

# ESSENTIAL ELEMENTS FOR SAFE OPERATIONS CHEMICAL PLANT SOLUTION

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**ESSENTIAL ELEMENTS FOR  
SAFE OPERATIONS  
CHEMICAL PLANT SOLUTION**



# What is a Chemical Plant and What Concerns Need to be Addressed?

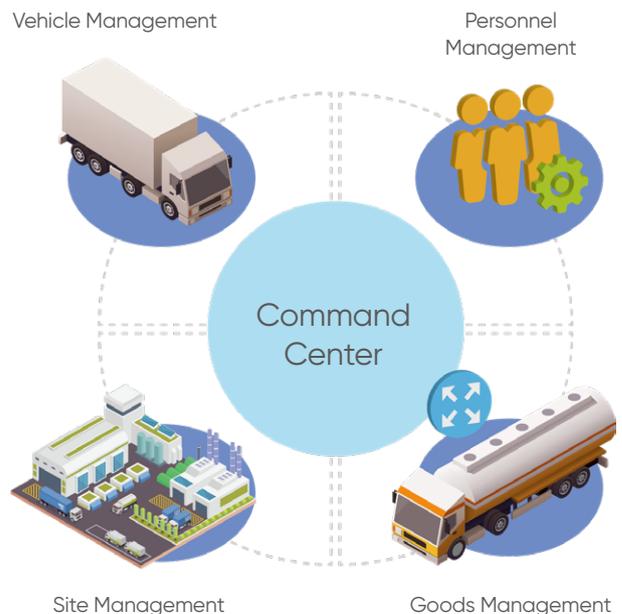
*Chemical Plants are complex facilities where chemical compounds are created and stored. Often, given the large amounts of chemicals kept in these plants, these facilities pose hazards for both working staff inside and people or animals living nearby. If mishandled, accidents can be deadly.*

*Ensuring the safety of all aspects within the plant – from property safety to staff safety and production safety – is the top priority for all chemical plants. However, due to the high-risk nature of these unique facilities, traditional security methods like manual inspections might not be as safe or efficient as they once were.*



## The Hikvision Chemical Plant Solution

Whether it's a single- or multi-site operation, Hikvision answers these concerns by offering an all-encompassing solution that focuses on four critical components. This solution not only improves property safety with its top-notch security solution, but also helps improve operational safety and efficiency through adapting Artificial Intelligence-powered functionality. All together, Hikvision's solution aims to build a more secure chemical plant.



# Personnel Management

Effective Protection and Efficient Management



**4 MP DeepinView  
Bullet Camera**

iDS-2CD7A46G0-IZHS

Protective helmet



Eye wear



VIS clothes



Protective boots



Dust mask



Ear plugs



Safety gloves



## Hard Hat Detection

PPE stands for Personal Protective Equipment – protective-wear that ensures worker safety. Hikvision now offers intelligently detection of helmets or other PPE.

For example, the embedded Hard hat detection can notify relevant personnel if a worker is found not wearing one where required. This helps to improve the safety level without requiring extra manpower to oversee.

## Access Management for Plants and Workshops



### Entering and Exiting During Rush Hours

Workers usually wear gloves and/or carry merchandise, making it difficult to use authentication methods that require physical contact. Additionally, clocking in and out is time-consuming with large numbers of workers. If a card-based authentication is used, there is also the problem of fake attendance records.

Face recognition terminals now make access authentication accurate, efficient, hygienic, and impossible to counterfeit.



**MinMoe  
Face Recognition  
Terminal**  
DS-K1T671TM-3XF



### Quick and Easy Movement Throughout the Warehouse

In the warehouse areas, forklifts and other equipment constantly pass from one zone to another. Face recognition technologies offer a smooth and convenient way to access various areas, for example, through a roller shutter door, without having to have workers get down from the forklift.

**DeepinMind NVR**  
iDS-9632NXI-I8  
DS-2CD7546G0-IZ(H)SY





# Vehicle Management

Standardize Driving Behaviors and Improve Vehicle Management

## On-Site Driving Regulations and Management

Vehicle regulation and management is especially important at chemical plants because vehicles often carry hazardous or toxic materials that require special training licenses and extreme caution. Driving over the speed limit or illegal parking in prohibited areas could have disastrous consequences.

With Hikvision's specially-design traffic management products, managing drivers and vehicles within the plant immediately becomes safer, easier, and more efficient.



**4 MP DarkFighter Traffic Network Speed Dome**  
iDS-2VS435-F836



**Check Point Camera / Radar**  
iDS-TCV900  
DS-TD10N-1

## Entrance & Exit Control

Hikvision offers convenient and efficient entrance & exit control for industrial parks with or without a security booth at the gate.

Pre-registered vehicles can pass efficiently via automatic license plate recognition. Visitor vehicles can also conveniently log in at a security booth or remotely using a video intercom device.



