

**Hikvision Mining Industry Solution**  
Safeguarding employees and operations  
with boosted productivity



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**HIKVISION**



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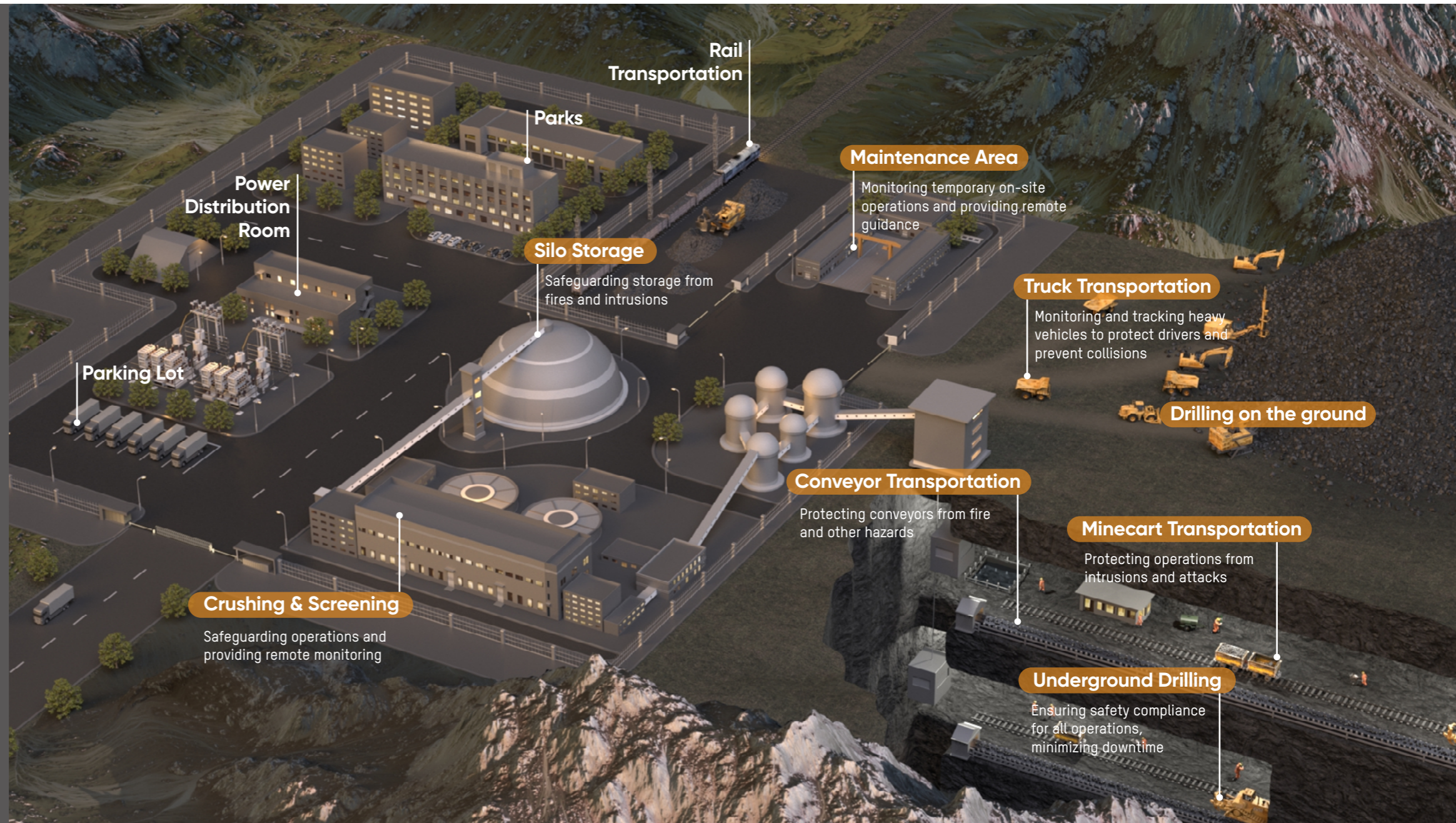
## Solution Overview

Whether underground or on the surface, priority number one in mining is workforce safety. Slips, trips, and falls in high-risk environments can mean serious consequences. Physical loss or damage to assets causes costly downtime, posing tremendous concerns for mining companies. Furthermore, the industry requires digital technologies – automation, improved manufacturing processes, and production optimizations – to promote operational efficiency and standardize the work process.

