Vaporless Manufacturing, Inc.

Quality Petroleum Equipment Solutions for Over 30 Years

Line Leak Detection for Diesel Power Generator (Genset) Systems

40 CFR § 280.44 Methods of Release Detection for Piping

"Each method of release detection for piping used to meet the requirements of 280.41 must be conducted in accordance with the following:"

Regulation Update

- "The 2015 UST regulation removes the deferral for UST systems that store fuel solely for use by emergency power generators (emergency generator tanks)..."

https://www.epa.gov/ust/release-detection-underground-storage-tanks-usts#pipe-rd

VMI PLC-5000 ELLD

- "Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping or triggering an audible or visual alarm."
- "detect leaks of 3 gallons per hour at 10 psi line pressure within one hour."

VMI PLC-5000 ELLD

In addition to providing Catastrophic Line Leak Detection, the VMI PLC-5000 is also:

- **Certified to detect leaks of .2 gallons per hour**
- **Certified to detect leaks of .1 gallons per hour**
- **"An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements." to meet federal / state requirements**

PLC-5000 ELLD

Line Leak Detection Designed for Gensets

- Control the Test Environment
  - Designed to keep piping pressurized
    - Prevents vapor pocket formation
  - Monitor the underground pipe
  - Monitor the line between the pump and where the pipe enters the building, up to a control valve, usually a solenoid valve

PLC-5000 ELLD

Line Leak Detection Designed for Gensets

- Meet the requirements of 40 CFR § 280.44 in underground pipe
- Mission Critical Override Capabilities

PLC-5000 Main Components

- Central Control Node (CCN)
- Pump & Control Valve
  - Bypass / Off / Auto
- Indicator Lights
  - Run & Alarm

PLC-5000 Main Components

Line Leak Detector Node (LDN)

- Monitors underground pressurized piping
  - Can monitor to the day tank solenoid
  - Recommended to monitor between the underground to exposed pipe transition solenoid