**4 MP ANPR Bullet Camera**  
iDS-TCM403-A

### Registered Vehicles

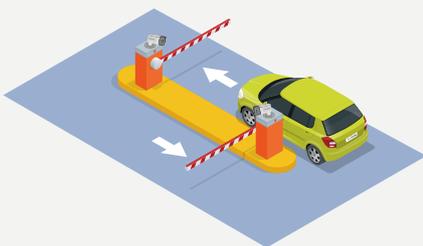


Plate recognition (ANPR Solution)

Auto-open barrier

Plate recognition

Open barrier

### Visiting Vehicles



Security guards check in the control room

Registers in the toll manually

Records the vehicle information

Auto-open barrier

Plate recognition

Open barrier

# Site Management

Reliably Record and Safely Store All Operations



**Thermal Network Bullet Camera**  
DS-2TD2137-25V1

## Perimeter Protection

When dealing with large areas that suffer from low illumination, using a thermal camera can provide clear video – even in zero-light environments.

For areas that require higher-level security protection, the combination of radar and dome camera brings both accurate radar and clear visuals together. The link between the two – radar accuracy and dome camera clarity – allows you to easily track any suspicious movements.

### Scenario 1

Low light and long distance



### Scenario 2

Areas with high security requirements



## Intelligent and Efficient Patrol

### On-site Patrols

Phase 1

The traditional on-site patrol methods suffer from several downsides:

- More manpower required
- Low efficiency as all the sites are checked manually
- Potentially dangerous for security to patrol areas with hazardous materials

### Remote Patrols

Phase 2

In chemical plants where a production workshop can be too hazardous or simply unfit for in-person inspections, remote patrolling offers a safer and more efficient alternative. Security or production managers can visually check all sites using high-definition cameras based on patrol schedules. Users will enjoy the many benefits that come with remote patrols in their existing security system.

If an event is captured during a patrol, a security guard receives notification and can respond immediately with the necessary protocols.

Airtightness Detection



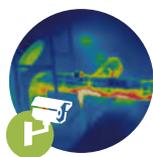
Fire Exit



Storage Area



Inside of Lab



Oil Leakage Detection



Vehicle Speed



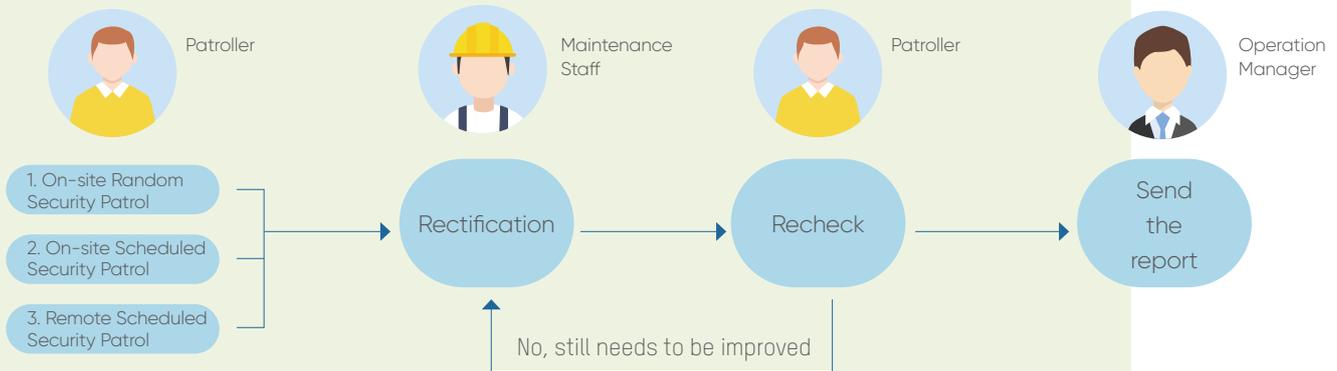
Unauthorized Vehicles



Illegal Parking



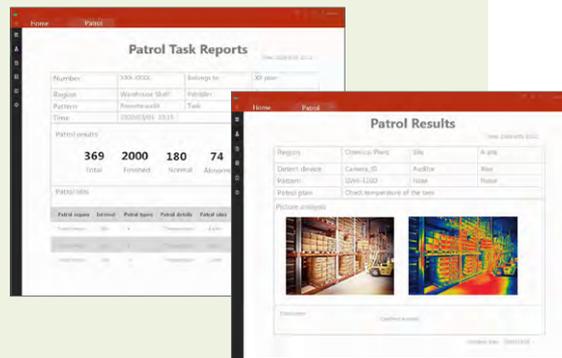
## Workflow for the patrol and improvement process



