



Case Study

Pit Viper fueling system upgrade drills into inefficiencies and environmental concerns

Location

This Banlaw client is an extensive gold mine in Eureka County in north-eastern Nevada. It is located on the Carlin Trend, a prolific gold mining district.



BANLAW

Liquid Asset Intelligence

Business Challenges

The site was experiencing frequent fuel spills related to the drill fleet being overfilled during refueling processes.

For both safety and environmental reasons, this miner takes a proactive stance against hydrocarbon leaks, and required a highly reliable solution for avoiding product to ground, whilst maintaining refueling efficiency.

With a mixed fleet of drill rigs experiencing varied refueling issues, the solution offered had to be flexible enough to suit different refueling setups on each drill. Furthermore, the solution needed to work with quick fill refueling systems produced by Banlaw and other equipment OEMs too. Finally, the solution also needed to be simple for site maintenance teams to self-install, so that fuel system upgrades could be deployed in line with scheduled maintenance activities on site.

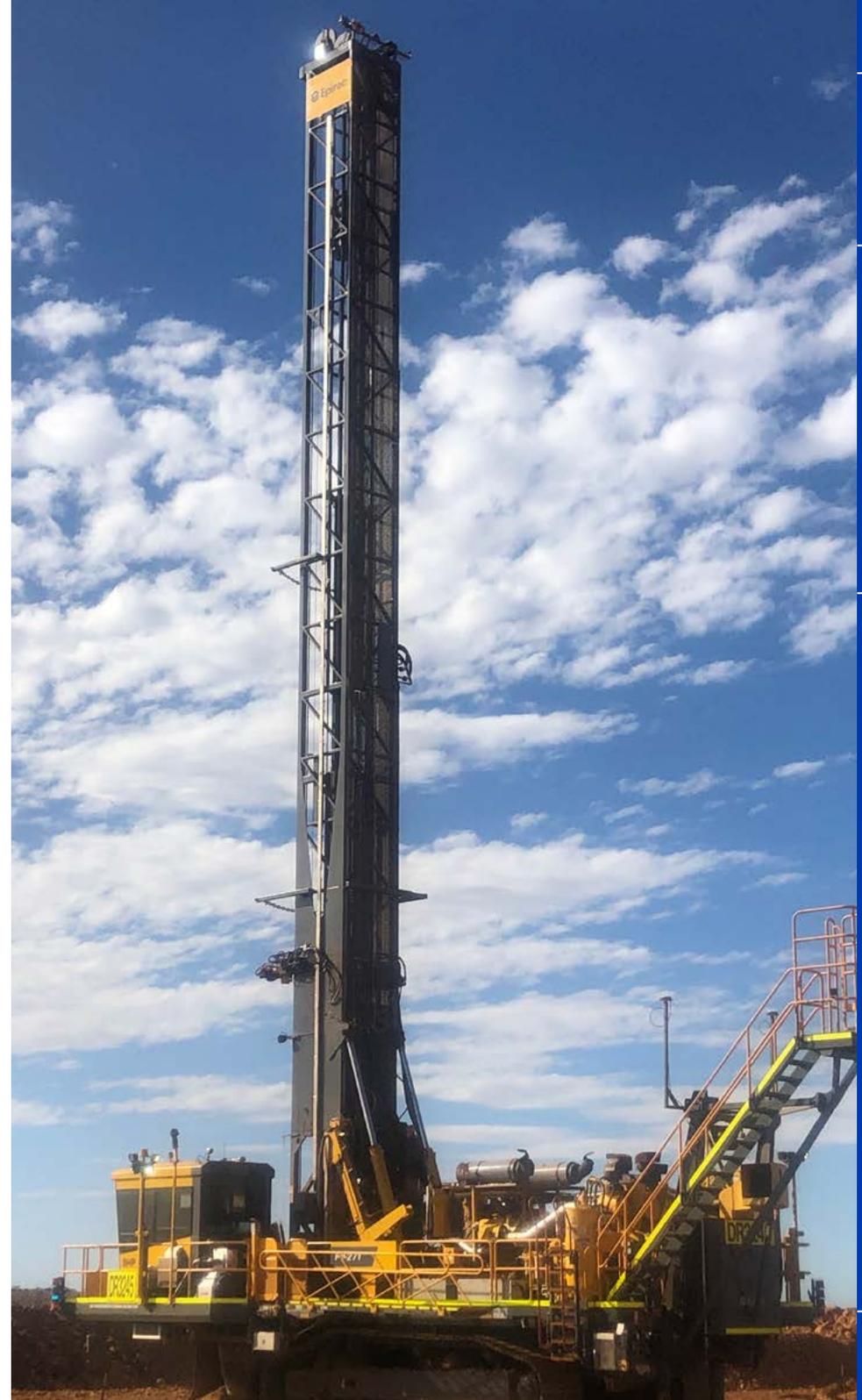
Blast drills represent unique challenges when it comes to refueling, and whilst eliminating spills was the primary goal, other risks also needed to be minimized.

