



Hydrocarbon Leak Detection

The IVC Video solution for hydrocarbon leak detection is being used by a major oil company monitoring a 120-mile crude oil pipeline in the western United States. The pipeline is located in mountainous terrain close to populated urban and rural areas. The company's goal was to ensure the safety of the public, the environment, and company assets through implementation of a comprehensive video surveillance system from IVC. Of critical importance was the verification of actual conditions related to incoming leak alerts, increasing the accuracy of incoming information, and decreasing the time to analyze pertinent data from multiple sources.

IVC's FV-3532-01 Hydrocarbon Leak Detection camera provides early leak detection for the company's remotely controlled block valve stations, terminals, and metering stations. IVC's Longwatch camera management software along with IVC's PTZ cameras provides real-time remote surveillance with on-site recorded video, video clips on alarm, as well as on-demand live video. This video and alarming have been integrated into the customer's OASyS SCADA system, providing control room operators with a new type of process data (video) to analyze. The IVC solution enables central operations personnel to:

- visually verify leaks when alerted,
- go back in time to analyze potential causes of leaks,
- view live video from the site to determine safe areas for field engineers

to navigate, and

- view live video from the site to gain insight to better equip field personnel with needed materials for site visits.

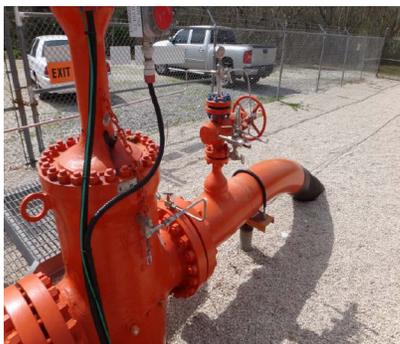
Overall, the video system provides important data the operator can use to ensure expedient and informed decision making.

Compliance with regulations required by the Pipeline and Hazardous Materials Safety Administration (PHMSA) was a major concern for the company. With the improved safety, security, and leak detection capabilities, the IVC solution enhances compliance with PHMSA regulations and makes reporting more robust and significantly more comprehensive.

Requirements

Before implementing the IVC solution, the customer researched reliable and efficient ways to verify leak alarms sent to their SCADA system. Although their legacy system included existing leak detection sensors, many were prone to false alarms or malfunction. The customer required additional, higher quality, visual data for leak detection to help verify existing leak detection sensor data. The customer wanted to:

- improve information accuracy during an alarm-triggered leak event,
- reduce response time and improve decision making during and after the event,



IVC Hydrocarbon Leak Detection solution ideal for monitoring compressor stations and block valves.



Hydrocarbon Leak Detection

- improve the quality of incoming data,
- decrease the high cost and loss of productivity when a shut down is initiated for false leaks,
- eliminate deployment of personnel to remote event areas in the case of false leak alarms, and
- enhance the safety of the surrounding population, the environment, and pipeline assets.

image verification of alarmed events with video of conditions before, during, and after the event.

Through seamless integration with the customer's process control system, when a leak is detected by the FV-3532-01, the camera sends an alarm to the PLC via the Modbus TCP protocol or discrete output. Simultaneously, the IVC Longwatch Video System creates a video clip that is automatically sent to mobile devices, email addresses, and the main SCADA console in the control room. In addition, the Longwatch Video System displays process data, such as flow rate, pressure, temperature, etc., as an overlay onto the video image to enhance the operator's scope of information about the potential problem. This provides the SCADA operator with a comprehensive set of critical information – multiple stages of images, video, and process data – combined into an easily understood visual format.



The FV-3532-01's thermal imager may detect leaks that are not immediately visible.

Solution

The IVC solution provides critical information needed for timely leak detection, confirmation, and analysis. IVC's FV-3532-01 thermal imaging camera combined with IVC's Longwatch Video System provides a complete leak detection solution for the key areas along this 120-mile stretch of pipeline – including security monitoring and video



