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SECURITY + MANAGEMENT

1 MAGAZINE FOR SAFETY AND SECURITY

COVER: Siemens – Video Analytics

Security for Public Transportation

Perimeter Protection

Fire Safety

Intelligent Video

Access Control

Airport – Safety + Security

SIEMENS

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FREE! Your copy of the Axis technical guide to network video at www.axis.com/free_guide/

www.axis.com

AXIS COMMUNICATIONS

Saving Money Can Be Expensive

Sometimes really amazing coincidences happen. Early in December 2008 we published the December issue of GIT Security with an article describing how vulnerable airports are without a good perimeter protection. Just hours later, we heard the news about security breaches at Stansted airport. Protestors from an environmental group breached security fences and occupied the runway. The airlines were forced to cancel more than 50 flights to and from the airport due to the protest which blocked the runway for two hours.

In the future Stansted will be fined millions of Euros if such a security fiasco repeats itself. The Civil Aviation Authority announced plans for a new system of penalties in an effort to improve services at Stansted. The new regime will bring London's third airport into line with the airports at Heathrow and Gatwick, also run by BAA. The penalties at Heathrow and Gatwick implemented last year have seen the airports pay compensation of 4.3 million pounds and 3.6 million pounds respectively to airlines for failures to meet minimum standard targets.

This is just another example showing that the efficient protection of processes and sites is not a cost factor. It can save a lot of money and gives companies the competitive edge to survive in the though economic environment we face.

A competition that we enjoyed very much was GIT Security Award 2009. After we presented more than fifty products in the different categories that had been nominated by our jury, we got hundreds of online votes, faxes, e-mails and letters from all around the world. Thank you very much for the participation and congratulations to the winners. On the following pages you can see all the winners of this year's GIT Security Award.

"Video analytics" was surely one of the magic words in 2008 and it will stay in the focus of many companies and installers this year. In this issue we are taking a closer look at the different aspects of this technique and we hope that this helps you in your daily work.

We at GIT Publishing hope you had a good start into 2009 and we wish our readers all the best this year!

Heiko Baumgartner

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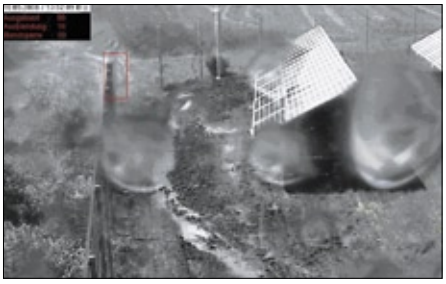

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Fingerprint Identification System for Kenya Police

The Kenya Police has chosen Sagem Sécurité (Safran Group) to deploy and maintain an automated palm and fingerprint identification system (APFIS). This latest-generation system will be deployed by the Criminal Investigation Department in Nairobi. Designed to fight criminality throughout Kenya, the system features biometric comparison algorithms that were top ranked for precision and interoperability by the National Institute of Standards and Technologies (NIST) in the United States. The Kenya Police thus deploys cutting-edge technologies for criminal identification and crime-fighting. The product will give them one of the largest digital fingerprint databases in eastern Africa, and will allow them to work in liaison with other police forces in Africa and throughout the world.
www.sagem-securite.com

Protection for Student Village

Apollo technology lies at the heart of an intelligent fire detection system installed to protect Phoenix Court, a new luxury student village in the heart of Bristol city centre. The specification emphasised the need for minimum unwanted alarms and an open protocol system. Multi-Alarm Systems of Bristol won the contract to supply and commission the fire detection system and recommended the company's Discovery range of intelligent fire detectors to meet the client's criteria. Built by the UK's largest student accommodation company Unite, Phoenix Court is the first part of Bristol's £ 500 million Cabot Circus retail and leisure redevelopment to be occupied. With 11 storeys, it is home to 277 students.
www.apollo-fire.com

Award for Video Analytics Innovation

Aimetis Corporation is the recipient of the 2008 Frost & Sullivan Award for Product Innovation in the Global Video Analytics Market. The award is in recognition of the company's strategic product development efforts for Aimetis Symphony software and its ability to provide a highly reliable and technologically innovative analytics solution to its end-users. The software helps address real world business challenges to cultivate and harbor migration from analog video to intelligent network video environments, helping drive demand for security and business intelligence applications. The product is an open, standards-based combined video management and video analytics platform. The inclusion of exceptional video analytics capabilities, allows it to alleviate key industry challenges such as high false alarm rates, costly installation and maintenance issues.
www.aimetis.com

Protection for Wind Turbine Manufacturer

Siemens has recently completed a comprehensive and fully interoperable security solution for a wind turbine and blades manufacturer in the south of Spain, whose primary objective is to generate a type of sustainable energy that benefits both society and its stakeholders. The wind turbine manufacturing company was established in the south of Spain to focus on environmental and technological advancement in wind power. The security system is a turnkey solution that manages security in the wind turbine plant from a single control room (supported by a back-up secondary control room). The comprehensive project includes Sistore CX video surveillance, Sipass access control and Sintony 400 intrusion detection systems, all integrated under a unique MM8000 danger management system (DMS).
www.siemens.com/buildingtechnologies

IMS Research about Video Surveillance Market

IMS Research's latest report demonstrates the potential of the world video surveillance market during the global financial crisis. "Analysis of the video surveillance market has been subject to considerable exaggeration" says market analyst Alastair Hayfield. "Perhaps this is understandable given the high level of growth seen in the network video surveillance market. However, a more measured approach is required in these uncertain economic times." In the more established markets of Western Europe, the US and Japan, there has been a noticeable slowdown in video surveillance spending. The retail and banking verticals are forecast to be hardest hit as consumer spending slows and financial institutions remain shaky. The transportation and government verticals fair better as video surveillance is often viewed as essential for ensuring public safety and substantial government funding still exists. Overall, the video surveillance market in Western Europe, the US and Japan is forecast to grow by a little over 4% in 2009. That said, market growth is forecast to recover significantly in 2011 and 2012 as the relentless trend to network surveillance continues.
www.imsresearch.com

Lanner Uses Stretch Solutions

Stretch announced that Lanner Electronics is using the company's S6000 processors and the Intelligent Encoder software for a new line of video surveillance products. The scalability of the processors has enabled Lanner to create an entire suite of video surveillance products, from 4-channel PCI Express H.264 encoding cards up to a 32-channel Network Video Recorder (NVR). The Stretch S6000 family of software configurable processors delivers H.264 encoding performance and provides a scalable solution to enable rapid development of multi-channel video solutions. The processors were designed to provide a flexible, common technology platform that allows customers to easily create a broad portfolio of products, from add-in cards to embedded DVRs.
www.stretchinc.com

Basler USA: Frank Webb Sales Manager

Frank Webb is the new Regional Sales Manager for Basler's IP camera series. He will be based in the company's US subsidiary located in Exton, PA and will be responsible for the IP camera customers in North, Central, and South America, including the USA and Canada. Frank Webb has been with the company for almost three years. He moved from his previous position as a sales manager in the machine vision industry, where he gained extensive experience selling digital cameras for industrial applications. Frank holds a Bachelor of Science in Industrial Engineering from the Rochester Institute of Technology and has over 15 years of sales experience in the industrial sector.
www.basler-ipcam.com

ComNet Expands into Europe

Communication Networks, a leading manufacturer of fiber optic transmission and networking equipment, has hired Jens-Uwe Ludwig to be the company's sales manager for all of Germany, Austria, Switzerland and Eastern Europe. Jens will responsible for the ComNet entry into the European market to meet the growing demand and drive the sales effort for the ComNet fiber optic and Ethernet product line. ComNet has extensive plans to open a central office in the near future to cover the expanding European market. Ludwig will be assigned to that office. Jens-Uwe Ludwig was the Senior Sales Manger for GE Security Fiber Communication selling Fiber Options and IFS products throughout Germany, Austria, Switzerland, and Eastern Europe. Jens-Uwe Ludwig has over 25 years of experience in the security and electronics market.
jludwig@comnet.net

Lynn A. Dugle Appointed Raytheon IIS President

Raytheon has appointed Lynn A. Dugle president of Raytheon Intelligence and Information Systems (IIS), effective Jan. 1, 2009. Dugle succeeds Michael D. Keebaugh, IIS president since August 2002, who plans to retire from the Company after a career of 40 years in the industry. Dugle brings significant experience in defense, networking technologies and international management to IIS' top leadership role. Prior to her appointment to IIS, Dugle served as vice president, Engineering, Technology and Quality at Raytheon Network Centric Systems from April 2004 through June 2008, responsible for the function's strategic direction, leadership and operations.
www.raytheon.com

Heitel in the US

Mathias Witt

Dirk Ostermann

The newly founded Heitel Digital Video USA with its headquarters in Maryland, USA, has started its marketing activities in November 2008. The majority shareholder of the US Company is Heitel Digital Video. Dirk Ostermann and Mathias Witt are additional shareholders, and will be running operative business in the USA. Dirk Ostermann (CEO) and Mathias Witt (CTO) have many years of experience in the field of professional CCTV. They were previously the managing directors of the German subsidiary of the US Verint Company. The principle tasks in the US are the active sales support of the US-American distributors as well as the local technical support of central monitoring stations.
www.heitel.com

Securitas Acquires Eureca, Satworld and Luxtracing

Following the strategy to further expand its business in the growing Tracking & Tracing market, Alert Services Holding, a Brussels based subsidiary of Securitas, has acquired the Belgian company Eureca Benelux Services, the Satworld group of companies in the Netherlands, and the company LuxTracing, based in Luxemburg. These are three separate acquisitions made during the third quarter 2008 and the total enterprise value for these three acquisitions is estimated to MSEK 100 (€ 10.5 million). The three companies have similar activities in specific geographies, covering the totality of the Benelux countries.
www.securitas.com

Kentec Powering Iceland's Geothermal Energy

Fire alarm control panels from Kentec have been chosen for a new Geothermal Power Plant, currently under construction south of Iceland's Mount Hengill for Orkuveita Reykjavikur (Reykjavik Energy), and designed to meet the increasing demand for electricity and space heating in Reykjavik. This latest phase of the plant will give access to geothermal fields up to 5 km below the surface and generate 300 MWe of electricity, and 400 MWth of thermal energy via steam transmission for Reykjavik's district heating system. Such a vast project, with its attendant risks as a high-hazard environment, demands the highest standards of reliability and integrity in monitoring and control of the prevailing conditions of the plant. That's why the specifiers, Iceland's Ark Security, selected Syncro two-loop open protocol fire alarm control panels for interfacing with the plant's smoke detection system, based on Hochiki's ESP – Enhanced System Protocol – analogue addressable devices.
www.kentec.co.uk

Helping Schools Play Safe

Little Aston Primary School in Birmingham, England, is keeping the UK's first ever interactive playground safe and secure with the help of a CCTV system from Dedicated Micros, part of AD Group. The school is the very first in Britain to have its own outdoor interactive playground that enables children to log onto a computerised system, collecting points from nine different pieces of apparatus around the playground as they play. "It's fun and keeps the children active," explains Headteacher Liz Pearce.
www.dedicatedmicros.com

IT Expertise for Geutebruck

Geutebruck has appointed Johannes Krings as its IT project consultant, a new post created in response to the increasing IT influence in the video security industry. Having joined the Company in 2000 as their internal IT manager, Krings successfully steered the company towards the Microsoft Gold Partner status that was achieved in early 2008. While retaining some duties as Microsoft MCTIP server and enterprise administrator, he will now direct much of his IT expertise and the Company's product knowledge towards providing specialist advice to colleagues and customers on the implementation of network based projects. His focus is particularly on network security issues and the introduction of new technology.
www.geutebruck.com

Fire Protection for Wind Turbines

The FL 2500 by Fuhrländer is a 2,5 megawatt wind power station that can be adjusted to varying conditions at different locations. Three rotor sizes of 80, 90 and 100 m and hub heights of up to 160 m are available. A "Condition Monitoring System" which is used for the comprehensive monitoring of the power station works with acoustic sensors that are positioned at the main bearing, the transmission and at the generator. Here a wideband record of acceleration is created. The station is equipped with high-performance safety technology which can installed according to the customer's demands. Part of this is the optional fire alarm system which increases the system security even more.
www.honeywell.com

Securitas Acquires Purzeczko

Securitas has signed an agreement to acquire 70 percent of the shares in the Polish security services company Purzeczko. The purchase of the remaining 30 percent of the shares is agreed to take place in 2011 and will be based on the financial performance of the company during the years 2009-2010. Enterprise value is estimated to MSEK 51 (MPLN 18). Purzeczko is the strongest local security services player in the eastern region of Poland, with annual sales of MSEK 110 (MPLN 39) and 1,690 employees.
www.securitas.com

Solar Power Stations Secured by Geutebruck

Geutebruck has teamed up with physical security specialist Haverkamp and system integrator Akera Security to supply customised, all-in-one PV power station security solutions. Two of these systems have gone into service in Spain in recent months. 150 Sun carrier panels, along with another 240 units near Alange are soaking up the Spanish sunshine and producing a total of 8,000 kWp. Protection and monitoring are essential to ensure that the installations remain intact and systems run smoothly, so that this output is maintained.
www.geutebrueck.com

GIT SECURITY AWARD 2009

Applause for the Winners of the GIT SECURITY AWARD 2009

And here is the winner of the Pentax camera:

Wolfgang Kobrow,
Lufthansa Logistik, Hamburg/Germany

Only three out of ten nominated products in the five categories could win the first three places in this year's GIT SECURITY AWARD 2009. For the first time in 2008 the award was international and readers from GIT Security and our German sister publication GIT Sicherheit had the chance to vote. The participation was great. We did get hundreds of votes via e-mail and fax and even more votes via our voting tool on www.pro-4-pro.com/security.

Until the last minute it was a very tight race this year and a lot of products had had good chances to win. We would like to thank you all for the participation. All the product did win a lot of attention and have been presented to a wide audience.

We hope that you join us again next year for the GIT SECURITY AWARD 2010 and now Applause for this year's winners!

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www.pro4pro.com/security

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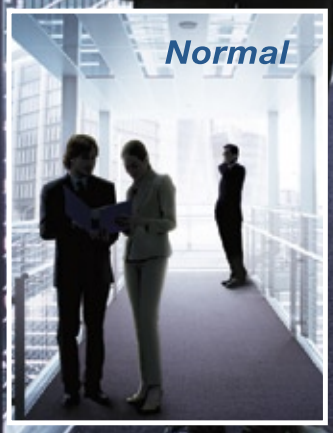

GIT SECURITY AWARD 2009 WINNER

▲ IP7142

IP7142 Fixed Network Camera

WDR • Outdoor • Day&Night

- Wide Dynamic Range CMOS Sensor
- 3.3 ~ 12 mm Vari-focal Lens with Auto-iris
- Removable IR-cut Filter for Day & Night Function
- Built-in IR Illumination up to 15 Meters
- Weather-proof IP66-rated Housing
- Real-time MPEG-4 and MJPEG Compression (Dual Codec)
- Supports Dual Streams Simultaneously
- Built-in 802.3af Compliant PoE (Power-over-Ethernet)
- Two-way Audio via SIP Protocol
- Digital I/O for External Sensor and Alarm
- RS-485 Interface for Scanners, Pan/Tilts
- Free-bundled 16-CH Recording software

ISC West 2009, Las Vegas, USA 04/01~04/03 NO.20117

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Category A
Safe Automation

Sick

Sick Safety Scanner: System OS2000

The OS2000 from Sick is an opto-electronic protective devices and the world's first certified, secure laser scanner system for outdoor use.

WINNER

Category B
Fire Protection

WINNER

Hekatron

Smoke detector Genius Hx

The smoke detector is equipped with a micro-controller and additional temperature sensors and differentiates changes to the vicinity from actual emergencies. With this, for the first time a smoke detector is available, which is proof against false alarms even in difficult areas such as stairways and cellars.

Category C
CCTV

WINNER

Dallmeier electronic

Video Management Centre VMC-1 „Eagle"

The VMC-1 Eagle is a top-class Video Management Centre. It has a modular and therefore flexible structure. The individual components – whether keyboard, joystick or jog-shuttle – can be freely positioned and are therefore equally suitable for both right-handed and left-handed operators.

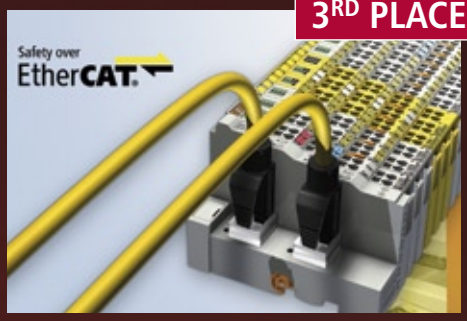
2ND PLACE

Bosch Rexroth

Function Module SIL3

With the SIL 3 function module, control components from Rexroth can be optionally extended in order to fulfil the tasks of "functional security" up to SIL 3 in addition to "functional applications" – regardless of the automation solution.

3RD PLACE



Ethercat Technology Group

Safety-over-Ethercat

For the realisation of safe data transfer for Ethercat, the protocol Safety-over-Ethercat has been disclosed within the Ethercat Technology Group. The protocol enables the transfer of secure and unsecured information in a communication system.

Novar a Honeywell Company

Fire alarm IQ8Quad

IQ8Quad is the only fire alarm, which in addition to detection, combines the visual function of a flashing light, an audible alarm and a multi-lingual speech alarm in a single housing.

2ND PLACE

3RD PLACE

detectomat

Humitec-Technology

With Humitec Technology, Detectomat provides a measuring system with which condensation inside the measuring chamber of optical fire alarms can be detected. In addition, the thermo-alarm component can be easily included for multiple sensors.

2ND PLACE

Axis Communications

P3301 network camera

The Axis P3301 network camera provides excellent image quality with progressive scanning and a large dynamic range and delivers pin-sharp images in both poor and good lighting conditions.

