FFL Airline Catering Services (FFL Limited) is a specialist catering operation serving a number of scheduled and chartered airlines flying from London's Gatwick Airport. The company has to ensure strict compliance with Department for Transport security regulations governing its current operation, and places a heavy reliance on security systems to achieve that goal. Brian Sims investigates an IP-based systems installation procured to overcome many tough and distinctly different on-site challenges faced by the client and project team.

Photographs by Mike Taylor Photography

Catering core

FFL AIRLINE CATERING SERVICES WAS formed in 1997 to assist some of the smaller airlines operating out of London's Gatwick Airport. Initially, FFL's staff were deployed at Gatwick to move specific airlines' catering supplies from a given aircraft's hold into the cabin for use on its next scheduled journey. The work also involved supplying a small number of additional meals for new passengers joining a connecting flight.

The airlines concerned generally ran between one and seven flights per week into Gatwick and, as such, the volume of business for FFL was limited but nonetheless steady.

To support this activity, FFL occupied just one small unit of less than 1,000 square feet on a business park – the Brunel Centre Trading Estate – in Crawley, less than a mile distant from Gatwick's perimeter fencing. There were some storage areas and also a small kitchen area, but nothing more.

Not surprisingly, Mark Matthews – FFL's managing director – was very keen to expand the business into a full service catering firm. Full service catering in this market includes the provision of all airline catering requirements, from hot and cold food through to drinks, magazines, cleaning products, First Aid kits and all other necessary 'above the wing' provisions. However, FFL found itself in something of a Catch 22 situation in that no airline would place its full catering contract with the firm until proof was available that it had the necessary facilities to cope.

Therefore, in November 2000 the company decided to lease a 4,500 square foot unit on the Brunel Centre Trading Estate, and proceeded to build a full-scale, industrial-sized kitchen complete with chillers, freezers, storage areas and industrial washing facilities. All of the necessary systems were in place before February 2001, but by that time FFL was still lacking any full service contracts.

Astraeus: a new beginning

In December 2001, Matthews was contacted by a new airline – Astraeus – that was planning on beginning operations within the next few months. FFL was then contracted by Astraeus from its launch in April 2002. In time, other airlines saw what a success FFL was making of Astraeus' catering and then signed on the dotted line. Contracts with Nationwide Airlines (South African), African Safari Airlines (Kenyan),

Helios (Greek Cypriot) and Futura (Spanish) were signed and sealed during the next two years. In the meantime, FFL also became a regular supplier to ad-hoc flights (such as those chartered for English football clubs).

"To win these types of contracts you have to be able to move fast on agreeing terms and locating suppliers," states Mark Matthews in an exclusive interview with SMT. "Some of the larger catering firms do not have the flexibility or appropriate expertise to cope with ad-hoc requests like this, but we do."

Today, FFL provides more than 500,000 airline meals per year! Necessarily, staffing numbers have expanded from eight full-time employees in 2002 to over 40 come last year. In turn, space was beginning to be a premium commodity. Thus, in May 2004 the company's management leased an adjoining unit, doubling total unit space to 10,000 square feet. New chillers and freezers were added, and a mezzanine floor created for the additional storage of dry goods.

Twenty two employees now work in the production areas of the business (ie food preparation and cleaning sections, etc) and 18 in operational spheres looking after the delivery of food and dry goods to and from aircraft. On top of that, FFL boasts a five-strong senior management team to lead and help grow the business.

Complying with the regulations

Like its competitors, FFL is forced to comply with strict Department for Transport regulations and directions, all of which are subject to regular revision. The latest update – entitled Direction 19 – was communicated to registered airline suppliers as recently as February this year by Transec (the Department for Transport's security division). These directions deal with the minutiae of security, such as allowing nail scissors in passengers' hand luggage which is then taken on board an aircraft, and metal cutlery for aircraft meals – restrictions that have only recently been lifted.