Taking these concerns into account, Hikvision's Mining Industry Solution protects employees, operations, and assets with high efficiency. Hikvision's solution harnesses the power of AI technology and top-tier products to help ensure workforce and facility safety, fluid operations, and improved productivity in general.

Continue reading to find out how our solution can safeguard your employees and critical operations with higher efficiency.

## Integrated Systems Improve Safety for Employees, Operations and Facilities



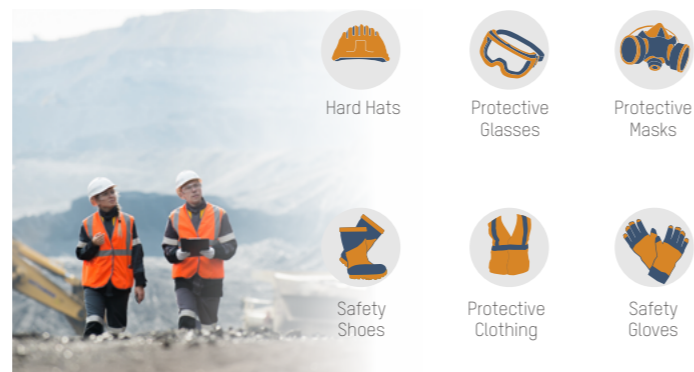
# Focusing on Personnel Safety and Risk Reduction

Hikvision's solution for the mining industry boosts health and safety for personnel with continuous monitoring of critical areas using AI-powered analytics. The solution can further identify, manage, and prevent potential risks. It also helps mining operators comply with safety regulations – ultimately saving lives.

## AI-powered analytics for personnel protection

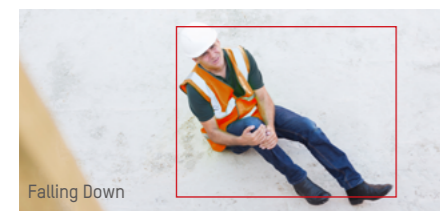
### PPE compliance detection

Wearing PPE (personal protective equipment) elevates worker safety during the production and maintenance processes in hazardous environments. With Hikvision's intelligent cameras and terminals, managers can remotely check employees' protective gear efficiently to maintain compliance and prevent injuries.



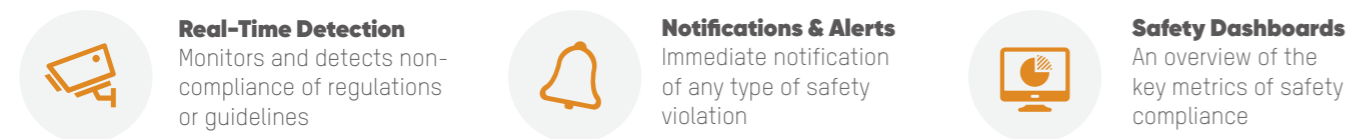
### Violation detection

Violation detection inspects safety compliance and risks at the work site, providing safe distance detection, absence detection, and more, notifying supervisors when their employees step into dangerous or restricted areas, or when someone breaches local regulations.



### Dangerous activity detection

Dangerous activity detection identifies emergencies and hazardous events that can threaten worker safety, such as falling down, running, unauthorized gathering, and more, helping managers respond in a timely manner.



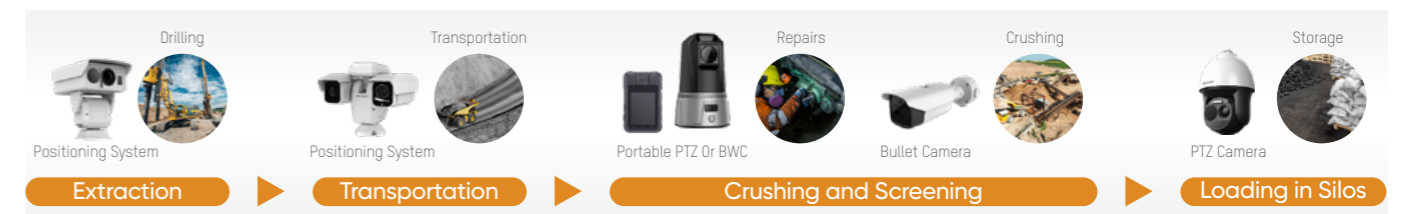
# Ensuring Operational Efficiency and Productivity

Our solution adds visibility to mining operations and assists managers in predicting operational failures with intelligent video analysis. Incidents such as temperature anomalies and fire hazards can be detected and verified in the early stages, reducing losses and unnecessary downtime. A manager's duties get a boost when Hikvision makes their supervision smarter and more effective, decreasing labor costs and improving overall efficiency.

