

IntelexVision Insights

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SECURITY
INDUSTRY
WHITEPAPERS

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AI Video Analytics for Proactive Security in the Oil and Gas Industry



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Protecting oil and gas facilities is crucial due to their role in global energy supply, economic stability, and national security. These extensive and complex infrastructures are vulnerable to threats such as vandalism, theft, sabotage, and terrorism, which can lead to significant financial losses, environmental damage, and human casualties. AI-powered video analytics provide a sophisticated and proactive security solution by continuously and accurately analysing video feeds in real-time, detecting unusual activities, potential intrusions, and safety hazards. This technology enhances situational awareness, enables rapid response to incidents, and optimises security measures, ensuring robust protection for critical assets and infrastructures.



Hospitals



Airports



Shopping malls



University campuses



Borders



Solar farms



Pipelines

IntelexVision's iSentry, an AI-powered platform for detecting unusual behaviour, has been successfully deployed in oil and gas industry across multiple countries worldwide. This system is designed to protect people, property, and assets in the critical infrastructure.

Reliable, responsive and accurate monitoring of objects & human behaviour in real-time with fewer control room operators



Oil and gas: the challenges

Protecting oil and gas facilities with video analytics presents several challenges that need to be addressed to ensure effectiveness. One major challenge is the integration of AI systems with existing infrastructure, which can be complex and costly. Ensuring the accuracy of AI in detecting genuine threats without triggering false alarms is crucial, as false positives can lead to unnecessary disruptions and resource allocation. Additionally, the vast and often remote locations of oil and gas facilities require robust and reliable network connectivity to ensure real-time data processing and analysis. Cybersecurity is another significant concern, as the AI systems themselves must be protected from hacking and other cyber threats. Finally, there is the challenge of managing and analysing the enormous amounts of data generated, requiring advanced data management and storage solutions.

A proactive approach to security in the oil and gas industry is vital. By anticipating and preventing potential threats before they escalate, companies can avoid costly and potentially catastrophic incidents. AI-powered video analytics enable this proactive stance by continuously monitoring and analysing video feeds, providing real-time alerts and actionable insights. This not only enhances the overall security posture but also allows for more efficient resource allocation and quicker response times. In an industry where the stakes are incredibly high, being proactive rather than reactive can make a significant difference in safeguarding critical infrastructure and ensuring operational continuity.

iSentry from IntellexVision can address several critical use cases in the oil and gas industry, enhancing security and operational efficiency. Here are some specific applications:

Perimeter Security: iSentry can monitor the perimeter of oil and gas facilities, detecting and alerting security personnel to any unauthorised access or potential intrusions in real-time. This helps prevent breaches and protect valuable assets.

Smoke and fire detection: iSentry can help protect oil and gas facilities by providing real-time alerts for early detection of potential fires, enabling rapid response and preventing catastrophic damage.

Safety Monitoring: iSentry can monitor operational areas for safety compliance, detecting unsafe behaviours or conditions such as personnel not wearing protective equipment or entering hazardous zones. This helps maintain high safety standards and prevent accidents. Detection of falls or slips is also of critical importance.

Incident Investigation: The system can record and store video footage, enabling detailed analysis of incidents such as theft, vandalism, or equipment malfunction. This facilitates thorough investigations and supports the resolution of security or operational issues.

Asset Protection: iSentry can track the movement of valuable equipment and materials within the facility, ensuring that they are not tampered with or stolen. This enhances asset management and reduces losses.



The solution

How iSentry works

iSentry is an Artificial Intelligence-powered video analysis platform. It can be installed on new systems as well as the vast majority of existing CCTV systems.

Equipped with the latest Artificial Intelligence (AI) and Neural Networks based Machine Learning algorithms, iSentry quickly learns what is normal from an individual CCTV camera feed, so that it can then detect the abnormal. It can be deployed in systems from just a few cameras up to thousands of cameras.

After a norm is established for a particular scene, the system will then create alerts based on exceptions or **'events of interest.'** iSentry then classifies each event upon detection using Deep Learning tools and a logic engine. This provides instant situational context to control room operators so that they can better understand what they are being shown, allowing them to respond appropriately.

iSentry can, for example, recognise that five or six men huddled around a valve for a prolonged period may be an event of interest, and it can differentiate and understand that staff are performing necessary maintenance.

iSentry detects loitering, directional violation, unusual objects entering a scene, running, violence, tailgating, smoke and fire, major leakages, removed or introduced static objects, people climbing walls, entering a perimeter or

area, or graffiti/signs painting. iSentry can also carry out pose analysis, (whether someone is standing, sitting, lying on the ground or has fallen) and many other abnormal situations.

