# Intelligent around-the-clock HDTV video surveillance at crude oil reserve project.

Enhanced operations, management and security for Sinopec Commercial Crude Oil Reserve Base with Axis cameras.



**Organization:**
Sinopec Commercial Crude Oil Reserve Base

**Location:**
Tianjin, China

**Industry segment:**
Critical infrastructure

**Application:**
Safety and security, remote monitoring

**Axis partner:**
Beijing GINIS Electronics Technologies, Ltd.

## Mission

Tianjin-based Sinopec crude oil reserve project covers a land area of approximately 684,000m², and maintains 32 100,000m³ floating top crude oil tanks with supporting oil pump station, sewage lifting pump station, and central control building, as well as repair and warehousing facilities. A digital surveillance system was expected to cater for Sinopec's operations, fire control, security protection and management. As staff, technologies and materials would be combined under the security system, no blind spot could be found in the monitored areas. The system was required to be "secure, reliable, open, manageable, maintainable, scalable, interoperable, and cutting-edge", addressing both integration and continuous expansion of the surveillance system.

## Solution

The HDTV surveillance system for Sinopec introduced IP-based digital video surveillance technology, and the image transmission, storage and management system is built on its private TV surveillance LAN, which provides the open IP architecture.

At the front end are Axis' intelligent HDTV network cameras, while at the back end is VICON's VICONNET platform.

## Result

The new system has an integrated management platform at the core, featuring perimeter intrusion prevention, video surveillance interlocking, and entrance/exit control. All monitoring points carry out 24/7 surveillance and obviates blind spots, resulting in a full coverage, manageable system flexible for future expansion.

**AXIS** COMMUNICATIONS

*"Axis HDTV network cameras provide superior images around the clock, addressing the operations, management, control and security of the crude oil reserve."*

**Wang Ying, project supervisor / project department office director.**

## Addressing the scope

Having versatile needs when it comes to surveillance, management and development, the solution for Sinopec crude oil reserve project includes several central points to address.

1. **Network system**: LAN is used to create the dedicated video network with front-end Gigabit access and aggregation, enabling connection with superior system.

2. **Intrusion alarm system**: an intelligent system where the sensor technologies and video detection and analytics technologies are leveraged to detect and indicate any illegal intrusion or attempt into the protected areas, handle alarm information, and send out alarm signals.

3. **Video surveillance system**: adopts the network video surveillance system architecture, with AXIS Q6035-E, AXIS P1354-E and AXIS M5014 Network Cameras at front end. Some analog thermal cameras are placed at the highest point of tank area, and AXIS Q7404 Video Encoders are being used to convert the signals into digital ones; all images are transmitted through dedicated network to the control center, for real-time surveillance on the large screen or control terminals.

4. **Surveillance center system**: The surveillance center receives and handles the video, alarm and status information from the various systems, manages the processed alarm information and instructions on VICONNET platform, and stores the video and alarm information 24 hours a day, without any interruption.

5. **Control and management**: the network-based digital video management system platform adopts the modular, hierarchical, distributed, load-balancing architecture, and provides support for directory tree maintenance, multi-database synchronization, remote configuration management APIs, multi-level device addressing, directory tree search, automatic routing. With scalable hierarchy and multi-system access, the platform provides the ability to enable the management and control of the video storage server, streaming server, and virtual matrix controller.

All monitoring points carry out 24/7 surveillance and the video storage server automatically saves the digital video recording around the clock without any interruption, storing data for a 30-day period. The new system eliminates any blind spots in the protected area, and seamlessly covers such important places as the tank area, fire control station, fire pumps, power transformation station, oil pump house, enclosing walls, and main intersections.

With extra protection at the critical areas, and excellent functionalities like intelligent alarming, tracking and identification, the system considerably improves the security of the crude oil reserve.

## Challenging circumstances

AXIS Q6035-E PTZ Dome Network Camera is designed for the most demanding applications. The outdoor-ready PTZ dome provides HDTV 1080p, 20x optical zoom and high-speed pan/tilt performance for coverage of wide areas and great detail when zooming in. AXIS Q6035-E supports day/night functionality for clear video even in low light conditions, and wide dynamic range for better visibility of objects in dark and light areas of a scene.

With Active Gatekeeper, the camera can automatically move to a preset position upon motion detection in a pre-defined area, and track the detected object. With AXIS P1354-E, superb HDTV 720P video quality is provided with progressive scan in multiple individual H.264 streams, as well as Motion JPEG streams. In particular, it integrates Axis Lightfinder technology, with maintained colors even in very poor light.

The entire system is easy to expand, with interfaces reserved for electronic patrol, emergency command, video conferencing, and large screen systems, allowing for scalability of intelligent digital platform. Further, all monitoring points address the overall construction plan enabling full coverage of the reserve base, while keeping discreet without any environmental disruption.