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Fuel Oil Control & Power Distribution System

FOC Commissioning and Equipment Registration Form

System Model: _____ **System Serial No.:** _____

Customer Location: _____

Technician: _____ **Technician Phone:** _____

Date of Service: _____

Fuel Oil Control & Power Distribution System

FOC Start Up Procedures, Record the Following Information –

Prior to going to the site –	*Comments*
_____ Make sure you have the latest version of all the drawings.	_____
_____ Make sure you have a volt and amp meter that also does 4-20mA signals.	_____
_____ Make sure you have your PC with all the latest software updates installed.	_____
_____ Make sure you have all the cable necessary to connect to the Controllers.	_____
_____ Make sure you have power cords to keep your PC plugged in.	_____
_____ Make sure you have your hot spot with you and it connects to your PC.	_____
_____ Make sure you have your shared Dropbox folder up to date.	_____
_____ Verify all wiring is completed.	_____
_____ Verify BMS system communications is complete (if any).	_____
_____ Verify all plumbing is complete.	_____
_____ Verify you have all the tank charts.	_____

Fuel Oil Control & Power Distribution System

Read this entire procedure and understand each step prior to continuing.

		Comments
_____	Verify all electrical connections are completed by checking them off on the drawings.	_____
_____	Verify incoming voltage is correct as per the drawings.	_____
_____	Verify the system is properly grounded.	_____
_____	Verify all probe and sensor cables that have shields are grounded.	_____
_____	Verify all piping is completed as per the drawings.	_____
_____	Check all check valves to see if they are installed as per the drawings.	_____
_____	Verify all solenoid valves with bypass handles are all fully extended counter clockwise (screwed out).	_____
_____	Verify tank levels of all tanks by sticking them.	_____
_____	Make sure the system key is in the OFF position and the day tank is in "AUTO" on the controller.	_____
_____	Turn off all the Motor Circuit Protectors (MCPs) for all pumps and motors inside the controller.	_____
_____	Turn off all the circuit breakers.	_____
_____	Verify the emergency stop switch on the controller is pulled out.	_____
_____	Turn on the main disconnect switch on the controller.	_____
_____	Turn on the circuit breakers one at a time starting from the left to the right.	_____
_____	Silence all alarms (some take up to 20 seconds).	_____
_____	Verify the controller does not go to the setup screen. If so enter all the missing data (e.g., tank chart information).	_____
_____	Verify all leak sensors are not in alarm.	_____
_____	The system setup password is "123".	_____

Fuel Oil Control & Power Distribution System

Comments

_____ Go to the setup menu (F1, F5, F5) and verify the day tanks are programmed to safe percentages. _____

_____ Day tank High Level Alarm level 50%. _____

_____ Day tank Pump Stop level 45%. _____

_____ Day tank Return Pump Stop level 35% (if applicable). _____

_____ Day tank Pump Start level 25%. _____

_____ Day tank Low level alarm 20%. _____

_____ If product is in a day tank, go to the "CALIBRATING THE DAY TANKS" section. _____

_____ Press F1 to go back to the Home Screen. _____

Calibrating the Main Tank

_____ NEVER CALIBRATE AN EMPTY TANK. The more fuel in the tank, the more accurate the calibration will be. _____

_____ Go to the setup screen (F1, F5, F5), then main tank. Enter the password. _____

_____ Go to the Calibration Screen. _____

_____ Enter the stick reading in step #1 (press enter). _____

_____ Press #2 calibration button. _____

_____ Wait 30 seconds and see if the stick reading is accurate; if not repeat steps 1 & 2. _____

_____ Verify the Main Tank stick reading is within 1/4" of what the controller is reading. _____

_____ Go to the Alarm Setup Screen. _____

_____ Verify the main tank low level warning is set for less than the product is in for the tank, or the supply pumps will not run. _____

_____ Press F1 to go back to the Home Screen. _____

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Manual Transfer of Product to Day Tanks

