Ensuring compliance with aviation security regulations

How UK airline catering company FFL used Axis IP-Surveillance equipment to ensure compliance with tight UK Department for Transport security regulations

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FFL in brief

FFL Airline Catering Services (FFL Limited) is a specialist catering provider serving a number of airlines flying from London's Gatwick Airport. FFL operates as a provider of meals and other provisions to both scheduled and charter airlines. FFL has 10,000 square feet of space at the Brunel Centre trading estate in Crawley, situated less than a mile from Gatwick Airport's perimeter fence.

The FFL growth story

FFL was formed in 1997 to assist some of the smaller airlines at Gatwick with catering services. FFL's staff were deployed at Gatwick Airport to move specific airlines' catering supplies from the aircraft hold while on the ground at Gatwick, into the cabin itself for use on the next scheduled journey of that aircraft.

To support this activity FFL had just one small unit of less than 1,000 square feet in a business park in Crawley, with some storage areas and a small kitchen. Mr Mark Matthews, managing director of FFL, was keen to expand the business into a 'full service' catering firm.

So in November 2000, FFL took the decision to lease a 4,500 square foot unit of the Brunel Centre, Crawley and begin building a full-scale industrial-sized kitchen, combined with chillers, freezers, storage areas and industrial washing facilities.

In December 2001, Mr Matthews was contacted by a new airline called Astraeus planning to start operations within the next few months. Astraeus elected to contract FFL as its front-line, full service caterer from launch in April 2002. Other airlines saw what a success FFL was making of Astreaus' catering and also signed them up.

"We have very tight procedures that insist that all visitors enter through our reception where they need to be verified and authorised and then issued with a security pass. They must also be accompanied by a member of staff at all times while on the premises."

Over half a million meals provided a year

In the two year period to mid-2004, FFL grew from producing a few hundred meals a week to several thousand. Today it provides more than 15,000 meals, equivalent to over half a million meals per year. The company had expanded from eight full-time staff in early 2002 to over 40 by 2004 and was now running out of space. So in May 2004, FFL's management took the decision to lease an adjoining unit, doubling total unit space to 10,000 square feet.

Today, one year on, FFL has a total of 45 full time staff. Twenty two of these employees work in the production areas of the business (food preparation, cleaning etc); 18 work in operational areas including delivery of food and 'dry goods' to and from aircrafts. FFL has a senior management team of five people to lead and help grow the business.

Complying with regulations drives need for surveillance

FFL has to comply with strict Department for Transport regulations and directions in order to supply aircraft. These directions are regularly revised. The latest update - Direction 19 - was communicated to registered airline suppliers as recently as February 2005 by the Department for Transport's security department called 'Transec'. These directions deal with the minutiae of security such as allowing of nail scissors in passengers' hand luggage taken on board an aircraft and metal cutlery for aircraft meals – restrictions that have only recently been lifted.

One specific section of the Department for Transport direction deals with the vital issue from FFL's point of view of securing food storage areas to avoid the risk of unauthorised ingress and contamination of food. This direction states that if these areas are not covered by surveillance systems then all doors must be locked upon exit from them. For FFL this direction created the imperative for installation of a surveillance system to ensure compliance.

Mr Matthews explains: "*We fully understand the need for the instruction, but for us it was simply impractical to expect our production staff to unlock and relock the freezers and chiller units each time they went in and out of them. Some of our staff go into these areas up to 40 times an hour – the sheer wastage of time and impracticality of carrying heavy loads and using keys to open doors made surveillance a requirement from management's perspective. We would have had to employ somebody full-time just to act as a doorman.*"

FFL, like many companies using numbers of lorries and vans to transport goods, was also suffering losses from occasional theft of diesel at night. These incidents created another motivation for the use of surveillance.

Health and Safety proves another driver for use of surveillance

A third reason, as identified by integrator and IP-Surveillance installer InCam Digital Surveillance, was health and safety-related.

Paul Stout, managing director of InCam explained: "*FFL's production area does contain some heavy machinery – self-closing freezers, industrial-sized dishwashers, ovens, lorries, kitchen knives, a mezzanine floor area for storage of dry food goods and other potentially hazardous facilities and equipment. Whilst FFL has a very effective and comprehensive Health and Safety policy, accidents might still happen which the company could be held liable for in personal injury insurance claim. Good quality surveillance pictures of the incident would be enough to prove whether the company or the individual was to blame.*"

The tender process

FFL called in a total of five, predominantly CCTV, specialists in the first analysis during the summer of 2004. Many of these firms were traditional CCTV installers keen to promote analogue-based systems recording images to VHS video recorders.

