

Beef up visual security to clamp down on illegal mining

 By [Laurence Smith](#)

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South Africa's illegal mining trade was estimated at being worth R7bn a year in 2017, while the SA Human Rights Commission said there in 2015 that there were about active 30,000 illegal miners (zama-zamas).



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News reports say that mining towns across the country are under siege by illegal mining syndicates, with zama-zamas trespassing at both abandoned and functional mines. Not only does illegal mining lead to lost revenue and tax, but also lost employment opportunities, capital expenditure, exports and foreign exchange earnings. Furthermore, illegal mining is extremely dangerous and happens often under desperate conditions without regard for safety. So, what can be done to secure mining properties in order to prevent zama-zamas from gaining entry?

It starts with getting the right visual security components in place. With the right mix of thermal cameras, 4K visual cameras and an intelligent video management system coupled with smart analytics, it becomes much easier and more cost-effective to physically secure mining premises to detect and / or prevent unauthorised access.

Rethinking the way we visualise mine security

In security, the importance of visual surveillance cannot be overemphasised. In mining applications, its purpose is to detect, prevent and deter zama-zamas, as well as provide evidence that can be used to catch and prosecute illicit miners. Because mining properties usually have such large perimeters, standard CCTV surveillance imaging won't cut it, as their distances are too great, and the lighting requirements are simply too much. Instead, pan/tilt or fixed thermal cameras will offer the most useful eyes, as they operate just as effectively by day as by night without the need for any lighting. These military-grade cameras have low power requirements and multiple lens options that allow surveillance operators to view images in environments with little or no lighting. Thermal camera technology detects 'heat signatures' generated from objects and people to create an image of the environment.

A self-sustaining security solution

Due to the large size of mining sites, the cost of setting up fencing is a massive barrier and it doesn't always guarantee keeping zama-zamas out. Instead, technology has been used by smart security manufacturers to create a unique perimeter security solution to this persistent problem. 4K cameras are vital in mining surveillance, as these cameras can

capture higher quality footage with the additional benefit of up to four times more detail at full 25 frames per second (fps) than today's top full HD 1080p cameras and legacy 10MP cameras. This allows operators to cover vast distances and electronically zoom in to areas of the picture without losing detail making these cameras ideal for mining area surveillance and especially useful in post-event playback.

However, 4K cameras can be coupled with thermal cameras that help operators see in total darkness and day light. Thermal cameras can penetrate through dust, smoke and any adverse weather conditions with an effective detection range of up to 1km, depending on the lens used. This is especially useful in a mining environment where dust and smoke are prevalent. By using thermal cameras, the mine can also reduce the overall number of cameras required in a surveillance set up, given their extensive range.

Leading by example

Mines must look towards 4K and thermal cameras solutions in order to create a safe and secure mining environment when facing the looming threat of zama-zamas. With the right visual security technology solution in place, security operators will improve their intruder capture rate while reducing the overall risk to security personnel, along with preventing the loss of revenue, jobs and foreign exchange earnings.

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