps, 18-12 AWG
- G. Lockable disconnect switch: UL/CE Approvals.
- H. Dry contact general alarms: One set of dry contacts provided. (Normally open for all alarms)
- I. Siemens Basic touch screen display.
- J. PLC shall monitor items 1-9
- K. Alarm conditions 1-9 shall be indicated by an audible horn.
- L. Visual alarm descriptions for items 1-9 shall be shown on the touch screen.
  - 1. Strainer plugged (Vacuum switch gauge)
  - 2. 3 Micron Filter Plugged (Differential pressure switch gauge)
  - 3. 10 Micron Filter Plugged (Differential pressure switch gauge)

4. Water level in separator bowl at maximum. (Water Detected)
  5. Leak in Cabinet. (Leak Detected)
  6. Motor overload. (Motor / Pump Issue)
  7. System Pressure (Pressure switch gauge)
  8. 1 Micron Filter Plugged (Differential pressure switch gauge)
  9. Loss of Prime (Low set point on pressure switch gauge)
- M. Signal device (audible alarms): 120/230V AC, Slow pulse, 80 to 95 Db.
- N. Controller shall be programmable to time delay the following 6 operations:
1. Vacuum / Strainer plugged (Vacuum switch gauge)
  2. 1, 3 and 10 Micron Filter Plugged (Differential pressure switch gauge)(one alarm delay for 1, 3 and 10 Micron)
  3. Water level in bowl at maximum. (Water Detected)
  4. Leak in Cabinet. (Leak Detected)
  5. Low Flow. (Loss of prime)
  6. System Pressure (Pressure switch gauge)
- O. One dry contact to turn off FTI system when generator starts.
- P. One dry contact to stop FTI system for any reason.
- Q. **Optional:** Control Panel strip heater. 50 Watt, Thermostat controlled.

## 5. Enclosure

- A. Cabinet shall have 2 lift off removable doors.
- B. Cabinet shall be treated with “**Zinc Primer**” for corrosion resistance and “**Powder Coat**” finish.
- C. Cabinet shall be manufactured to “NEMA 3R” standards and designed for rack or wall mounting.
- D. Cabinet size: 48” W x 48” H x 16.5” D.
- E. Leak detection: Provided in cabinet.
- F. Shipping weight: 550 Lbs.

## 6. Voltage Options

- A. Choose one: (115V AC, 1 Phase, 50/60 Hz) (208-240V AC, 1 Phase, 50/60 Hz)

## 7. Plumbing

- A. Supply line shall be installed at the sump, or low end of the fuel tank.
- B. Supply line shall be installed 1” from the bottom of the fuel tank, with a foot valve.
- C. Return line to be installed at the opposite end of the fuel tank.
- D. Installer shall provide & install a submersible pump.
- E. Submersible pump voltage shall match the FTI control panel voltage as ordered.
- F. Submersible pump shall be wired to the FTI control panel.
- G. Flow control valve (included) and a flow meter (included) shall be installed in the FTI cabinet to adjust the flow to 20 GPM.
- H. Inlet connection = 1 1/2” NPT.
- I. Outlet connection = 1 1/2” NPT.

## 8. Installation Precautions:

MODEL FTI-20A SINGLE TANK HAS NO PROTECTION AGAINST THERMAL EXPANSION OF THE FUEL LINES. IF THE FUEL LINES ARE INSTALLED WITHOUT PRESSURE RELIEF, DAMAGE MAY OCCUR TO THE PUMP, MOTOR OR FILTERS.

INSTALLER SHOULD PREVENT ANY CLOSED LOOP WITH THE FTI-20A SYSTEM IN THE MIDDLE.

FTI WILL NOT BE RESPONSIBLE FOR ANY DAMAGE DUE TO EXCESSIVE LINE PRESSURE CAUSED BY THERMAL EXPANSION

Model FTI-20A as Manufactured by  
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