FireVu

Video based detection and visual verification of smoke and flame.

Protecting assets and industrial processes: Waste recycling - Food - Petrochemical - Chemical - Paper - Metal - Critical Infrastructure - Heritage - Military

The Challenge

The Challenge

Fire detection systems are often based upon well established technology, however, most if not all conventional means of detection require some form of direct interface or 'contact' with the smoke or flame generated by the fire. Whether detection follows the passing through and partial obscuration of a beam or the need to physically detect smoke particles within a sample of air, the need for the fire to reach the detector effects both the number of detectors required and the size to which a fire must get before detection can take place, subject to it starting in the immediate vicinity of the detector itself.

This problem is further compounded when dealing with large structures where voluminous atrium's, high ceilinged areas and open roofless facilities can be affected by high airflow and smoke stratification, often preventing smoke from reaching spot-type smoke detectors significantly reducing their performance if not rendering them completely ineffective. The presence of airborne particles/contamination in certain applications often result in false activation of beam technology based systems.

Risk to commercial building owners

Even where conventional fire detectors are able to respond in an effective and desirable way, they alone offer no means of quantifying or qualifying the fire, or even of verifying that a fire is in fact present. This often leaves fire fighters unaware as to what they may face upon entering a building and if human life is not at risk may even result in non-entry and greater loss to property, as a fire which may have been easily tackled is left to spread.

False alarms have often resulted in the unnecessary deployment and use of costly resource, both in the financial impact of said deployment as well as the potential opportunity cost of delayed, diminished or non-existent presence at real incidents whilst dealing with non-events. It is said that over 95% of automatic alarms generated from non-sleeping commercial premises are false.

Contents

'Even where conventional fire detectors are able to respond in an effective and desirable way they alone offer no means of quantifying or qualifying the fire, or even of verifying that a fire is in fact present.'

The Intelligent Solution

FireVu from DM Network Video offers a video flame and smoke detection solution. Internal software comprising sophisticated analytic algorithms within the product itself analyse video images then detect the presence of smoke and flame at source unaffected by airflow or the effects of stratification. Even in areas where conventional fire detection could work, FireVu is able to cover larger areas with a single camera or 'detector' through its active analysis of the entire field of view.

EARLY DETECTION
FireVu offers an early warning reaction to a fire incident at its inception stage not needing to wait for the smoke to reach the 'detectors' vicinity, thus offering the best opportunity to protect commercial property in the shortest possible time.

FULL INTEGRATION
Relay outputs and alarm inputs enable full integration with existing building management and fire panel systems enabling the activation of these systems as well as controlled use or activation of on-site suppression systems such as sprinklers.

VISUAL VERIFICATION
Early detection combined with detailed knowledge of the threat in hand means controlled, measured and appropriate action can be taken as safely as possible, not to mention the benefit of being able to stand down any false alarms before resources are unnecessarily committed.

LOCAL OR REMOTE
The ability to view images from, and configure a FireVu product over IP mean that not only is there a means of early fire detection but, equally as important, a means of both verifying and assessing a fire either from a terminal on a local network or remotely at either a guard house or monitoring station (RVRC).
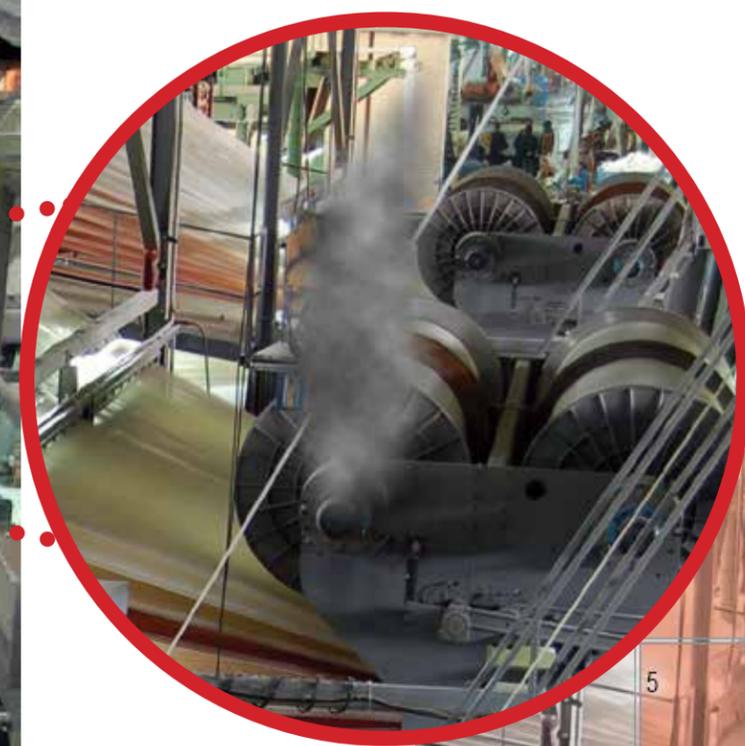
Video Smoke Detection & Visual Verification of Fire