PLC-5000 Supplementary Component

98LD-2000PLC

2” STP Mounted C/V

Multi-Port Couplers

- PLC-5161-2 for Fuel Oil Supply Line
- PLC-5161-2R for Fuel Oil Return Line

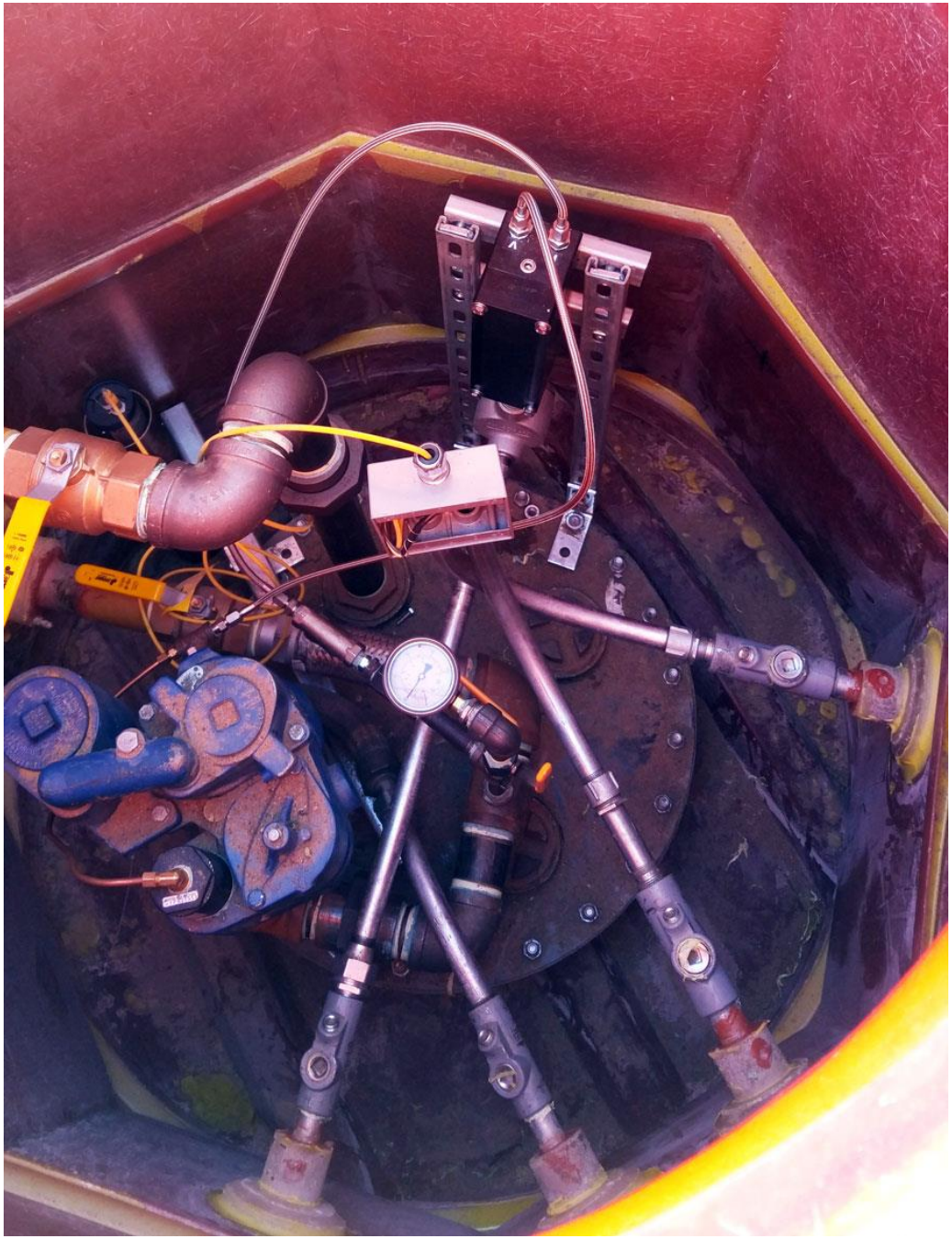
PLC-5000 Components

PLC-5161-2

Multi-Port Coupler for FOS Line

- **Delivers Fuel to LDN via Y-Strainer**
- **SS Braided Flex Hoses**
- **Pressure Gauge**
- **Quick Connect Test Fitting**

Wall Mounted LDNs at Underground to Aboveground Transition



STP Sump Mount

PLC-5000 ELLD

- Gensets operate differently than regular service stations
- Service stations pump fuel regularly
- Gensets are run for short periods of time once every 2 – 4 weeks unless there is an emergency. Therefore…

PLC-5000 ELLD

- When a line is inactive for long periods of time the pressure can fall due to:
  - Thermal contraction
  - Weeps that allow pressure to bleed back into the tank
- When line pressure falls vapor pockets form

PLC-5000 ELLD

- When vapor pockets form, the line resiliency changes
- When line resiliency goes up, the sensitivity of line leak detection goes down
- ELLDs will miss leaks or under-report the leak rate

PLC-5000 ELLD

- VMI runs continuous line leak detection
- After a fuel delivery is made, a line test is performed, the PLC-5000 continues to monitor line pressure
- Every time the pressure falls below a preset threshold a test is run

PLC-5000 ELLD

- Monitor underground pressurized piping for tightness
- Monitor for fuel authorizations
- Upon call for fuel (from a day tank, fuel polisher or a boiler)
  - Energize pump
  - Verify the line builds or is at operating pressure
  - Energize underground/aboveground transition solenoid

PLC-5000 Function

- Monitor line pressure constantly
  - Field adjustable per application
    - Extreme elevation change (high head pressure)
- Test line as needed
  - If pressure falls to preset level, CCN energizes pump to re-establish line pressure and test line
  - Multiple cycles allows system to distinguish between thermal contraction vs. line release

Benefits of Constant Line Pressure Monitoring

- Constant line pressure monitoring finds problems as they occur, allowing repairs before mission critical fueling events
- Mission critical fueling events are a bad time to discover a line leak or equipment failure to deliver fuel!

Mission Critical Fueling

- In the event of a line leak alarm at anytime, shut down the pump
  - The sites have day tanks designed to hold enough fuel for the generators to run for hours without refueling
- Site maintenance personnel walk interior portion of line to identify if the leak is inside the building
- Prevent diesel from flooding a generator room or running down a hallway
  - Perform emergency repairs
  - Place containment under leak or absorbents to contain leak

Mission Critical Fueling

When personnel have determined it is safe to bypass or override the alarm, place the CCN in Bypass

- **Create a direct pass-through of authorization to energize the pump when a daytank calls for fuel**
- **Energize the transition solenoid**
- **Pumps will run and solenoids will open even if electronic control boards fail or are destroyed by a power surge**

Contact VMI for Further Info

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