Mark Matthews explains: "*Frankly I was unimpressed – they appeared to show little interest in my business and any specific requirements we might have. They seemed keener to sell their pre-determined system rather than a system that I actually wanted. The idea of rotating VHS tapes daily filled me with horror. We are not the kind of business that ever shuts off the lights, puts the CCTV system on and locks the doors at 5PM; we are a 24/7 business.*"

Mark Matthews was then able, through word of mouth recommendation, to meet InCam's Paul Stout. InCam is a growing specialist in IP-Surveillance. InCam provides free consultation and a thorough site survey at the start of any tender. This consultation and site survey formed the basis of a fully-costed proposal which included site diagrams with clear location of all cameras and detailed coverage levels.

Mr Matthews again: "*It was very clear what we were paying for and the additional benefits we were likely to gain from going the IP-Surveillance route. Paul (Stout) showed me one of his demo sites which we viewed via his PDA. He could control a PTZ camera via the device and see right around a large workshop using one camera. I identified some situations where pushing images to a PDA would be useful - if I'm travelling between meetings when an alarm is triggered for example.*"

So although InCam's proposal was not the lowest cost, FFL's board members collectively and separately agreed that InCam offered the most suitable solution for its needs. The tender process closed in early September 2004 and work began on rolling out the system almost immediately.
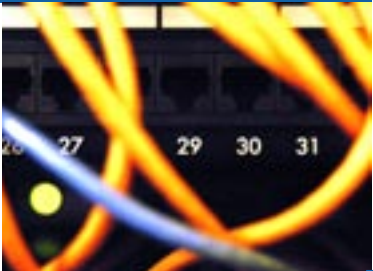
Installation challenges

By mid-September InCam had implemented a week of infrastructure work. InCam installed a totally dedicated network for the cameras. Electrical connections were established close to each camera point using FFL's approved electrical contractors. Another key consideration was the fixing of the cameras onto the chiller walls.

Paul Stout at InCam explained: "*These Igloo chillers are made from thin, toughened steel walls sandwiching a thick polystyrene material for insulation. Drilling into the steel required the toughest diamond drill bits and then we found there was nothing solid and deep enough for raw plugs and screws to attach themselves to. So for the four cameras being fitted in the chillers we needed to fabricate our own fixing plates which tightened against the back of the inner skin of the steel walls. Needless to say it was difficult to plan for this sort of work.*"

InCam then purchased all equipment including a total of 25 Axis network cameras and tested them offsite to ensure correct operation before installation. There were other site-specific considerations at FFL. One of the principle issues was the need for good housings with proper heating and fans inside to combat the freezing temperatures in the food storage areas which operate at about 2°C and the hot, steamy conditions in the dish washing area. Cameras set to be installed in the loading bay area also had to be able to cope with large temperature changes in winter when the doors were open to the elements during the loading of lorries outside.

In early October 2004 all cameras were installed, electrical work completed and the system integrated with the Milestone XProtect Professional system for managing viewing and recording of surveillance data. Most installation work was carried out overnight, when FFL's production area is relatively quiet, to avoid disruption and in order to ensure no food was contaminated by dust from drilling.
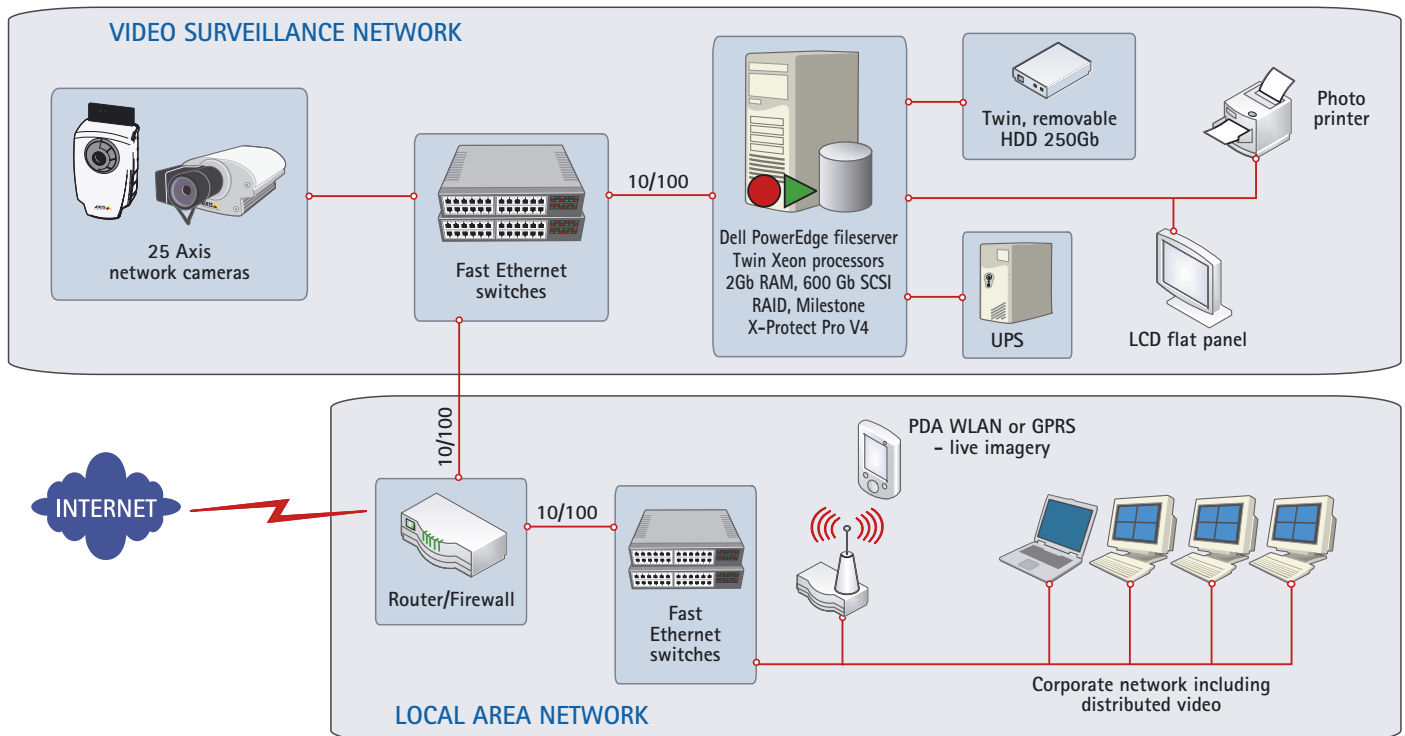
The Technical Solution