		Comments
_____	Turn on all the MCPs.	_____
_____	Clear all active alarms (F4, then Reset History).	_____
_____	Bump each pump for proper direction by pressing in the control relay for each pump.	_____
_____	**Never pump a pump dry for more than 15 seconds.**	_____
_____	Turn off all ball valves at the day tank's supply valve assemblies. Green 1/4 turn handles.	_____
_____	Verify all other ball valves are open on the entire system.	_____
_____	Start a pump by turning on the System Key switch to "HAND."	_____
_____	The lead pump on the main tank should be running.	_____
_____	Check the entire system for leaks. Turn off the system key if a leak is found or the Emergency stop switch is necessary.	_____
_____	Fix all leaks and repeat the last step, if necessary.	_____
_____	Verify the main tank "MT-ASV" visual flow indication has product in the window.	_____
_____	If product is already in the day tank, skip the remainder of this section.	_____
_____	**Know how much product can go into the day tank before continuing.**	_____
_____	We would like to add less than 25% of product into the day tank.	_____
_____	Turn the System Key to "HAND" with the day tank key "AUTO" with the day tank ball valve closed.	_____
_____	Verify the correct Solenoid valve for the selected day tank is opening and closing. Repeat if necessary.	_____
_____	Open up the Fill ball valves at the day tanks.	_____
_____	Keep in mind you are pumping fuel to a day tank if the System Key is in Fill "HAND."	_____
_____	Turn the System Key to Fill "HAND" until the day tank reaches about 20% of fuel.	_____

Fuel Oil Control & Power Distribution System

Manual Transfer of Product to Day Tanks

Comments

_____ Turn the System key to the "OFF" position when the fuel level is reached. _____

_____ Always use the stick when transferring product until the system is fully calibrated. _____

_____ Repeat for each day tank. _____

_____ Take a good look at all the system piping again and verify that there are no leaks. _____

Calibrating the Day Tanks

_____ NEVER CALIBRATE AN EMPTY TANK. The more fuel in the tank the more accurate the calibration will be. _____

_____ Stick the tank and verify the system and the stick are within 1/4" of each other. _____

_____ Go to the setup screen, F1, F5, F5 then the day tank. Enter the password. _____

_____ Go to the Calibration Screen. _____

_____ Enter the stick reading in step #1 (press enter). _____

_____ Press #2 calibration button. _____

_____ Wait 30 seconds and see if the stick reading is accurate. If not repeat steps 1 & 2 again. _____

_____ Verify the Main Tank stick reading is within 1/4" of what the controller is reading. _____

_____ Press F1 to go back to the Home Screen. _____

_____ Repeat for each day tank. _____

First Time Automatic Day Tank Fuel Transfer

_____ After all tanks have been calibrated continue to the next step. _____

_____ During these steps always use the stick gauge as your gauge as you verify the controller is reading within 1/4" of the stick. _____

_____ If the main tank is in Low Level Alarm the lead pump will not start. _____

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Comments

_____ Turn the system key to the "AUTO" position. _____

_____ The lead pump should start and the day tank solenoid valve should open and fuel should be flowing. _____

_____ The day tank Key should be to the "AUTO" position. _____

_____ The system will stop when the day tank programmed pump stop level percent is reached. If not, turn the System Key to the "OFF" position. _____

_____ The lead pump will not start unless the day tank product level is less than the programmed pump start level. _____

_____ Stick the tank and verify the system and the stick are within 1/4" of each other. Recalibrate if necessary. _____

_____ Repeat for each day tank. _____

_____ With all keys in the "AUTO" position, clear all the alarms (F4, Reset History). _____

High Level Alarm and Return Pump Test

_____ With the system key in the "AUTO" position, clear all the alarms (F4, Reset History). _____

_____ Turn the Day tank Key to the Fill "HAND" position. _____

_____ The lead pump should start and the day tank solenoid valve should open and fuel should be flowing. _____

_____ Always use the stick when transferring product until the system is fully calibrated. _____

_____ If a High Level "CV-HL" Overfill Solenoid is used, the normal open valve should be closed when the high level alarm sounds. _____