## Optical solutions for operational supervision

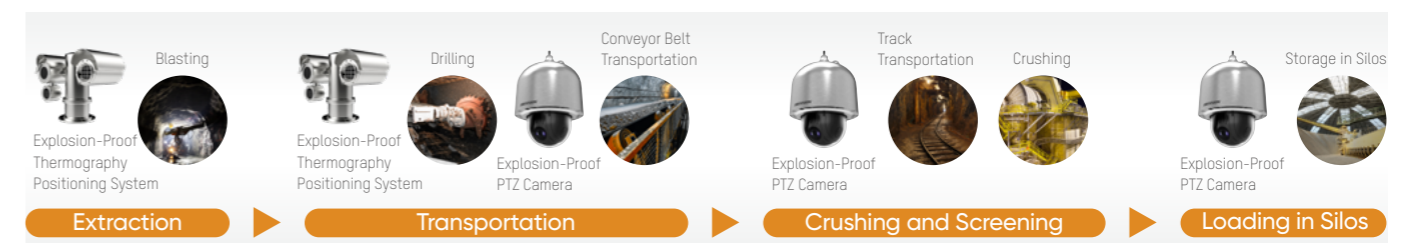
### Monitoring processes in open areas

Protecting workers in expansive, open areas such as large pits can pose many challenges. Site managers must conduct continuous safety monitoring of the entire production process. Hikvision's Mining Solution helps users keep track of the entire operational process by using a control center connected to various optical cameras deployed at worksites, providing more efficient and secure remote management with 24/7 online protection.



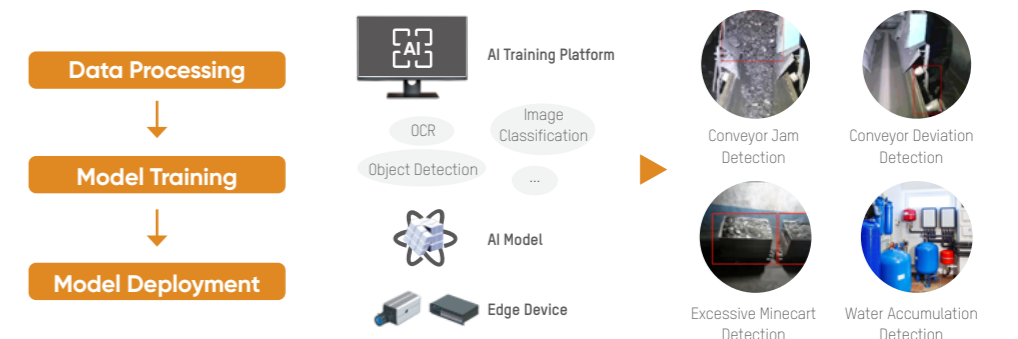
### Processing monitoring in underground mines

Combustible substances – such as gas and chemical dust in drilling and blasting areas – elevate the risk of explosion and fire. What's more, mine fires and fire injuries remain serious hazards in equipment failures of mine tunnels or silos. Our stainless steel explosion-proof cameras are designed for these extreme hazardous environments, providing stable and clear imaging to strengthen site-wide security and minimizing risk potentials.



### Asset status detection for underground mines

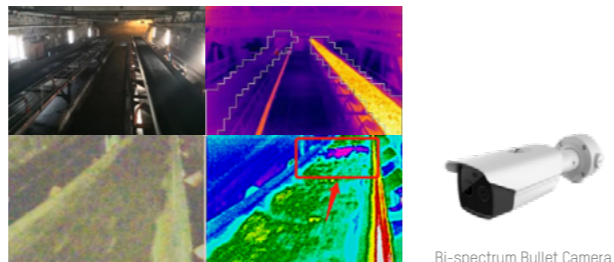
Our AI-powered image analytics support real-time alerts of abnormal status in mines via open AI platform. Integrated with on-site voice reminders and video, the analytics assist users intelligently, automatically identifying faults and intervening to greatly reduce downtime.