"We have very tight procedures insisting that all visitors enter the premises through our main reception area where they need to be verified and authorised, and then issued with a security pass," adds Mark Matthews. "They must also be accompanied by a member of staff throughout the duration of their time on the premises."

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

Mark Matthews continues: "We fully understand the need for this instruction," he suggests, "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 enter these areas upwards of 40 times every hour. From a management perspective, the sheer wastage of time coupled with the impracticality of carrying heavy loads and using keys to open doors made surveillance a definite requirement. We would have had to employ somebody full-time just to act as a quasi-'door supervisor', which wasn't a practical option."

Like many companies using a number of lorries and vans to transport goods, FFL was also suffering reasonably heavy losses from the occasional theft of diesel, particularly at night. A further reason for good surveillance.

Another driver for monitoring – this time identified by systems integrator and IP surveillance installer InCam Digital Surveillance – was Health and Safety-related.

"InCam chose to set all of FFL's cameras at a maximum of 400,000 images per day to ensure that loading on the server would not exceed 75%. The database works by storing images, camera-by-camera, as distinct blocks of disk space"

FFL's production area does contain some heavy machinery and implements – self-closing freezers, industrial-sized dishwashers, ovens and kitchen knives among them. While FFL has a very effective and comprehensive Health and Safety policy, there's always the chance that an accident will happen (for which the company would then be liable in relation to personal injury insurance claims).

"Good quality surveillance pictures of a given incident would be enough to prove whether the company or the individual(s) involved were to blame," suggests Paul Stout, InCam's managing director.

Tendering for the contract

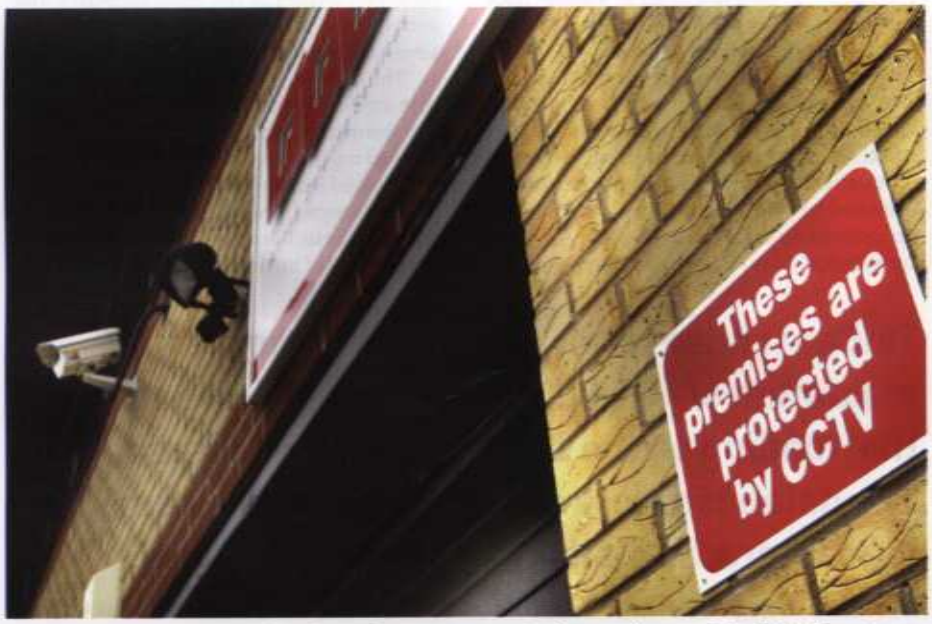
The first analysis of its security requirements during the summer of 2004 led to FFL calling in a total of five (predominantly) CCTV specialists, the majority of whom were traditional CCTV installers keen to promote the benefits of analogue-based systems recording images to VHS video recorders. The end result was that Mark Matthews remained singularly unimpressed.