3RD PLACE

Vivotek

IP7142 camera

Vivotek's IP7141 camera is an all-in-one WDR network camera for outdoor day and night applications against various challenging light conditions. The incorporation of IR illuminators and a removable IR-cut filter makes the camera ideal for day and night outdoor surveillance.

Category D
Locks and Access Control

WINNER

Nedap Security Management

Security Controller

The Security Controller is a hardware that eliminates the need for separate dedicated systems for Access Control, CCTV monitoring, Intrusion or Intercom. It s is an all-in one generic controller that performs many tasks that previously had to be allocated to different dedicated systems.

Category E
Safety at Work and Hazardous Substance Management

Ansell

Hand protection solution HyFlex 11·920

HyFlex 11-920 is a pioneering hand protection solution for the handling of small to medium-sized components which are wet with oil. Through the integrated patented Grip Technology the glove provides a unique combination of outstanding sealing against oil and excellent grip.

WINNER

2ND PLACE

Panasonic Systems Solutions Europe

BM-ET200 Iris recognition

Panasonic's iris recognition reader can operate within large scale applications or stand alone. Identifying a user in only 0.3 seconds, the reader is ideal for high level security with a false acceptance rate of just 1 in 1.2 million.

Honeywell Security

mifare fingerkey reader Accentic

Whether for protection against break-ins or access control – with the new evaluation procedure the mifare fingerkey reader guarantees extremely reliable recognition within a very short space of time.

3RD PLACE

GfG

Microtector II G460 Gas Warning Device

The G460 is a small lightweight multiple gas measuring device with an infra-red sensor for the measurement of inflammable gases and carbon dioxide and an integrated PID sensor for the detection of toxic gases.

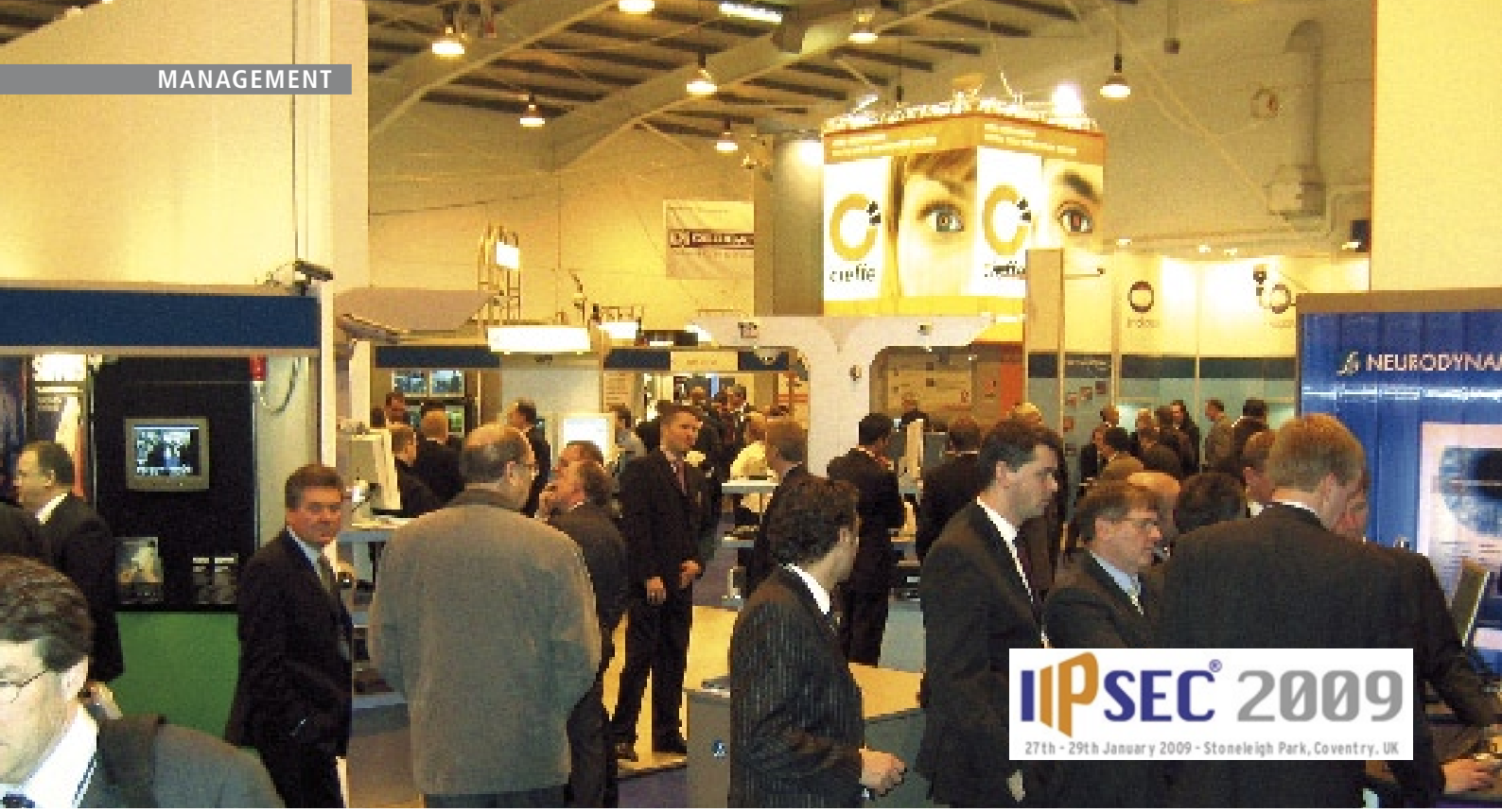
2ND PLACE

3RD PLACE

Düperthal

Classic one XL safety cabinet

Due to its high class equipment, especially its user-friendliness and increased life-span, the Classic one XL, with classification 90, exceeds all statutory and standard requirements and therefore provides extra quality and convenience.



EVENT

Dedicated to Networked Physical Security

IIPSec 2009 in Coventry

From 27 to 29 January IIPSec in Coventry will offer a unique event demonstrating the latest networked technology and it's application within integrated security, life safety and building management solutions. Located at the NAC Stoneleigh Park, the only exhibition dedicated to networked physical security, life safety and building management solutions will be a showcase for IP technology and networked applications.

Since its inception, IIPSec has led the field in delivering quality time with quality people in an environment conducive to business at all levels. IIPSec is an extremely popular show, the international exhibitors, speakers and visitors are focused on security technology especially IP networked solutions, are almost exclusively suits and attend with real and tangible projects in mind.

Innovation not Imitation

IIPSec is primarily designed to allow the industry to gain knowledge about changing technologies and how their business can benefit from them. The combination of the educational programme and product showcase provides ample time to engage with exhibitors, speakers and fellow visitors alike. With an expected 4,000+ participants at the show including more than 800 delegates to the educational sessions, IIPSec continues to be the centre for learning about the latest networked security and life safety solutions and how they integrate.

The combination of innovative technologies, seminars, conferences, live workshops and awards programs ensures that IIPSec provides the all important wow factor that bring both exhibitors and visitors back year after year. As a valuable learning experience, IIPSec will also offer a voice to both Exhibitors and Supporters alike, the combination of seminars and presentations enhances the environment for learning and has been devised for delegates of all levels. IIPSec will host innovative networked technology including:

- Surveillance & CCTV
- Access Control, Time & Attendance
- Intruder Detection & Alarms
- Fire Detection & Evacuation
- Integrated Safety Solutions
- Audio, Intercom & Messaging
- Transmission & Comms Systems
- Building Management Systems

Fresh Thinking and New Developments

IIPSec attracts cutting edge software developers along with the world's leading product vendors who demonstrate a vast range of solutions along with fresh thinking, new techniques and methodology. IP is changing the way security and BMS is sold, designed and installed. IIPSec is at the centre of these changes and the event is the place where stakeholders can engage with the channel via a rich combination of live demonstrations, on-hand experts and advice and as an event provides an entry point into the digital world. The introduction of networkable systems is making huge leaps in the way businesses manage security, life safety and real estate. Yet more and more organisations are finding that the proliferation of devices, solutions and applications', hinder the ability to gain real value and benefits. IIPSec unravels the concept of unifying all this technology into a single, open environment realising the full potential and benefit to the client.

With over 60 educational tracks, break-out sessions, workshops and conferences IIPSec provides its most comprehensive learning experience ever. The event will once again unite the key figures from within the industry to address seminars, panel discussions and round table sessions providing the perfect opportunity for practitioners, stakeholders, consultants and others to acquire the necessary knowledge to benefit from the IP revolution.

►CONTACT

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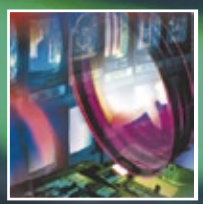
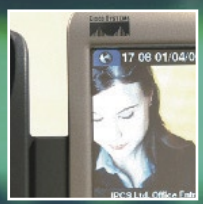
A unique event demonstrating the latest networked technology and its application within integrated security, life safety and building management solutions


Surveillance


Access Control

Intruder Detection

Fire & Evacuation

Audio & Messaging

BMS Technologies

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COVER STORY

Analyse This

Developments in Video Analytics

Siemens Building Technologies has been developing video sensors and motion detection systems for more than 15 years. Recognising the need to use technology to help overcome operators potentially missing important events, the company now employs advanced algorithms in its range of digital recording systems to automate the detection process. Sven Giesecke, Senior Product Manager for Record and Control Software, Product Line CCTV, Siemens Building Technologies, looks at video analytics and how they are becoming an ever more important feature in the video surveillance market.

Sven Giesecke,
Senior Product Manager for Record and Control Software, Product Line CCTV, Siemens Building Technologies

One of the current buzz phrases in video surveillance is 'video analytics'. In fact it is one of three buzz phrases, all of which effectively mean the same thing, with 'Video Content Analysis' (VCA) and 'intelligent video' also used to describe the means by which relevant and meaningful information is extracted from digital video.

Like so many sectors, video surveillance is not insulated from the current global financial crisis. Recent market reports suggest there has undoubtedly been a slowdown in investment in video surveillance, but overall the market in Western Europe, the US and Japan is forecast by IMS Research to grow by around 4% in 2009, with Russia, Eastern Europe, the Middle East and Latin America holding up well with combined growth forecast to be in excess of 20% for these regions. Whatever the level of growth, over the next few years the majority of surveillance systems installed will feature video analytics, either within network surveillance cameras or in the intelligent video encoders embedded in Network Video Recorders (NVRs) and Digital Video Recorders (DVRs). This is highlighted by a forecast from IMS Research that more than 40% of network cameras will be 'intelligent' by 2012.

Operator Fatigue

'Information overload' is also a phrase that we hear a lot these days. It is effectively this problem that video analytics seeks to address. Video surveillance can be an invaluable ally in providing the eyes (and also the ears if audio transmission is included) in monitoring a site but it is still subject to human interpretation. Research has shown that after approximately 12 minutes of continuous viewing of two or more sequencing monitors, operators can miss up to 45% of scene activity. After 22 minutes, this can increase to up to 95%, significantly reducing the effectiveness of detecting potentially critical situations and seriously jeopardising the whole security process. This is where analytics can be used to ensure that such situations are not missed. Video analytics essentially mirrors human vision in that it has not only a perceptual element but also a cognitive one: vision algorithms 'see' the scene while machine intelligence interprets what is seen, learns from it and makes certain deductions as a consequence.

Advanced Algorithms

The algorithms detect movement or changes in live and recorded video by examining each pixel of the video and putting together all the pixel changes (this process is known as segmentation). If many pixels are changing in one area and that area is moving in a given direction, the software considers this to be motion. However, with video analytics it is not simply about achieving just motion detection. The analytics then takes it on through further stages, identifying if the motion is an object and what that object is (e.g. a person, an animal, a vehicle etc – this is known as classification), understanding the context in which the object is situated and then calculating if the movement presents a possible threat. Depending on the pre-defined policies and alerts that have been established, the operator will be notified of this motion and, for example, object tracking will be automatically enabled.

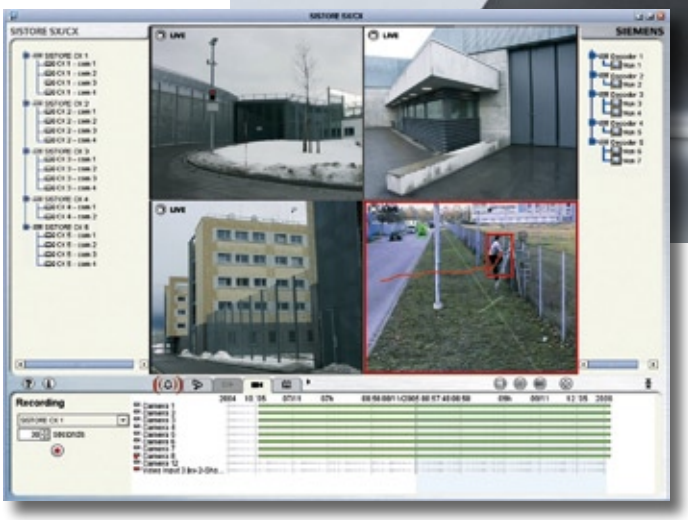
It is this capacity to automate the detection process rather than rely on human observation of the images being generated that is a significant step forward in identifying and acting upon potential security breaches. In analytics-based surveillance, the technology does the monitoring, using the rules and algorithms to screen out unwarranted alarms. Only suspicious behaviour triggers alarms, thereby enabling security personnel to focus on decision-making in the event

of an alarm rather than the monotonous monitoring which naturally leads to the operator fatigue and resulting inability to spot incidents referred to earlier.

Analytics on a Powerful Platform

While digital video analytics is a relatively recent phenomenon, Siemens Building Technologies has been developing digital products at its five separate research and development facilities located around the globe for 25 years, the last fifteen of which have included R&D into outdoor video motion detection systems. These systems have been installed all over the world, with many of those early systems still operating successfully in a wide range of applications, from prisons and airports to industrial sites and government facilities.

In terms of video surveillance products, central to the Siemens Building Technologies offering is SISTORE CX, an intelligent video codec that integrates three devices: digital video recorder, video matrix switcher and video motion detection. SISTORE CX incorporates powerful signal processors capable of running incredibly sophisticated software algorithms. It is in this area of algorithms that Siemens is at the leading edge of technology, developing the means through which intelligent video analysis continuously examines the camera signals with over 30 billion computations processed every second, to help reduce the load on the human element of the surveillance equation.



Analytics modules can be added to SISTORE CX as retrospective upgrades via a software licence to enhance its capabilities. These are the Enhanced Detection System (EDS) module and the Object Detection and Removal (ODR) module.

EDS

End users of conventional outdoor video motion detection systems have long been concerned about the general reliability of such systems and the costs associated with high rates of false alarm. Recognising the market requirements for a more robust approach, Siemens Building Technologies developed SISTORE CX EDS, a next generation system which combines the most sophisticated hardware platform and detection algorithm available to offer streaming, recording and professional outdoor video motion detection with object tracking.

Rather than employing the conventional motion detection technology currently available on the market, Siemens BT used a statistical method analysis that actually monitors an object to build intelligence, continuously analysing the video to ensure the object being tracked fulfils the exact criteria for a true alarm. A unique feature to SISTORE CX EDS is the use of 'trip wires' which can be quick and easily set, usually along a perimeter or an area into which objects should not stray. Multiple trip wires can be set, with the addition of motion arrows to ensure movement is detected in a specified direction. Taking it on a stage further is the capacity to set dynamic trip wires, usually employed where standard trip wires cannot be set. A prime example is the façade of a building, for example a prison, where the camera monitoring the façade can be set to pick up any movement within its field of vision, irrespective of the direction. By using a combination of trip wires, the setting of target object direction, speed and size with tracking and perspective compensation, the highest detection rates are achieved while the sophisticated algorithms suppress false alarms due to environmental factors such as snow, wind, animals, leaves etc. Object tracking and alarming is made very simple with tracked objects highlighted in green, showing the source direction of the object, turning to red and initiating an alarm when the specified criteria is met.

ODR

The second analytics module available for SISTORE CX is Object Detection and Removal (ODR) – also known as 'lost object' or 'baggage detection', providing a video sensor system which again uses the latest in Siemens algorithm based technology but this time to detect objects which have been moved or left. This makes it the ideal surveillance solution for a wide range of applications (either indoor or outdoor). In general these sorts of algorithms have been marketed predominantly in airports, railway stations, sports stadia, retail complexes and hotels etc – in fact any public area where potentially explosive devices may be left. ODR can identify abandoned suspect packages and allow for prompt intervention but it is important to recognise that an environment which might be subject to a terrorist attack is far from that of the laboratory. Many products currently available on the market do not meet the expectations of users. There are therefore opportunities to employ the same basic principles in other applications and these are the areas on which Siemens is focussing.

The capacity to protect against attacks is the most obvious application of the ODR technology but it can also be used in other ways. For example, security personnel can be alerted if an emergency exit or escape route has been blocked by

suitcases in an airport, by a vehicle in a retail complex loading bay or by boxes in a warehouse. Designated 'staff only' areas can also be monitored, as can museums and art galleries where ODR can detect the removal of artefacts, as well as alerting security staff to any unattended objects which could pose a threat. If an object is left or removed, an alarm condition is initiated and automatic recoding of the scene begins.

IDD

The latest development from Siemens Building Technologies in the analytics field is brand new and is known as image degradation detection (IDD). As traditional systems often have a problem in recognising if the image quality is good enough to be used for advanced analytics such as EDS and ODR, IDD provides the means through which the system can automatically detect whether the reliability for such an algorithm is sufficient. It will warn the user if the images are too noisy, too bright or too dark or if the camera is simply not good enough to be used for digital analytics so that countermeasures can be taken. This is not to be confused with Sabotage protection (also integrated within the technology) which validates the content of an image based on visible edges and can be used to make sure that the camera is still pointing in the right direction by comparing the live image to a reference image or, in the case of fog, generating an alert if visibility is lost.

