



USA:

AN ALL AMERICAN EXTRAVAGANZA

From the Atlantic to the Pacific, some of the world's leading research and development of new technologies to counter the terrorist threat has been taking place in the United States. **Philip Baum** travels Route 66 in search of American avsec solutions.

American Science & Engineering

It could have been the title for the article, but American Science & Engineering is, for those with any knowledge of X-ray technology in general, actually a brand associated with some of the most technologically advanced X-ray systems available on the market. As Richard Mastronardi, the company's VP Strategic Marketing puts it, "if good enough is not good enough, then you buy AS&E". For this reason, high security government facilities often opt for the AS&E solution.

The company has been in the market since 1958 and one of its pioneers, Dr. Riccardo Giacconi, was actually awarded the Nobel Prize for Physics in 2002, being further indicative of the company's pedigree.

Whilst better image quality comes with a higher price tag, it also comes with better detection capability, and even the inexperienced eye can appreciate the benefits of the almost photographic images generated by X-ray backscatter technology.

Customs organisations around the world have been key customers and granted the company's wide range of cargo screening solutions, ports too have been a target market. With the aviation industry finally starting to take serious note of its

vulnerability in the cargo arena, AS&E certainly want to start competing as players in this market too.

Backscatter technology offers the user two key benefits. Firstly, it clearly identifies low atomic number materials thereby better highlighting organic materials. With the main threat from checked baggage and cargo coming from explosives, such detection capability cannot be underestimated. Secondly, the image displayed on the monitor is far easier for the operator to interpret.

Two products likely to have an impact of the aviation security industry in the not too distant future are the Z Backscatter Van (ZBV), being a mobile X-ray unit, and the Bodysearch, a passenger X-ray solution.

The ZBV utilises one-sided backscatter technology. The driver simply drives alongside the container (or vehicle) to be screened whilst the operator receives a clear image of the organic materials contained therein. The ZBV is available with Radioactive Threat Detection technology that will aid in the identification of potential dirty bombs.

The Bodysearch, already widely used in prisons, has huge potential for the enhancement of passenger screening,

especially for passengers having casts or prosthetic devices who cannot be effectively screened using traditional metal detection technology, let alone the obvious advantages of being able to detect explosives using this image-based solution.

Reveal Imaging Technologies

It's a case of "watch this space" for the success of this David & Goliath story! Formed late in 2002, former Vivid and InVision employees set up Reveal Imaging to develop a CT solution that would better fit the airport environment. The task was to create an effective screening solution that would fit into existing airports rather than rebuild airports to cater for over-sized machines.

Armed with \$10m in venture capital funding by June 2003, supplemented by \$4.75m from the TSA, product development began and by December 2003 the first CT-80 was delivered to the TSA for testing; testing that the company hopes will result in certification by later this spring.

The CT-80, at \$300k per unit is significantly cheaper than its CT competitors, yet with 100 bags per hour being its initial throughput (and 200 bags per hour the short-term goal), obviously a number of machines will need to be purchased to match the throughput of L3 and InVision solutions.

Yet, the CT-80 can be placed behind the check-in desk without having to rebuild the airport in the process. Furthermore, with the passenger still present at the check-in counter as the bag is screened, security is enhanced, as any dilemma can be resolved without having to locate and summon the passenger sometime before they board the flight. From a European perspective, the ability to offer certified Level 3 screening capability either at Level 1, or in stand-alone configuration at Level 3, is a huge selling point.

As Michael Ellenbogen, Reveal's President, says, "The TSA is faced with the difficult challenge of enhancing security while keeping down the massive costs associated with integrating EDS units into the automated baggage conveyor systems". By down-sizing the EDS, the airport rebuild costs, which can be conservatively estimated as being at least three times the cost of the equipment itself, can be all but eradicated.

The CT-80 approach is similar to the L3 eXaminer, with a rotating scan that covers the entire bag, rather than inspection of individual slices of the bag, à la InVision.

Jim Buckley, VP Sales, hopes that, "by September 2004 the first orders will be in". There is no reason to consider that overly optimistic. After all, what airport wouldn't select a system that, if certified, is 50% smaller than its competitors and can be effectively installed into check-in operations within a matter of days, thereby causing little disruption to operations, reclaiming lost space ahead of the check-in counters and not costing multi-million dollars in airport reconstruction?



Reveal Imaging's CT-80

Thermo Electron Corporation

Thermo is home to the EGIS range of explosives detection systems. EGIS II and EGIS III, are highly sensitive devices developed to detect various types of commercial and military explosives, including dynamite, Semtex, C4, and TNT. EGIS Systems are designed to be used in conjunction with other techniques in order to provide a comprehensive programme to screen for explosives.

The EGIS II is designed to provide excellent sensitivity and selectivity under demanding operating conditions such as high sample throughput and environment, whilst the EGIS III is designed to provide the customer with some of the highest levels of sensitivity and selectivity available on the market today.

L3

Few would argue with the fact that L3 is one of the aviation industry's most prolific stables for screening equipment. It is also the recipient of the world's largest hold baggage screening contract; their Changi Airport contract in Singapore was valued at some \$45m.

L3 has been one of the leading companies in the industry's natural desire to develop integrated screening solutions. With customers now able to purchase both X-ray and CT-based solutions from a single source, not only have prices dropped but also systems integration problems have been relieved.

L3 however is far from resting on its laurels. It's International Research and Development group are actively researching new solutions, most notably their Certified Carry On (CCO) product that aims to bring the world of CT screening to the carry-on baggage environment.

Other areas of research include millimetre wave imaging for passenger screening. L3 is actively working with Millivision on the development of a commercial product that alleviates concern over privacy issues associated with the technology. This will be achieved by generating an optical image of the passenger on the screen (in their clothes!), whilst identifying areas on the body (using an algorithm that evalu-

ates the concealed millimetre wave image) that the screener will need to search.

Along with Rutgers University, L3 is pursuing the development of a coherent scatter product to compete with the Yxlon solution and, like many of their competitors, considerable research is being undertaken in the area of radiation detection capability being integrated into existing X-ray solutions.

GE Ion Track

This is another of those "something big is going to happen" stories. When GE bought Ion Track in October 2002, it was clear to most that GE's spending spree and foray into the aviation security market was unlikely to stop there. With GE being one of the world's most prominent suppliers of CT equipment to the medical industry, it can only be a matter of time before they go head to head with L3, OSI and Smiths.

Yet, for the time being, explosives trace and vapour detection products are the company's avsec offerings. Itemisers are now seen at checkpoints around the world and with their Entryscan passenger portal detector having passed testing in April 2003, it can only be a matter of time before airports, like their existing nuclear power plant customers, start to swallow the arguably bitter pill of the \$125k per unit price tag and start deploying them. Arguably, given that it is small change when viewed in comparison with the \$15bn the US government spent bailing out the airlines after 11 September.

Integration is very much the buzzword at GE Ion Track. Not only is the company looking at ways of integrating metal detection technology into its portal detectors and considering the incorporation of explosive trace and/or vapour detection capability into baggage inspection systems, but it is already linking its solutions to video-based solutions that will enable passengers to be tracked should an alarm occur at a checkpoint. Therefore, should a passenger run through, or from, a checkpoint, the CCTV system would follow them, thereby preventing the need to shut down the terminal.

Another product that has some scope for

the aviation security community is the StreetLab. This is a portable explosives and narcotics identification system that works using a technology called Raman Spectrometry. Should a suspect substance be found during a bag search, a sample is placed in the StreetLab that then evaluates the material using a laser and classifies it against a library of pre-entered spectra. Providing the material is in a clear vial or plastic bag, through which the laser beam can shine, it is not even necessary to touch the substance itself. This offers detection capability for liquid explosives, let alone narcotics.

Control Screening

Control Screening is another company now capable of offering the aviation industry a wide range of security products. In fact, in terms of varying technologies, more than most.

Albeit best known for its X-ray solutions, Control Screening offers metal detectors and, since its acquisition of Scintrex in June 2001, explosive trace and vapour detection products. Indeed the Scintrex business now accounts for around 50% of Control Screening's turnover.

Around half the company's output is for the export market. For its X-ray machines, China is the number one destination, but South America is also a key source of business. From an airport perspective, Brazil gave Control Screening their biggest aviation contract to date, when they purchased 120 units for both hold baggage and carry-on baggage screening.

Todd Conway, Managing Director, argues that, "there is very little differentiation between the capabilities of X-ray machines produced by the different manufacturers, but that there is in terms of serviceability". Control Screening believes that the long-term ownership costs of their products is considerably lower than that of their competitors. As Todd Conway boldly states, "we guarantee that the equipment will break...but it will be easier to fix than that of our competitors"!

Control Screening recognises the limitations of metal detection technology and is actively working on a solution that will

combine metal detection with trace detection. Hopefully a prototype will be available for evaluation by the end of the year. They are also doing considerable work in the field of millimetre wave imaging, albeit that they recognise that the image qualities of X-ray backscatter solutions would be the preferred route to take from an imaging perspective. "Unfortunately", according to Conway, "the aviation market cannot afford backscatter technology".

Most of the exciting product development work is in the area of explosives vapour detection. The E3500 is soon to be launched on the aviation sector. It is the world's first portable trace detector that uses Luminol Chemiluminescence to facilitate the detection of threat explosives, including ICAO tagants, military plastics and the notoriously hard to detect TATP.

Also available from Control Screening is the Large Vehicle Bomb Detection System (LVBDS) which can screen trucks and cars for the presence of explosives using a touchless sampling system. Granted the nature of "new terrorism", we may yet see such technologies deployed at airside vehicle access control posts.

According to Brad Conway, Control Screening's CEO, "simultaneous vapour and particulate detection is the way to go", rather than rely on ion mobility spectrometry with its limitations. "Then we need to integrate metal detection and possibly millimetre wave technology" to have a catch-all solution.

Smiths Detection

With the marriage of Barringer and Heimann under the wedding canopy of Smiths, the "largest basket of detection products on the market" is now available, according to Smiths' Brook Miller.

The Sentinel portal detector, developed over three years ago, may finally be set to break into the airport market. Indeed the recent product development has focused less on the trace detection technology and more on human factor issues, including signage and practical methods of ensuring the passenger remain within the portal whilst the screening process takes place.

Yet whilst the Ionscan and Sentinel may be the better known products, Smiths Detection also offer a Document Scanner that can test for the presence of explosives or narcotics on passports, tickets and boarding cards.

Of considerable interest to the airport environment should be the Centurion, which provides for the continuous monitoring of air within a building for the dispersal of chemical warfare agents and toxic industrial chemicals. It consists of a central PC-based command centre that is linked to remote detector heads.

In response to the threat of biological agents, Smiths Detection has developed the Bio-Seeq, a portable hand-held thermocycler capable of detecting bacterial and viral pathogens. Whilst it is extremely unlikely that a biological agent be detected at an airport security checkpoint (and, if detected, the damage will already be done), Bio-Seeq is a first responder tool that may be utilised in the event of a suspected chem/bio attack in an airport or on board an aircraft.

Galaxy Scientific

Galaxy Scientific Corporation was established in 1988 to develop technology-based solutions for a number of different government agencies. Located in Atlantic City, a few miles from the Technical Centre that evaluates aviation security technologies, Galaxy offers the industry blast-containment solutions and training.

It is Galaxy that develops TIP (Threat Image Projection) images by the thousand for the TSA (via their contract with Lockheed Martin) that are later displayed on X-ray monitors for screener evaluation purposes. And it is Galaxy that has partnered with the Canadian Air Transport Security Agency (CATSA) for the development of their computer-based training solutions.

The ECOS³ Secure Luggage Container was developed as an alternative to the LD-3; one that could contain an explosive blast should a bag containing a bomb not be identified by traditional screening solutions. The container is built from GLARE, an advanced patented aluminium-fibreglass laminate.

Being approximately 50% heavier than the standard 250lb LD-3, there are understandable concerns as to the cost of transporting baggage in such containers; a B-747's take-off weight is increased by 0.6%, arguably a small price to pay for increased security. Yet Galaxy is well on the way to developing a second-generation product that will only be 10 to 15% heavier.

At a cost of \$23,500 per unit (some 10 times the cost of an LD-3), price is also an airline concern. However, in real terms, the cost per passenger (on a 3,000 mile flight) is estimated at \$1.44. That figure, granted mass production, will only decrease. And, after all, unlike the traditional LD-3, one must remember that the ECOS³ is a security device.

Regrettably, however, we may have to wait until the limitations of screening technologies are exposed by a disaster before airlines elect to embrace the secure luggage container. EI Al is one airline that has decided not to wait...

The G-Man is Galaxy's portable explosives containment device. A bag considered suspect at a screening point can be

placed in the G-Man which can then be pulled clear of concourses; evacuation of terminals becomes less on a necessity. The G-Man is designed for upward blast ventilation for an explosive charge of up to 2.5lbs of TNT equivalent.

Lockheed Martin

Whilst better known for their rockets, missiles and aircraft, Lockheed Martin is not exactly new to the training industry. Already providing dispersed training to some 400,000 students per annum on a wide range of aviation-related subjects, it was not surprising that the company was awarded the prestigious TSA contract of managing and delivering the aviation security training required for some 50,000 screeners across the USA.

Using 200 instructors, supported by a Smart Approach computer based training programme, Lockheed is now responsible for the delivery of the 45-hour initial training and the annual recurrent training provided to screeners. The instructors themselves are trained by the TSA.

The five-year contract that started in May 2003 is already valued at \$8.9m.

Yet Lockheed sees no reason to stop at training. It is actively involved in projects that are evaluating the potential for upgrading and standardising security checkpoints, specifically focusing on studies that will expedite passenger flow. Indeed, Lockheed has received a government grant for this work.

ENSCO

One name to take note of for the future is that of ENSCO, developers of the first CT-based screening system with no moving parts...

The Springfield, Virginia-company was established in 1969 and is involved in a wide range of software and systems integration projects and security-related activities, many of which have applications with the transportation industry.

Products include their SentryTM chemical, biological and radiological early warning system, their VideoGuardTM automatic intrusion detection system (already on trial at one US airport and a pilot programme with Amtrak is currently under discussion) and their MicroSearch[®] heartbeat detec-



GE Ion Track

Worldwide Headquarters
205 Lowell Street
Wilmington, MA 01887 USA
Web Site: www.geiontrack.com

Email: geiontracksales@ge.com
USA: +1.800.433.5346
Europe: +44 (0)1223 728888
Hong Kong: +852 2368 2332



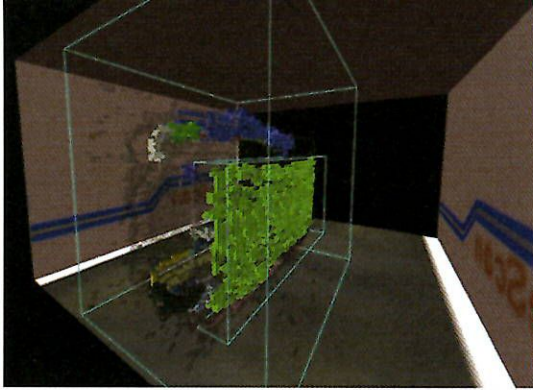
Itemiser³

Desktop Explosives
and Narcotics
Trace Detector

- Simultaneous detection of explosives & narcotics
- Approved for explosives detection by the TSA
- Extended range of contraband detection
- Unparalleled transportability, 26 lbs. (12 kg) with softshell case
 - Fold-down touchscreen display
 - Maintenance-free regenerative dryers
 - Internal backup battery
 - Reusable, extended shelf life traps

Detect & Identify Traces
of **Explosives**
in Seconds

Boston • Cambridge UK • Hong Kong • Miami • Washington DC



tion system. However, it is their SureScan™ that has the greatest airport application.

Initially developed for the US Department of Agriculture for the identification of food-stuffs, high detection capability was of paramount importance. It had to be able to detect 10 grams (or 3 grapes!) of material without a high false alarm rate.

Capable of scanning 1000 bags per hour (and potentially up to 2,000) in continuous motion, thereby enabling it to be an effective Level I solution, the CT images are created by dozens of X-ray sources rather than a rotating gantry. The system is capable of density and effective atomic number calculations on each and every voxel within the bag contents, greatly increasing the discriminating capability and reducing false alarms. On the screen, a transmission X-ray image is displayed, currently in black and white, along with CT slices; naturally, an auto-alert capability is incorporated.

ENSCO intends to hit the aviation security market this year and will be seeking TSA certification for the SureScan.

Carter & Burgess

Technology is one thing, integration another. This is where companies like Fort Worth-based Carter & Burgess come into their own.

With more than 60 years experience of airport projects, Carter & Burgess' security consultants assist airports in balancing the statutory requirements with airline needs and passenger convenience. They aim to seamlessly integrate new security technologies into existing infrastructures and develop cost-effective physical, staffing and procedural measures that mitigate risks from the entire spectrum of threats that airports face.

In Dallas-Fort Worth, America's third busiest airport, the company has assisted in managing a team of over 20 design firms - led by Parson Brinckerhoff and including CAGE Inc. for baggage design - to integrate explosive detection systems (EDS). In Terminal 3, for example, eight separate baggage systems existed would have necessitated 20 EDS; by reducing the number of systems to three, not only did the number of EDS reduce to 12, but the manpower requirement, and therefore cost, was also significantly reduced in the process.

Upgrading perimeter security is also an area where Carter & Burgess have been active, Austin Bergstrom airport is a case in point, and in Killeen, Texas (one of the first regional airports to be constructed after 11 September 2001), the company oversaw the entire security integration process.

Boeing

One might well wonder why companies like Boeing become involved in aviation security, especially if the first project one is offered is to ensure that all 443 US commercial airports, in less than six months, are capable of screening 100% of checked baggage!

"We're in the business of connecting the world", says Greg Deiter, Director of Program Management, Airport Security Programs. "We want people to feel comfortable getting on our aeroplanes, so contributing to aviation security was a natural path to follow".

And so it was that Boeing was awarded the \$585m contract, with its partner Siemens, to oversee the installation of explosive detection systems at all American airports. Siemens was the natural partner given its background in airport technology integration, yet other partners were sought and found in the fields of construction, electronics, architecture, modelling and simulation. Around the country, Boeing teamed up with airports' preferred construction partners and, impressively, managed to pass on 40% of the business to local small disadvantaged businesses, rather than place it all with the "giants".

The initial Boeing team comprised of seven people (out of the entire Boeing workforce of 135,000), yet within a few weeks 100 people were scattered around the country conducting site assessments. The entire team, including subcontractors, grew to some 30,000 in number. Whilst it was the TSA that determined which manufacturers equipment would be deployed at any given airport, it was up to Boeing to help those suppliers meet their production targets. Consequently, they deployed people to the factory floors just to ensure that production continued unimpeded.

On Christmas Day 2002, with only a week to go before the deadline for 100% hold baggage screening to be in place, Boeing had 100 trailers moving some 200 pieces of equipment from factories to airports. However, on 31 December 2002, Admiral Loy announced that the assignment had been completed on time and stated, "This is a tremendous success, a credit to our screeners, the airports and airlines and our contract partners, Boeing-Siemens and Lockheed Martin".

\$2 billion worth of equipment had been ordered, manufactured and deployed!

On 1 January 2003 the work continued. Deployment was one headache solved, maintaining the equipment another one brewing. Since November 2002, Boeing has actually overseen 100,000 actions resolving operational issues. The task: to fix any system that goes down within a 24-hour timeframe.

Boeing now has a taste for aviation security. "We need to identify the next threat and get to it before it happens", said Deiter. "We also need to make airports more efficient", and he believes that in doing so, "all security initiatives can be funded without it costing the passenger any more".

Garrett Metal Detectors

When does a hobby turn into a security solution? The answer is no joke. It's when you start out as a treasure hunter and then recognise that the solution you have developed to aid in your endeavours can also identify guns, grenades, knives and ammunition that might be used to target

aviation. And that's what Mr. Garrett did...

Garrett is now celebrating its 40th anniversary, yet has been supplying security-orientated products since 1984. Their entrée into the security market was the Los Angeles Olympics; all the metal detectors supplied were from Garrett and provided free of charge.

Today, they have almost 100% of the hand-held metal detector market in the United States, and are exporting about 50% of their security products, albeit that only 10% of it actually goes to the aviation sector; prisons, court houses, embassies and schools actually buy in greater quantities.

Their newest product is the PD 6500i walk-through metal detector. The system is capable of discriminating harmless objects, such as coins, keys, jewellery, shoe shanks and cigarette packs, from real threat items using its unique 33-zone pinpoint detection technology.

Garrett is not only about technology, but also about training. Accordingly, it boasts the only Metal Detection Academy in the

world, helping security agencies better understand the capabilities and processes behind metal detection.

ARACOR

Our first port of call in Silicon Valley (perhaps best known in aviation security circles for being home to InVision) was Advanced Research and Applications Corporation, better known as ARACOR. Indeed it was ARACOR that, back in 1983, delivered the first X-ray CT scanner for industrial use.

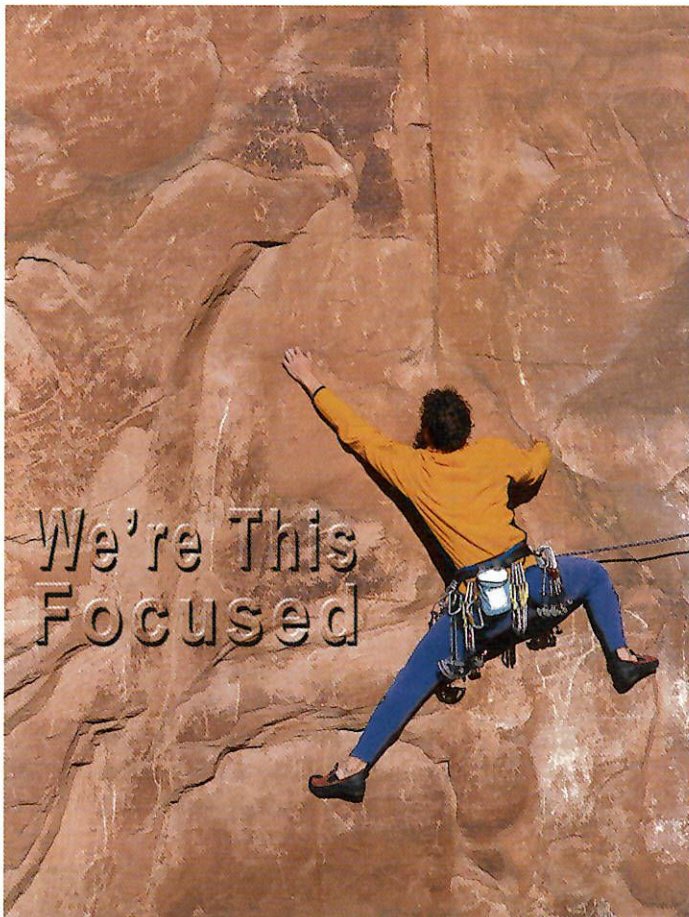
Only days preceding our visit, ARACOR was acquired by OSI Systems (parent company of Rapiscan, Ancore and Metorex) who were no doubt impressed by the work ARACOR has done in the development of the Eagle cargo screening solution.

Unlike the VACIS (from SAIC) and GaRDS (from Rapiscan), both of which use gamma rays, the Eagle creates X-rays using a linear accelerator. It is a high-energy solution capable of penetrating 350mm of steel. According to US Customs, 98% of containers can be inspected by the Eagle without having to be opened. Gamma ray solutions can

penetrate approximately 150-175mm of steel and low energy X-ray solutions around 100mm.

The first Eagle prototype was deployed at the Port of Miami and now, after nearly three years service there, is being moved to El Paso, Texas, where it will scan trucks at the Mexican border. ARACOR has received an order in excess of \$40m to produce eight Eagles for US Customs over five years. Systems sell for \$4m to \$5m each, depending on options and customers requirements. The Port of Kingston, Jamaica ordered the first system for overseas use.

Granted that a 40 foot container can be inspected in less than a minute, that the operator can stand only 5cms from the system and that even a stowaway could be screened 16 times per annum without any risk, cargo screening is now a real possibility. However, as Robert Frankle, Manager Business and Technology Development, correctly asks, "Will Congress mandate cargo screening, like they did with baggage screening, without a tragedy occurring first"?



GARRETT METAL DETECTORS

Focused on Meeting Your Metal Detection Needs



Why should you choose Garrett Metal Detectors for your security needs? Because our only focus is providing you with the most advanced walk-through, hand-held and ground search detectors in the industry. So, whether it's an event, an airport or a school campus, trust Garrett to provide you with the world's most advanced metal detection screening solutions that fit your unique application and budget.

GARRETT METAL DETECTORS

Since 1964
Ground Search • Walk-Through • Hand-Held

1881 West State Street
Garland, Texas 75042-6797
P: 972-494-6151/F: 972-494-1881



www.garrett.com

ARACOR is also involved in research in two other areas. Inspection AIDE (Analyser for the Identification of Drugs and Explosives) utilises photo neutron analysis (somewhere between TNA and PFNA solution). The overall approach involves an initial inspection by a high-energy X-ray system and, if a suspicious area is detected, the X-ray beam is then targeted on that area. Then a converter is automatically inserted into the pulsed X-ray beam to produce a beam of pulsed photo neutrons. Some of these neutrons are captured by the material in the targeted area, raising them to an excited state. The material relaxes by emitting a gamma ray which can be analysed to determine which elements are present, thereby indicating the likely presence of narcotics or explosives. No prototype system yet exists, but the lab tests have been completed and demonstrated proof of concept.

The other area of research is Active Nuclear Interrogation (ANI) for the identification of fissile material in cargo. Fissile materials give off neutrons when exposed to high-energy X-rays and, given that highly enriched uranium is not detectable using existing radiation pagers, ARACOR sees considerable potential in the development of this technology.

Ancore

Ancore was, until 1997, a division of SAIC. Their expertise lay in using neu-

trons to inspect containers. The question was determining what elements were present within the container rather than whether there was a suspicious shape.

To a certain extent that's what the particulate and vapour detection manufacturers are doing, but the key difference is that Ancore, now another member of the OSI family, is looking for bulk quantities rather than traces.

Given that nitrogen is the key component of most military explosives, the Ancore TNA and PFNA solutions were based on the premise that if one can identify bulk quantities of nitrogen, there is a fair chance of there being an explosive charge present.

Two TNA-based (Thermal Neutron Analysis) solutions have been developed for the airport environment. The SP-EDS (small package EDS) can scan a bag in 30 seconds and offers a "clear" or "alarm" solution to the operator. Ideal for deployment at cabin baggage checkpoints, at a cost of \$150,000, Ancore now believes we can better focus on real risk bags by identifying bulk quantities rather than traces.



The SP-EDS was tested at San Francisco airport, but a more extensive field trial is now being planned.

The V-EDS (vehicular EDS) is also based on Ancore's TNA technology. This enables the inspection of vehicles either by a portal (such as could be installed at an air-side access point) through which all vehicles would be scanned as they drive through, or by a mobile solution by which the mobile unit could be driven alongside a suspect vehicle to determine whether that vehicle poses a threat.

The Ancore Cargo Inspector uses PFNA (Pulsed Fast Neutron Analysis), which measures the elements contained within a shipment in small volume elements they refer to as voxels. Unlike the TNA-based solutions, the measurements taken by the PFNA system are used to generate 3D images of the cargo's elemental composition.

Material signatures enable the system to determine whether contraband is present and exactly where within the container it is situated. The monitor also displays a radiographic (X-ray) image which can be used by the operator to determine whether the shape also indicates a risk.

HID Corporation

Part of the Swedish Assa Abloy Identification Technology Group, HID, was originally established in 1991, and in its short history has become one of the world's leading suppliers of proximity products using RFID (radio frequency identification) technology.

With over 150 million units supplied to customers, there's a fair chance that almost every reader has seen an HID product installed somewhere. Given that the company sells through agents, it does not always know exactly where its products are in use. Airports, however, are a target market and it can attest to the fact that in both Denver and Little Rock HID solutions are deployed as part of the airports' access control systems.

In Denver, magnetic stripe readers already existed. Given that these could not be phased out overnight, HID had to

OmniPerception's unique and patented face recognition technology is the ultimate combination of accuracy and convenience for biometric authentication.

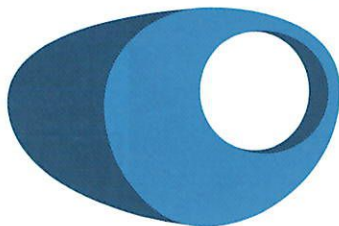
With one-to-one verification **and** one-to-many identification capabilities, face provides the most comprehensive range of solutions for the aviation sector.

Using **Client-Specific** algorithms to generate an individual **FacialPIN™**, this fully scalable technology allows implementation on Smart Cards as well as Servers.

OmniPerception offers:

Affinity™ Authentication - Software Developer's Kit
Bespoke Verification and Identification solutions
Consultancy and Services

The **Affinity™ SDK** allows developers to integrate OmniPerception's highly accurate Face Recognition capabilities into today's demanding and critical security based Verification and Identification applications, such as: **Border Control**, **Access Control** and **Machine Readable Passports**.



OmniPerception

Transforming the Face of Biometrics®

OmniPerception Ltd.

Surrey Technology Centre
40 Occam Road
Guildford, Surrey
GU2 7YG, UK

Tel: +44 (0) 1483 688 350

Fax: +44 (0) 1483 573 704

Contact: Martyn Gates

E-mail: info@omniperception.com

Website: www.omniperception.com

develop a solution whereby access could be granted to users of both technologies – those with the older magnetic stripes and those with the new proximity readers. In Little Rock, the airport wanted to implement a dual identification solution, by combining proximity with a biometric identifier. Accordingly, HID teamed up with Bioscript to offer a proximity card that incorporated a fingerprint.

HID is not limited to one partner in the biometric arena and is actively working with companies such as Identix and Recognition Systems too.

The newest product in the HID range is the iCLASS™ 13.56MHz read/write contactless smart card, introduced two years ago.

HiEnergy Technologies

On the very day we arrived at Irvine, California-based HiEnergy, the company was issuing its press release announcing the launch of its first commercially viable entity – the CarBomb Finder 3C3™.

HiEnergy are in the business of stoichiometry! Research into the technology, funded by both the private sector and contracts from the US Department for Defense and US Customs, indicates significant potential for use in airport security, bio weapons detection and contraband detection.

Stoichiometric explosive detectors provide for the remote deciphering of chemical formulas through steel with fast neutrons and gamma rays.

The CarBomb Finder, costing only \$99,000, was tested by AENA, the Spanish airport security agency, in Irvine, California, in September 2003 and field tests are planned to be held soon at Madrid's Barajas Airport. Granted the activities of ETA in Spain, and their use of an explosive known as cloriteta in car



bombs, HiEnergy expect that their successful trails (in detecting cloriteta amongst other substances) will result in the order being confirmed within weeks following the field tests.

HiEnergy's own figures are impressive. They claim 99.5% probability of detection, with a 1% false alarm rate, if a car is inspected from a distance of 6 inches over a period of 30 seconds.

Other HiEnergy products with an aviation security application include the False Alarm Eliminator™, whereby luggage can be examined without human intervention in the case of a more traditional screening system signalling an alarm, and the Wizard™ for examination of sealed cargo containers.

I guess it's another case of watch this space...

Rapiscan

Last but by no means least, no visit to America's west coast would be complete without Rapiscan.

Well known for its extensive range of X-ray solutions, along with its OSI partners, Rapiscan's BANTAM project work was of considerable interest. The BANTAM project, funded by the TSA with Rapiscan being the only manufacturer working on the technology, is focusing on the development of a light throughput solution (160 bags per hour) for mid-sized airports where the aim is combining X-ray with explosive detection technology.

The result is the XRD-1000, TSA testing of which is expected to begin in February.

The XRD-1000 works on the principle of initial examination of the bag using two X-ray sources, creating two images, and with a diffraction probe then investigating any area of the bag that is unresolved by the initial X-ray examination. Potential threats are automatically identified based on the size, density, effective atomic number, and location of an object. The diffraction stage automatically addresses the locations and inspects them for the presence of catalogued threat substances.



The system can be toggled to Operator interactive Substance Identification. The operator can then point and click at suspicious objects in the images. The diffraction system will automatically screen that location for the presence of a catalogued threat. In other situations, where a high throughput is needed and it is acceptable to put potentially suspect items to one side for thorough screening at a later time or alternatively redirect suspect items to a lower throughput screening path, the system can be operated with a continuous belt speed of 0.5m/sec (typically scanning around 1200-1500 items per hour).

Given media attention paid to personnel scanners in recent months, Rapiscan's Secure 1000™ Body Scanning System shows considerable market potential. The Secure 1000™ allows the operator to detect threats by imaging explosive materials such as dynamite, C-4, Detasheet®, as well as ceramics, graphite fibres, plastic containers, plastic weapons, glass vials, syringes, packaged narcotics, bundled paper currency, and even wooden objects. The individual being screened stands in front of the system for a 6 second front, rear and 2 side scans. The digital image is immediately displayed on the security operator's computer screen showing the shape and location of objects hidden under the clothing.

From stoichiometry to photo neutron analysis, and grape detection capability to 100% hold baggage integration at 443 airports, America certainly provides the rest of the world much technological food for thought.

The company's featured in this article are those visited during a two-week visit to the United States in January 2004. They are featured in the order in which they were visited. Only companies in the Massachusetts, New Jersey, Washington DC, Dallas, San Francisco and Los Angeles areas were approached for a visit.