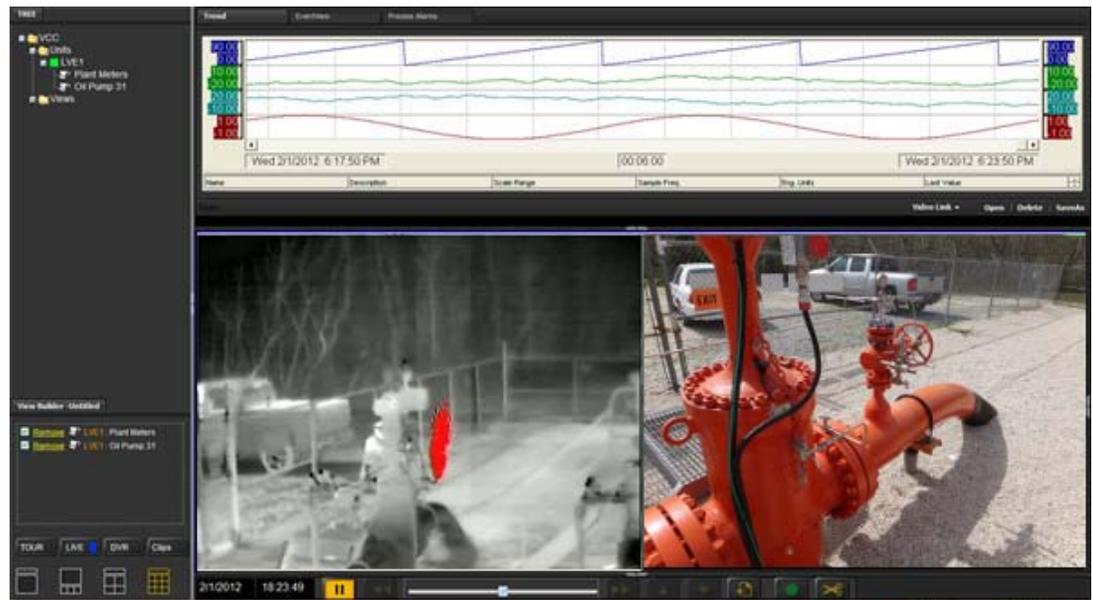
The FV-3532-01's thermal hydrocarbon leak detection camera under test at the TEEEX Training Center. Propane under pressure is being detected by the camera.



Hydrocarbon Leak Detection



IVC FV-3532-01 deployed with legacy PTZ camera.



IVC's Longwatch Video System is used to treat video from remotely deployed cameras as additional process data. The Longwatch Video Historian can then correlate saved video clips from the site with other process data from the SCADA historical database to provide a more accurate picture of what is happening at the site

This allows the operator to quickly assess the situation and reduce guesswork when responding to an event.

IVC's FV-3532-01 has four customizable detection zones that allow coverage of different areas with different sensitivities. The camera can be tailored to detect hydrocarbon leaks on sections of different equipment and sections of pipe, joints, valves, etc. The hydrocarbon signatures it detects include propane, diesel, gasoline, and crude oil. Prior to the product release

in late 2012, the FV-3532-01 camera successfully passed a series of leak tests for these hydrocarbons at Texas A&M's TEEX training center. The tests performed involved both gaseous and liquid products as well as a number of leak types including high pressure and overflow.

Other fixed and Pan Tilt Zoom (PTZ) optical cameras at pipeline locations provide high resolution video that is stored locally and can be controlled by operators in the control room. The IVC Longwatch video system



Hydrocarbon Leak Detection

includes site-installed ruggedized DVR appliances that store video from the fixed, PTZ, and thermal cameras. The cameras also have the capability to communicate bidirectionally with the PLC at each location allowing the IVC video system to become an extension of the process control system. When a leak alarm originates from the FV-3532-01 camera, a video clip is generated and saved on the appliance. Video is stored and forwarded with advanced compression algorithms over the customer's existing low bandwidth satellite communication connection to the central control room. The control room operator can view this comprehensive data, and visually observe what occurred at the moment of the alarm. After assessing the situation, the operator can view live streaming video to confirm the site status, and determine safe areas for field personnel and necessary equipment to deploy to the site.

- increased confidence in data and event analysis,
- shortened event response time,
- improved real time decision making,
- increased confidence in assessment of leak alarms and events, and
- enhanced compliance with PHMSA regulations.



IVC FV-3532-01 PoE connection simplifies installation.

Benefits

Immediate and accurate visual verification is critical to quickly determine if a safety risk to the surrounding population or environment exists. The IVC leak detection solution helps ensure the safety and security of critical areas along multiple locations of the pipeline. The IVC solution enabled this company's operations personnel to react more reliably and efficiently to potential and real leak events. This provides:

- improved accuracy of leak identification

About IVC

Based in Newton, MA, IVC delivers a broad range of quality IP-based video systems to industrial, commercial and military applications. Their standards-based software, which delivers quality video to PCs and other client devices over a network, is designed to be scalable and easily integrate with third party software. A key strength of IVC is its ability to develop cameras, enclosures, and software to meet demanding customer requirements.