Forensics

An important consideration in current digital video technology is the recording element. Whether recording locally or centrally, the amount of data stored is growing rapidly. This means that the young field of forensics analytics is focussing on the finding of objects or situations in images that have already been recorded. This is done by post-processing and in most cases is based on metadata that has been stored within the footage while recording. Based on such metadata, users can later search large databases for specific events, motion in certain areas or track objects by size, speed or colour. It is anticipated that in the future this area of analytics will have the same focus as the current real time analysis. If an operator misses something in the live viewing, he/she has to search for it in the recordings. In the case of potential security breaches, speed is vital so the viewing process needs to be fast and efficient. That is why Siemens Building Technologies incorporates a so called "Smart Search" facility in all of it's SISTORE products, designed with the user in mind to help find situations as quickly as possible. The Siemens corporate research centres are already working on further advanced forensic algorithms so this is certainly an area of significant development and one to look out for in future security technologies.

Technology and Operator Working Together

In the current economic climate much effort is being spent trying to predict how the security market will be affected. What is clear is that the use of video surveillance will continue to grow, albeit perhaps at a slower rate in the short term in certain vertical markets (banking and retail for example). At a time when added value is particularly under the spotlight, ways of enhancing the capabilities of video surveillance have never been more important. Against this background, video analytics will undoubtedly have an increasing role to play, providing the means through which technology can help to ensure that incidents are not missed, leaving the human part of the security equation to focus on responding to those incidents.

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Wireless Alarm System

With the Secvest 2Way wireless alarm system, Abus Security-Center presented the first alarm system that not only reports a break-in, but actively prevents this in conjunction with the electro-mechanical window fitting rim lock Abus FTS-E. New functional and design elements, such as the backlight status display, bi-directional remote operation and 48 wireless zones, produced huge interest among the trade fair audience. The alarm system actively protects against break-ins. This is made possible by integrating the Company's wireless window fitting rim lock FTS 96 E. In the event of a break-in attempt, it counters the burglar with two solid steel rods which provide tremendous mechanical resistance – and hence considerably delaying the burglar's attempts. At the same time, the Secvest 2Way alerts the control centre of the attempted break-in, long before the mechanical security is fully put to the test. The benefit: the home owner, the security service and the police can react before the break-in has taken place.
www.security-center.de

Extra Large Camera Housing

Videotec has launched the HGV, the largest camera housing of the range. The big dimensions of this housing make it suitable to contain the largest zoom lenses of the video surveillance market. The strong construction includes a base made of aluminum casting and a top part of the body, with integrated sunshield, in robust ABS material. The wiper is integrated in the housing and it does not interfere with the viewing range of the installed camera. The internal correct temperature is ensured by a reinforced triple heater and two continuous duty blowers for the internal air circulation. Weather proofing IP66 is guaranteed by a neoprene-rubber gasket and stainless steel screws to firmly close the housing. For an easy access during installation and adjustment of the camera, it is possible to remove the upper part of the housing body, which is hold by a robust safety cord.
www.videotec.com

Access Control in a Door Handle

Paxton Access Ltd has launched the Easyprox compact keypad, a standalone system that offers the same installation convenience as its proximity counterpart. This all-in-one, battery powered, keypad, lock and access control system is perfect for internal security. With its control electronics housed within the keypad, and the battery power source replacing mains wiring, it's incredibly easy to install. The system's understated appearance of brushed steel and black plastic makes it suitable for a wide variety of applications.
www.paxton.co.uk

Zoom Lens for Mega-Pixel Cameras

Fujinon has introduced its D32x10R4D, featuring a 32x high magnification zoom lens for mega-pixel cameras: f = 10~320 mm; zoom ratio 32x. It is suited for round-the-clock surveillance with sharp and high-quality images by day and night cameras, without focus shift when switching between day and night mode. It offers bright images captured even in a dark place by the lens with special wide-band coating for near IR light and the aperture range of F2.5~T1500 (corresponds to F1500). Other features are: Small size and light weight allows for installation of a compact, long-range surveillance system: Mass = 2,5 kg, C-Mount for 1/2" Camera support, Iris operation: Video-iris or DC-iris.
www.fujinon.de

Dual-Stream Megapixel IP-Network Camera

JVC has introduced the VN-X35U IP network 1.3 megapixel security camera which offers scaling from Quad VGA to VGA resolution. It allows users to conserve bandwidth with VGA images, yet benefit from megapixel resolution when needed. The camera creates a surveillance environment where the user can see an image at four times the resolution of standard IP network cameras. It has the ability to digitally zoom in on the recorded image to provide precise image detail in any conditions, day or night. The camera uses a full motion multi-stream codec that delivers dual-stream Quad-VGA (4 x VGA) Motion JPEG and VGA MPEG-4 compression streams simultaneously at 15 frames per second. In addition, it has a built-in in/out audio jack which supports two-way audio.
www.jvcproeurope.com

Online Access for Mechanical Doors

Aperio from Assa Abloy is a technology developed to upgrade mechanical doors and wirelessly connect them to an existing electronic access control system, providing end-users with a simple, intelligent way to raise the security level of their premises at a lower cost than a traditional system. The technology allows for security and IT managers to conveniently and cost effectively increase the number of doors that can be monitored. The typical customer is a security, IT or facility manager of a company with 500+ employees. The product is a customer driven project taking into account existing and future needs of the security industry. More than 150 customers around the world shared their experience in a global focus group.
www.assaabloy.com/aperio

H.264 Panoramic Cameras

Arecont Vision has demonstrated a H.264 panoramic cameras at Security 2008. The company presented its H.264 version of the proprietary Surroundvideo technology, which utilizes four two megapixel sensors in 180° (AV8185) and 360° (AV8365) cameras for true high definition panoramic views. „Using H.264 allows us to increase bandwidth and storage efficiency on average by a factor of ten," said Dr. Vladimir Berezin, President, Arecont Vision.

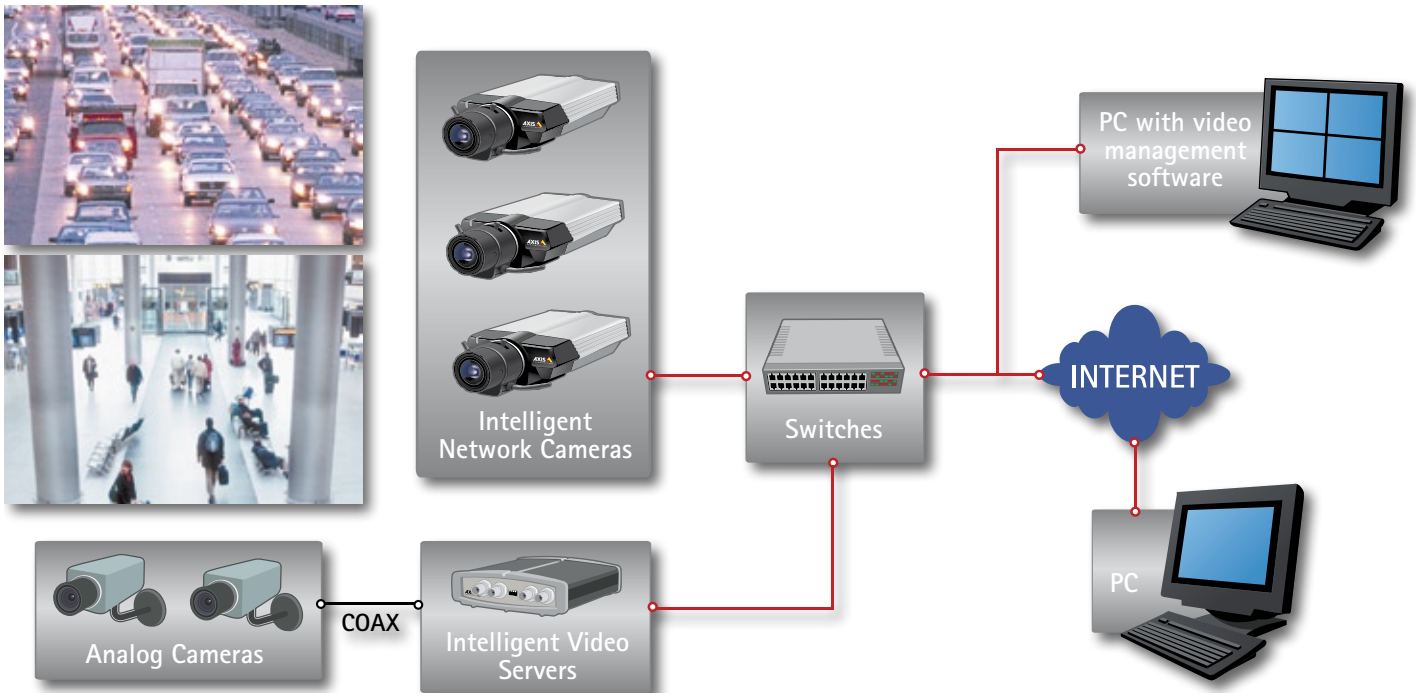
PTZ Network Camera

Vivotek PZ7111/PZ7121 is a high-performance network camera featuring 10x optical zoom and pan/tilt functionality. The camera is designed for indoor surveillance applications such as retail stores, offices or banks. The built-in 10x motorized optical zoom module provides greater depth of field when zoomed in. Therefore, it can display clear-cut images on near or distant objects. With flexible 300-degree pan and 135-degree tilt, the camera can give users more comprehensive control over the monitored site. It is incorporated with the company's self-developed Bach Soc, giving users the advantages of dual-codec (MPEG-4 and MJPEG), dual streams and two-way audio by SIP protocol. With support of dual streams, it simultaneously delivers dual video streams with different resolutions, frame size and image quality to different platforms such as web browser or 3G cell phones.
www.vivotek.com

VIDEO ANALYTICS

Intelligent Video

Managing Video Surveillance Systems Effective and Efficiently



Distributed architecture with embedded intelligence analyzes the data in the camera and only sends essential data, whereas in centralized systems all information needs to be transmitted to an intelligent video server first.

Linda is looking for information on video technology on the internet. Of course she is not browsing every single website related to the topic as this is very time-consuming and limits the number of hits. She uses a search engine instead. Search engines use algorithms that either analyse the relationships between websites or the number of times the search term appears on a page and then build a ranking based on these results. An algorithm can be described as a set of precise rules that specify step-by-step how to solve a problem or to perform a task. Computer programs are basically just algorithms that tell computers which specific steps to perform. In today's all IP world, algorithms are deployed multifariously.

With Active Tampering Alarm the camera would send an alert if sprayed, covered or re-directed.

Using Algorithms for Video Surveillance

So why not use algorithms when it comes to video surveillance? Why should a security officer monitor 24 hours of coverage a day when he is only interested in certain incidents?

Security officers have to monitor larger installations each time. With expanding systems a massive amount of video needs to be recorded and reviewed. Several studies have highlighted the hit and miss nature of the human ability to spot change in a surrounding environment. As a result, events are missed, and suspicious behavior is not noticed in time to prevent incidents. According to several experts, a person's attention reduces significantly after 20 minutes scanning a dozen monitors on which most of the time nothing interesting happens. These challenges have led to the idea of employing algorithms to optimize the usage of video surveillance.

These algorithms are used to automatically perform an analysis of the captured video and identify incidents. If somebody passes by a corridor they shouldn't or enters a building at the wrong time of day, alerts are sent out and the

recording starts, thereby reducing the vast amount of information contained in video. The process is made more manageable for both the system and the person monitoring it.

Analytics based on algorithms are summarized under the concept of Intelligent Video (IV). Intelligent video allows the operator to use the video surveillance system more pro-actively as the system is configured to specific parameters. This makes it possible to get instant alerts when pre-set parameters have been breached, thus delivering early warnings to staff. Systems can be set up to deliver far more targeted and specific information so that fewer operators can monitor even very large installations. Manpower can therefore be used more efficiently.

The Advantages of Intelligence at the Edge

There are two broad categories of systems for implementing intelligent video - centralized and distributed architectures. In centralized architectures, video and other information is collected by cameras and sensors and brought to a centralized server for analysis. In distributed architectures, the edge devices (network cameras and video encoders) are 'intelligent' and are capable of processing the video and extracting relevant information.

The most scalable, cost-effective and flexible architecture is based on 'intelligence at the edge'. As much of the video as possible is processed in the network cameras, or video encoders themselves. This architecture entails the least amount of bandwidth usage since the cameras can send out data and intelligently figure out what video needs to be sent. This significantly reduces the cost and complexity of the network centric processing model, decreases the network load and eliminates the drawbacks of centralized architectures.

Furthermore, processing video at the edge significantly reduces the cost of the servers needed to run the intelligent video applications. Servers that typically process only a few video streams of an entire video can handle hundreds of video streams if some of the processing is done in the cameras.

Advanced Functionalities

The applications performing the analyses are referred to as Video Analytics (VA). Video analytics range from video motion detection and audio detection to more advanced systems including camera tampering detection, people counting, virtual fences, and vehicle license plate recognition.

Intelligent video also enables the use of video for applications outside of security, making it possible to extract greater benefit from the video surveillance infrastructure and get a higher return-on-investment. Here is a short introduction to some of the most common video analytics:

The Active Tampering Alarm alerts security staff when there is disrupted camera operation caused by vandalism or accidents – such as redirection, blocking, or defocusing of cameras. It is especially useful in schools, prisons, public transportation, and in harsh environments where weather, vibration, or dirt can disturb the camera's performance. Without the Active Tampering Alarm, it can take a long time before tampering is noticed, particularly when one operator monitors multiple cameras.

Video motion detection is primarily used to reduce the amount of video that is stored, by flagging video that has changes and eliminating video in which nothing changes. By only storing video in which changes occur, security personnel can store video for a greater time period on a given storage capacity. An intelligent video system that has tagged the video stream with appropriate labels during recording can automatically search through days of stored video to find the right video footage in a matter of seconds. Video motion detection is also the foundation for a large number of more advanced video analytics, such as people counting, digital fences, and object tracking.

Audio detection detects noise – such as the breaking of a window or voices – and uses this as a trigger to transmit and record video, or to alert operators of suspicious activities. It can react to events in areas too dark for the video motion detection to function properly, or detect activity that is hidden from the view of the cameras. For audio detection to work, the camera needs to at least include audio support, and either have a built-in microphone or have an external microphone attached.

A People counter system is used to measure the number and direction of people entering a shop or to track the number of customers in selected parts of the store per time unit. It is installed as part of the IP network and provides real-time customer data statistics that help retailers when it comes to monitoring and comparison of conversion rates, customer flow analysis, queue management and evaluation of marketing and display efforts. This information helps retailers to optimize their store layouts, business process and to increase their sales.

Thanks to the usage of algorithms in video surveillance, it is possible to use the video surveillance systems for a host of new applications. Intelligent Video responds to end user desires to get more from existing network video infrastructure providing business intelligence which can be used to improve the effectiveness of organizations.

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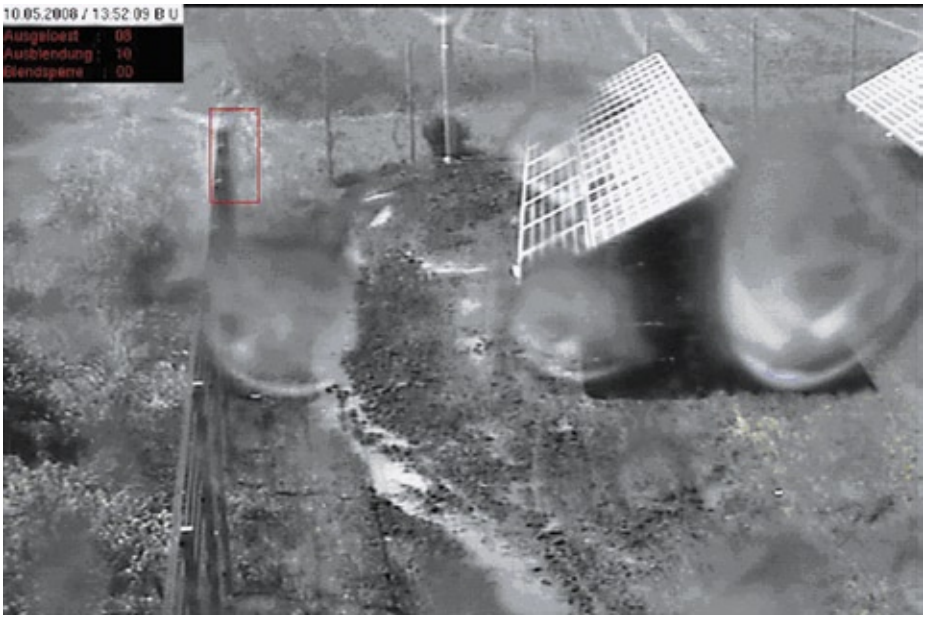
VIDEO ANALYTICS

The Future of Video Analytics

Reduction and Management of False Alarms as the Key to Success

A year ago, the video analytics issue has been only discussed between experts and the broad market was only aware of basic motion detection that has already been commodity in most IP cameras and DVRs. But markets proceed, and recently there has been some important developments going forward both on the technical side as well as on positioning that now allow a reliable prediction about future developments.



False Alarm caused by rain and heavy wind. Due to the detection frame the guard is able to close the file of false alarm in seconds. Without he has to scan the complete picture with the naked eye.

An Inconvenient Truth: False Alarms Will Remain

I would like to start with one of the biggest taboos in the industry: No intruder detection or high end "lost objects"-detection, no algorithm nor any other solution will be 100% reliable. There will always be false alarms! Consequently, the biggest challenge is not to create a reliable alarm. The biggest challenge in real life applications is to reduce false alarm rates and to handle those false alarms in a way that the whole solution is not rendered null and void.

The Importance of Video Management Systems

No matter from which perspective you look to a state-of-the-art CCTV installation, there is no denial that the Video Management System (VMS) is the central component, that makes the complete solutions intelligent – or not! The VMS is the only component that has access to all information available in the system. It defines the screen that the user or guard sees. It steers the workflow of alerts, alarms and events and last but not least, the VMS allows the user and installer to configure a complex setup – including analytics – under a unified user interface.

Sounds too good? Well, that is true – but it can be real in the near future if all manufacturers of the respective components do their homework and work on real IP video network standards and interfaces. And according to analytics, the most important duty is the consequent handling of Meta Data.