_____ If a Return pump is used, the Return pump will come on when the high level alarm sounds. _____

_____ When the Day tank High Level is reached, turn the System Key to the "OFF" position. _____

_____ **Test the Return Pump** (if applicable). _____

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		Comments
_____	Turn the System Switch to the "AUTO" position.	_____
_____	The return pump should start and pump fuel back to the selected main tank.	_____
_____	**Never pump a pump dry for more than 15 seconds.**	_____
_____	Look at the gauges and verify the pump is pumping fuel. If you're not sure within 15 seconds, turn the system key to the OFF position.	_____
_____	Suction side of pump's gauges will read less than 0 (about 10); discharge side of pump gauges will read greater than 0 (about 10 PSI).	_____
_____	Wait 2 minutes before restarting the pump to verify the pump is pumping fuel. (DO NOT REPEAT AFTER THE SECOND ATTEMPT).	_____
_____	Check for leaks and verify rotation again. Verify the check valve is installed in the correct direction. CALL FOR SERVICE IF REQUIRED.	_____
_____	The return pump should stop when the day tank reaches the return Pump Stop Level.	_____
_____	To test the return pump manually, turn the day tank Return Pump to the Hand Position and then back off.	_____
_____	Repeat for each day tank.	_____

Second time Automatic Day Tank Fuel Transfer

_____	Turn the System Key to the "OFF" Position.	_____
_____	Go to the setup menu (F1, F5, F5) and verify the day tanks are programmed to their final set points.	_____
_____	If return pumps are not used, set all the values 5% less that listed below level room for more product during customer training.	_____
_____	Day tank High Level Alarm level 90%	_____
_____	Day tank Pump Stop level 85%	_____

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Comments

_____ Day tank Return Pump Stop level 75% (if applicable). _____

_____ Day tank Pump Start level 65%. _____

_____ Day tank Low level alarm 60%. _____

_____ Silence the Low level alarm (if applicable). _____

_____ Press F1 to go back to the Home Screen. _____

_____ Repeat for each day tank. _____

_____ Turn the system key to the "AUTO" position and then the day tank Key to the "AUTO" position if necessary. _____

_____ The lead pump should start and the day tanks (all) solenoid valve should open and fuel should be flowing. _____

_____ The lead pump will not start unless the day tank product level is less than the programmed pump start level. _____

_____ Verify the system gauge with the stick gauge in each day tank for accuracy. _____

_____ The system should stop automatically when the day tank's Pump Stop level is reached. If not turn the system key to the "OFF" position. _____

_____ Stick the tank and verify the system and the stick are within 1/4" of each other. Recalibrate if necessary. _____

Fuel Polishing (if applicable)

_____ Turn all the switches to the Auto positions. _____

_____ Make sure there are no alarms. _____

_____ Press F1, F5, F4 to enter the manual transfer mode. _____

_____ On the bottom right corner of the screen, arrow up the selector switch until the manual run time above it shows 1 min. _____

_____ Above the 1 min. button there is a *Press to Start* button. Press it to start. _____

_____ With the valves open, the programmed filtration pump will run for 1 minute. _____

Fuel Oil Control & Power Distribution System

		Comments
_____	While the pump is running, verify the filtration system for leaks.	_____
_____	Arrow up the selector switch until the manual run time above it shows 5 min.	_____
_____	Press the *Start* button to start.	_____
_____	The filtration pump will run for 5 minutes.	_____
_____	While the pump is running, verify the filtration system for leaks.	_____
_____	Above the *Manual Start* Button is a *Filtration Schedule* Button. Press that button and fill out the schedule as required.	_____
_____	We like to cycle all the fuel in the tank at least once a month but **it's up to the customer.** Below are our recommendations only.	_____
_____	Divide the gallons up into 4 weeks (8,000 gallons would be 2,000 gallons per week).	_____
_____	Divide the weekly gallons by 10 gallons per minute. This means the 2,000 gallon per week should take 200 minutes per week.	_____
_____	Divide the 200 minutes by the number of days per week you want to fuel polish. Example would be 40 minutes per day based on 5 days per week.	_____
_____	Schedule the days Monday – Friday or whatever day would be better for the customer's employee work schedule.	_____
_____	Set the start time late in the morning (9 a.m.) so it runs when employees are on duty.	_____
_____	When the set points on the schedule are true, the auto fuel polishing will start.	_____