FireVu offers an early warning reaction to a fire incident at its inception stage not needing to wait for the smoke to reach the 'detectors' vicinity. Thus offering the best opportunity to protect commercial property in the shortest possible time.
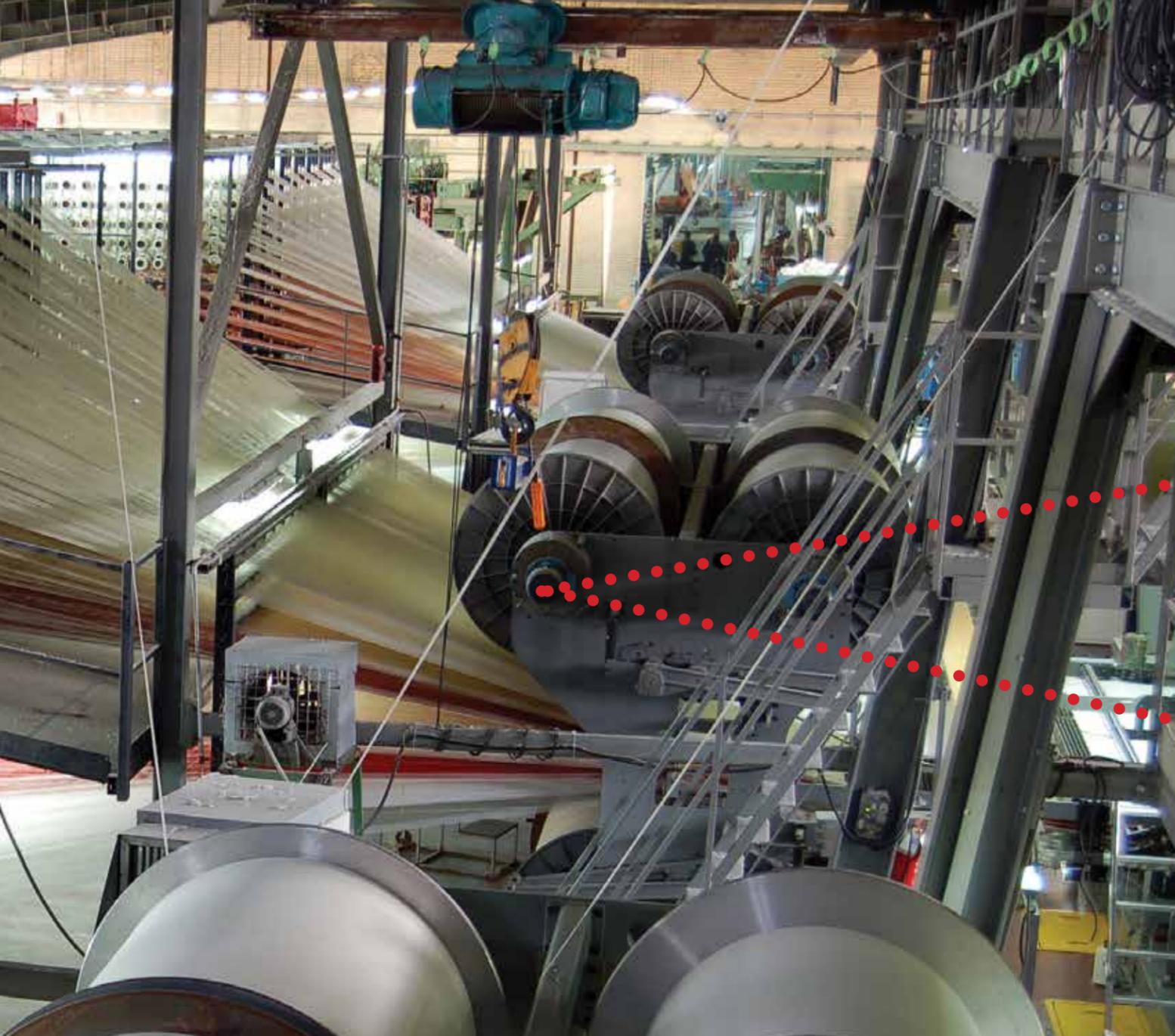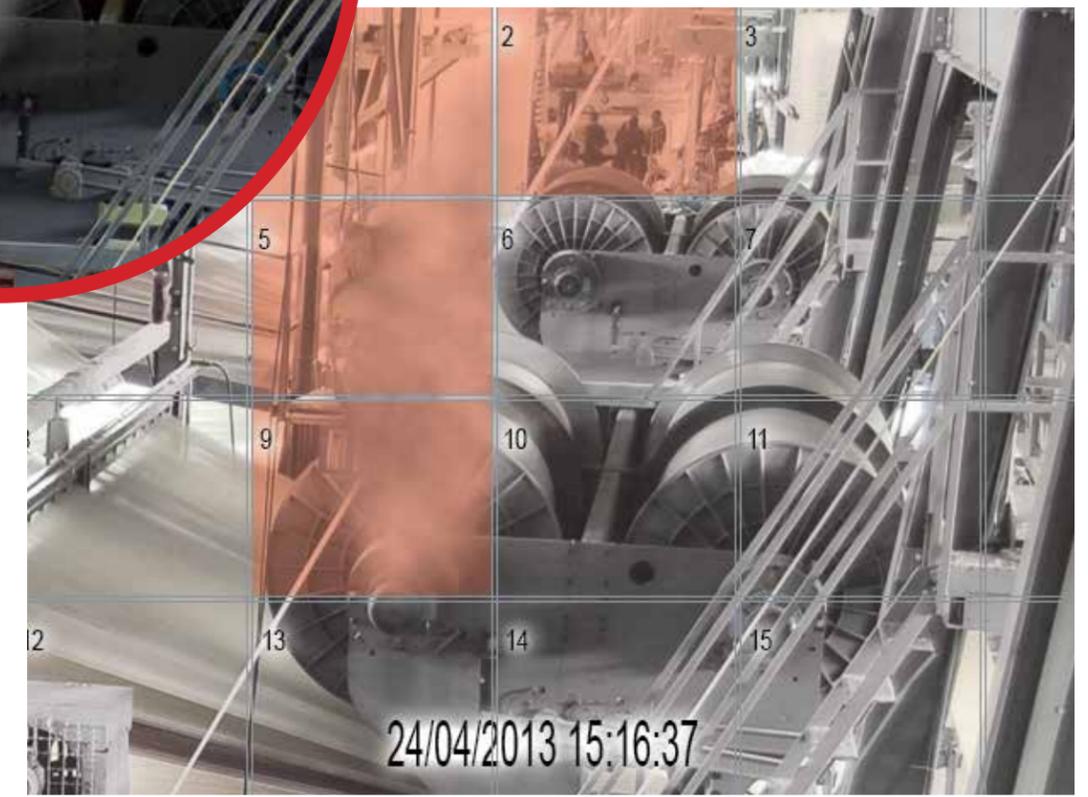
Early 'cause' focused detection