## Remote anomaly detection with thermography

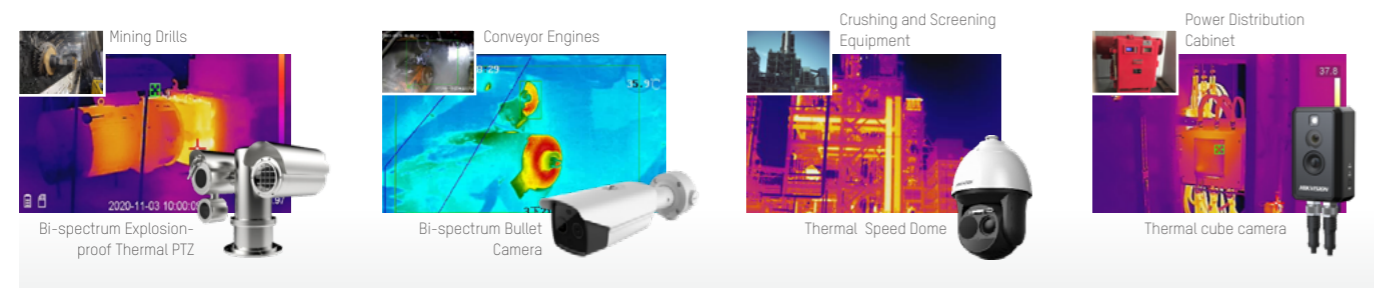
### Industrial thermography for conveyor belts

Hikvision thermal cameras help capture temperature changes in the environment or equipment, rapidly detecting potential risks such as burning material or conveyor belts after long-distance transportation. When excessive temperatures are detected, our thermal cameras immediately trigger alarms on the central platform, equipping managers with critical information for the best response.



### Industrial thermography for critical assets

Mining equipment is tremendously costly to repair or replace, so operators need to closely monitor high-value equipment. Our solution detects abnormal temperatures continuously around mining assets to catch potential failures early. This way, employees can take action before the equipment seizes or suffers damage, protecting workers at maximum efficiency and saving time and money.



## Transportation monitoring

The essential step of transporting minerals in the distribution process requires close monitoring. Drivers of transportation vehicles, such as large mining trucks and engineering vehicles, at dig sites often deal with blind spots which can cause collisions and injuries. Dangerous road conditions pose challenges as well. Hikvision helps users solve these challenges with real-time vehicle tracking and monitoring based on automated, intelligent video driver assistance and activity detections.

### Real-time vehicle tracking & monitoring

Compared to traditional GPS positioning, Hikvision expands insight by adding video monitoring, intercom, and an emergency alarm system, which work together to track vehicle location and status for more efficient and effective event handling. Multi-dimensional driving data gets uploaded to the management platform so managers can stay on top of all activity.



## AR live interaction

Augmented reality in video imaging delivers an enhanced, panoramic view of every operational process in time without losing details. Mine operators can identify emergency issues quickly or review events remotely by bridging the physical and virtual worlds with 3D imaging.



- 3D** **Enhanced awareness**  
From 2D GIS to 3D real images
- Rapid understanding**  
One complete view of what's happening from cameras
- i** **Better information delivery**  
ANPR results, panic alarm, traffic data, and more



### Driver assistance and detection

With the DBA, BSD, ADAS system, our solution provides intelligent driving analysis and detection, including fatigued driving, smoking and making a phone calls. The comprehensive driving assistance brings collision warning, deviation alarm, and blind spot detection, along with other functions to enhance safety and protect personnel.



# Providing Comprehensive Protection for Critical Infrastructure

Hikvision's solution builds the first line of perimeter protection for various high-value assets, preventing intrusions and safeguarding critical facilities from property damage or loss. Thanks to the clear and accurate remote imaging of our thermal and optical technologies and products, security management just got easier – even in low-light environments.

## Perimeter protection at multiple sites

Our solution helps safeguard critical infrastructure, from perimeters to critical zones, with a series of optical cameras and radar and thermal devices. It can stop potential intruders in real time, alerting personnel of their presence when approaching restricted areas or attempting to breach a perimeter.