Refueling challenges unique to drills

The diesel tanks in blast drills tend to be long and shallow. Being critical to production they need to be filled quickly, but diesel foams-up during refueling, and can easily be pushed out the top of the tank through the vent. Because of how shallow the tanks are, any automated refueling system must operate accurately and rapidly or overfills will occur.



Breakdowns due to fuel contamination or empty tanks needed to be avoided at all costs because a drill which cannot be moved off the pattern can delay blasting, potentially causing production to cease.



The Banlaw Solution

The refueling system upgrade recommended by Banlaw is called FillSafe Zero. It is a mechanical solution for fast, accurate, pressureless filling of diesel tanks. Kits are available for all types of diesel-powered equipment and the selection for the drill fleet on this gold mine included a Vented Level Sensor at the top of the fuel tank, a Remote Flow Control Valve at the tank inlet (which then affixes to the remote-fill-point pipework), and an Internal Pilot Line.

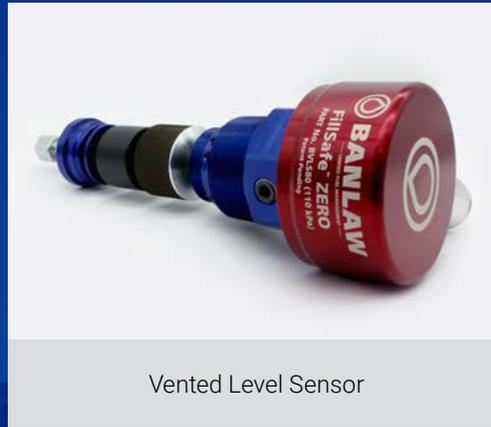
System Components

Banlaw Products

- ▶ Vented Level Sensor
- ▶ 2" Remote Flow Control Valve
- ▶ Internal Pilot Line

Ancillary Components

- ▶ Standard coupling to repurpose the existing fuel tank vent port on top of the tank
- ▶ Standard 90° coupling to affix the Flow Control Valve at the tank inlet to the remote fill-point pipework
- ▶ Thread tape and thread sealing compound



Vented Level Sensor



2" Remote Flow Control Valve



Internal Pilot Line

Vented Level Sensor

- ▶ Terminate refueling/filling process at the nominated tank ullage, with zero pressure build-up in the tank
- ▶ 264gpm / 2,118 SCFH air venting (exhaust and intake)
- ▶ 'Anti-spill' rollover protection
- ▶ Secondary (top) float for Dry Break refueling system 'shut-off' redundancy
- ▶ 110kPa (16psi) pressure relief valve

2" Remote Flow Control Valve

- ▶ Ideal for applications where the receiver is mounted a distance from the fuel tank
- ▶ Diesel flow range of 27gpm-211gpm
- ▶ Suitable for all climate extremes

Internal Pilot Line

- ▶ Correctly specified for constant immersion in diesel fuel
- ▶ 'Swivel' process connections ensure components cannot 'fall off' inside the tank
- ▶ Stainless-steel braid improves resilience and reduces hose damage from bumps and scrapes

Business Outcomes

Fuel spills due to diesel tanks overflowing on the drill fleet have been resolved. The Banlaw FillSafe™ Zero solution has been rolled out across the blast drills, first on one of the Epiroc Pit Vipers as a trial, then on two more Pit Vipers, before installation on the remainder of the drill fleet. After the wide-ranging benefits observed with the drills, this operation has now deployed appropriately selected FillSafe Zero refueling kits on tens of vehicles including dozers as well as the underground haul fleet.

Drill Fleet Outcomes

- ✓ Eliminated overfills and fuel spills
- ✓ No potential tank underfills
- ✓ Ensured zero tank pressure during refuelling
- ✓ Established highly reactive and accurate shutoff for long, shallow tanks
- ✓ Optimized equipment filling speed – no throttling
- ✓ Maintained functionality of the remote fill point
- ✓ Integrated tank venting and level sensing from a single port
- ✓ Reduced breakdowns from particulate contaminants in diesel
- ✓ Verified refueling equipment cross-compatibility with other OEM nozzles/receivers



FillSafe Zero Vented Level Sensor – terminates filling quickly and accurately, with zero pressure build up in the tank.



FillSafe Zero Remote Flow Control Valve being installed at the tank inlet – an ideal product for applications where the receiver is mounted a distance from the fuel tank.





After the PV-271s, other equipment types such as dozers and underground haul trucks were upgraded.

Site Feedback at the Conclusion of the Successful Product Trial

“I would like to thank you for helping us out with the install for the FillSafe Zero system that Banlaw offers. We now have 3 of these systems on our drill fleet.

Issue:

- ▶ We had fuel spills that were happening while fueling due to overfilling

Solution:

- ▶ Banlaw installed our FillSafe Zero system → overfill issues have ceased
- ▶ We now have three drills with FillSafe Zero → all running with no issues
- ▶ Site is installing FillSafe Zero on the rest of the fleet → scheduled upgrades underway

Again, thank you and your staff for helping us out with this problem in such an effective way

I would recommend this system for all equipment.”

Willie Pirtle

Mine Maintenance Shovel & Drill Planner