At the heart of FireVu

At the heart of the FireVu family lies AD Group's proprietary FireVu analytic software that is able to 'see' the movement of smoke across a CCTV image or the presence of flame within that image through the identification of characteristics unique to either smoke or flame. These include, but are not restricted to, assessing changes in brightness, contrast, shape, edge content, loss of detail, motion and colour matching.

FireVu analytics will operate when a minimum of 20 Lux of lighting is present, as well as operating under IR conditions when required for unlit areas.

BEFORE

Not only does FireVu offer the ability to monitor an area for fire anywhere within the field of view of the detecting cameras, but due to the unique visual benefit of this form of detection technology, you can focus on specific identified risk items. This may include deposits of flammable material or machinery where friction creates heat, for example bearings.

DURING FIRE/SMOKE

FireVu provides early warning, being able to trigger at the first signs of smoke or flame within the view and provides a clear image of where in that field of view the detection has occurred, identifying immediately the location and (if visible) the cause of the fire.

FireVu Benefits

- Capable of 'seeing' flame within seconds.

- Capable of 'detecting reflected flame.

- Detection of pluming smoke based on the unique way in which it moves.

- IP connectivity offers access to footage across networks and to remote locations, enabling visual verification of incidents, fully configurable for dial out to an RVRC (Remote Video Response Centre).

- Bandwidth limitation avoids network congestion.

- Compatible with bespoke NetVu Observer FREE viewing software, enabling monitoring of live and recorded video from various devices, from anywhere in the world.

- Events are logged and associated footage is marked.

- Generic web-browser based interface for configuration.

- Configure two separate sets of parameters. Often necessary where two separate environments may exist, for example if the equipment is required to run 24 hours a day then separate criteria is relevant in hours of darkness than during daylight. Other differences may occur in occupied and unoccupied hours as more sensitive criteria can run in unoccupied hours where there will be fewer or no false alarm stimuli.

- View footage live from a camera as well as being able to replay recorded footage or view downloaded files/footage. Incidents or false alarms can be reviewed and the analytics parameters behaviour clearly seen and assessed.

- Fully tailorable masking enables an area within the cameras field of view of any size or shape to be ignored, hence problematic areas can be excluded. This means that camera views with sections where smoke or smoke like phenomena are present normally and acceptably can still be analysed by ignoring those parts of the view.

Whether an analogue camera linked to a FireVu server or a FireVu dome, the 'viewed' area of each FireVu channel of VSD (Video Smoke Detection) can be segmented into up to 16 detection zones, each configurable for detection of flame and/or smoke. 'Zone Count' and 'Zone Wait' parameters allow you to calibrate to detect smoke as it builds across a user defined number of regions within a user defined time period preventing false alarm events. Environmental controls allow you to 'tune-out' certain stimuli which would result in false activations on lessor VSD systems.

Each system can be configured with two complete sets of parameters capable of being 'switched' between on an alarm, time, or geographically adjusted time basis, enabling appropriate settings for sites with differing environments between day and night or occupied and unoccupied times. The system can therefore be set to work when you need it whilst being effectively inactive when required, avoiding unnecessary fire response measures at inconvenient times.

FireVu is capable of signalling several alarm states covering not only fire associated conditions such as flame and smoke but also encompassing fault conditions such as camera power loss, camera masking and loss of contrast.

Complete IP System Solution

Designed to offer a complete fire detection solution where other technologies will at best struggle, FireVu from DM Network Video is available as a complete IP system. This system can be segregated from the site's corporate IT network removing any reliance on existing infrastructure and ensuring ongoing reliable operation of the fire detection system.

A FireVu IP system not only provides all the benefits attributed to modern IP CCTV systems, but by utilising DM Network Video's unique Closed IPTV technology it is simple and easy to set-up, offering a full 'plug and play' solution whereby simply plugging the cameras in to the switches results in auto-detection and all the necessary IP address allocation without the user needing to apply any IT networking knowledge or configuration expertise.

Each single system can consist of up to 240 channels of Video Smoke Detection, which can consist entirely of FireVu IP cameras or a mixture of FireVu IP cameras and 8 channel FireVu Servers connected to analogue cameras.

At the heart of a FireVu IP system is DM Network Video's FireVu Annunciator, providing all the alarm handling for up to 240 individual cameras and giving the end user one point of interaction from which events and alarms can be reviewed, analysed and where necessary acted upon in an informed, measured and appropriate manner.

Alarm annunciation from the FireVu Annunciator takes place in the form of a detailed visual and user interactive output to either an HDMI or composite monitor. This provides the user with a means of monitoring and identifying any events on site at a suitable 'manned' location, for example a reception area or security room/building.

