

# Model FTI-20A



## Engineering Specifications Automated Diesel Fuel Maintenance System 1-4 Diesel Fuel Tanks Up To 60,000 Gallons Each

### 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. **Includes: Modbus RTU, RS485 Serial Communications.**

### 2. Pump / Motor Ratings

- A. Pump: 20 GPM, rotary gear, mechanical seal, positive displacement, pressure relief valve.
- B. Motor: 1 1/2 HP, 115/208-240V AC @ 18/8 Amps, 1 phase, 60Hz, TEFC.

### 3. 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)

### 4. 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.

### 5. Controller Specifications

- A. Control panel shall be UL 508.
- B. Siemens 1200 series PLC
- C. Siemens CB1241 RS485 Serial Communications. **(Modbus Module Included)**
- D. PLC shall monitor items 1-6.
- E. Alarm conditions 1-6 shall be indicated by an audible horn.
- F. Visual alarm descriptions for items 1-6 shall be shown on the touch screen.
  - 1. Motor overload.
  - 2. Five stages of filtration. (see section 3. Filtration Shall Consist of)
  - 3. Leak detection.
  - 4. Water level sensor.
  - 5. System pressure.
  - 6. Low flow: Loss of prime.
- G. Circuit breaker: 2 Pole, 15 Amps.
- H. Lockable disconnect switch: 115/230V AC, 32 Amps.
- I. Motor contactor: 115/230V AC, 12 Amps, AC-3, UL/SA/CE approvals.
- J. Motor overload: 115/230V AC, adjustable range 4-20 Amps, UL/SA/CE approvals.
- K. Multi pole terminal block: 26 Amps, 18-12 AWG.
- L. Siemens color touch screen
- M. Signal device (audible alarms): 115/230V AC, Slow pulse, 80 to 95 Db.
- N. Controller shall be programmable to operate up to four separate diesel fuel storage tanks.

- O. Controller shall be capable of operating up to eight solenoid valves or eight electric actuated ball valves.
- P. Controller shall have one dry contact (normally open) for remote general alarm status.
- Q. Controller shall be programmable to time delay the following four operations:
  - 1. Turning on the fuel pump. (1-90 seconds)
  - 2. Auto pressure relief. Timed opening of solenoid valves or actuated ball valves. (5-90 seconds)
  - 3. Alarm trip delay. (1-90 seconds)
  - 4. Low flow alarm delay. (1-6 minutes, default is 3 minutes)
- R. **Optional:** Control panel strip heater shall be a 50-watt, thermostat controlled.

## 6. 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. System weight: 550 Lbs.

## 7. Voltage Options

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

## 8. 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. Caution should be taken not to exceed the 15 feet lift capability of the fuel circulation pump.
- E. Should total suction lift exceed 15 feet, the circulation pump in the FTI cabinet shall be removed.
- F. Installer shall provide & install a submersible pump.
- G. Submersible pump voltage shall match the FTI control panel voltage as ordered.
- H. Submersible pump shall be wired to the FTI control panel.
- I. Flow control valve (included) and a flow meter (included) shall be installed in the FTI cabinet to adjust the flow to 20 GPM.
- J. Inlet connection = 2” NPT.
- K. Outlet connection = 1 1/2” NPT.

## 9. Installation Precautions:

IF POWER TO THE FTI CONTROL PANEL IS TO BE TURNED OFF AFTER IT IS INSTALLED, THEN THE INSTALLER SHALL PROVIDE FOR THERMAL EXPANSION PROTECTION.

ALL MANUAL BALL VALVES SHALL REMAIN OPEN. THIS WILL ALLOW FUEL THERMAL EXPANSION TO FLOW BACK TO THE FUEL TANK.

THE FTI CONTROL PANEL WILL AUTOMATICALLY OPEN ALL ELECTRICALLY CONNECTED VALVES WHEN THE FTI PRESSURE SWITCH GAUGE REACHES 45 PSI. THIS WILL OPEN AND CLOSE ALL SUPPLY AND RETURN LINE VALVES CONNECTED TO THE FTI CONTROL PANEL 24/7, ONE TANK AT A TIME.

THIS FEATURE OPERATES AUTOMATICALLY ONLY WHEN POWER IS ON, AND THE CONTROL PANEL IS SET TO “AUTO MODE OFF” OR “MANUAL MODE OFF”.

FTI WILL NOT BE RESPONSIBLE FOR ANY THERMAL EXPANSION DAMAGE DUE TO EXCESSIVE PRESSURE.

Model FTI-20A as Manufactured by  
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