Design Guide ESS.DG.911. Spec 01

Make your MasterSpec into An Integrated Fuel System Spec

earthsafe
Fuel Systems for Critical Power

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Introduction

Search your Fuel System MasterSpec for the word “Integration” and you are likely to come up with “No Results Found”. Without specified integration requirements, it will be a system that is obsolete before startup.

The fuel system should include integration requirements to make sure (a) that it all works together, and (b) that it integrates with the building management system, so that the facility may be operated with the greatest assurance and least effort.

The Master Spec can be modified very simply by inserting some key paragraphs to assure integration.

Key Specification Elements

Add language to PART 1: GENERAL for Integrated Components like:

1. **Integrated System**: The system components for fuel transfer and control shall be provided by a single supplier to assure integration. The components shall include electronic controllers that communicate using a data network to minimize interconnected wiring. The system shall include a Master Interface Panel to allow single point monitoring of system status and a single point of integration to the BMS system. The Master Panel shall include a data connection to the electronic tank gauge and leak detection panel. Integrated components shall include: tank fill stations, generator day tanks, duplex pump sets, filtration polishers, actuated flow control valves, and Master Control Panels.

Add language at the SUBMITTAL paragraph like:

a. Wiring Diagrams: Provide detailed wiring diagrams including conduit and wiring schedules for interconnection of fuel system components.
b. BMS Interface Details: Provide a list of points and addresses to allow integration to the BMS system. Coordinate communication protocol requirements of the BMS system and provide specific details as to the device names and addresses and required communication settings.
c. Generator and Switchgear Interface Details: Coordinate generator and switchgear control interface requirements. Provide list of points, and wire connection details.
d. Startup Procedures and Forms: Provide detailed startup procedures and checklists for the fuel system components.

Add language to PART 2: PRODUCTS for an integration Panel

2.1 Master Integration Panel

A. Manufacturers: Subject to compliance with requirements provide products by:

1. Earthsafe Systems, Inc. Model C900
2. Approved equal.

B. Description:

1. General: Provide a UL listed controller with network capability to integrate the local controllers on the fuel transfer components including fuel transfer pumps, day tanks, fuel filtration systems, tank fill stations, and multi-tank selection valves.
2. Networking: The controller shall include a managed Ethernet switch to accept Ethernet communications from the fuel systems components.
3. Enclosure: The controls shall be within a NEMA rated steel enclosure suitable for the location and shall include thermal control systems to maintain the enclosure within the environmental ratings of the components.
4. Dual Power Inputs: The controller shall include dual power source inputs with auto-switch on power source failure. The controller shall monitor the power source status. The controller shall include dual DC power supplies.
5. Operator Interface: provide touch screen operator interface for system operating data and operator selected parameters. Provide selector switches, push buttons, and indicator lights from a common manufacturer.
6. Emergency Stop: Control panels shall include emergency stop devices to stop fuel transfer upon activation in compliance with OSHA requirements
7. Alarm Indication and Logging: The controllers shall provide alarm indication for conditions indicated in the operating description. The controller shall maintain a date-time log for the alarm conditions and for other operating events as indicated.
8. BMS Integration: The control system shall provide a standard communication capability for the BMS system. The communication protocol shall be BACnet, Modbus, N2, or LON to match the project requirements.
9. Output Relays: the controller shall provide sufficient dry contact output relays for integrations with generator controls, switchgear, BMS, fire, and security systems.
10. Tank Level Gauging and Leak Detection System Integration: The fuel system master controller shall accept a data communication from the tank level gauging and leak detection system. The master controller shall provide the tank level and leak detection information to the BMS system in conjunction with all other fuel system information.