There was then a two-week load balancing period where InCam adjusted frame rates, compression levels and resolution settings on all cameras. The lowest frame rates that were used were 3 fps (frames per second). Four of the cameras, principally in high risk areas like the loading bays, were set up to speed up frame rates on motion detection to 12 fps. Eight cameras covering 'high traffic' areas, including the lorry parking area outside the front of the building, were set permanently at a rate of 6 fps. All but three cameras were set on low compression to maximise picture quality. All cameras were set at high resolution of 640 x 480, VGA resolution again to promote good quality image reproduction. A total of 11 cameras required housings fitted with both heaters and fans because of the extremes of temperature and humidity that they were likely to be exposed to.

InCam selected housings with built-in electrical supply and selected a high specification low smoke, zero halogen CAT 5e data cable for the entire system although this was not a mandatory requirement. Metal Halide external lamps provided enough lighting in the loading bays at night to ensure that no additional Infrared lighting was required to provide good images from external cameras at night. All electrical lighting remains on inside the building throughout the night in the production and loading areas of the unit so it was not an issue in these areas either.

A total of 14 AXIS 2100 Network Cameras inside, four AXIS 2110 Network Cameras outside and 7 AXIS 206 Network Cameras were fitted and configured by InCam at FFL, creating a total of 25 cameras.

To support FFL's aim of having coverage of up to 80 to 90 per cent of site, InCam also fitted wide angle lenses to five of the cameras to increase their field of view without increasing numbers of network cameras deployed.

VIDEO SURVEILLANCE NETWORK

- 25 Axis network cameras
- Fast Ethernet switches
- 10/100
- Dell PowerEdge fileserver Twin Xeon processors 2Gb RAM, 600 Gb SCSI RAID, Milestone X-Protect Pro V4
- Twin, removable HDD 250Gb
- Photo printer
- UPS
- LCD flat panel

LOCAL AREA NETWORK

- INTERNET
- 10/100
- Router/Firewall
- 10/100
- Fast Ethernet switches
- PDA WLAN or GPRS – live imagery
- Corporate network including distributed video

## Completing the surveillance solution

A Dell PowerEdge Server running Microsoft Windows 2003 Server software suite was selected and Milestone XProtect Professional Version 4 configured on it by InCam. The server also held twin Xeon processors offering 2Gigabite (GB) Random Access Memory (RAM) and a 600 GB SCSI Random Array of Independent Disks (RAID) storage device, all backed via USB ports from the server to two removable

Maxtor OneTouch 250GB Hard Disk Drives (HDDs) for archiving and disaster recovery purposes. The Milestone software was configured so that cameras could be triggered to accelerate frame rate upon motion detection. An Uninterruptible Power Supply (UPS) runs to the Milestone XProtect server. In this way power failure could not result in loss or corruption of recorded images stored in the system.

There is also a DVD-Recorder in the server for production of copies of video for evidential purposes following any incident. A single 19-inch flat panel display mounted on the wall of the office shows output from all cameras. It is possible to make the links live by simply passing the mouse across a specific image and clicking on it. A colour printer attached to the system enables duty managers to print high quality still images off the system where evidence needs to be provided in a hurry.