The Importance of Meta Data

Currently most VMS simply accept a pure alarm trigger signal from an analytical sensor channel – for instance a Axis or IQInvision camera, enhanced and enabled with video analytics. The intelligent "sensor" is treated like a thumb photo-electric guard or a glass breakage detector. That simple ON or Off signal is only a fraction what video analytics can provide. For instance, in the application of intruder detection or perimeter protection, even the smallest and cheapest full-featured solution – the viasys edge client – is able to provide information like the size of the movement, which allows a discrimination e.g. if it's a person or a vehicle, the coordinates of the upper left und lower right corner of the movement (to draw the red alarm box around the detected object) and date, time, sequence number and of course the picture itself, together with a sequence of pre- and post alarm pictures. As solutions get more complex, providers like Agent VI or Vidient add to the above list more meta data like "object falling, running or lying" or directional information of several objects.

Meta Data Makes False Alarms Manageable

What is that good for? Is it not enough to have the right camera pop up on the screen when an alarm is triggered, but if the alarm is a real alarm and the object that caused the event can be clearly identified a bounding box around the object enhanced with some more information like size or direction may be regarded upon as a nice-to-have feature. But in case of an false alarm without any object information or any information which area caused the alarm its simply impossible for a human to handle that "alarm" quickly and efficiently. Theoretically, the guard have to scan the whole picture with the naked eye to make sure that this alarm can be ignored.

And last but not least, meta data becomes essential when scenes and sequences should be found in archived video data. In well structured meta data, a search over a year like "show all cars that drove in that section from left to right without a stop" may take only some seconds search in a database whereas uncompressing the video streams with H.264 can easily take days and block the server that is computing such a search.

Consequences

The above insights have already initiated first reactions from the market. Many leading camera manufacturers, for example Axis, Bosch and Sony, realized that there is a need for standardization if they want to push VoIP further into the mass market. They initiated the Open Network Video Interface Forum (ONVIF) and 18 other manufacturers like Panasonic and HIKvision already followed. Even in the first version of the specifications, ONVIF reserves a special chapter exclusively for video analytics and how to handle events and meta data.

The leading VMS developer Milestone Systems has recently released their Xprotect analytical server which exactly solves the above issues: Alarm triggers from various sources can be managed under a unified platform. Meta data is accepted and stored in conjunction with the respective video stream and processed, e.g. for the

above mentioned alarm box around intruders. But also from the general concept, the approach from the market leader for VMS looks like a big hit: Their framework handles server-based, edge-based and even library based video content analysis. That covers everything that will be available in the future – and it will be a milestone in the IP Networked Video segment that other VMS vendors will have to match up with. And they surely will!

Server Based vs. Edge Analytics

The above approaches, especially the analytical server framework pose the question about the advantages and disadvantages of the respective way to host the analytical algorithms – but also responds to that question in a clear way that will be outlined at the end of this section. First let's have a closer look to the two – or more exactly - three ways to host analytics:

Server Based Analytics

The oldest and currently widest spread way to host video content analysis is to put it centralized on dedicated server. That was necessary because most of the algorithms consumed huge amount of resources both in CPU usage and RAM. Even on those dual or quad core machines, barely more than a dozen camera channels can be analyzed. To implement a larger complex intelligent CCTV network can easily end up in building a heavy and expensive data processing center – or, in like in many projects, it will cause the customer to step back from analytics and handle things in the old fashioned way.

The second serious disadvantage is the fact, that all video streams from all cameras have to be sent continuously 24 hours a day from the edge of the network (cameras, video encoders) all the way to the centralized server(s) – even if most of time nothing relevant happens. In doing so, terabytes of data block jam-pack the valuable network bandwidth – another serious reason for consumers stepping back from analytics or even choose analog cameras and wiring instead.

Those server based solutions have the advantage, that the above discussed handling of meta data is solved – naturally in a way that fits best with the underlying algorithms. After all it's the analytics vendor itself that designed the user interface. But even in that case the analytics has been a separate program, outside from the VMS that may not have been able to handle meta data. That may be a reason why some analytics vendors dare to step away from their core business and try to provide a full video management system with integrated analytics – aimetis is an example for such a positioning. In that case, the consumer has to abandon the option for a best-of-breed approach and may miss features on the VMS side. Another vendor did a move in the opposite direction: IOimage is now a manufacturer of cameras and encoders with embedded analytics. It will be interesting how those companies will handle the channel conflicts involved into such a positioning and how they can convince their clients of buying their closed proprietary solutions and not the open standard solutions of the many other manufacturers like Axis, Milestone and viasys.

Library Based Analytics:

This is the latest development in server based technology: Encapsulated algorithms with standardized interfaces can be loaded and run on the same machine that hosts the VMS. The advantages are clear: less hardware is needed and the complete solution can be configured and handled under one unified user interface. A standard for meta data allows a deep integration of analytics so that the user is no longer aware that different manufacturers are involved.

Edge Based Analytics:

This is the consequent way to avoid the most serious problems of both server based approaches: Need for heavy CPU/memory resources and extensive network bandwidth consumption. In this case "edge" means the edge or end of the network, so not only cameras but also video encoders as the first device between analog signals and IP belong to the class of edge devices. If analytics is able to run on those devices itself the network traffic is simply zero as long as nothing relevant happens. Not until an alarm is triggered there need to be sent short IP signals with meta information to the VMS. This will then – in any desired frame rate and resolution – connect to the camera and monitor the event. The viasys solution for instance is also able to send in a push mode a complete alarm sequence including pre- and postalarm pictures via network to any receiver. The bandwidth consumption is so low, that even ISDN or UMTS connections are sufficient.

If VMS now start to accept and integrate the provided meta data, the effect for the user is the same as in server based analytics. A red alert box around the intruder, additional information displayed together with the video stream under one unified interface.

Edge Analytics – the Ultimate Solution?

Looks like the ultimate solution? There is no expert in the market that will deny – but only on the long run. The big "disadvantage" of edge analytics is the simple fact, that there are only very few algorithms worldwide that can run and will run for the next years on standard IP cameras. Of course you can pack a "server" in the camera, and some high end models have such a DSP (digital signal processing) chip and tons of RAM already integrated in the device – but that price level is far beyond mass market needs. In fact, such solutions are much more expensive than a centralized server park.

On the other hand, there are some few solutions available that feature small and smart algorithms for the "bread and butter" needs in video analytics. For people counting there is a solution for a few selected Axis cameras available from a Cognimatics, same with some basic algorithms from server based manufacturers for one or two camera models.

The widest spectrum of supported cameras and hardware is available from viasys: Intrusion detection, perimeter protection and alarming can be handled reliable with features like "directional detection" or "trip wire" even outdoors. A pure piece of software (the Plug-In) runs fully at the edge on all Axis cameras and video servers as well as on all IQeye Megapixel Pro Line cameras. No additional hardware or DSP chip is needed, which brings the TCO for the customer to a minimum. Users of the above solutions do not have to make compromises in the quality of detection or false alarm rate, as long as they accepts that advanced behaviour recognition like "slip & fall", "lost objects" or "face recognition" can not be upgraded on those cameras at the moment.

Conclusion

In the new integrated video world that handles meta data, there will be no conflict between the different hosting forms of analytics. Customers may choose between server and edge analytics according to their needs – and why not combine an affordable edge analytics for intrusion detection on the majority of cameras with enterprise class behaviour recognition on a server from another vendor? All algorithms will anyhow be available and configurable under the unified user interface of the VMS.

And with the increasing CPU power of the standard IP-cameras there will be more features available at the edge. But smart vendors of edge analytics will also provide in the near future server based and library based algorithms. If their solution is able to run on a standard Axis camera, it naturally can run on any PC or as a library embedded into any VMS – and the advantage of small and fast algorithms is still a big advantage. When an analytical channel does consume less than 1% of CPU load, why not run a dozen analytical channels on a Milestone server or hundreds of channels on a single dedicated server.

And last but not least, customers can expect to find analytics on devices that they have not thought such an application to be possible. In Q1 2009 for instance American Fibertec – a manufacturer of high end network infrastructure – will release a network switch with embedded video analytics from the leading edge analytics company. The suspense continues…

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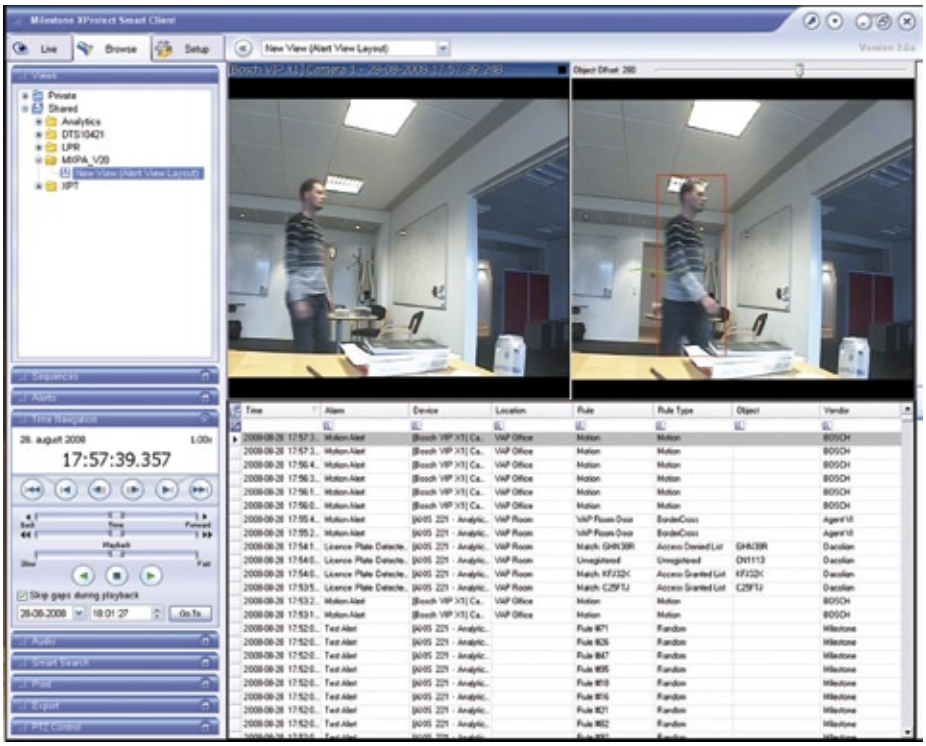
VIDEO ANALYTICS

Multiple Tools under a Single User Interface

Software Helps to Decrease False Alarms in Video Analytics

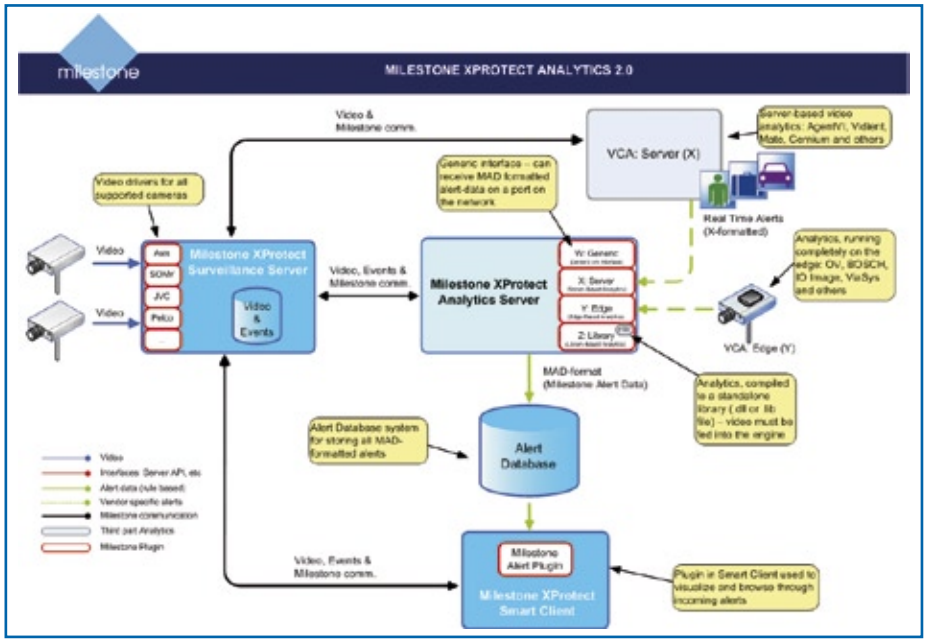


XProtect Analytics integrates video analytics tools from different manufacturers.

Digitalization and IP networking are transforming the way that video surveillance and monitoring is used. Businesses, organizations and municipalities worldwide are increasingly looking to IP network video to improve the performance of their video surveillance and video-enable their operations. One of the most amazing ways IP network video can do this is by taking over the "seeing" and doing it intelligently. Video analytics, video intelligence and video content analysis are all terms for the ability to mathematically detect, recognize and analyze objects and events using digitized video.

As video analytics has dramatically improved its effectiveness as a tool for providing real-time, actionable intelligence in security installations, it's getting serious attention for other uses as well. Its versatility provides excellent return on investment for a wide range of applications, including business intelligence, factory automation, loss prevention, public liability assessments, training, consumer behavior analysis, monitoring traffic flow, and more.

The growing interest in video analytics is fueling new innovations and products, and will continue to do so for some time to come. A report from IMS Research predicts that the video content analysis market will grow to an estimated US-$ 3.4 billion by 2010. But this is just the tip of the iceberg for the IP video surveillance industry as a whole. According to ABI Research, the video surveillance industry is at a key inflection point between analog and digital technologies and could expand from US-$ 13.5 billion in revenue in 2006 to US-$ 46 billion in 2013, according to "Video Surveillance Systems: Explosive Market Growth and New Market Opportunities," ABI Research 2008. This means many



Advanced analytic tools and IP video technology enables video analytics at the edge and at the server.

more businesses and organizations will have the ability to video-enable their operations.

"Within the next three to five years video analytics will be as prevalent in video surveillance solutions as motion detection is today," says Eric Fullerton, Chief Marketing and Sales Officer of Milestone Systems. "Enabling users to easily integrate intelligent video analytics from different manufacturers, both at the edge and at the server, is a new offering that can help decrease false alerts, reduce operating costs and make intelligent video surveillance systems much easier to manage."

Video Analytics Framework

At all the security trade shows in the autumn, Milestone systems was demonstrating its new Video Analytics Framework – XProtect Analytics 2.0 – that does just this. Part of the Milestone open platform video management software solution, XProtect Analytics seamlessly integrates video analytics tools from different manufacturers under a single, easy-to-manage interface. This gives a powerful, future-proof framework for implementing and managing different video analytics applications and addresses some of the key industry issues such as the end user's need to easily correlate alerts between different analytics tools. Using the Milestone correlation tools, they can rapidly search across alerts and events to easily find relevant video evidence about security incidents from multiple sources.

With the Milestone Video Analytics Framework, organizations can have easy access to critical information they need to make proactive decisions and take preventive measures to mitigate the consequences of a security incident.

A combination of advanced analytic tools and optimized IP-based video technology based on the Milestone open platform, XProtect Analytics Framework enables video analytics at the edge (on camera) and at the server, minimizing processing power and adding value to archived video. Users can correlate events from generic tools such as license plate recognition, facial recognition and traditional real-time access control, with alerts from video content analysis tools like object detection, motion direction, tripwires, etc. Users can build strong, accurate evidence by cross-matching events in real-time and from archived video.

Integrating video analytics with open platform video management gives a flexible choice of hardware and software that greatly expands the potential for video analytics and increases the value of archived video. A true open platform solution simplifies system operation by integrating a wide variety of video analytics products under one easy-to-manage user interface. This gives a powerful surveillance solution with a flexible best-of-breed IP video management system, and a central console for operating, collecting and correlating events from multiple sources.

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VIDEO ANALYTICS

Behaving the Right Way

Video Analytics for Retail Operations

About 10 years ago video analysis was more myth than reality. Some would argue that not much has changed, but they would be wrong. In the past, video analysis technology was comparatively basic and not especially accurate. Many companies emerging in this market place had the right ideals in place, but the actual technology was not as advanced as the way of thinking.

Robert Wint, Marketing Director EMEA

Today, technology has improved considerably. The potential use for video analysis has broadened as well as potential users and interested parties. According to some industry insiders, there has been a 65% annual growth in the video analytics market since 2004, and they predict the sector will be worth € 270 million in 2009.

Behavioural Analysis

Video analytics has a wide range of uses, although recent media hype tends to focus the technology usage mainly around safety and security. Many organisations are also using analytics to monitor such things as people entering or exiting a perimeter or area of interest, or for determining the speed and direction of travel of a car. It can also be used to identify suspicious movement of people or property, to protect against theft or vandalism, enhance licence plate identification for tracking suspects or traffic enforcement, and even evaluating how long a bag has been left in a designated area to verify whether or not it is a 'suspect' package.

No matter how people implement analytics within their environments, the technology can significantly enhance situational awareness for critical infrastructure organisations, positioning them to more effectively deter terrorism and crime and promote a safe environment for people and commerce.

Retail Scenarios

Retail operations are bigger and more geographically dispersed than ever before, and this presents security personnel with a serious challenge: How do they secure such a vast, heterogeneous environment with the resources they currently have?

Video analytics can help. By automatically detecting potential security breaches and other noteworthy behaviour, video analytic applications foster a more proactive approach to security and help retailers secure expansive operations without having to add a lot more security specialists to their staffs.

In the quest to maximise loss prevention initiatives, security teams focus heavily on the point of sale (POS), where near-constant activity needs to be monitored closely. Cashiers are ringing up sales, customers are returning merchandise, and long lines during busy periods increase the chance of employee error.

POS analysis applications are designed to help security teams more effectively detect theft, error, and fraud at the point of sale. These applications integrate with corporate databases to gather exception and transaction data and flag suspicious POS activity, such as excessively large cash transactions, overrides of declined credit cards, voids not followed by a sale, cash-back transactions, overuse of employee discounts, high-value returns, etc. The system can be configured to send an alert to security personnel when a suspect transaction takes place, and a staff member can then review the video associated with the transaction to determine what steps to take next.