"The companies involved appeared to show little interest in the business and any specific requirements I had," he explains. "They seemed much more intent on selling their pre-determined system rather than the set-up I actually wanted. The idea of rotating VHS tapes on a daily basis filled me with horror! We are not the kind of business that ever shuts off the lights, turns on the CCTV system and locks the doors at just after 5.00 pm."

Matthews was then able to meet InCam's Paul Stout. A growing specialist in the area of IP surveillance, InCam offers a free consultation and a thorough site survey at the start of any tender. As events turned out, this consultation and site survey formed the basis of a fully-costed proposal which encompassed site diagrams (including the clear location of all cameras) and detailed coverage levels.

Matthews adds: "It was very clear what we were paying for, and the additional benefits we were likely to gain by going down the IP surveillance route. Paul showed us one of his demonstration sites, which we viewed via a PDA. He could control a PTZ camera via the device, and see all around a very large workshop area using only one camera. I then identified some scenarios where pushing images to a PDA would be useful... If I

FFL provides over 500,000 airline meals each year to its regular client base.



Networked cameras monitor the main entrance to FFL's premises at Gatwick Airport.

happened to be travelling between meetings when an alarm is triggered, for example."

Although InCam's proposal was not the lowest cost option, FFL's Board members collectively and separately agreed that it offered the most suitable solution. The tender process closed in early September last year, and work began on rolling out the new surveillance system almost immediately.

The installation phase

By mid-September, InCam had completed one week of infrastructure work. The company 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. "The igloo chillers are made from thin, toughened steel walls sandwiching a thick polystyrene material for insulation," comments Paul Stout. "Drilling into the steel required the toughest diamond drill bits. We then found there was nothing solid or deep enough for plugs and screws to attach themselves to. As a result, 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."

InCam then purchased all of the necessary equipment, including a total of 25 Axis Communications-designed network cameras, and tested them off-site to ensure correct operation prior to any installation work.

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 around two degrees centigrade), as well as the hot and steamy conditions experienced in the dish washing areas. Those cameras installed in the loading bay area also need to cope with large temperature changes in winter, when doors are opened and closed during lorry loading.

October 2004 saw the installation of all cameras. All electrical work was completed and the set-up integrated with the Milestone XProtect Professional system for managing the viewing and recording of surveillance data. Most of the installation work was carried out overnight, a time when FFL's production area is relatively quiet. In this way, disruption was avoided and no food contaminated by dust generated from drilling.

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 used were three frames per second (fps), although four of the cameras – principally in high risk areas such as the loading bays – were set 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 six fps. All but three cameras were set on low compression to maximise picture quality. All cameras have been set at a 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 due to the extremes of temperature they were likely to experience.

External metal halide lighting

InCam's team members chose housings with built-in electrical supply, and selected a high specification, low smoke, zero Halogen, Category 5e data cable for the entire system (although this was not a mandatory requirement). External metal halide 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 were fitted internally and four Axis 2110 network cameras installed externally. In support of FFL's aim to offer coverage of up to 80%-90% of the site, InCam also fitted wide angle lenses to five of the cameras as a means of increasing their field of view without having to heighten the number of units deployed.

A Dell PowerEdge server running MicroSoft Windows 2003 server software suite was selected, and Milestone XProtect Professional Version 4 then configured on it by the InCam engineers. The server also holds twin Xeon processors offering 2 Gigabit (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 250 Gb hard disk drives for archiving and disaster recovery purposes. The Milestone software is configured so that cameras may be triggered to accelerate frame rate when motion detection is activated.

In addition, a UPS runs to the Milestone XProtect server. In this way, power failure will not result in the loss or corruption of recorded images stored in the system.

There is also a DVD recorder in the server for the production of copied video for evidential purposes following any incident. A

Inside the Operations Room. A single 19-inch flat panel display monitor mounted on the wall enables staff to monitor high resolution images from all cameras on the site.