## Reports for security manager and production manager



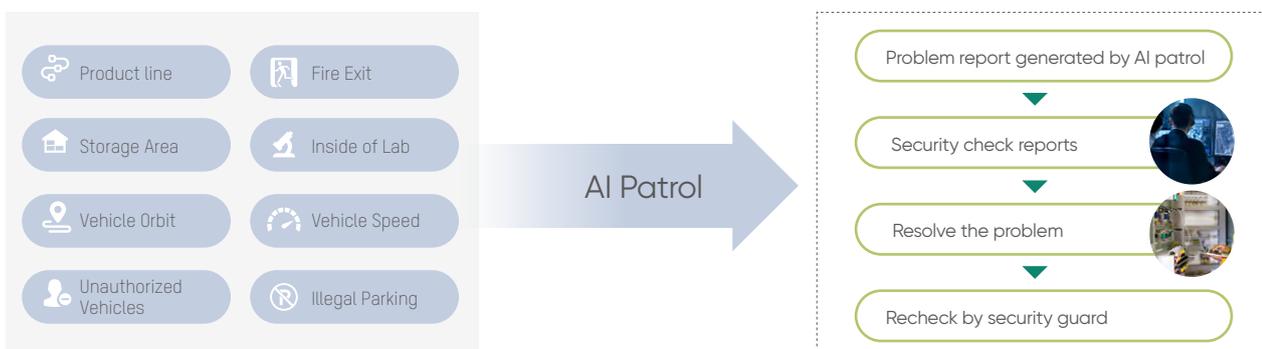
Comprehensive reports include all patrol tasks and process for security manager.



Reports detail each task for the production manager, who is responsible for resolving problems.

## Phase 3 AI Patrols

Artificial Intelligence Patrols add intelligence on top of remote methods – now security staff and managers do not have to manually check all video footage. The AI patrol will identify a problem when a captured image triggers pre-set rules. In the past, a security guard had to check images for all patrol locations. However, with AI patrol, only those that have an issue will be sent to security, vastly reducing labor cost. Security can then resolve that specific problem. AI patrols reduce manpower and offer a more intelligent way to quickly respond to any problem.



# Goods Management

Intelligent Functions to Ensure Production and Goods Safety

## Temperature Tracking and Warning System

Of all the events that could take place in a chemical plant, fire hazards are the most serious and deadly – and perhaps the most preventable. This is why the ability to foresee such events is particularly important in production and storage areas.

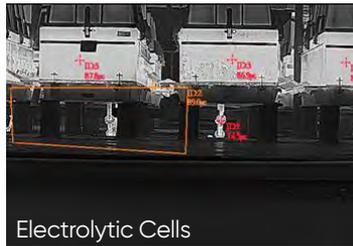
Hikvision's Thermal Cameras provide continuous tracking and monitoring of temperatures in targeted locations. Alerts or warnings will be sent to relevant personnel upon the detection of abnormal temperature. Utilizing thermal technology helps to effectively detect fire or explosions in the early stages.



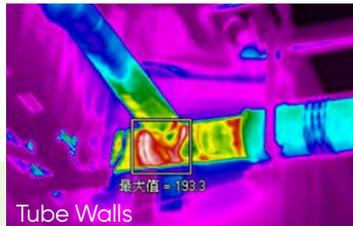
**Temperature measuring range**  
-20°C to 150°C , 20°C to 350°C  
**Temperature accuracy**  
Max (±2 °C, ±2%)



Chemical Pipelines



Electrolytic Cells



Tube Walls



Motor Windings

## Processing Monitoring

In chemical plants, process monitoring is crucial to be able to see and respond to accidents or any property losses timely. However, conventional security devices are unfit for these environments. Hikvision's anti-corrosion cameras and explosion-proof cameras are specially-designed for these challenging scenarios. With a full portfolio of both indoor and outdoor models, you can easily monitor different areas or processes with ensured device robustness and great imaging capability. For example, an indoor explosion-proof camera can be used to monitor the liquid level of oil tanks.