Apart from the point of sale, there are a myriad of locations for theft and other criminal activity to occur, and it's virtually impossible for security staff to monitor increasingly vast retail properties without the help of technology-based tools. Multiple entrances and exits, large car parks, and diverse, dispersed locations, such as warehouses, stock rooms, loading bays, offices, and cash rooms present ample opportunity for wrongdoing. Video analytics can detect a host of suspicious behaviours, such as loitering in secured areas, excessive driving speed in a car park, private cars at the loading bay, or equipment being removed from shipping or receiving areas. By pinpointing such activity and notifying appropriate personnel, analytics allow security managers to stay on top of store activity and deploy team members effectively and efficiently.

Another useful analytic for retailers is intelligent motion tracking. This application can tell the manager who goes where in the store and when they come through the door, which is useful in assessing the suc-

cess of specific marketing initiatives or merchandising. Similar tracking can also help personnel optimise the lay-out of the retail location by understanding the directional behaviour of the shoppers (the 'route' that shoppers take around their store). Outside, traffic flow within the car park can be watched, and any suspicious activity reported.

But video analytics can be used for more than loss prevention and physical security. These applications can generate valuable business intelligence that helps retailers to identify shopper behaviour patterns, improve merchandising initiatives, streamline operations, and increase sales.

Is the store busier on Monday evenings than it is on Friday afternoons? If there are multiple locations, does one attract more customers than another? Does a store have "hot spots" areas where customers tend to be drawn? How many people who enter the store actually end up buying something?

These are all questions that can be answered with a retail traffic analysis application. Major retailers are using this software, leveraging their existing video surveillance systems to monitor shopper traffic patterns and deliver information about where, why, and how customers shop.

One of these retail traffic analysis applications is called dwell time. Dwell time refers to shoppers seen 'loitering' in an aisle (or for example by a display in a museum) for a particular amount of time. Security personnel can monitor these areas and report on suspicious behaviour as well as -identify simple trends like a shopper having trouble locating a specific item on the shelf. Such data can be analysed after the event, and the statistical information the analysis provides can be acted upon to improve the operational performance of the store, and even compared against other stores within the same 'group'. This can include moving promotional items or displays where the shopper 'density' is highest, or increasing the number of staff in areas where customer service is more clearly in demand.

Not a Fiction but Daily Routine

Now if this all sounds a little too far fetched, such technology is in fact fast becoming reality. Several US retailers are currently using retail analysis in their daily operations and are reaping the rewards. For most of them, the purpose of deploying Verint's Nextiva Retail Traffic Analytics technology is not one of security, but rather the ability to analyse shopping patterns and improve merchandising based on those trends.

Research conducted on different days, including weekends and holidays, at different times and in different departments yields the best results. The value of the research, to the client, is that it identifies how shoppers behave in-store, allowing them to see whether their employees are being effectively deployed, comparing retail traffic to point of sale data, and giving a clear indication as to the effectiveness of advertising (e.g. through product displays and posters) and special offers. Not surprisingly, given that the research was conducted in the US, weekly trend analysis of traffic through the beer and wine area peaked on July 4th whereas the traffic within the men's razor area remained constant.

Retailers using Verint's technology in the US are able to experiment with changes to store layout to see how these impact on behaviour, and also uncover differences in behaviour between stores. Crucially, they are able to use their existing infrastructure (cameras for security and asset protection) to extract business insights beyond POS analysis. The investment, for those who use it, is well rewarded, with a system payback in less than 18 months. A retailer with an existing video surveillance system gets the best of all worlds: a solution to his security needs, and in combating such difficulties as staff fraud and shrinkage; and a solution to his need to maximise sometimes limited resources and shelf space.

Video analytics has many more applications beyond a marketing and customer service tool. In more critical situations, baggage left behind in an airport or train station can be monitored to ensure it is not suspect, or a lost child in a theme park or shopping centre tracked and then reunited with their parents. Youths loitering outside a supermarket can be targeted, and if their behaviour arouses suspicion a guard can be notified and deployed to deal with the situation.

A CCTV Society

In a society where CCTV cameras seem to track our every move and a city like London having the highest number of cameras in any city in the world, there is a perception among the public that the level of crime is worse than it is in reality. In particular, the problem of anti-social behaviour is escalating across Europe. The tool to combat this is video analysis.

The posture and movement of an individual can be observed to ensure they are not intent on criminal activity. For example, a system could determine the difference between a passenger going straight to their car to unload some shopping or a car thief waiting for the right target.

Video analytical software can be taught to distinguish between movement that is a valid alarm and motion that is part of the natural background like a swaying tree, which can be masked out of the scene. The more advanced systems can deal with picture break up or interference without giving a false alarm. Low-level light and poor weather conditions can also be overcome by carefully configured software.

One major development has been the use of audio analysis alongside video. With effective audio analysis, the intervention of security guards on hearing gunshots or shouting and screaming that could indicate a fight or sexual assault can prevent a situation escalating. It is these improvements in the technology, as well as the advance in the video analysis software to track an individual through a crowd through vector analysis, that is interesting the public and private sector private alike.

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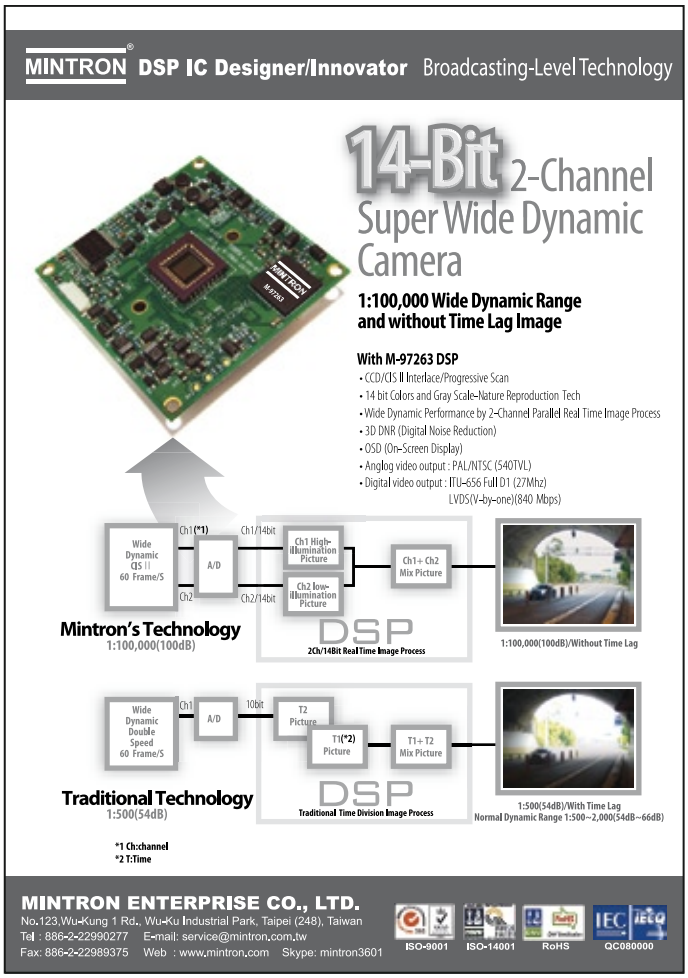

All-in-One Video Motherboard

Lanner Electronics has released a 16-channel integrated H.264 video motherboard for Video over IP applications. The VM-8016 all-in-one video encoding motherboard simultaneously captures and encodes 16 channels of analog video to H.264 compressed digital format directly on the motherboard without external capture cards. The all-in-one video motherboard features an LGA775 socket for Intel Core 2 Duo or Core 2 Quad CPU, Intel GMA 3100 integrated graphics, six Sata II hard drive ports and two DIMMs for up to 4GB DDR2 memory. It also provides 16 channel audio inputs and onboard audio/video synchronization, two gigabit LAN ports for high-throughput networking and a PCI-E (x16) expansion slot for an independent VGA adaptor or an additional Lanner capture card.
www.lannerinc.com

Night Monitoring

At the recent Sicurezza fair in Milan, Videotec has presented its Ulisse IR360, an upgrade for their day/night vision positioning system. It is now available with infrared lights mounting and with continuous rotation and hence 360° night monitoring. These outdoor positioning systems combine the benefits of a tradizional PTZ head like strenght, ruggedness, quality drive motors, etc, with the nimbleness and flexibility of a dome camera.
www.videotec.com

Secure Bank Transactions

The Dallmeier recorder range "bank" comprises compact digital recording systems whose certifications and specific system parameters as well as the specifically designed software make them ideal for bank applications. The recorders are highly stable and reliable devices delivering very high image quality and operator convenience. All recorders come with integrated UTC capability, which allows for the convenient configuration of the Company's cameras via the recorder interface, even during ongoing business. This function is also available in remote operation via network. Additionally, the recorder configuration offers the possibility to insert privacy zones within the picture, i.e. to mask out certain sections or black them out respectively (for example number pads for PINs).
www.dallmeier.com

Xtralis Opens European Showroom

Xtralis has opened a new European showroom to demonstrate the full integration and interoperability between the security, video, access control and fire detection technologies within the Xtralis product range. The showroom, located at the heart of Xtralis' EMEA business in Brussels, has been built with three key purposes in mind: as a showcase for Xtralis' products; as a training centre for engineers; and as a facility to aid the further development and integration of the Xtralis product portfolio. Complementing two other facilities in the UK and Germany, the new centre is also the site from which e-learning and webex sessions will be delivered.

Increased Demand for Hybrid Technology

Heitel Digital Video has presented a variety of innovations including its new hybrid Camdisc HNVR video recorder and Camcontrol MV video wall software at the world's largest security technology trade fair, "Security", in Essen, Germany. The Company's product innovations where e.g. the Camtisc HNVR hybrid recorder for analogue and IP cameras, applications for mobile phones, Iphones, and a client/server-based EMS video alarm management system. Visitors were especially interested in the new hybrid technology for recording and transmitting analogue and IP cameras as well as the many new features of the Heitel platform.
www.heitel.com

Versatile Hybrid Recorder

Geutebruck's high performance hybrid recorder "Reporter" is now available in a special edition at a special price and dispatched within 24 hours. Reporter/econ processes up to 19 video channels and an audio channel. It supports analog, network and megapixel cameras from all well-known manufacturers, and enables easy migration from analog to digital. Ideal for many types of application, the system's preconfigured software and wide range of options makes installation quick and customisation easy. Digital signal processors and software updates enable state-of-the-art functionality to be maintained indefinitely. It comes with a 500 GB hard disk and an English language operating system which can be changed via the desktop script if required.
www.geutebrueck.com

VideoIP Range

With the IP product line "a tribute to Amadeus" Dallmeier has developed a VideoIP range with individual components that are extensively tested in advance for optimal interoperability. Open interfaces ensure that third-party products or systems can be connected without problems. With the IP range the high standards of CCTC applications combine with the benefits of pure IP solutions. The Company's "Designcams" are cameras that are designed exclusively according to the customers' demands. Hence, the user is free to choose. The cameras turn into eye-catchers thanks to their classy design that stands out, or they become more discreet through an appearance that matches the ambience of the surroundings. That way video surveillance can be part of the user's overall interior design.
www.dallmeier.com

Introducing Samsung Techwin Europe

Samsung Opto-Electronics UK Ltd is changing its name to Samsung Techwin Europe Ltd. The company states that the change, which came into effect on the 1st January 2009, cements its commitment to the pan-European professional security market and the development of the Samsung Techwin range of products. Commenting on the name change managing director Mr Jake Kim said "Our strategic decision to break away from Samsung's consumer imaging business in March 2008 has allowed us to focus exclusively on the professional security market. This has led to Samsung Techwin quickly becoming one of the fastest growing security brands as we continue to expand our operations across Europe." Mr Kim added: "A substantial investment in research & development has resulted in us being able to offer a very exciting and innovative range of security solutions. To successfully promote and support these new products, many of which incorporate ground-breaking technology, we have bolstered our team by recruiting the best possible sales, technical, product management and marketing people who share our vision to provide the highest possible levels of support for our clients."
CCTVsales@samsung.com

ACCESS CONTROL

Security in Numbers

The Role of the PIN Code as an Effective Method of Security

Concerns about the security of access control systems have been increasing worldwide. Security product and system providers and, above all, their users are all facing the common challenge: what is secure enough? The good thing is that, at the same time, this puts the onus on security product and system providers to focus on improvements. The following article gives a short overview of the PIN code as a method of enhancing security.

Finding the Weakest Link

When speaking in general about all the different identification technologies that are used around the world, more focus should perhaps be put on potential system improvements and on the use of a sufficient level of security in proportion to the type of protected assets. Better security is generated by a series of security improvements at all levels. When evaluating the security level of a system, one should also remember that breaking the system must be profitable enough for the crooks in relation to their effort. This is why the security level of a certain system or technology may be sufficient in one application but not in another. Security in general does not depend only on identification technologies, but is also either negatively or positively affected by other factors such as the whole system's security, communication protocols between access control readers and the system controller, data encryption and, last but not least, human related factors.

Security on Three Levels

Security and integrity, and the assurance that only authorized persons can access the premises protected by an access control system, can be guaranteed by security methods on three levels: 1. The person allowed access possesses something unique that others don't have (a unique access card), 2. The person allowed access is recognized by his or her individual personal characteristics (iris, fingerprint, photograph), 3. The person knows something that the others don't know (PIN code, password). If an access control card gets lost, it is very easy to protect the system by cancelling the access rights of that card. Personal characteristics are practically impossible to steal which makes this method very reliable, but one disadvantage of systems built on these identification methods is the higher cost. In addition, these technologies are often not suitable for certain conditions or users. A PIN code, which is known only by one person, is a very effective method of maintaining security. Getting to know someone's PIN code requires action by the person to whom it has been assigned. A PIN code with suitable identification technology and an appropriate system structure is a simple and cost effective way to reach a very reliable level of security.

The Pinnacle of Security

The advantages of a PIN code are significant, as a PIN code is very simple to use and it provides a very reliable security level. Personal PIN codes prevent the use of access control cards which for some reason fall into the wrong hands. Also, if someone should manage to copy an access control card that is used in a system protected by PIN code identification, the card is useless and remains so if the PIN code is not known. Even the newest identification technologies with the latest security improvements can be made more reliable with PIN code identification.

The security of a PIN code is based on the fact that it is not encoded in the card itself. The system which accepts both the card and the personal PIN code compares the card data and the PIN data, so the card does not contain anything related to the PIN code. One example of the positive effect of a PIN code is magnetic stripe technology. Despite the magnetic stripe's security defects, it is still widely used, even in credit cards. The security of credit cards with a magnetic stripe has been improved to a sustainable level by PIN code identification.

It is more than reasonable to protect environments with high security requirements such as banks, power plants, government buildings etc. by using a combination of an ID card and a personal PIN code in their access control systems.

PIN Code Readers

It is easy to enhance the security level of an access control system with PIN code readers. The readers are simple to use and install and, when chosen correctly, they can also be placed in harsh environments where they must withstand moisture, temperature changes and dirt. PIN pad readers with traditional keypads may collect dirt or moisture between the buttons which may cause harm to the reader. Traditional buttons may also get broken, which often necessitates replacement of the whole reader. Idesco's PIN pad readers do not contain any moving parts, which is essential when the readers are used in harsh conditions. And with the keypad built into the surface of the housing, the readers are very robust.

PIN pad readers with an illuminated keypad are also available and are a user-friendly choice for environments without a light source. The keypad area of the reader is visible only after activation by a contactless RFID transponder, or by pressing the keypad. The keypad is not lit all the time, so the reader does not attract unnecessary attention. PIN pad readers for flush installation are also included in the product range. Despite the robustness and durability of these PIN readers, no compromises have been made on creating an elegant reader design.

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PERIMETER PROTECTION

Special Challenges for Oil & Gas Security

Fiber Optic Based Intrusion Detection

The Middle East's high proportion of critical infrastructure, its political instability and increasing global energy prices combine to present special challenges to the suppliers and operators responsible for protecting the critical oil and gas infrastructures in the region. Security issues typically revolve around two key areas – the plant and equipment (oil refineries, LNG plants, etc.), and the products' transportation (pipelines) and the security requirements for each of these are quite different, as are the range of solutions available.

Plant and Equipment Protection

Regardless of the application or solution selected, the most important item by far in any security plan is to actually have a plan, and secondly, to have a procedure in place for responding to an intrusion. For refineries, LNG and petrochemical plants, the main security threats come from intruders and deliberate sabotage. Often, the first line of defence at these facilities is a perimeter fence which, while succeeding to delay or deter intruders, is largely ineffective in protecting the entire perimeter. Obviously, a 6–10 km perimeter fence can easily be climbed or lifted in a number of places to allow completely undetected access to a site.

In the past, CCTV cameras employing Video Motion Detection (VMD) technology held great promise, but experience has shown that they have been prone to nuisance alarms, thereby reducing their effectiveness over time. Similarly, traditional fence mounted intrusion detection sensors have proved less than ideal solutions, as they require power and electronics to be deployed every few hundred metres along the fence line, which is expensive to provide and intrinsically unsafe. In addition, their extremely basic processing power meant they typically traded off detection sensitivity to reduce nuisance alarms, ultimately undermining the very security these systems were originally intended to provide.

Fiber Optic Based Detection Systems

Future Fibre Technologies' current generation of fibre optic based fence mounted intrusion detec-

Secure Fence can pinpoint the location of intrusions to within 25 m anywhere along the fence, requiring no power or electronics.

tion technologies have overcome these problems to deliver a state of the art security system which is being used to protect an increasing number of the world's refineries, LNG and petrochemical plants, as well as military bases, sensitive government facilities and other critical infrastructures.

