

## SPECIFICATION

### SafeSite™ Fuel Oil Transfer Pump Set

#### 1.0 GENERAL DESCRIPTION AND STANDARDS

- 1.1 The SafeSite Duplex Fuel Oil Pump Skid NYC for Fuel Oil No. 2 and No. 4 shall be rated at the GPH and discharge pressure (PSIG) per the Contract Drawings.
- 1.2 Manufacturers: Subject to compliance with requirements, provide Fuel Oil Transfer Pump Set by the following: Core Engineered Solutions, Inc.

#### 2.0 DESIGN AND CONSTRUCTION

- 2.1 General Piping, Pumps and Strainers: The SafeSite Duplex Pump Skid NYC shall be factory assembled and tested. All pipe shall be Schedule 40 ASTM A-53 Grade A with ANSI B16.3 Class 150 malleable iron threaded fittings. The assembly shall be factory mounted on a pump skid base and support rack. The pump skid base and support rack shall be continuously welded steel plate with 3" steel side rails with a ½" containment basin drain plug. The pump skid base and support rack shall be powder coated. The pump skid base and support rack shall be hydrostatically tested at the factory.
- 2.2 Isolation Valves: The SafeSite Duplex Pump Skid NYC shall be assembled with four isolation valves, one on both the suction and discharge of each pump. The isolation valves shall be full-port ball valves to provide full flow and positive shutoff.
- 2.3 Check Valves: The SafeSite Duplex Pump Skid NYC shall be assembled with a check valve on the discharge of each pump. The check valves shall be swing style and mounted horizontally. Spring style check valves will not be permitted.
- 2.4 Fuel Oil Strainer: The SafeSite Duplex Pump Skid NYC shall be assembled with a duplex strainer in the incoming fuel line. The duplex strainer shall use 40-mesh baskets. The duplex strainer shall have a differential pressure gauge installed with a 0-10PSIG alarm set point.
- 2.5 Pressure Relief Valve: The SafeSite Duplex Pump Skid NYC shall be assembled with pressure relief valves that are sized to relieve the full discharge of the pump. The pressure relief valves shall be field piped in accordance with NFPA 30. Internal pump pressure relief valves will not be accepted as a sole means of overpressure protection. The pressure relief valves shall be field adjustable with a metal-on-metal lapped seating and stainless steel springs.
- 2.6 Flow Switch: The SafeSite Duplex Pump Skid NYC shall be assembled with a flow sensing switch on the discharge of the pump. The flow switch shall activate the lag pump should the lead pump fail to provide or maintain flow. The flow switch shall be factory wired to the Integrated Control Panel.
- 2.7 Pumps: The SafeSite Duplex Pump Skid NYC shall be assembled with two positive displacement fuel oil pumps. The pumps shall be UL343. The pumps shall be rotary type with cast iron housing and self-adjusting mechanical carbon steel ring seals. Aluminum, brass or bronze pump housing will not be permitted. Packing gland, close-coupled, carbonator shaft or centrifugal pumps will not be permitted. The pumps shall have an internal pressure relief valve for overpressure protection.

- 2.7.1 The pumps shall be configured with two open drip proof, rigid base, NEMA frame motors. The pump and motor assemblies shall be factory assembled and mounted to the pump skid base and support rack with vibration isolation pads.
- 2.7.2 Flexible connectors shall be installed on both the suction and discharge of each pump and motor assembly.
- 2.8 Leak Sensor: All leak detection shall be a float type with N/C signal with stainless steel construction. Discriminated leak sensors shall not be permitted due to false alarms. Any leak sensor that is to be installed in the interstice of a tank shall be mounted using a Camlock adapter for easy access.
- 2.9 Level Transmitter: All levels of the main storage tank and day tank shall be monitored by using a float level with both 4-20mA Output and a digital N/C overflow sensor signal with stainless steel construction. Both signals shall be derived by using one float; dual float transmitter shall not be allowed for safety and overflow protection. Both signal wires shall be independently wired back to the controller. The level transmitter shall be mounted using a Camlock adapter for easy access. Pressure transmitters shall not be permitted.

