

Complete Explosion-proof Security Solution for Oil and Gas



Applications

I. Applicable Scenarios

Core coverage scenarios:

- Oilfield production well sites, gathering and transportation stations, and integrated stations (with supporting materials: panoramic real-scene images of well sites and schematic diagrams of station layouts)
- Oil and gas processing plant, oil storage tank area, loading and unloading area (Supporting materials: aerial view of the tank area, schematic diagram of loading/unloading platform operations)
- Oil and gas transmission stations, valve rooms, and skid-mounted stations (with

supporting materials: pipeline layout diagrams, interior photos of valve rooms)

- Refining and chemical processing unit area, hydrogenation unit, tank farm (Supporting materials: Refining and chemical processing unit zoning diagram, high-risk area warning diagram)
- Offshore fixed platforms, self-elevating platforms, FPSO floating production storage and offloading units, and LNG receiving terminals (with supporting materials: panoramic aerial photographs of offshore platforms, platform stratified layout diagrams, and deck equipment arrangement diagrams)
- New addition: Special scenarios for offshore oil platforms (sub-sectors): platform deck operation area, drilling module area, oil and gas processing compartment, explosion-proof zone of living buildings, helicopter deck, and submarine pipeline landing area (exclusive illustrations: helicopter deck real scene view, explosion-proof equipment layout inside compartments, platform side view structural diagram).

Specialized Drawing Standards for Offshore Platform Scenes: Complying with marine petroleum engineering drafting specifications SY/T 10028 and GB 46766—2025 Safety Code for Fixed Offshore Oil Platforms, the drawings must clearly indicate explosion-proof zones, hazardous material compartments, evacuation routes, and emergency assembly points. The designs are engineered to withstand extreme offshore conditions including high salt fog, elevated humidity, and intense wind waves. Color schemes utilize industrial blue with warning yellow accents, and all diagrams shall bear the CCS (China Classification Society) marine-specific certification mark.

Explosion-proof zone: Zone 0 / Zone 1 / Zone 2 Explosive gas environment

Protection ratings: Ex d IIC T6, Ex ib IIC T4, IP66~IP68, Corrosion resistance: C5-M

Authoritative certification: Ex (Marine-specific)

Scene illustration requirements: Priority should be given to high-definition aerial photographs of real scenes and standardized process layout diagrams, with explosion-proof zone demarcation and equipment installation points clearly labeled. The color scheme should uniformly adopt industrial blue and warning yellow, complying with the visual specifications outlined in the bidding documents.

II. System Composition

1. Explosion-proof video surveillance system

Device 1: Explosion-proof infrared network camera

- Image Requirements: High-definition front-facing real shot, close-up of the silver 316L stainless steel body, highlighting the explosion-proof gland, infrared fill light, and Ex explosion-proof certification mark.
- Appearance: 316L stainless steel cylindrical/rectangular shell with thickened metal

explosion-proof cavity and sealed flameproof structure

- Image features: Industrial-style real shots with no clutter, core parameters and explosion-proof rating marked, suitable for PPT and project illustrations
- Application: 24/7 monitoring of wellheads, pipe racks, valve assembly areas, and loading/unloading platforms, suitable for outdoor harsh operating conditions.



Device 2: Explosion-proof Pan-Tilt-Motion Hemisphere/Spherical Camera

- Image requirements: Overall installation rendering of the dome camera + close-up view of the unit, showcasing heavy-duty stainless steel dome cover, shock-resistant bracket, and salt spray-resistant coating.
- Appearance: Integrated explosion-proof structure, heavy-duty explosion-proof spherical cover, wind-resistant and shockproof, suitable for large-scale outdoor inspections
- Application: Panoramic monitoring of tank farms, large-scale inspection of facility areas, and comprehensive coverage of key zones without blind spots



Device 3: Explosion-proof thermal imaging dual-spectrum camera

- Image requirements: Dual-lens close-up photo + temperature measurement screen rendering, labeled with visible light/thermal imaging dual camera array, high-temperature alarm indicator, and temperature measurement data display area.
- Appearance: Integrated dual-lens design, explosion-proof stainless steel housing, and built-in temperature measurement algorithm module
- Applications: Real-time monitoring of tank wall temperature, identification of abnormal temperature rise in pipelines, intelligent nighttime fire detection, and leakage hazard warning



III. Deployment Solution for Typical Scenarios

Scenario deployment diagram requirements: Create a standardized planar deployment diagram, marking equipment installation points, monitoring coverage areas, detection zones, and alarm linkage logic. Include real-scene comparison diagrams to visually demonstrate deployment effectiveness.

1) Wellhead/Valve Group Area

- Configuration: Explosion-proof infrared network camera + Fixed combustible gas detector
- Functions: Boundary crossing alarm, unauthorized intrusion detection, intelligent smoke and fire monitoring, gas leakage exceedance alarm
- Illustration: Actual installation view of single wellhead equipment and overall layout plan of valve assembly area

2) Oil storage tank area

- Configuration: Explosion-proof pan-tilt camera with panoramic coverage + Explosion-proof thermal imaging camera + Three-band infrared flame detector
- Functions: High/low liquid level monitoring of storage tanks, abnormal wall temperature warning, oil spill interlock alarm, and rapid open flame detection
- Illustration: Aerial deployment map of the tank farm and thermal imaging temperature measurement rendering

3) Loading and unloading station/Loading platform

- Configuration: Explosion-proof video surveillance + combustible gas detection + electrostatic grounding monitoring with interlocking
- Functions: Identification of personnel violating operational procedures, off-duty alerts, speed monitoring, and gas leak alarms
- Illustration: Actual installation scene of loading platform equipment and workflow monitoring diagram

4) Oil and Gas Processing Unit Area

- Configuration: Multi-layer explosion-proof camera + Toxic gas (H_2S) detector + Fire detector
- Functions: Real-time monitoring of toxic and harmful gases, interlock system for fire-gas-emergency shutdown, and comprehensive video surveillance
- Illustration: Device stratified layout diagram, equipment interconnection logic diagram

5) LNG/LPG region

- Configuration: Intrinsically safe explosion-proof equipment as the main component + Low-temperature explosion-proof camera + High-sensitivity gas detector
- Functions: High-sensitivity gas detection, stable operation in low-temperature environments, and early leakage warning

6) Special Deployment for Offshore Oil Platforms

- Core configuration: Salt spray-resistant explosion-proof thermal imaging dual-spectrum camera + intrinsically safe explosion-proof pan-tilt-zoom camera + toxic and combustible mixed gas detector + explosion-proof flame detector + marine-specific explosion-proof intercom and broadcasting system
- Functional coverage: comprehensive deck video surveillance, round-the-clock monitoring of oil and gas leaks, early warning of open flames, helicopter deck operation monitoring, cabin gas concentration control, and emergency command intercom linkage, compatible with high-risk explosion-proof environments in marine Zone 0/Zone 1.

- Exclusive accompanying images: aerial panoramic view of the offshore platform, floor plan of equipment deployment on upper and lower levels, helicopter deck monitoring installation diagram, gas detector layout in cabins, and close-up shots of explosion-proof equipment installation at sea.
- Mapping requirements: Mark the platform's hazard zone classification, equipment protection rating (IP68), corrosion resistance rating (C5-M), evacuation routes, and emergency equipment locations in compliance with marine oil engineering visualization standards and bidding documentation specifications.