The product, Secure Fence, uses its Digital Signal Processing technology to overcome the problems of nuisance alarms. The technology uses signature recognition and advanced learning algorithms to "know" the difference between an environmental nuisance alarm and an attempted intrusion. The system does not require any power or electronics to be installed on the fence line at all makes it ideally suited to the Oil and Gas industry. FFT recommends a fence mounted fibre optic detection system, linking back to the main security centre and ideally interfacing to CCTV cameras to provide visual confirmation to security staff so they can determine the exact nature of the intrusion or threat that they face. It's this type of configuration that the company has already installed on the perimeter fences at six critical LNG plants in the Gulf Cooperation Council in the last 12 months.

FFT's Secure Fence has the added advantage of being available in an Arabic version, which delivers an intuitive and easy to understand graphical alarm interface to security staff in their local language and works with the company's patented Alarm Recognition and Discrimination technology. Another advantage of the system is its ability to pinpoint the location of intrusions to better than 25 m anywhere along the entire perimeter fence compared with the traditional 200 or 400 m zones of older systems.

Pipeline Protection

Like plants and equipment, pipelines must be protected to prevent theft, sabotage or third party interference (TPI) and once again, traditional protection methods have delivered extremely inconsistent results. Regular pipeline patrols, periodic flyovers by aircraft and/or satellite imagery are prohibitively expensive and rely on being in just the right place at just the right time, resulting in a very low probability of detection and virtually no early warning. With a state of the art advanced fibre optic based pipeline protection system, one can detect and pinpoint the location of digging activities near pipelines – in real time, before the pipeline is damaged. Such a system is a much lower cost than alternative methods and it can often use existing fibre optic cables as the sensor to reduce costs even further. FFT's Secure Pipe system provides valuable early warning of an event before pipeline damage or loss occurs and it can protect pipelines thousands of kilometres long. It monitors entire pipelines for interference in real time, 24 hours a day, 7 days a week. The Pipe system has been successfully deployed on many oil and gas pipelines around the world, protecting thousands of kilometers since its launch in 2002. The latest application has been for protecting high pressure gas pipelines for Gaz de France and Fluxys in Europe recently to meet the new EU safety requirements.

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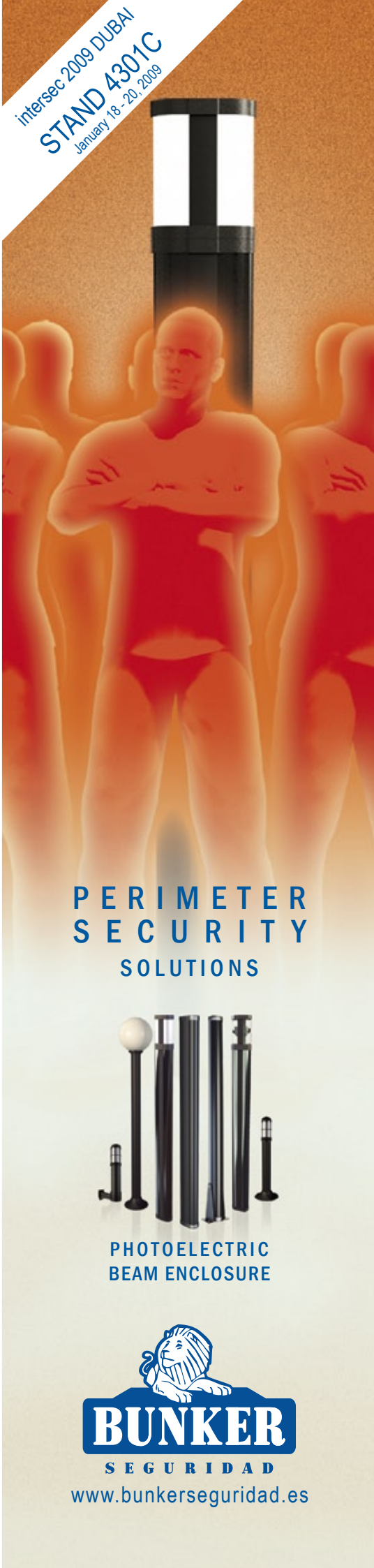

PERIMETER PROTECTION

See and Not Be Seen

Discreet and Disguised Perimeter Security Columns

Trying to rescue his captured heroine, no doubt James Bond would ask his favorite gadget inventor Q to find a way but, using today's technology, it would be extremely difficult for your average intruder to get past Bunker's range of perimeter security products unnoticed.

Bunker Seguridad Electrónica was established in March 2002, and has been working closely with other leading security distributors to design and develop a range of products to complement the prestigious end of the perimeter security market. The Company is perhaps best known for their range of beam towers, which house the infrared beam transmitters and receivers that are used in perimeter security.

Initially producing beam towers for use with the active infrared barriers produced by world class manufacturers, Bunker decided to develop enclosures in the form of garden lampposts that would offer the same degree of security as the towers but designed to protect the perimeters of villas, private residences, hotels and locations where appearance and visual appeal are important whilst still illuminating the location in which they are set. Bunker has now expanded their range of products to include the MALTA, CAV, CAV-W and SPIRO security garden guard lamps.

Invisible Beam Source

The primary advantage offered by the Bunker range is the high level of protection that is provided, as the intruder is unable to see where the beams are. The MB and PT 180° & 360° Beam Towers respectively prove to be an indispensable solution where the securing of aesthetically valuable landscapes or sensitive areas requires a robust yet discreet enclosure. Capable of hosting both Twin and Quad photoelectric beams and microwave sensors, the PT & MB range are built to disguise the number, position, type and orientation of the security sensors installed inside. MB and PT are economical perimeter security protection enclosures designed for quick and easy installation.

Attractive designs and simple, discreet enclosures not immediately recognizable as security devices are at the heart of the ingenious product range, providing excellent alternatives to protect the close proximity of any building. The external housing of the towers and security garden guard lamps range is made from polycarbonate, which allows the infrared beam to pass through whilst at the same time offering protection against solar and ultraviolet radiation. The unique properties of this polycarbonate allow the presence and positioning of the beams to be hidden, and help to ensure that the units remain vandal resistant.

A Solid Reputation

Equipped with their own in-house design department, Bunker Seguridad are able to continually improve and innovate in their strive for excellence. New products are continually being developed, with focus being kept on quality and reliability. Technical support and advice is offered by staff professionally fluent in English, Italian and Spanish. The Company prides itself on its excellent customer service, ensuring customer demands can be met according to schedule by maintaining a large quantity of stock in their warehouse located near their offices in Madrid. With over 20 core products and a range of accessories to suit, Bunker Seguridad has built successful business relationships with some of the biggest names in the security industry. This Company's eagerness to provide only high quality products that provide complete peace of mind to its customers has earned it recognition by leading distributors as a reliable supplier.

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Hybrid Video Recorder

Siemens Building Technologies has produced new demo software for the Sistore MX range of digital video recorders which allows the customer to operate and test a fully functioning demonstration on a standard PC or laptop. The software is available as a download from the Siemens website and shows how the hybrid video recording system can be easily managed through a simple and intuitive graphical user interface. Sistore MX is a hybrid video recording platform allowing for recording and control of up to 32 analogue and 32 IP cameras with a storage capacity of up to 2 TB internally. Sabotage alarm, activity detection, smart search and temperature management are built-in features which ensure high system security and its embedded architecture leads to the highest reliability.
www.siemens.com/sistoremx

Technical Furniture for Control Rooms

Winsted will be showing their new 'Sight-Line' console at Intersec 2009. Expanding their 'Prestige' range of control room consoles, the new series is functional and striking in appearance; specifically designed for demanding command and control applications. The console features the company's innovative 'Versa-Trak' monitor array mounting system, which offers very high adjustability, allowing users to easily modify sight-lines and monitor viewing angles based on operators' personal needs. All consoles of the series come as standard with the producer's 'Truform' work surface and decorative end panels, both of which are available in a variety of colours and shapes. Custom work surfaces and end panels are also available in laminated MDF or solid surfaces.
www.winsted.com

Business Alliance Mühlbauer and Oerlikon Esec

Mühlbauer High Tech International enters into an alliance with Oerlikon Esec. The partnership enables the companies to provide complete manufacturing solutions and services in the rapidly growing IC module business in the smart card industry and related emerging markets. Today, over four billion smart card units are manufactured annually. Driven by the banking sector (e.g. payment cards), governments (e-passports, e-ID cards) and telecommunications (e.g. SIM cards for mobile phone), the smart card industry is projected to grow annually at double digits. To keep up with this demand, smart card module manufactures require the latest assembly technology and a partner who can offer the highest levels of output, optimal production yields, and efficient support.
www.muehlbauer.de · www.oerlikon.com

RFID Excellence in Business Award

ADT'S Sensormatic iRead platform won a prominent industry award for "RFID Excellence in Business" at RFID World 2008 in Las Vegas. This award recognises the Company's commitment to forward-thinking radio frequency identification (RFID) solutions for implementing item-level intelligence in retail environments. The awarded platform took top honours in the Excellence in Technology Award category. With it, retailers can improve the integrity of item-level data and gain greater visibility into store operations, allowing them to become more predictive and proactive in improving profits.
www.adtemea.com

Intruder Detection Anywhere Outdoors

Visitors to the Sicurezza 2008 event in November in Milan could inform themselves about no less than eight different products at the CIAS stand. The Company's range of infrared and microwave security products includes the Newton Pro, an outdoor perimeter protection barrier capable of being remotely tuned and maintained. Installation and alignment of the 2.3 m columns are simplified by the built-in buzzer and connection for a standard multi-meter. The useful 100 m range is achieved by up to eight optical detectors that provide a quick response time of as little as 40 millseconds. Where a longer distance must be covered between devices, the Pythagoras 3Tech may provide the solution. This combination infra-red/microwave column employs fuzzy logic to select the best settings for the current environmental conditions and thereby reduce false alarms. An ingenious anti-tamper system detects intruders trying to climb over the device by stepping on it. Other long-range detection devices include the elegant Newton range, the portable MMD system for immediate surveillance of temporary or threatened locations (which is also available in desert sand color), and the Ermo 482X Pro range covering up to 500 m for very high risk sites. The options of solar panel power and wireless connectivity are particularly valuable for extreme and remote installations.Short range detection up to 50 m is covered by the Murena and Anemone product range employing both microwave and thermal detection techniques.
www.cias.it

Long-Range Perimeter Protection

Combining security technologies within one housing assures maximum protection while drastically reducing nuisance alarms caused by environmental disturbances. A new version of an active, outdoor, dual technology barrier has been developed by Sicurit, a manufacturer of advanced perimeter protection. The Absolute Plus IMN200 is a tailor-made system enclosed in extruded aluminum columns in which infrared beam and microwave technology are combined into one unit. Both sensing elements are connected electronically by using a special AND logic function. Since the two sensors will not "sense" an intrusion precisely at the same time, the system is designed to generate an alarm only when both sensors trigger the alarm within a pre-selected time interval. The standard configuration contains 2 IR bi-directional beams and 1 bi-static microwave in a 2 m pillar, expandable up to 8 IR beams and 2 microwaves housed in 4 m pillars for full 200 meter protection. Parameter setting and alignment is made easy by the on-board LCD display. Up to 15 barriers can be remotely programmed and administered by using the additional IMNMBRD remote interface board.
www.sicurit.it

PIR Motion Sensors

GE Security has launched "5D," its most recent generation of PIR motion sensors. They effectively overcome the potential problem of false alarms caused by reflected sunlight and other typical slow moving thermal signals. Building on the strengths of 4D motion sensors, when a slow thermal source is detected, the signal processing switches automatically to 5D-mode, executing additional heat pattern recognition detection. Installation is made easier and install time is reduced because no range setting is required, as performance is not influenced by mounting height or wall angle deviation. The sensors are part of the EV1000 series, a range of motion sensors, which include sensors offering variants in housing size, detection range, anti-masking, dual detection technology, addressable interfacing, and wireless transmission.
www.gesecurity.com

CONTROL ROOMS

Large Screen for Spanish Rail

Control Centre at Delicias Railway Station "Gutiérrez Soto" in Zaragoza

ADIF (Administrador de Infraestructuras Ferroviarias) is a Spanish public cooperation responsible for the operation of the Spanish railway network and stations. As a preliminary step before the privatisation of the Spanish railways, the management for the rails and stations was outsourced from the national railway company RENFE, and transmitted to an independent institution.

Based on these reformations of the Spanish railway sector, there where several modernisations including new lines and stations realised in the past couple of years. Part of these investments is a new control room at Delicias Station established in October 2008. Main task of this installation is to control the traffic of the high-speed trains going from France to Madrid and back, which is the main connection of the Spanish railway network with the rest of continental Europe.

Video Wall Made of 42 Cubes

Central element of this new control room is a large screen system from Eyevis. 42 cubes of the newly developed HD type were combined to a huge video wall in 14 x 3 configuration. The total resulting screen surface is more than 20 m wide and about 2.5 m high. Each cube provides full HD resolution (1,920 x 1,080 pixels) on a 67 inch screen. Eyevis was the first manufacturer world-wide being able to provide a rear-projection cube offering this high resolution standard.

The HD cube offers all the outstanding characteristics of the rest of the Company's EC Series. Thanks to the "seamless" design of the cubes, they can be combined to video walls of almost every size with almost invisible gaps between the individual cubes.

The superiority of the DLP technology in use is a decisive feature for this project, because the cubes do not suffer from burn-in effects from static image contents, even in 24/7 operation. The automatic double-lamp system of the cubes enhances the availability of the video wall even more. The one-stop solution also comprises two Netpix graphics controllers and the Eyecon wall management software, both proprietary developments. The open and flexible design of all of our products allowed a trouble-free integration of the system into the existing hard- and software environment provided by Indra and Dimetronic.

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VIDEO ANALYTICS

IP Outdoes Analog

Video for Traffic Surveillance in Georgia

Batumi is the capital of the autonomous republic of Adjara in south west Georgia, a seaside city on the Black Sea coast. It is the country's most important harbor and is situated about 20 km from the Turkish border. Over the last few years the city has enjoyed an economic and tourist boom, giving rise to a huge increase both in the number of visitors to the city and its inhabitants (currently around 121 800). This growth has been accompanied by increased traffic levels and therefore more road accidents. To the regret of the police and injured parties, in many cases it was not possible for the events to be resolved or reconstructed and a solution to this problem had to be sought.

In 2007 the Batumi police had an analog surveillance system installed with 64 cameras. But the drawbacks of the system soon came to light. For example, searching for events proved to be a very lengthy exercise as the video material had to be viewed in chronological order. Most of the images recorded could not be used for investigations because the image quality offered by the cameras was not good enough. Adding more cameras was a laborious and very costly job as each individual camera needed its own coaxial cable. As future plans for the city involved additional surveillance on the five largest boulevards with the highest volume of traffic and this amounted to a total length of ten kilometers, cabling costs would have shot up.

This was one of the main reasons why the Interior Ministry invited tenders for a new video surveillance project. Despite its drawbacks, the existing system was to remain in operation in parallel to the new one. The invitation for tenders clearly laid out what was needed. The video surveillance control center was to be located in the main police station, the system was to be easy for operators to get to grips with and operate, costs were to be kept low and additions were to be easy to implement.

The Solution

Gesco Group won the tender with an IP video surveillance system based on a fiber optic cable network and high-quality analog cameras linked with video servers. The Company employs 45 members of staff and is based in Tbilisi. It specializes in planning and setting up CCTV, security, alarm and electronic systems for public and private organizations. In the area of IP video surveillance, it works closely with Philippsburg-based SeeTec Communications, whose SeeTec 5 camera management software was to be de-

ployed for central camera management in this project. Merab Merabishvili, head of the technical department at Gesco, enthuses about the new system: „The IP technology and fiber optic cable network greatly cut the wiring costs because up to 500 cameras can be supplied by just one fiber optic cable and a separate coaxial cable does not need to be laid for each camera. This has enabled us to keep costs comparatively low." The distances between the camera locations and video control center in the police station extend up to two kilometers and the total length for the five streets is ten kilometers. The technology also offers the benefit of new cameras being quickly and simply integrated in the overall system.

The Result

GESCO constructed a new glass fiber optic network, operating at one gigabyte a second and covering more than twenty kilometers in the area where surveillance is to be undertaken in the future. Analog high-speed dome cameras and controllable cameras – 91 in total – were installed for this purpose along with an ACTi video server each.

The image server has a generous memory capacity of 27 terabytes so that adding more cameras will be a smooth process. There is sufficient scope for connecting up new cameras and in places where a new cable will need laying, the shortest route to the existing connection point can be selected.

At the heart of the new video surveillance systems lies the SeeTec 5 camera management software which manages any number of cameras and is very powerful, capable of a throughput of up to 2,500 images a second. The image database is used to store images. All camera settings such as resolution, refresh rates or compression can be undertaken on the screen itself and do not require the operator to go to the camera's location. The software features useful functions like alarming, alarm transmission by email or text message, integrated motion detection and the option of searching for images by event, date or time. The police have set up two surveillance workstations, each comprising four monitors, on which the cameras can be seen. All cameras are displayed on a map to make it easier for operators to see where the cameras are located in the streets. The camera image is displayed on screen by simply clicking on the corresponding camera symbol. The user can also individually adjust the layout and size of images on the monitor to ensure a good view of critical areas for example. The analog cameras of the old system will probably be incorporated in the IP system, enabling the surveillance team to only have to work with one system in the future.

The Customer

The objective of improving security in the city has been met. High-resolution camera images and controllable cameras have enabled vehicles which have been involved in accidents to be identified. Batumi's police force are very happy because the SeeTec solution is highly flexible and the system is easy to extend. The overall costs were lower than those which would have been required to extend the analog system. Merab Merabishvili adds: „The main reason why we opted to use SeeTec in Batumi was that the software had been developed with the customer in mind. SeeTec 5 was the best solution for our project."

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PUBLIC TRANSPORTATION

Tunnel Vision

Modern Surveillance Systems Improve Safety in Tunnels

The disastrous fires in the Mont Blanc and St. Gotthard Tunnels, led to a major reappraisal of tunnel safety. Full video surveillance within road tunnels is now mandatory, not just in Europe but throughout much of the world, and the latest video surveillance technologies are being deployed to ensure the highest levels of safety and fast reaction to emergencies. Ad Biemans, Product Marketing Manager CCTV for Bosch Security Systems, gives us a detailed insight into modern surveillance systems in tunnels.

