RACO | ALARM AGENT

APPLICATION NOTE

Preventing Sewage Spills with AlarmAgent

Sewage spills can have a range of serious impacts on the environment, public health, and local communities.

Wastewater operators hold the responsibility to effectively manage and prevent these spills, and to respond promptly and efficiently in the event of a spill to minimize the harm to people and the environment.

Spills can occur due to equipment failures, heavy rainfall, and human error, and they can result in the release of pollutants such as bacteria, viruses, chemicals, and toxic metals into the environment. The impacts of sewage spills can be wide-ranging, including water pollution, soil contamination, harm to aquatic life, and increased health risks for people. To ensure that the impacts of sewage spills are minimized, it is critical for wastewater operators to have effective monitoring, management, and response systems in place.

The AlarmAgent from RACO Manufacturing & Engineering provides operators a reliable and affordable means of preventing spills before they even start. This saves operators the many different costs associated with a spill - cleanup and remediation, regulatory reporting requirements, fines, reputational risks within the communities they serve.

AlarmAgent users can get so much more out of their unit with proper configuration.

Pump Run-times

By observing the runtimes of your pumps, you can make sure they are pumping consistently meeting their duty point on the pump curve. If the pumps are not pumping equally, that could mean you have a bad or worn impeller, clogged volute, or other restrictive issues.

Daily Pump Performance Report

	Pump 1 Hours	Pump 2 Hours
Cumul Run Time	320	305
Hours to Maint 1	9799	9793
Hours to Maint 2	9799	9793

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Run the Numbers

The volume of water pumped at station that has a 10' diameter wet well and the off float that is 2' below the lead float would be as calculated:

$$3.14 \; x \; 5 \; x \; 5 \;=\; 78.5 \; cubic \; feet \; (cf) \; per \; foot \; of \; pumping \; area$$

The volume per foot would be:

$$78.5 \; cf \; x \; 7.48 \; (gallons \; per \; cf) \;=\; 587.18 \; gallons/foot$$

Because the lead float is 2' above the off float, each time one pump comes on and pumps down and turns off, it has pumped 1,174.36 gallons. Note: inflow must be added back to have an accurate calculation. This information should be easy to capture.

If the duty point of the pump is 65 g.p.m, it should take 18.06 minutes to pump down to off condition, excluding inflow.

AlarmAgent.com makes it easy to determine how long a pump ran. If pump 1 pumps down to off in 18 minutes and pump 2 pumps down to off in 26 minutes, it is immediately clear that pump 2 is pumping an extra 8 minutes than it should.

Why this matters

This calculation tells the operator when the pump needs to be examined for a clog, worn impeller, bad connection on the discharge elbow etc. In this example, it also indicates that 8 more minutes of electricity is needed to get the same job done. For districts with sustainability goals, this sort of optimization is important.

Phase Monitor Provides Precious Time

This customer uses channel 6 as a phase monitor fail. The reason this is so important is you will be notified immediately of phase loss. This is the start of the bad outcome that you can be made aware of instantly,

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instead of waiting for when the high-level float will trigger its alarm. This affords you precious time to respond before a spill.

Date ▲	Calculated Station Flow KGAL	Pump 1 GPM	Pump 2 GPM	Pump 1 Starts	Pump 2 Starts	Pump Ratio
2023-01-21 21:57:43	1.94	82.99	81.75	3	3	1.00
2023-01-22 21:57:41	6.02	84.23	81.75	9	9	1.00
2023-01-23 21:57:43	4.62	84.85	81.75	7	7	1.00
2023-01-24 21:57:22	3.94	84.23	81.13	6	6	1.00
2023-01-25 21:57:42	6.38	85.47	82.37	9	10	1.11
2023-01-26 21:57:23	4.62	85.47	82.37	7	7	1.00
2023-01-27 21:57:43	3.61	84.85	82.37	6	5	0.83
2023-01-28 21:57:43	3.27	84.85	82.37	5	5	1.00
2023-01-29 21:57:43	3.59	85.47	81.75	5	6	1.20
2023-01-30 21:57:43	8.90	85.47	82.37	13	15	1.15
2023-01-31 21:57:24	6.72	85.47	82.37	10	10	1.00
Total	53.61	84.85	82.03	80	83	1.038

Saving Drive Time on Maintenance

This town uses their alarm agent to verify the exercising of the generator. The alarm comes on when the generator is running. This saves man hours driving around from station to station. It also notifies you that the generator did not exercise properly, and it needs to be checked on.

Maximize Travel Time to Station

Using Channel 9 and 10 on the Alarm Agent will assist you in preventing a spill. You can install a transducer or flow meter and land the signal to one of the two channels. These are analog channels and will give you exact depth or flow in real time. They are typically 4-20 Ma and easily programmed by you. AlarmAgent provides you with an automatic scaling tool - just enter the high and low setpoints and scaling is automatic.

If you have a flow meter that is a pulse counter, it can be connected to one of the discrete channels and give total flow in whatever increments your meter gives. (One pulse per thousand gallons) Where this will help you is that your operators will know how fast the wet wells fills up and empties. They can move their floats around to maximize travel time to get to the station, so they do not spill.

Planning Future Capacity

The other advantages of Channel 9 and 10 since they are analog signals, they will give you reporting to plan for future upgrades. Utilizing the pulse totalizer count will alert you if a pump station is near design capacity. This gives you time to plan for the future before you exceed capacity.

Easy to Program

One of the best features of the Alarm Agent is that you do not need an I&C technician to make changes or run reports. We train your team and empower you to do it the way that works best for you.

Conclusion

The AlarmAgent sets the standard in the wastewater industry.

RACO has a long history of reliability that you can count on, both with our products and with our US-based support team.

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