### **3.0 OPTIONAL INTEGRATED FUEL POLISHING SYSTEM**

**3.1** The SafeSite Duplex Pump Skid NYC shall be assembled with an integrated fuel polishing system. The fuel polishing system shall be controlled and monitored by the Integrated Control Panel. The fuel polishing system shall utilize the pump and motor assemblies. The fuel polishing system shall be factory assembled and mounted on the SafeSite Duplex Pump Skid NYC. The fuel polishing system shall be a four stage system designed for use with fuel oils, including biodiesel fuels. The fuel polishing system shall remove water and solids to 1-micron insuring clean, dry, contaminant free fuel is delivered to the emergency generator or boiler. The fuel polishing system shall be automated and run on a 24/7 schedule or programmed to run manually. The fuel polishing system shall be field piped to return the fuel to the main storage tank. The control valve shall be capable of manual bypass in the event of failure.

3.1.1 The Integrated Fuel Polishing system shall be assembled with the following:

- 3.1.1.1 Isolation ball valve with bronze body rated up to 600PSIG
- 3.1.1.2 Control solenoid valve with bronze body rated up to 125PSIG
- 3.1.1.3 Visual flow indicator with double windows
- 3.1.1.4 Check valve with bronze body rated up to 300PSIG
- 3.1.1.5 Differential pressure gauge with aluminum body and stainless steel internal rated up to 6,000PSIG
- 3.1.1.6 Pre-Strainer with bronze body rated up to 300PSIG
- 3.1.1.7 Filter Canister with aluminum housing, steel canister and powder coated components – 1.5" inlet and outlet – rated up to 150PSIG and 160°F.

3.1.2 Refer to fuel polishing section for details.

### **4.0 OPTIONAL INTEGRATED PIPE LEAK MONITORING SYSTEM**

**4.1** The SafeSite Duplex Pump Skid NYC shall be assembled with an integrated pipe leak-vacuum monitoring system. The pipe leak-vacuum monitoring system shall be controlled and monitored by the Integrated Control Panel. The pipe leak-vacuum monitoring system shall be factory assembled and mounted on the SafeSite Duplex Pump Skid NYC unless otherwise noted in the contract drawings.

4.1.1 The Integrated Pipe Leak Monitoring System shall monitor the interstitial space of double wall piping for integrity and tightness of both the primary and secondary piping.

- 4.1.2 The Integrated Pipe Leak Monitoring System shall consist of, but not be limited to the following components:
  - 4.1.2.1.1 Vacuum pump – cUL and UL listed, 50PSIG, 24inHG, 0.52 CFM
  - 4.1.2.1.2 Liquid safety barrier
  - 4.1.2.1.3 Digital pressure sensor with PSIG range -14.5 to 14.5
  - 4.1.2.1.4 Pressure gauges – 30inHG, 100PSIG, liquid filled, stainless body with brass internals
  - 4.1.2.1.5 Compound gauge – 30inHG, 100PSIG or sized to 1.5x system operating PSIG.
  - 4.1.2.1.6 Stainless steel bracket for manifold and pump assembly (4B finish)
- 4.1.3 The bracket and assembly shall be factory assembled and wired.
- 4.1.4 Refer to pipe and leak monitoring section for details.

## 5.0 Factory Testing

- 5.1 The SafeSite Duplex Pump Skid NYC shall be factory tested prior to shipment. The factory testing shall include both pressure and vacuum testing for 24-hours. The pressure testing shall be the greater of either 100PSIG or 1.5 times the normal operating pressure of the system with an allowable loss of 4PSIG. The vacuum testing shall be 26inHG with an allowable loss of 1inHG.
- 5.2 The factory testing shall be performed by a factory certified technician and using a leak-vacuum monitoring system that is listed with the NWGLDE. The power, control logic and control wiring shall be tested through a functionality test of each of the devices. A certification of the factory testing along with a copy of the project specific wiring diagrams shall be placed in the Integrated Control Panel prior to shipment.

For drawings or more information contact Core Engineered Solutions at [www.core-es.com](http://www.core-es.com)  
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