In a 2007 report on the European Tunnel Assessment Program (EuroTAP), the UK Automobile Association (AA) referred to an accident in the Ehrentalerberg Tunnel near Klagenfurt, Austria. On 19 January 2007, 29 cars, nine heavy goods vehicles and a bus collided deep in the tunnel. Amazingly, there were no fatalities and only 12 people were slightly injured. Around 150 people left the tunnel safely and the rescue services described the outcome as 'a miracle'.

According to the AA report, however, the happy outcome was more likely due to the high safety standards employed at the Ehrentalerberg and efficient tunnel management – an essential element of which is full video surveillance along the whole length of the tunnel. Without the proper measures in place, reaction to accidents like this can be delayed, and in the confined space of a tunnel the result can be a nightmare as happened at Mont Blanc in 1999 and St. Gotthard in 2001. These tunnel fires, in fact, accelerated the demand for video surveillance in tunnels due principally to new recommendations for tunnel safety established by the Inland Transport Committee of UNECE (United Nations Economic Commission for Europe). The committee recognized, in particular, the value of video surveillance in providing full-road coverage and fast detection of stationary or slow-moving vehicles, or vehicles moving in the wrong direction, enabling security personnel to quickly respond to incidents and even anticipate incidents before they occur. And if an emergency call comes from

inside the tunnel, the images from the camera in that particular section can be made to appear automatically on the monitor in the tunnel operator's control room.

Special Challenges

Road tunnel surveillance is a special form of highway surveillance and many of the challenges it has to meet are essentially the same. Of course, it doesn't have to contend with varying visibility due to the weather and to changes in ambient road lighting, but the conditions within tunnels are just as challenging as they are on the open highway.

In the entrance and exits of road tunnels, for instance, light levels change rapidly from daylight, which may be as high as 100,000 lux, to the relative gloom of the tunnel's artificially lit interior. This places severe demands on the cameras deployed in these areas, particularly on their sensitivity and dynamic range. You only have to drive into a tunnel yourself on a bright sunny day to see the effect it has on your eyes as you enter the darkened interior. It's in these areas, in particular, that cameras such as Bosch's Dinion XF camera with its 15-bit Digital Signal Processing (DSP) in combination with a High Speed Positioning System score highly. The company has made use of the power of its DSP to accentuate details in a scene that would otherwise be lost. A proprietary feature, known as XF-Dynamic, uses a process called histogram equalization to stretch out the details in the image by amplifying tiny variations in illumination. XF-Dynamic provides a 32-fold increase in dynamic range compared with a standard camera, which means that scenes remain clearly visible even if bright shafts of sunlight penetrate the interior of the tunnel.

Never Out of Sight

Despite greater public awareness of the dangers inherent in using road tunnels since Mont Blanc and St Gotthard, accidents still occur due almost exclusively to driver error. Video surveillance of road tunnels reveals increased incidents of reckless driving within tunnels, including more incidents of dangerous overtaking, lane switching, speeding and driving in prohibited lanes. Drivers seem to be under the impression that their transgressions pass unobserved within the dark confines of a road tunnel. Nothing, of course, could be further from the truth.

Cameras with built-in video motion detection can monitor prohibited areas to help ensure they remain free of traffic and to alert the authorities if drivers obstruct these areas. To dedicate a camera to this single application, however, is hardly cost-effective. The DinionXF addresses this issue with a proprietary built-in video motion detector capable of sensing motion in four individually programmable areas in a scene with four different motion thresholds. The system allows a single camera to monitor several lanes simultaneously with the motion detector programmed to trigger an alarm only if traffic is seen moving in the prohibited lane.

The detection of lane switching and speeding within tunnels and identifying the guilty drivers presents a greater challenge that modern video surveillance systems meet with new intelligent Video Content Analysis (VCA) algorithms. One of the most advanced of these is Bosch's Intelligent Video Analytics software IVA 3.5, currently deployed in the company's IP (Internet Protocol) network video products. The functionality offered by this software is typical of what can be expected in high-quality VCA products. One of the great strengths of the Bosch IVA system is its powerful forensic search capability. Content analysis information, in the form of metadata, is generated and stored with the video images. The recorded metadata, comprising simple text strings describing specific image details, is much smaller and easier to search through than the recorded video. This enables users to easily set up search queries that scan through the recorded metadata and point them to video of interest in a matter of seconds. Searches which may take days or even weeks when done manually can be completed within seconds just by searching the metadata with smart search facilities similar to those provided by an Internet search engine.

Number Plate Identification

Character recognition is now becoming essential for identifying vehicle registration number plates and CCTV cameras must be capable of delivering images of sufficient resolution for such systems to operate effectively. In virtually every still picture taken from recordings of incidents involving movement, details lose clarity because of the relatively slow shutter speed of 1/50 or 1/60 sec used in standard security cameras. This makes identification of number plates difficult or even impossible.

In the Dinion XF, Bosch has solved the problem of acquiring images without motion blur by combining several features that work together to maintain optimal performance even if the lighting level within the tunnel should drop (due for example to failure of the tunnel lighting installation). The camera can be switched into what's called Default Shutter Mode in which the user can set the shutter speed at a default value, for example 1/500 sec. This is sufficient to capture vehicle registration plates without motion blur. As long as there is sufficient light in the scene for the camera's auto iris lens control and Automatic Gain Control (AGC) to produce a full video signal, the shutter speed remains fixed at the default value. Only if the light fails does the shutter control take over to reduce shutter speed until the standard value is reached. At this lower shutter speed, of course, motion blur will reoccur, but this is preferable to the video signal being completely lost. So the Default Shutter system provides video without motion blur for as long as possible, and yet still allows the full range of lighting conditions within a tunnel to be covered without the operators in the control room losing the video image in an emergency.

Effective Tunnel Management

The ability of video surveillance systems to cover large areas of a highway and to provide a wealth of traffic data is also now well recognized. In addition to their traditional surveillance function, the systems nowadays are making a valuable contribution to effective tunnel management, especially the measurement and management of traffic flow in congested tunnels. Here they are replacing, or at least supplementing, traditional inductive loop detectors embedded in the road surface. These sense when a large metallic object such as a car engine passes over them and are traditionally used for counting vehicles entering and exiting a tunnel to provide an indication of congestion within the tunnel.

New developments in imaging technology and digital signal processing by leading security systems companies such as Bosch are dramatically improving the effectiveness of highway surveillance in general and tunnel surveillance in particular. Following the introduction of new legislation on tunnel safety, especially in Europe, there has been a concerted effort to upgrade all tunnels falling short of the new requirements. This includes the introduction of state-of-the-art surveillance equipment such as that manufactured by Bosch, as this is now recognized as one of the most effective measures for improving tunnel safety and avoiding a repeat of the tragic accidents of the past.

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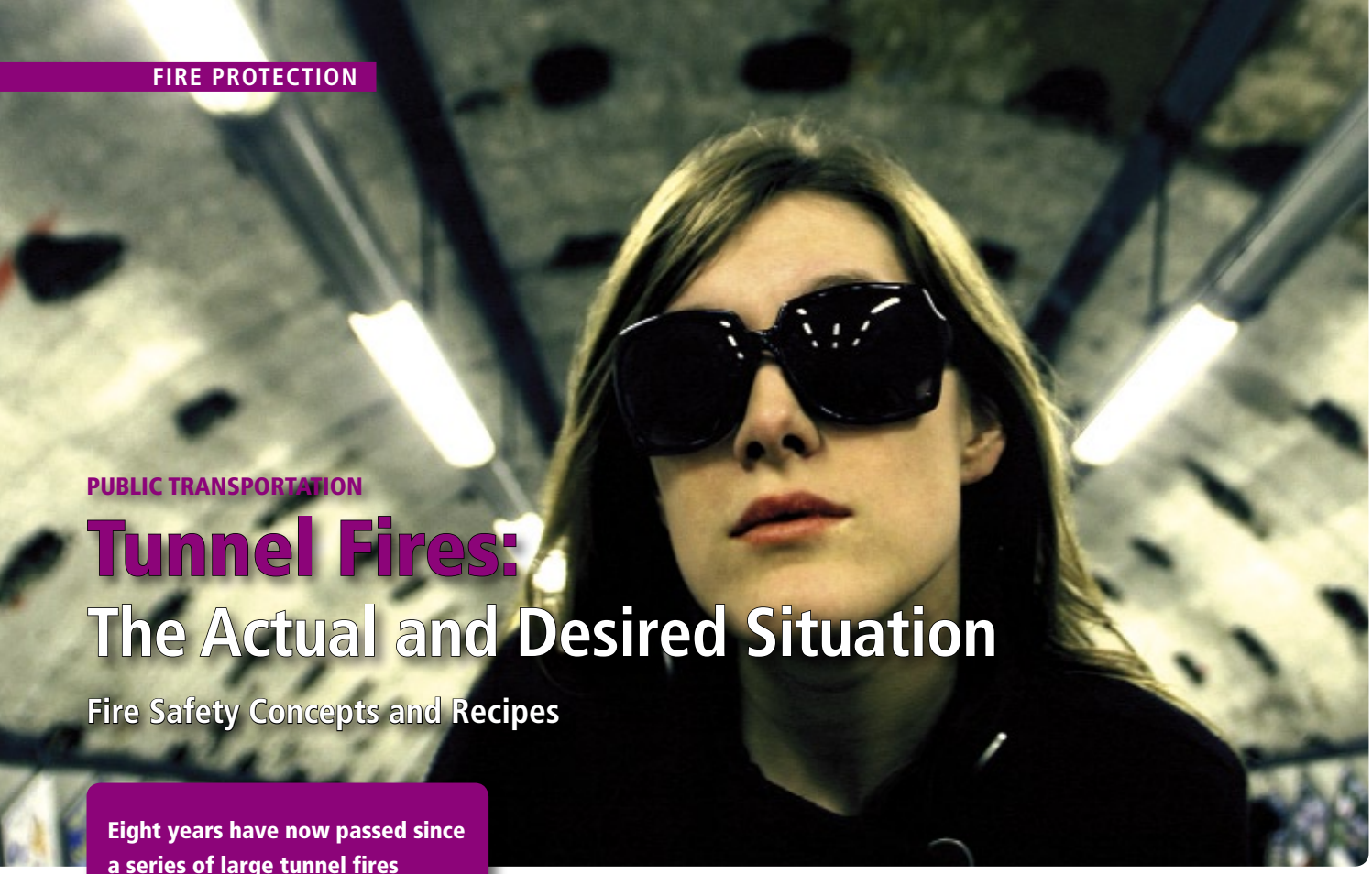

PUBLIC TRANSPORTATION

Tunnel Fires:
The Actual and Desired Situation

Fire Safety Concepts and Recipes

Eight years have now passed since a series of large tunnel fires triggered a debate. Since then, a great deal has been discussed and written on this subject – however, there has been too little action: The German motoring association ADAC produces an annual report every year and categorises tunnels. Most European governments see no need for action and discuss apparently more important topics – in an increasing number of areas people get the impression that they are being administered rather than governed. Therefore, especially in critical situations such as fires in road or rail tunnels, people are left to their own devices and have to act quickly – and correctly.

Introduction

About once a month there is a vehicle fire in a tunnel. Usually nothing serious happens, so therefore the press ignore it. However, nine years ago, there were three large tunnel fires with a large number of fatalities within a few weeks, and at that time fire safety in tunnels became an issue. This only concerned road tunnels, as apparently nothing has ever happened in a railway tunnel, and therefore this was never an issue. Understandably, the railway companies have no great interest that this is discussed in public; because such debates usually end with utopian demands for changes to the law concerning technical or constructional safety measures, which ultimately are of doubtful effect.

Today's disasters are tomorrow's standards. Or put another way, there is a reaction instead of action – and that is only the second best solution. Doing one thing and not stopping doing others is how one could describe the complex topic of tunnel safety. This means that everyone is responsible: The State as the legislator, the tunnel operators as executives and we citizens as those affected (tunnel users). It is necessary to clearly differentiate between deliberate pathological malicious acts (such as the destruction of the WTC towers in New York) and negligent behaviour (such as the recent ICE accident caused by a collision with sheep in the tunnel): In the case of deliberate action, if it is professionally and cold-bloodedly planned, there hardly any chance of countering it, as the capacity of the protective measures is usually not sufficient. Negligent behaviour – usually described as human error – should, or rather must be ruled out as far as possible. Here, technical measures could prove to be effective, for example movement-sensitive cameras in the tunnel (or on the trains), heat sensitive cameras, or cameras which can detect living beings and communicate this information within a matter of seconds.

31 years ago the main warehouse of the Ford works in Cologne burned down. Ten years ago the departure lounge of Düsseldorf airport, and in this millennium there were the tunnel fires, the aircraft attacks in the USA and the mountain tunnels in Kaprun in Austria. As well as this, throughout the world there were also several thousand fatalities in discotheques, old people's homes, mines, prisons, meeting places, department stores etc. A bus rolled over and killed 32 people; a skating rink collapsed on New Year's Eve and killed more than ten children. As one can see, fires or other fatal disasters happen everywhere and therefore we should not let ourselves be tempted to over-reaction in a particular direction simply because of lurid headlines in the media. Sheep are not the only problem facing the railways. There are also attacks by terrorists or youths, smouldering fires, misdirected trains and many other dangers. Just think about the disastrous collision of two aircraft over Lake Constance. Was this human error? Avoidable? Criminal? Negligent? Or simply fate? Particularly this disaster shows us that in spite of the great amount of technology and the fact that air traffic control in Central Europe is the best in the world – the human factor is always present and we are not yet completely dominated by technology.

Accidents and Disasters

In Emsland a Transrapid collided with a maintenance vehicle on the test track because people

made mistakes and the safety technology did not work. Nine years ago, 40 people died in the Mont Blanc Tunnel (one could say "only", because it could have been 200 or more!) and two months later over ten people were killed in the Tauern Tunnel. Now an ICE train has been derailed in a tunnel because of sheep. In the Kitzensteinhorn disaster in Austria, over 150 people were killed within a few minutes – as many as during four years in the whole of Austria. Of course it is easy to talk of blame and safety targets and to demand new and more stringent legislation; however, it is difficult to point the way to effective an affordable ways to achieve greater safety, as there is no such thing as complete safety and costs increase exorbitantly the closer one comes to 100%. We know from many areas that safety technology is not accepted if it is too expensive, or the layman considers that it is not necessary. In addition there are the initial problems associated with the introduction of a new level of protection.

Optimum Protection

As unsatisfactory as this may sound: One's own behaviour in case of fire and the mental preparations for this are vital. Imagine being caught in a tunnel in which the cars are stopped because of a fire. The tunnel fills with smoke, it gets darker and people start to panic. Anyone who now thinks about his photographic gear in the boot or wants to rescue his luggage has got the wrong priorities in life. However, those who have specifically thought about this situation in advance have a clear advantage over such people, because they observe the following when travelling through tunnels in vehicles:

- When entering the tunnel, note its length (this is almost always stated) and while in the tunnel continuously estimate how far you have travelled or still have to travel, so that in case of fire you have a basis for a decision in which direction to escape.
- Observe whether the road in the tunnel leads upwards or downwards (smoke rises, so it may make sense to escape downwards past a burning vehicle, even if this is the longer way out).
- In the tunnel, note whether there are escape routes (e.g. a separate opposite lane).
- Note the position of fire extinguishers or wall hydrants and fire alarms in the tunnel.
- Adjust your own speed to the speed limit (usually 80 km/h).
- Keep your distance from the vehicle in front.
- And, even if you find it difficult, let the aggressive driver who is tailgating you at a distance of 80 cm overtake, so that you do not cause an accident or a fire.

With this, you have done all that you can in order to be safe. If you are actually involved in a tunnel fire:

- Leave the vehicle immediately if you cannot drive any further.
- If your own car is on fire and there is still no smoke in the interior: drive on as far as possible until you are in the open air.
- In case of small fires, use a fire extinguisher (your own). This is no longer advisable in the case of lorry fires, which are already well alight.
- Leave the tunnel by the shortest direction, or the route which is less affected by smoke or leads downwards.

Fires in Railway Tunnels

Just like in an aircraft, in a train you more or less have to rely on the driver of the vehicle. If there is a collision which causes a fire and where people are injured because of a derailment the situation is difficult to imagine: darkness, shouts, panic, pain and possibly blocked doors, and of course the rescue teams will not arrive within a few minutes because the train personnel also needs help and external helpers can take at least 15 minutes to arrive – or cannot enter the tunnel because of the smoke. You are on your own. Although there are ventilation systems, there are no effective smoke vent systems – an probably never will be – because the demand for an effective smoke and heat venting system for a tunnel which is several kilometres long can be regarded as illusory and infantile. Because smoke is the main cause of death in fires, you will die if you do not get out of the tunnel quickly enough. In Kaprun, only a handful of people went downwards after they had left the train. Some of the people did not get out of the carriage and some went upwards. Only the first group survived this tragedy. All the rest died.

Imagine a train which comes off the rails in a tunnel at a speed of 300 km/h. Probably everyone is either injured or severely injured and technical systems such as the lighting or fire extinguishing systems no longer function (like the sprinkler systems in the World Trade Centers in New York). Anyone who thinks that they can develop safety concepts for this situation should be given the Nobel Prize for safety, which has yet to be created.