Anti-corrosion Camera



Explosion-proof Cameras



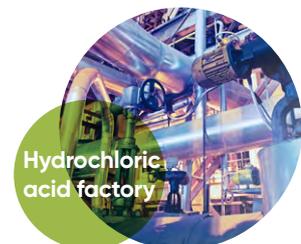
Chemical Plant



Nitric acid factory



Vitriol factory

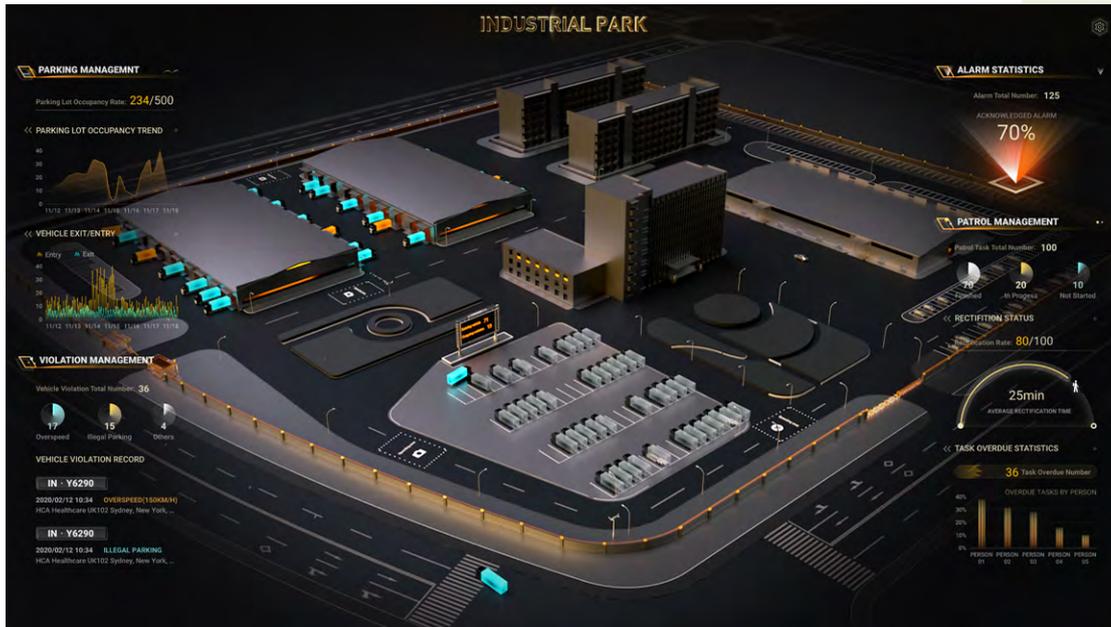


Hydrochloric acid factory

# Command Center

## Intuitive and Comprehensive Dashboard

With a 3D image of your chemical plant at the center of the dashboard, you will see all operational data and activity in one place. Whether you're looking for statistics on operations, security, or employee performance, this dashboard has it all!



## AR Command Center

This AR command center is an efficient tool for you to quickly access real-time video feed for different areas - simply click on the tag to switch view window.



**24 MP 270° Panoramic and PTZ Camera**  
DS-2DP2427ZIXS-DE/440/T2





**Headquarters**

No.555 Qianmo Road, Binjiang District,  
Hangzhou 310051, China  
T +86-571-8807-5998  
overseasbusiness@hikvision.com

**Hikvision USA**  
T +1-909-895-0400  
sales.usa@hikvision.com

**Hikvision Europe**  
T +31-23-5542770  
sales.eu@hikvision.com

**Hikvision UK & Ireland**  
T +01628-902140  
sales.uk@hikvision.com

**Hikvision UAE**  
T +971-4-4432090  
salesme@hikvision.com

**Hikvision Russia**  
T +7-495-669-67-99  
saleru@hikvision.com

**Hikvision Australia**  
T +61-2-8599-4233  
salesau@hikvision.com

**Hikvision Italy**  
T +39-0438-6902  
info.it@hikvision.com

**Hikvision South Africa**  
Tel: +27 (10) 0351172  
sale.africa@hikvision.com

**Hikvision Singapore**  
T +65-6684-4718  
sg@hikvision.com

**Hikvision Korea**  
T +82-(0)31-731-8817  
sales.korea@hikvision.com

**Hikvision India**  
T +91-22-28469900  
sales@pramahikvision.com

**Hikvision Brazil**  
T +55 11 3318-0050  
Latam.support@hikvision.com

**Hikvision France**  
T +33(0)1-85-330-450  
info.fr@hikvision.com

**Hikvision Spain**  
T +34-91-737-16-55  
info.es@hikvision.com

**Hikvision Poland**  
T +48-22-460-01-50  
info.pl@hikvision.com

**Hikvision Canada**  
T +1-866-200-6690  
sales.canada@hikvision.com

**Hikvision Turkey**  
T +90 (216)521 7070- 7074  
sales.tr@hikvision.com

**Hikvision Kazakhstan**  
T +7-727-9730667  
nikia.panfilov@hikvision.ru

**Hikvision Tashkent**  
T +99-87-1238-9438  
uzb@hikvision.ru

**Hikvision Indonesia**  
T +62-21-2933759  
Sales.Indonesia@hikvision.com

**Hikvision Thailand**  
T +662-275-9949  
sales.thailand@hikvision.com

**Hikvision Malaysia**  
T +601-7652-2413  
sales.my@hikvision.com

**Hikvision Vietnam**  
T +84-974270888  
sales.vt@hikvision.com

**Hikvision Hong Kong**  
T +852-2151-7161  
info.hk@hikvision.com

**Hikvision Colombia**  
sales.colombia@hikvision.com

**Hikvision Romania**  
marketing.ro@hikvision.com