**Temporary deployment** for short-term operations requiring a temporary increase in monitoring points

**Long-term deployment** for scenarios where electricity and internet are not readily available



Users can enjoy timely monitoring 24/7 even with complex geographical and environmental conditions by using our Solar-powered Security Camera Kit. This kit effectively eases routine inspections at remote areas, minimizing human and hardware costs. Security staff can receive intelligent alerts in a timely manner when an abnormal event occurs. It requires no wiring for power or data transmission and can be installed virtually anywhere where there is a 3G/4G signal.



## Fire prevention

Fire prevention is one of the core concerns of the mining industry. Spontaneous combustion, the accumulation of flammable materials, or smoking in unsafe areas can cause fires resulting in damage to surrounding assets as well as huge property losses. Our solution helps detect abnormally high temperatures and smoke before the worst happens.

### Thermal Channel: Fire source detection

The Thermal Channel works by comparing the difference between the target temperature and the environmental temperature. If the difference exceeds the threshold, an alarm will be generated.



Bi-spectrum Thermal PTZ Camera

### Optical Channel: Smoke detection

Optical lenses in the positioning system deliver smoke detection as a supplement to thermal fire source detection, which helps to locate suspicious targets earlier.



Bi-spectrum Thermal Positioning System

## Vehicle management

### Entrance & exit control

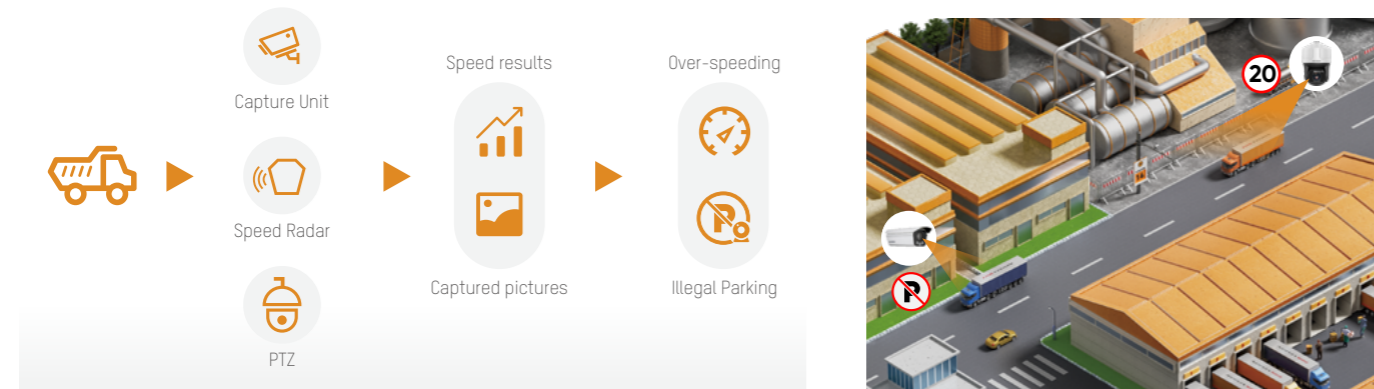
Hikvision offers flexible and efficient entrance & exit control for the mining industry, with varied access control levels for vehicles entering the park.

Vehicle type	Entrance	Exit
Private Car	<ul style="list-style-type: none"> <li>Registered Vehicles: Automatic access (ANPR Camera + I/O Relay Terminal + Barrier)</li> <li>Visiting Vehicles: Remote access granting (ANPR Camera + I/O Relay Terminal + Video Intercom + Barrier)</li> </ul>	Automatic exit (ANPR Camera + I/O Relay Terminal + Barrier)
Truck	<ul style="list-style-type: none"> <li>Registered Vehicles: Automatic access (ANPR Camera + I/O Relay Terminal + Barrier)</li> <li>Visiting Vehicles: Remote access granting (Check the truck and open barrier manually)</li> </ul>	Manual checking (Check the truck and open barrier manually)



## On-site vehicle regulations management

Our vehicle checkpoints can be deployed on arterial roads in refinery and chemical plants to detect and send alarms upon detection of violations. Violations include speeding, illegal parking, and others, reducing potential risks while improving operations. All alarms and notification will be sent to security guards for further handling.



## Visualizing Data for Better Insights

Hikvision's Solution for the Mining Industry features an all-inclusive dashboard to present perceived data in an intuitive, visualized way. The dashboard equips operations teams with a bird's eye view and multidimensional analytics, displaying on-going site operations and real-time inspection status with detailed information and data indexing. All of this comes together to inform and elevate decision-making.



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