FFL and IP surveillance: monitoring to increase at Gatwick

AS A COMPANY, FFL IS EXPANDING FAST, WITH STAFF NUMBERS HAVING RISEN FROM JUST eight in 2002 to more than 45 as of May. Expansion is now planned, with the addition of another unit on an adjoining business park to its existing base on the Brunel Centre Trading Estate.

That being the case, InCam will be extending FFL's security systems to cover the new facility before the end of the summer. Nine additional Axis cameras will be added, with the installation of a single Milestone XProtect Professional system to support them. This configuration is far more economical than upgrading the existing server to cope with the additional capacity.

FFL's only requirement is that monitoring across the site can be conducted centrally from the existing operations office where the company has the space to do this work. 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 unit. ■

Cameras in the loading bay area have to be able to cope with extreme temperature fluctuations during winter.

single 19-inch flat panel display mounted on the wall of the main Operations Room shows output from all cameras. Links can be made 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 whenever evidence needs to be provided in a hurry.

Viewing, management and storage

InCam's project team selected Milestone's 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 (stored on the database in tamper-proof mode such that they are admissible as evidence in a Court of Law). All of this equipment is stored in a lockable data cabinet to increase security still further. The aforementioned Operations Room where the equipment is held is manned around the clock by one of FFL's duty managers.

InCam chose to set all of FFL's cameras at a maximum of 400,000 images per day to ensure that loading on the server would not exceed 75%. The database works by storing images, camera-by-camera, as distinct blocks of disk space. As limits are reached, users then have a choice of archiving images on secondary servers or they can begin to delete 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 they are likely to be used in a Court of Law following a security or Health and Safety-related incident.

The Milestone XProtect system also has a built-in web server with secure HTTP login so that 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, as well as the necessary IP address identification.

In truth, this was achieved by InCam working alongside FFL's network integrator – Thema Consulting – in order to assign static IP addresses for each camera, making port selections for each camera and configuring FFL's NetGear DG834G routers so that they would allow communication with a specific camera without being blocked at the firewall.

Beneficial contract agreements

Mark Matthews has been able to view the live video streams from his home computer, and is impressed that he's able to look over 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, not to mention Milestone software upgrades as well.

It's worth noting here that InCam is also able to analyse call logs and act as a rapid response service for FFL in case of emergencies. In fact, InCam built such a service into its agreed annual maintenance contract. Other end users would do well to note this for their own contract agreements.

From the client's perspective, Health and Safety-related 'bonuses' have been a key additional benefit of the surveillance system. FFL enjoys near total surveillance coverage in all of those areas where there are likely to be accidents occurring during the working day. If accidents or incidents do occur, the management team now has the piece of mind of knowing that they will catch relevant images, and be able to study these to determine responsibility. These images can be used in a Court of Law if the employee(s) involved were to pursue personal injury claims.

The system has also heightened the importance of security in the minds of all FFL's staff, as Mark Matthews explains. "The cameras act as a constant visual reminder that all security checks and procedures need to be adhered to at all times," he suggests.

"The sensitivity of our privileged position as a caterer to airlines at Gatwick Airport needs to be properly understood by all of our staff. We have found it much easier to impart the security message to members of staff since the surveillance system was installed. It also supports the security awareness training we conduct on a regular basis."

Future-proofing the installation

Incam has undertaken to provide one on-site test of the surveillance system per annum.

The use of an IP-based system has created opportunities for sharing existing network resources, perhaps leading to integration with access control and intruder alarm systems by way of tightening security at FFL's facility.

Perhaps what is most important is that the client now has a surveillance system in place which it knows is capable of growing with the company, and serving its monitoring needs long into the future (see panel 'FFL and IP surveillance: monitoring to increase at Gatwick'). It is effectively future-proofed.

That fact alone is of huge importance to the end user when it comes to making an investment in bespoke security systems. ■

Cameras monitoring the lorry parking area are permanently set at a rate of six fps.