



KEEPING THE ROOF DRAIN OPEN

A new floating roof drain system that only closes valves when petroleum product is detected not only saves personnel hours but also acts as an early warning system for undetected leaks or spills



As an experienced storage operator and owner, Mark Rauch faced several challenges during his extensive career, including protecting floating open roof storage tanks from contamination and damage.

One of the challenges in using this type of storage tank is protecting it from storm water damage and preventing environmental contamination from product leaking through the drain. Most storage tanks have a drainage system to remove rainwater from the roof.

The premise of these systems is to close the automated valve when oil is detected in the storm water. Some systems react to the petroleum in the liquid by dissolving a piece of Styrofoam which would then trigger the valve to close. The operator would then see a flag to indicate that the valve had closed, but the reaction time for the foam to dissolve and close the valve would vary depending on the product in the water.

Other solutions would absorb the product but not the water. As they absorb the petroleum, the system would restrict the flow until it would stop letting liquid out of the system and the head pressure of a full tank could create a problem for that system. Therefore, a small leak might not be detected. Additionally, if a tank is full, it puts a restriction on the roof drain which could lead to a bigger problem.

Rauch, president and CEO of Pipeline & Terminal Management Corporation, decided to develop a system that would keep the roof drain valves open and only close them when oil was detected. 'I looked for many years to find a device that worked by allowing me to keep my roof drain valves open and only close them when it saw oil. I now have what I was looking for, but I had to develop it myself.'

The EnviroEye drain guard system (DGS) works by detecting hydrocarbons on the surface of storm water discharge. As the liquid flows



An EnviroEye DGS connected by flange to an EFR

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through, if the system does not detect a sheen or if there is no discharge, the valve remains open. The DGS only closes the automated valve when it detects oil on the surface of the water. The system then sends out a customisable alert, either visually, audibly, text message or a signal to the control room.

'The key advantages of the system is that you can leave your roof drain valve in the open position and it will only close when petroleum is present in the discharge,' says Rauch.

'When rain events happen, you do not need to send operators out to open the roof drain and monitor the discharge for product in the

storm water. I am not sure they would see it in a major rain event or at night.

'This also puts your personnel in harm's way for trip and fall hazards, lightning and other hazards that are associated with tank farms.'

CASE STUDY

Once the first system was built and installed at Rauch's facilities in South Florida, US, DGS' were installed at the remaining storage tanks at that facility.

Weeks later an alert was triggered on one of the tanks early one morning. Upon inspection the manager could not detect any product in the water that drained through the DGS and re-opened the valve, however it closed immediately.

Upon closer inspection he was then able to smell product in the DGS chamber but as it was just before the start of hurricane season in the US, there was no place to move the product quickly.

It transpired that the leak was only a teaspoon of product that would sometimes trigger the alarm depending on whether there was a rain event or if product had moved in or out of the tank.

The team set up an absorbent system to collect product before the sensor, keeping it from being discharged into the dike area and activating the alarm. If the amount of product



The EnviroEye DGS system under heavy rain conditions

discharged was too large, the sensor would then signal to the valve to close and send an alert.

Rauch says: 'The best part of this is, the DGS protected us from a potential disruption to our revenue stream and delivery to our customer.'

PRODUCT EVOLUTION

The company has developed a further two models for dike drains using the same concept as the original model. One model uses the

same concept but monitors at the dike outfall instead of at the roof drain line of an external floating roof tank. The other is the same unit with an additional filter system.

Additionally, the company is also expanding its dealer network and examining the potential of installations outside of the US.

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