VEEDER-ROOT

Technical Service Notification

Troubleshooting DEF Probe Out Alarms

Overview

Troubleshooting a Probe Out alarm in a DEF tank can be challenging due to differences between standard petroleum products and DEF. DEF is a water-based liquid (67.5% de-ionized water) that is conductive and more susceptible to electrical noise interference, which can cause probe communication issues. Because DEF can conduct current, proper grounding of all DEF-related equipment is critical. If there is a difference in potential between the grounds of the DEF pump and probe, a ground loop will be created.

Troubleshooting Tips

- **Wiring** – Make sure the site is using shielded cable and the shields are grounded in the console, cutoff in the field. Make sure no intrinsically safe wiring is sharing conduits, wiring troughs or electrical boxes with high voltage wiring.
- **Grounding** – Confirm the console and other devices associated with DEF (DEF Pump, Heater) are properly grounded and share the same ground point. The console will have two isolated grounds. Disconnect these cables from the console. Place the leads of the ohm meter on each grounding wiring and confirm it reads less than 1 ohm of resistance. If it reads more than 1 ohm of resistance, then the console has bad grounding, which could be a cause of an electrical noise interference issue.
- **Probe** – It may not be possible to install the probe in another tank while troubleshooting. DEF probes have only one float and don't detect water unlike most petroleum probes.

A Simple Test

Remove the probe from the tank and reconnect it while it's laying on the ground. With the probe out of the tank, the circuit is broken. Does the alarm clear when the probe is removed from the tank and out of the product? If the alarm only occurs when the probe contacts the product in the tank, you likely have a problem with the grounding at the site and not the probe.

Other Factors to Consider

- When does the alarm activate? Does the probe out alarm activate only when another device is turned on? i.e. DEF STP, heat tape or heater. One of the devices could be causing noise and affecting probe communications.
- Are the alarms consistent? If the probe out alarm is consistent, connecting it to the field wiring of a working tank or directly to the console will help identify if the probe is working properly.
- Refer to the Probe Diagnostics and compare the samples read and samples used, errors and partial reads. These are key indicators of the probes performance and will help determine when you have fixed the problem.

Further Information

- Contact Veeder-Root Technical Support at 1-800-323-1799 for additional help or questions.
- Learn more about maintaining the quality of stored DEF on our DEF Recirculation Monitoring Solution page.

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