Its Deep Learning engine recognises multiple classes of objects even at difficult angles. Additional capabilities have recently been added such as the ability to monitor for Health & Safety compliance, for example, the wearing of hard hats, high visibility jackets, eye protection glasses, face shields or facemasks for COVID compliance.

iSentry's powerful Logic Engine can largely and autonomously fulfil the function of a video surveillance operator. More than 80% of the time it will be capable of reaching a correct decision regarding an event of interest, based on the number and combination of object types that trigger an alert, the time of day and object size, or even the likelihood of accurate classification.

Any incident that iSentry cannot confidently classify automatically or determine through the rules engine whether to dismiss or alarm is then transferred to a human operator for further investigation and decision-making. iSentry empowers control room operators to solely focus on those decisions at which humans excel. iSentry also enables control rooms to function effectively with **far fewer operators, as massive quantities of video** can be meaningfully and accurately monitored, and processed by the platform.



iSentry vs. video verification analytics

To reduce the number of false alarms many Video or Alarm Monitoring Centres use Video Verification Platforms to determine if there are people or vehicles in specific snapshots of alerts, typically generated by on-camera motion detection analytics. This can lead to a reduction in overall alarms by as much as 50-70%.

While this sounds impressive, control room operators are still left with an insurmountable quantity of false alarms to deal with on every shift.

iSentry is different.

The iSentry platform uses AI to first detect and then intelligently classify alerts. As a result, the number of alerts control room operators receive is **90-95% lower than standard video verification systems**. With iSentry, fewer operators can perform more, and to a much higher standard, freeing personnel to work on other higher value-added tasks.

Case studies

Case 1: Reducing Opex

We tested iSentry's Unusual Behaviour on a 25-camera system against traditional video verification software platforms. iSentry escalated 2,086 alerts to operators, against 32,616 alerts from standard video verification software. **iSentry also reduced escalated operator alerts by 94%** greatly increasing efficiency and lowering alert-related operational costs.

Case 2: Reducing Opex

In a major city, iSentry monitors many thousands of cameras in real-time. Our system's AI and Deep Learning powered alert detection has become so precise that our system now only presents 1% of total recorded video to a control room operator for review.

The accuracy of their recall of events of interest flagged by iSentry is 90%+. Prior to our system being installed, this was between just 5% and 10%.

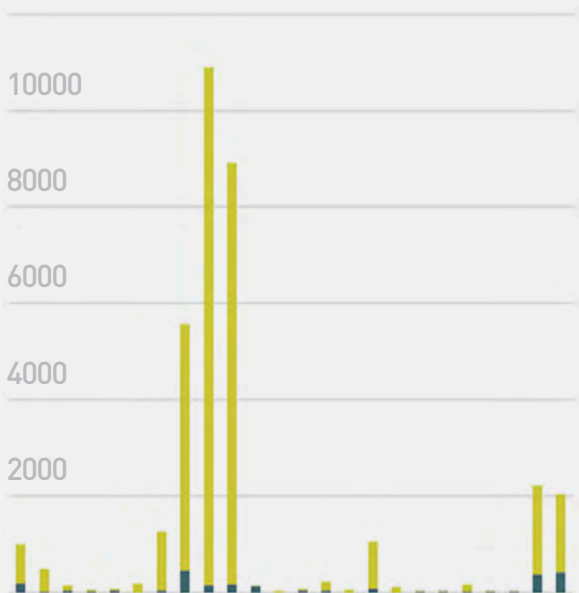
Prior to iSentry's installation, one control room operator was responsible for managing up to 80 cameras with very poor incident detection performance. With iSentry, the same operator can monitor a daily average of **350 cameras and up to 800 cameras at off-peak times**.

Case 3: Reducing Capex

iSentry was installed by a major bank across hundreds of branches with an average of 30 CCTV cameras per branch. As a result the total amount of video to be reviewed was reduced to less than 1% of the previous quantity, without missing any event of interest.

This significant reduction in video footage and the efficient hardware and software architecture of iSentry has led to very low bandwidth demands on the central Control Room together with a reduced need for operator consoles. This has led to major CAPEX savings.

Comparison camera by camera



Comparative analysis of the alerts generated by each camera-to-camera system

iSentry **Video verification SW**

The benefits of iSentry



UP TO
40%
REDUCTION
IN CAPEX

Fewer cameras needed and less related infrastructure

Effective monitoring with fewer cameras across your venue and estate

Maintain your current CCTV system iSentry is hardware-agnostic working effectively with most existing CCTV systems



UP TO
75%
REDUCTION
IN OPEX

Fewer operators needed

Operators can monitor 10x more cameras than before

Fewer false alarms

With fewer false alarms, costs related to unnecessary security personnel visits and interventions are reduced

iSentry is a smart, non-invasive security platform that does not use facial recognition technology nor any Personal Identifiable Information while delivering a higher detection rate.

AI-powered CCTV analysis from iSentry



Major cost savings with a **90%-95% reduction in false positives** compared with most advanced camera analytics software systems



Operators can **monitor 10x** the number of cameras



Works with most existing **CCTV systems**



Used by governments and businesses **worldwide**