Airline Catering Services

No Unauthorised Entry

Beyond This Point

Managing Surveillance Images
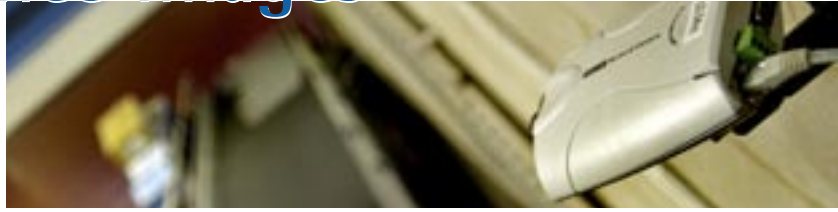
InCam selected Milestone XProtect Professional Version 4 for viewing, management and storage of all surveillance images at FFL. This system contains a dedicated, native-language database for all images. This ensures that all images stored on this database are tamper proof, and therefore are admissible as evidence in a court of law. This equipment is stored in a lockable data cabinet to increase its security still further. The operations office where this equipment is held is manned around the clock by one of FFL's duty managers.

InCam chose to set all FFL's cameras at a maximum of 400,000 images per day to ensure that the loading on the server would not exceed 75 per cent. The database works by storing images, camera-by-camera as distinct blocks of disk space. As limits are reached then users have a choice to archive images on secondary servers or simply begin deleting the oldest images as new ones are added. FFL elected to follow Data Protection Act guidelines which stipulate that recorded images should be deleted after 30 days unless the images are likely to be used in a court of law following a security or health and safety incident.

Milestone XProtect system also has a built-in web server with secure HTTP login so anyone with proper authorisation can access the database of recorded images and live recordings from all cameras by video stream to a PDA or PC in a remote location. It is also possible to view individual cameras direct from a web browser with proper username and password verification and IP address identification. This was done by InCam working alongside FFL's network integrator Thema Consulting, to assign static IP addresses to each camera, making port selections for each camera and configuring FFL's NetGear DG834G routers to get them to allow communication with a specific camera without being blocked at the firewall.

> "*The cameras act as a constant visual reminder that all security checks and procedures need to be adhered to all times to ensure that we operate a secure and safe operation.*"

Remote monitoring and maintenance proves important

Mark Matthews of FFL has been able to view the live video streams from his home computer while working from home one day and was very impressed that he was able to view the entire grid of camera images via the Milestone system at the same time.

Remote access is also used by InCam to provide remote firmware upgrades for the cameras and Milestone software upgrades. InCam is also able to analyse call logs and act as a rapid response service for FFL in case of emergencies. InCam has built this service into its agreed annual maintenance contract.

Health and Safety preparedness

Health and Safety has been a key additional benefit of the surveillance systems as far as FFL is concerned. FFL now has near total surveillance coverage in all the areas where there are likely to be accidents during the course of the working day. If accidents do occur, FFL's management now have the peace of mind of knowing that they will catch relevant images and be able to study these to determine responsibility.

It has also heightened the importance of security in the minds of all FFL's staff.

Project set for expansion

FFL is expanding fast with staff numbers growing from eight in early 2002 to more than 45 people in May 2005. Expansion is now planned into another unit on an adjoining business park. The security system will be extended across to the existing unit from the late summer of 2005. InCam is set to deploy nine additional Axis network cameras into this new unit and one additional Milestone XProtect Professional will be installed over there to support these cameras. A total of six AXIS 206 Network Cameras, two AXIS 211 Network Cameras and one AXIS 210 Network Camera will be deployed in the new space.

Future proofing investment in IP-Surveillance

Compliance with UK Department for Transport aviation security regulations undoubtedly drove the selection of a new state-of-the-art IP-Surveillance system. But there have been many other business benefits, not least from a Health & Safety perspective and future reductions of employer's liability insurance. The system itself has served to reinforce the importance of security in the minds of all FFL's staff. Finally the use of an IP-Surveillance system creates opportunities to share existing networking resources, perhaps integrating with access control and burglar alarm systems to further tighten security at the facility.

"What is most important is that we now have a system which we know is capable of growing with us and serving our needs long into the future...it's effectively future-proofed which is important when you are making an investment of this kind."

inCAM
digital surveillance

milestone

For more information, visit www.axis.com/solutions

About Axis

Axis increases the value of network solutions. The company is an innovative market leader in network video and print servers. Axis' products and solutions are focused on applications such as security, surveillance, remote monitoring and document management. The products are based on in-house developed chip technology, which is also sold to third parties.

Axis was founded in 1984 and is listed on the Stockholmsbörsen (XSSE: AXIS) Attract 40-list. Axis operates globally with offices in 16 countries and in cooperation with distributors, system integrators and OEM partners in 70 countries. Markets outside Sweden account for more than 95% of sales. Information about Axis can be found at **www.axis.com**

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