Situational Awareness

All the information required to analyse and act upon a FireVu raised alarm is achieved through a detailed yet user-friendly visual interface. This consists of the following methods of supplying complete situational awareness: -

- Site map detailing camera locations.
- Event list showing alarms recorded.
- Video window playing live video from the last camera in alarm.
- Bank of virtual LED's one for each camera connected showing:
  Camera operation 'Normal' - Green
  'Smoke Alarm' - Red
  'Flame Alarm' - Magenta
  Camera 'Fault' - Yellow

Alarm verification, acceptance and clearance is provided through either a mouse connected to the FireVu Annunciator or the use of touch screen technology. The user is also able to view live video from any camera on the site map by simply selecting that camera's LED or location label from the site map.

In systems of up to 32 FireVu cameras, the FireVu Annunciator can be connected to an external storage device to which it will record all the footage from the connected cameras. This can be utilised in addition to the integrated on-board recording available on all FireVu IP camera products, and will provide the user with a centralised repository of recorded footage from all connected cameras which can be reviewed either locally or remotely without the need to identify and interrogate individual cameras.

This central point of video collection means that the record profiles used can be configured in the most appropriate way to accommodate the end users needs, for example if being reviewed remotely, lower resolution images or record rates can be employed to make best use of connections of lower bandwidth(s).

With provision of a suitable link, (for example an ADSL line) the FireVu Annunciator will report alarms directly to a Remote Video Response Centre (RVRC), as well

as providing the local annunciation as described above. This 'architecture' means that any RVRC has one point of access for up to 240 devices, (and access to recorded images in one location for up to 32 devices).

The central control point provided by the FireVu Annunciator also enables other benefits such as being able to use the Annunciator as an NTP clock server across all connected cameras/servers. Beyond notification, (either to an RVRC or on-site) the FireVu Annunciator can be used to generate local responses or activate local notification devices/systems via its in-built relay output.

The FireVu Annunciator supports alarm messaging transmitted over 'Mod-bus' protocol, allowing a FireVu system to communicate with building management systems, offering the facility to integrate the FireVu solution with a premises' overall facilities management system.

Closed
IPTV

Secure Network

Each FireVu IP system is built up using DM Network Video's Layer 3 Enhanced CCTV Switch. The Closed IPTV switch is available as a 16 port PoE or non PoE variant or an 8 port variant with 2 SFP fibre ports, again PoE or non-PoE.

The use of DM Network Video's Layer 3 Enhanced CCTV Switch in either 8 or 16 port guise brings with it the unique Closed IPTV architecture. This provides a means of segregating the FireVu IP system from the corporate network whilst still enabling access and the ability to configure the system over that network.

With trusted and recognised end points, DM Network Video's Closed IPTV architecture also provides total security and resilience to physical tampering or damage to infrastructure within the system.

NetVu ObserVer

NetVu ObserVer Video Management Software allows users to seamlessly view distributed images from any NetVu Connected product, such as FireVu. Whether working on routine tasks or responding to a critical situation, you can now have up-to-the-minute access control and video information.

NetVu ObserVer is now also available as an App, Available on the App Store or Android App on Google Play.

ANDROID APP ON
Google play

Available on the
App Store

Remote Access

External IP access to a FireVu product, either a single standalone dome or a complete IP system means that monitoring personnel, either on site or at an RVRC (Remote Video Response Centre) can be provided with immediate situational awareness.

This can mean that knowledgeable and better planned suppression measures can be followed, and in the case of linkage to a RVRC (Remote Video Response Centre) these actions can be in accordance with well thought out procedures following actions defined by the client.

A further benefit of this interaction is that it provides the ability to react to events as they happen rather than simply providing a means of post event analysis.

All of this not only enables fire & rescue authorities to tackle incidents from a position of knowledge but even prior to this stage allows for the complete eradication of false alarms that result in costly and unwanted resource use, avoided by allowing a human operator to properly and accurately verify the existence of an incident.

Notes

Notes

www.dm-networkvideo.com
www.firevu.co.uk

DM Network Video is part of the AD Group of Companies, whose experience in providing high quality video solutions doesn't stop at securing commercial buildings, other areas of expertise include: the FireVu Video Smoke Detection solution which provides early warning of smoke and flame to commercial and industrial businesses; and the TransVu video surveillance solution designed for the transport sector which both secures and increases the operational efficiency of the fleets of major transport operators around the world.