Action for the Sake of Action

After the Kaprun disaster a guideline was produced on the subject of sprinkler systems in tunnels. The fact that such a sprinkler system cannot, for example, extinguish a lorry fire should be apparent to any first-year student of safety technology. It is equally clear that effective outside help cannot arrive quickly enough. It must also be said that such a sprinkler system is very expensive to purchase and maintain and primarily serves to protect material rather than people, and that at temperatures below 0°C the reservoir and/or the pipes need to be heated. Therefore it must be ensured that such fires do not start in the first place:

- Less aggressive driving in tunnels (also a nice but infantile idea).
- Entry into tunnels is regulated by means of traffic signals outside of the tunnels (even on motorways), so that regardless of whether there is a fire, the traffic does not queue inside the tunnel, but rather in front of and after it.
- There is a dense network of heat detectors in the tunnel, which immediately alarm the emergency services automatically and prevent further vehicles from entering the tunnel.
- At the same time there is continuous surveillance with automatic cameras.
- The personnel who evaluate the information from the cameras can give live instructions to the people in the tunnel by means of loudspeakers.
- There are radar speed checks ahead of and inside all tunnels, which are indicated to drivers (the aim is not to cash in, but rather to achieve correct driving behaviour – at least this should be the case). Driving too close and excessive speed still remain the main causes of fires and accidents, and this is something which cannot be eliminated by technology or construction measures. However, with known radar systems and in areas with camera surveillance people demonstrable behave more correctly.

Anyone who thinks that fencing in the tracks can improve the problem of railway tunnel fires in any way whatsoever is either knows nothing about safety technology or is unintelligent. This would only create further problems and hazards. It has also been known for decades that because of greater security (of a constructional or technical kind, or because of insurance cover), people change their behaviour in such a way that the increase in safety is overcompensated by their new, more negligent or risky behaviour. In summary, they are more at risk than they were before. For example, a scientific study of children's playgrounds by Bremen University showed that less small children suffer accidents on more dangerous playgrounds if they are left unsupervised than children on so-called safe playgrounds for which the mothers give constant instructions as to their behaviour. If we extrapolate this to adults, it can be seen that it is up to us to prevent fires and to react correctly in case of fire. On the roads it can be seen that even 20 years ago in some African countries derelict cars were driven more safely than new cars in this country. In Africa they did not rely on unreliable technology, they had no insurance cover, and therefore they behaved more cautiously.

Learning from Faults

A few hours after the fatal fire on the morning of 11 November, at 18:30 the person responsible for the operation of the Kaprun tunnel appeared visibly shocked on the Austrian TV news and stated: "We had never reckoned with a fire in the tunnel". With this he showed that this topic

had never been considered – because it was thought to be impossible. In Kaprun there was no tunnel lighting, no smoke venting, and the doors could not be opened from the inside. There were also no emergency hammers, no escape route, no second tunnel, no rescue rooms, no loudspeaker announcements and of course neither a fire alarm or an extinguishing system in the carriage compartments (such things exist, but they are not required by law). As well as this, there were no instructions to the passengers. There were also no cameras or loudspeakers. This means that it was only after the death of 156 people that the operators gradually came to realise that obviously something must have happened.

However, even with the fire in the Mont Blanc tunnel, there are some points which cannot be understood: The safety concept originated in 1956, and in this the collision of two private cars was assumed. There were and still are different hydrant connections in the tunnel (French and Italian) and neither then nor now were there effective, coordinated rescue concepts (neither in the two countries nor in their cooperation).

Safety Concepts

Technical measures, such as lighting powered by an emergency supply (near to the ground with high-intensity diodes) indicate the escape route – if possible in two directions. Loudspeakers give useful and calming information in at least three languages. Individual circuits allow fresh air to be introduced into the tunnel and smoke directed in a particular direction and out of the tunnel as quickly as possible. Smoke curtains keep the smoke against the ceiling and enable it to be extracted directly. A great deal can be achieved by construction measures; however these also cost a great deal. A well-secured tunnel has an escape tunnel or a strong dividing wall and the possibility of safely escaping from one side via the other. However, if you are blasting a hole many kilometres through a mountain it make a big difference whether the opening is 20 m x 8 m or 25 m x 8 m! Technical measures prevent further vehicles from entering the tunnel and at the scene of the incident the emergency services ensure that people and vehicles are brought out as quickly as possible.

Eight years ago, some towns in Germany issued the information brochure "Correct behaviour during fires in road tunnels" This brochure correctly points out that smoke spreads extremely fast in tunnels, that nothing can be seen, and that one will die very quickly if one does not escape in good time. As well as this it recommends:

- Do not enter in case of danger
- Form an access route for the fire service
- Call the fire service by mobile phone
- Use the vehicle to leave the tunnel as quickly as possible, or if this is no longer possible, leave on foot.
- Inform other persons of the danger of smoke and get them to leave.

Outlook and Conclusion

10 kg of plastic can produce up to 25.000 m³ of lethal smoke gases. If one considers that a tunnel which is 3.125 km long, 10 m wide and 8 m high has a volume of 250.000 m³, then 100 kg of plastic (a loaded private car has more combustible material) would be sufficient. A large lorry has over 1,000 l of diesel, 100 m² of load and perhaps 16 tyres, which each weigh 50 kg. Even if a ten-fold exchange of air could be ensured, this would achieve very little: Someone who handed our Finance Minister a cheque for one million Euro in order to reduce the national debt would not be noticed at the seventh decimal place – and this is the case here.

The only thing which can really help is to prevent fires by careful, considerate behaviour and rapid and correct action in case of fire. Perhaps this is unsatisfactory, but this is often the case with the truth. We can think about what we would do in case of fire: at the airport, at home, in the supermarket, in hotels, in the sauna etc. We can also practice considerate behaviour ourselves and pass this on to others. This is better value for money and more effective than constructional and technical measures and also increases our own sense of responsibility.

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De-Mystify Safety Culture

Changing culture is a tricky subject at the best of times, but aviation specialists agree that in order to improve safety in Europe's skies, it is crucial to change the Safety Culture within organisations. At a conference in Rome, Italy, almost 100 senior managers (CEOs, COOs, Safety Managers and Safety Experts) from European Air Navigation Service Providers, together with representatives from the USA's Federal Aviation Administration and the Civil Air Navigation Services Organisation (CANSO) discussed and shared experiences on how to implement a Safety Culture.

The conferencehad as an objective to demonstrate that commitment and leadership are necessary in order to raise the awareness, understanding and motivation that will result in a Safety Culture.

"Put simply," said David McMillan, Director General of Eurocontrol, "Safety Culture is the way safety is perceived, valued and prioritised within an organisation. It reflects the real commitment to safety at all levels within the organisation. Safety should not be seen as a cost but as an opportunity to achieve superior business performance. Good safety also drives good business outcomes."

The term 'Safety Culture' was first applied in the nuclear power plant world in the aftermath of the Chernobyl nuclear disaster in 1986. This plant had a safety management system and trained operatives but deficiencies in the attitudes to safety in the organisation led to the world's worst nuclear disaster. Since then, use of the term has spread to other industries, including Oil and Gas, Chemical, Rail, Aviation, Medical and Air Traffic Management, where it has recently been applied to both the Überlingen and Milan Linate accidents in 2001 and 2002 respectively.

It is widely recognised within the aviation industry that the existence of an appropriate and comprehensive Safety Management System, of which Safety Culture plays an integral part, is necessary for maintaining and improving the safety of Air Navigation Services and ANSPs across Europe. ANSPs have already made a substantial effort to meet the European Commission requirements to implement a robust SMS.

"Eurocontrol's strategic vision is that by 2013 all of Europe will have engaged in Safety Culture in one form or another," David McMillan added. "Our aim is for each ANSP to have a clearer and more comprehensive risk picture, and its entire staff to be involved in keeping the industry safe. ANSPs will share information and learn together how best to tackle existing and new problems in safety. The vision is also that other industries will look towards Air Traffic Management as a leader in the field of making Safety Culture deliver sustainable safety, whilst remaining profitable and environmentally responsible."

www.eurocontrol.int

AIRPORT SECURITY

The Most Frequent Travelers

Clearing Flight Crew Efficiently through Immigration

Have you ever arrived slightly too late at the airport, rushed through check-in only to be confronted by a long, stationary queue in front of the immigration desks? A glance to one side often reveals VIPs, First Class and Frequent Travelers strolling casually through reserved lanes. But who are the most frequent travelers in fact?

We often overlook the fact that 'behind the scenes' of an airport there are hundreds or even thousands of people working on our behalf. In recent years, Dubai International Airport has seen an above-average growth of passengers, aircraft throughput and therefore also crew movements. With an average of 3,000 Pilots, First Officers, Pursers and Flight Attendants arriving and departing daily, all of whom must pass immigration, the logistics were being stretched to capacity. Rising concerns about international crime and terrorism have meant stronger border checks and, with that, increased pressure on immigration and custom departments worldwide.

Now, as part of a joint effort between the airport authorities, Emirates airline and the Dubai Immigration Department called the 'Unified Electronic Gate Project', Datel Dubai has provided a state-of-the-art solution to the problem. Heinz Corona, former member of the Board and now consultant to the Magnetic Autocontrol Group, says "Together with our local partners, we have created an innovative and efficient solution for passport control with the Dubai Immigration Department".

A Proven Technology

Following their première in Singapore in 1996, electronic immigration gates were first trialed in the United Arab Emirates as long ago as 2002. A subsequent information campaign to encourage travelers to apply for their own personal electronic smart card that enables the bearer to use the e-gates has been immensely successful. It can be obtained in just 10 minutes at several enrolment offices throughout the UAE both by nationals and other UAE residents. The high uptake led to the decision to install the e-gates in all 6 international airports. Over 100 e-gates – now renamed "UAE Gates" – have now been operating successfully in the Dubai International Airport since the beginning of 2006. Travelers can swipe their cards and scan their fingerprint at the electronic gates upon arrival and departure, and pass through immigration much more quickly.

Now a modified wide version adapted to the specific needs of airline crew, manufactured by Magnetic Autocontrol Group and called the MEG A3-700, has been introduced. In Emirates' own Terminal 3, a total of 46 e-gates process the air crew automatically with enhanced security by the inclusion of biometrics. The crew member's fingerprint and a digital photo are encoded into a crew smart card after enrolment through the Immigration Department. When a card is inserted into the e-gate reader, data is sent to a central system for rapid identification and verification. If all is in order, the gate opens quietly and smoothly. The technology behind this apparently simple and user-friendly system is the result of Magnetic's long experience in this field. Here, a new patented MHTM-drive technology (Magnetic High Torque Motor) has enabled the creation of smaller gates that fit well into any architectural environment.

Efficient People-movers

The processing speed of each traveler is, of course, an important factor in ensuring that no queues build up at the gates. Each UAE Gate is therefore equipped with its own industrial PC, linked by Ethernet to a UNIX server. A resident application in each e-gate controls the fingerprint scanner, administers the touch-screen and drives the barrier wing motors. As passengers come in all shapes and sizes, a further separate controller handles the complicated task of pedestrian detection together with the gate end display. Another welcome feature of Magnetic's immigration gate is the detection of any belongings the passenger accidentally forgets; passengers will be notified to pick up all belongings before leaving the gate.

The UAE Gates were installed and integrated by local service partner Datel. Their commitment to protect the accuracy, confidentiality and security of personal and corporate information is a key element in the trusting relationship with the immigration authorities. Skilled technicians are employed to commission the UAE Gates, coupling them to the central mainframe. Integration and commissioning takes place in full cooperation together with the local immigration department.

Future Travelers

The system has potential for future extension by the addition of other biometric elements and/or video decision capabilities. A new VIP e-gate design has also recently been completed. As the hardware and software has already proven itself under real operating conditions, the inclusion of other airlines into the system is now being considered. This would further reduce administration costs and increase security.

Police and Immigration officials are equally confident that cases of mistaken identity will be eliminated, now that electronic identification has been introduced. The control process has been optimized by removing the human error factor and, as a bonus, the operational costs of passport control procedures have been reduced. The responsible ministry is now in the process of introducing electronic passports in the UAE which can also be used at the UAE Gates.

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Single European Sky by 2012

The International Air Transport Association (IATA) challenged Europe to deliver a Single European Sky (SES) by 2012. "After decades of talks and little action, failure to implement an effective SES is Europe's biggest environmental embarrassment. In 2007, this failure resulted in 21 million minutes of delays and 468 million kilometres of unnecessary flight. This wasted 16 million tonnes of CO_2. This crisis that is gripping the airline industry highlights the fact that airlines cannot afford the € 5 billion cost that this brings. And neither can Europe afford the impact on its competitiveness. This must change fast," said IATA Director General and CEO Giovanni Bisignani in a keynote address to the European Air Transport Summit being held in Bordeaux.
www.iata.org

1,200 Bags per Hour

As well as improving the check-in areas and departure lounge, the baggage handling system at London City Airport has received a total upgrade. International multi-disciplinary engineering consultancy Buro Happold undertook the baggage handling system design and provided structural advice for the integration of the system into the building. The system is able to handle up to 1,200 bags per hour. The fast-track project meant the system had to be in place within five months – while ensuring continuity of service. "It started out as a fast-track project, to replace the obsolete integrated hold baggage screening machines with the latest state-of-the-art Smiths Detection machines," explained Peter Noonan, project leader for Buro Happold. Commenting on the various developments taking place at the airport site, Richard Gooding OBE, Chief Executive of London City Airport said: "Our contribution to London's infrastructure is vital for it to maintain its role as a leading world city. These developments allow the airport to continue its successful processing of passengers to their destinations with ease."
jenni.o'connor@burohappold.com

Integrated BHS at La Tontouta International Airport

Logan Teleflex has won a € 2.8 million contract to supply outbound and inbound systems to Nouméa - La Tontouta International Airport. The two-part BHS solution is part of the extension and refurbishment project for New Caledonia's main airport and provides integrated baggage screening. The fully integrated solution for the busy Asia-Pacific airport will be implemented in phases with the departure area going live in two stages: stage one at the end of November 2009 and stage 2 at the end of June 2010. The arrival area will also go live in two stages, with stage 1 at the end of 2010 and stage 2 at the end of January 2011. The inbound system comprises two manual 1,200 bags per hour conveyor lines that transport baggage to the claims area. Each inbound conveyor line discharges baggage to its own dedicated stainless-steel sloped-plate claim carousel. This system also includes an oversized-baggage slide. The outbound system has 24 check-in units with two separate conveyor lines, each equipped with a Level 1 primary explosive detection system (PEDS).
www.loganteleflex.com

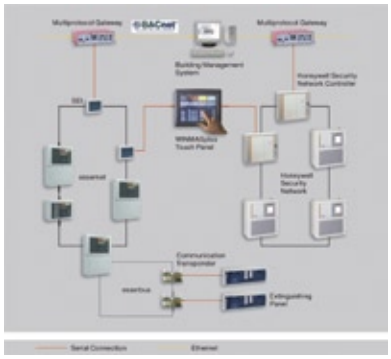
150,000 passages

Sagem Sécurité announced its automated SmartGate system, used for Australian and New Zealand travelers with electronic passports, has now exceeded 150,000 passages. This system will soon be accessible to all holders of e-passports that comply with ICAO standards. SmartGate identifies travelers using facial recognition technology, based on photos integrated in the chip of electronic passports. The simple two-step operation requires only an automated kiosk and a biometric gate. Travelers are authenticated in real time, thus simplifying the control process, while also accelerating border passage.

People Screening System

Thales presents the Smart Corridor, a screening system, which answers the problem of increasing people flow management in sensitive sites, events or access control of critical infrastructures. The system is based on a sophisticated mix of state-of-the-art identification, detection and inspection technologies, and is designed to carry out the security screening procedures. It is designed for use in airports, railway stations and other transportation hubs, critical infrastructures such as nuclear facilities and petro-chemical plants, and in government buildings such as ministries, police departments and military bases. It is currently in the prototype stage and can be seen at the Company's European Security Solutions Center, recently inaugurated in Vélizy le Bois, near Paris. Laboratory simulations and operational tests have already demonstrated the advantage of such a people screening solution. "Taking a holistic approach to the issue of security in critical infrastructures, the Smart Corridor integrates intelligent video surveillance, biometrics and sensor technology into a powerful automated screening system that achieves security objectives without requiring people to stop at checkpoints" comments Kamel Boussadia, the Company's iAirport Solution Manager. It „is completely transparent to the passenger, who feels only a slight breeze when the system analyses the air for molecules of potentially explosive materials. The system is compatible with security laws and international regulations and is based on multiple passive, non-intrusive sensor technologies which respect passengers' privacy, health and safety", Boussadia comments.
www.thalesgroup.com

Multiprotocol Gateway



Esser by Honeywell presents the universal protocol converter for connection to building services management systems. It often happens within complex, technical building networks that a transfer of data to overriding locations becomes necessary. Up until now, the Winmagplus was applied as a protocol converter where an essernet was used. The Multiprotocol Gateway from Esser now offers a cost-effective alternative to this possibility. The combination of hardware and software with permanent standard protocols is advantageous in that a predefined number of detection points is already included and a corresponding bundle is significantly more cost effective when compared to the Winmagplus since the detection points were previously calculated separately. Another cost advantage is that the investments for PC hardware and Windows XP operation system are not necessary. The Gateway provides the conversion of essernet data protocols to standard software protocols for the communication with overriding building services management systems as well as devices from other manufacturers.
www.esser-systems.com

Early Warning Fire Detection in Heathrow

Xtralis announced that its Vesda Very Early Warning Aspirating Smoke Detection (ASD) system has been chosen by BAA to help ensure the safe transit of passengers through the baggage halls of the recently opened Heathrow Terminal 5. This terminal is the largest single-span structure in the UK and is designed to accommodate 30 million passengers annually. To effectively protect passengers and their luggage, BAA needed an early warning smoke detection system that would operate effectively in the cavernous spaces of T5. The chosen solution was specified for its advantages over conventional point or beam detection systems in protecting large open spaces. The system constantly samples the air for even the smallest of smoke particles, thus preventing a small fire from becoming a major incident.
www.xtralis.com

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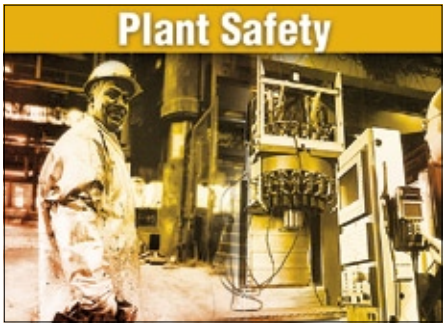

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