Fuel Oil Control & Power Distribution System

Final Calibration

Comments

_____ Verify all tank levels are within 1/4" of the stick reading. Recalibrate if required. _____

_____ Leave the system in Auto unless directed by others. _____

_____ **Verify all leak sensors by flipping them over for a least 5 seconds until the alarm sounds.** _____

_____ **Press F4 to see and reset each sensor.** _____

_____ **Repeat for each sensor and list the sensors below as tested.** _____

Site Information

	Product	Tank Info.	Tank Type (main/day) (AST/UST)	Capacity	HLA Set Point (High Level Alarm)	HLW Set Point (High Warning) (Pump Stop)	Return Pump Stop Set Point	LLW Set Point (Low Level Warning)	LLA Set Point (Low Level Alarm)	Stick Reading Inches	System Gauge Inches	Number of Leak Sensors
#1												
#2												
#3												
#4												
#5												

Fuel Oil Control & Power Distribution System

Leak Sensors

	#1	#2	#3	#4	#5	#6
Location						
Tested						

	#7	#8	#9	#10	#11	#12
Location						
Tested						

Other Equipment

	Type	Location	Tested	Comment
#1				
#2				
#3				
#4				

Create a Simple Site Drawing and any other Useful Information Below

Fuel Oil Control & Power Distribution System

Customer Training – Perform these steps with the customer's representative present

_____ Explain to the customer that this system is fully automatic and doesn't require them to do any of these steps below. This is for demonstration only.

(If using a RETURN PUMP start here)

_____ Use the day tank return pump return HAND switch to remove product in the day tanks until the day tank start level has been reached.

_____ Turn the day tank HAND switch back to OFF.

_____ The Lead supply pump will start and stop at the normal stop level.

_____ Turn the day tanks' fill switch to HAND.

_____ When the day tank's high level alarm sounds, switch the day tank's switch back to the OFF position. The return pump will start.

_____ If a High Level "CV-HL" Overfill Solenoid is used, the normal open valve should be closed when the high level alarm sounds.

_____ If a Return pump is used, the Return pump will come on when the high level alarm sounds.

_____ The return pump will stop when the day tank reaches the return pump stop level.

_____ Repeat for each day tank.

(If no RETURN PUMP start here)

_____ To start an automatic call for fuel (CFF) you must change the programmable set point for the day tank level.

_____ Go to the setup menu (F1, F5, F5) and verify the day tanks are programmed to their final set points.

_____ Day tank High Level Alarm level 90%.

_____ Day tank Pump Stop level 85%.

_____ Day tank Pump Start level 65%.

_____ Day tank Low level alarm 60%.

_____ To start to CFF change the day tank Pump Start level 81%. The lead pump will start filling the day tank.

_____ Change the day tank Pump Start level back to 65%.

_____ The pump will automatically stop when it reaches the Pump Stop Level 85%.

_____ Repeat for each day tank.

_____ NOTE: by pressing F1,F5, F4 you will enter the Manual Run Screen. Here you can manually trigger a CFF or a return pump start without changing the level. Tanks can't be at their pump stop levels.

Fuel Oil Control & Power Distribution System

Fuel Polishing (if Applicable)

_____ Make sure there are no alarms.

_____ Press F1, F5, F4 to enter the manual transfer mode.

_____ On the bottom right corner of the screen, arrow up the selector switch until the manual run time above it shows 1 min.

_____ Above the 1 min. button there is a *Press to Start* button. Press it to start.

_____ Above the *Manual Start* button is a *Filtration Schedule* button. Press that button and fill out the schedule as required.

_____ We like to cycle all the fuel in the tank at least once a month but IT'S UP TO THE CUSTOMER. Below are our recommendations only.

_____ Divide the gallons up into 4 weeks (8,000 gallons would be 2,000 gallons per week.)

_____ Divide the weekly gallons by 10 gallons per minute. This means the 2,000 gallon per week should tank 200 minutes per week.

_____ Divide the 200 hours by the number of days per week you want to fuel polish. Example would be 40 minutes per day based on 5 days per week.

_____ Schedule the days Monday - Friday or what day would be better for the customer's employee work schedule.

_____ Set the start time late in the morning (9 a.m.) so it runs when employees are on duty.

_____ When the set points on the schedule are true, the auto fuel polishing will start.

Leak Sensors

_____ Demonstrate to the customer what happens when you flip a leak sensor. Go to the alarms F4 and view and reset the alarms.

_____ _____
Customer Signature Date

_____ _____
Technician Signature Date

Comments: