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ALL I WANT FOR CHRISTMAS

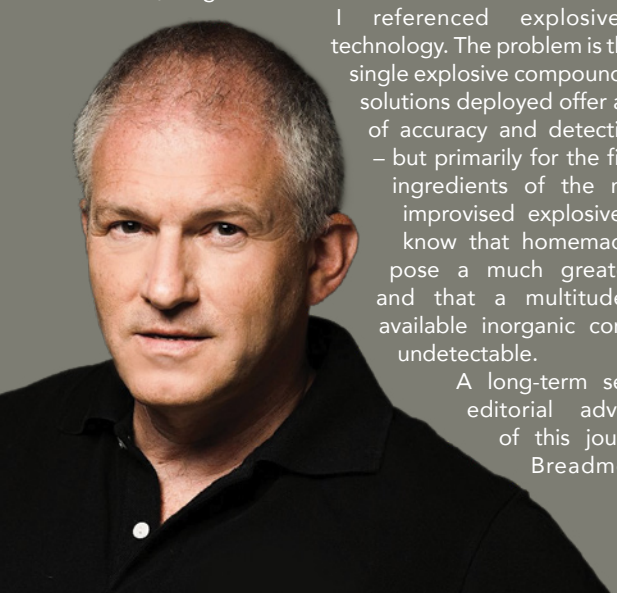
by Philip Baum

It is often said that aviation security is reactive in nature and that it takes a major incident for the system to change and for new technologies to be embraced and deployed. The traditional checkpoint still consists of archway metal detectors and X-ray machines, with those in the developed world also utilising explosive trace detection technology. Sure, the detection capabilities of all these devices are much improved, but we have not witnessed any radical re-think of how we screen people and their baggage.

We are gradually seeing the deployment of computed tomography (CT) for cabin baggage screening, an increase in the capability of automated threat detection software for X-rayed bags and more widespread installations of advanced imaging technology (body scanners) for either random searches or the performance of secondary screening. That said, we're still trying to identify the same threat items and substances as we did a decade ago and are not much nearer to being able to detect some of the more challenging explosive compounds or chemical, biological or radiological substances. That's not to say the technological capability is not out there – it is. But we are resistant to demanding such technologies being deployed in an environment which has not (yet) witnessed the use of such weaponry. Complacency, however, is to be avoided.

CCTV systems and access control solutions have become increasingly more powerful in detecting and recording intrusions, whilst management systems have created a more robust security environment, especially in the area of cyber security. Furthermore, given the disruption now regularly being caused by drone-related incidents, counter-drone technology manufacturers are flourishing. But back in the world of passenger and bag screening, perhaps because of regulation, innovation is more muted.

Last December, my lead editorial highlighted my five pet peeves with airports, air travel and hotel accommodation. This year, in a more positive vein, my 'five of the best' relate to some of the most exciting technologies I have seen that could enhance the security arsenal for any airport. Having recently attended the *International Security Expo* at London Olympia, I found that there were a number of products which both could, and even should, find their place within the security technology array that protects aircraft and those who fly in them. Refreshingly they are from various countries around the globe: Australia, South Korea, Israel, Belgium and Belarus.



I referenced explosive detection technology. The problem is that there is no single explosive compound. Many of the solutions deployed offer a high degree of accuracy and detection capability – but primarily for the five traditional ingredients of the military-grade improvised explosive device. We know that homemade explosives pose a much greater challenge and that a multitude of readily available inorganic compounds are undetectable.

A long-term server on the editorial advisory board of this journal, Michael Breadmore, may be the man behind one of the industry's game-changing technological innovations. On show in London, manufactured in Melbourne, Australia, yet with its roots slightly further away in the chemistry labs of the University of Tasmania, was the **GreyScan** ETD-100. The product can aid in the detection of the more accessible (i.e. inorganic) explosive substances that the more established explosive trace detection machines fail to identify. Such ammonium nitrate fertiliser-based explosives were the main charges of the bombs used in numerous IRA attacks and the Oklahoma City bombing and, this century, in the Bali bombings, attacks on synagogues in Istanbul, and at the Boston Marathon.

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The detection capability was developed by the Australian Centre for Research on Separation Science, which is based in Hobart at the University of Tasmania. The project is led by Professor Michael Breadmore and was recognised this year when it won the Eureka Prize for Outstanding Science in Safeguarding Australia.

I look forward to visiting the commercial factory manufacturing GreyScan, and its new CEO, Samantha Ollerton, in Melbourne this December (albeit after this issue of *Aviation Security International* goes to press).

Many a product on display at the Expo claimed to be AI (artificial intelligence) enabled. With computer science enabling the development of technologies that are able to perform tasks which, to date, would have required human intelligence, and the industry determined to ensure that machines sound alarms rather than individual intuition, AI is set to be the buzzword of the next decade, whether one is looking at CCTV or screening solutions.

South Korea's **JLK Inspection** was one such company proclaiming AI security solutions. Their XINSPECTOR utilises AI as a tool to evaluate X-ray images, claiming to minimise human error due to operator fatigue by automatically signalling potential threats. But JLK was also marketing an innovative method of screening unattended bags and that was what caught my eye.

The XPERT is an AI-based solution integrated into a hand-held, and therefore portable, X-ray camera. It enables security teams to move around airport terminals, external concourses and car parks, and X-ray any bag or item causing concern using low-dose radiation. The XPERT looks like a camera and takes images like a camera. The images are analysed within a couple of seconds using JLK Inspection's unique AI algorithms which highlight potential threats.

Mifram Ltd. has a lengthy history of supplying innovative defensive products. Established in 1950, and based in Israel, the company manufactures a broad-range of anti-terror products from guard posts to fencing and from barriers to explosive-proof blast and fragment decompression flight simulator chambers. The latter was a one-time staple demand of the aviation industry, and Mifram is one of the few companies which continues to manufacture such systems to check cargo for the presence of barometric devices. One such system is installed at Tel Aviv's Ben Gurion International Airport.

However, in terms of innovation, it is Mifram's MVB 3X™ barriers that seem to be an absolute necessity for any facility

concerned about the now all-too-frequent use of vehicles to simply mow people down in public places including, potentially, on airport forecourts. The lightweight barrier prevents vehicles from ramming into restricted areas and can stop trucks of up to 7.5 tonnes by simply transferring the momentum of the vehicle from forwards to the ground.

Barriers are, in themselves, nothing new, but the availability of a modular solution offering the capability for a single security guard to quickly manoeuvre barriers into a defensive position as soon as alarm is raised, if not all the time, is noteworthy. Interesting that Cheddar – the online news network that features the world's most innovative products, technologies and services – has covered the MVB 3X™ in an episode of Cheddar Gadgets.

A newer kid on the block is a Belgian company, 360 Solutions, which offers aviation security training through its e-learning solutions. The company currently offers a range of avsec-related courses, including on crowd management, evacuation, first aid and SeMS. The online courses include interactive video – including, as the company name suggests, 360° views of client facilities – information, animation and quizzes to assess comprehension.

Last, but by no means least, Adani. The company was founded in Belarus by Vladimir Linev (Ernst & Young's Entrepreneur of the Year, Belarus 2018) back in 1991 and, whilst it offers solutions to the healthcare industry and a range of X-ray products for vehicle and cargo scanning, it is Adani's CONPASS SMART DV body scanner that I remain convinced is a missing element of nearly all airports' security systems.

The archway metal detector may well be the primary tool for routine screening and the passive millimetre wave technologies can, as mentioned, offer us an enhanced ability to identify a broader range of threat items concealed beneath clothing. However, the reality is that the human body itself can, as drug traffickers prove on a daily basis, be a vessel with which prohibited or restricted products can be infiltrated through checkpoints and onto aircraft. We like to believe that the airside areas of airports are sterile zones, but we only have to look at how many illicit goods manage to make it into far securer establishments, such as prisons, where there are fewer concerns about customer-service issues, queuing times and invasion of privacy, to realise that it is only a matter of time before an attack against aviation is facilitated by means of an internally concealed or surgically implanted weapon or device.

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Whilst not necessarily a solution for routine screening, transmission X-ray capability needs to be available to screeners who have cause for concern about an individual passenger of staff member. It is simply not good enough to clear a passenger simply because the AMD did not alarm and nothing was detected using millimetre wave technology. The CONPASS SMART DV, also now AI-enabled, is one solution that fills that gap and, given that Customs agencies around the globe rely on the technology to resolve their concerns, if we are serious about aviation security we too need to ensure that we build a screening system flexible enough to embrace solutions that achieve our security goals and address the likely threats of the future.

Technology purchases are obviously budgetary considerations, but in your letter to Santa (a.k.a. your Chief Financial Officer) this year, you might like to request some solutions that address vulnerabilities we know exist.

Wishing all our readers a happy, healthy, safe and secure 2020.

The contacts for all the companies featured may be found in the 2020 Buyers' Guide on page 23.