



FIGHTING BACK

Portable, light solutions ensure a speedy and safe response to suspicious devices

Yedidya Moy explains how a complete X-ray lab that fits into a small bag is giving security forces the cutting edge

In the past, the ability to pull out an entire portable X-Ray system from a small bag was considered a fantasy, but today due to developments in technology this dream has finally become a reality. A few years ago a standard portable X-Ray system weighed over 40kg, today the lightest Vidisco's system weighs less than 6kg without compromising on the system's penetration capability and resolution. These latest technology developments along with the changes in terror doctrine have created a new need for light and compact portable X-Ray systems.

The rise of ISIS in 2013 turned terror into a global threat. The nature of the terror acts became more complex. Until recently, the threat of one bomb in a crowded street or a car bomb was the main concern, but today terror cells carry out combined attacks involving multiple locations, while using several

methods. On Milipol eve 2015, a group of terrorists simultaneously executed several attacks throughout Paris forcing the bomb squad to respond immediately to multiple calls at once. As a result, security forces have been required to change their operational model, become more mobile and faster to foil such threats.

This new reality changed the bomb technician requirement of the portable X-Ray system. Innovative technologies have allowed Vidisco to adapt to these new needs by reducing the size and weight of the portable X-Ray systems. In the past, the sensor, referred to as the panel, which is responsible for generating the X-Ray image, required a supporting environment of several devices. Current Vidisco panels are autonomous with strong battery and wireless capability. These new caricatures have affected the entire system by enabling Vidisco to reduce the size of a standard 40kg system and offer new compact 10kg systems packed in a backpack.

The Alpha panel superiority over the FlashX panel

is evident in every parameter mentioned in the table overleaf. Even though these two panels share the same effective imaging area, the Alpha offers a better working environment for the bomb technician in the field. The panel is not the only means to improve mobility. There are other options, such as a smaller mobile source of radiation and a touchscreen tablet with suitable software to work in harsh environments.

The weight summation of a 2.8kg panel, 1.4kg tablet, 2.2kg X-Ray source and the 0.5kg communication device totals less than 7kg for a large panel system. The weight of a system with the smallest panel can get down to less than 5.7kg. This incredible improvement in size and weight along with the autonomous capabilities of the new systems has resulted in new possibilities and work methods for the bomb technician using Vidisco's systems.

This new generation of compact, smart and lightweight systems is being used for a variety of security applications. The lite Vidisco backpack has improved the operator's performance in the field in many aspects, but most importantly in saving lives. What follows are several examples of precisely how the lite backpack is improving the workflow of the user in the field.

EOD POLICE

Police bomb disposal units must be mobile and agile as a result of recent changes in terror activities. The contemporary trend involves equipping the units with both previous generation systems (in a case) and new generation systems (in small backpacks) to improve their response speed. Consider the terror attack at the Boston Marathon, where there was a high probability of another bomb striking the survivors and the rescuers. In a situation where a bomb has exploded in a public area, the bomb disposal expert can quickly screen suspicious objects and neutralise any additional bombs, to allow safe evacuation of the wounded from the scene.

EOD ARMY

Army bomb disposal forces mainly deal with roadside charges and booby traps situated in hostile environments. The ability to carry an X-Ray system in a backpack and provide support to the forces conducting a search offers a significant advantage that contributes to the confidence and survival of the military forces. For example, if the detection forces carry a light and easy-to-use X-Ray system during their incursion on foot into a village in Afghanistan, their operational ability will improve. When the force arrives in the village – which is one of the most dangerous and complicated combat fields for military infantry troops – and suspect a roadside charge, the ability to speedily foil the threat by utilising this system to inspect the object will help neutralise dangers much more efficiency.

NAVY

Bomb disposal experts in marine environments require unique mobility between sea and land or when moving between vessels. They must be able to navigate tight spaces and narrow corridors. Navy bomb disposal experts are required to raid suspicious ships, which they must screen to detect weapons and explosives. Hence, a lightweight system solution assists them in inspecting such places, quickly and safely.

S.W.A.T

The inspection systems used by special units are mainly for disarming explosive charges in order to enter buildings quickly. Time is vital for these units. The new systems offer optimal mobility with minimal weight and size, leading to high demand and significantly increased use. For example, in a hijack where the kidnappers use multiple explosive charges to improve their negotiation ability, thereby deterring the S.W.A.T team from breaking into the building, a system that is carried on the back can quickly neutralise potential threats and decrease the time required to break into the building and rescue the hostages. In a hostage situation, every second is critical for saving lives and this inspection system can provide a quicker response than ever before.

Vidisco has created a unique solution consisting of a lightweight, mobile, quick and easy-to-use system. Vidisco's One Platform technology allows the operator to enjoy the current abilities on a customised lightweight system. When choosing and purchasing a new system, it is important to select an appropriate sensor (panel). Selection of the sensor derives from the size of the inspected object. When you select a panel with a large screening area, such as Vidisco's Alpha panel with a 43x35cm screening

THE ABILITY TO CARRY AN X-RAY SYSTEM IN A BACKPACK OFFERS A SIGNIFICANT ADVANTAGE

area, the carrier bag is bigger than the compact bag that's designed for the SparX (size: 32x25cm). The size of the panel has almost no effect on the weight of the bag; it only influences the bag's size. Since the difference in weight is negligible, Vidisco's main advantage is in the way it operates as an autonomous unit that includes a battery with a nine-hour lifespan and built-in charger. The new smart panel offers a significant reduction to the amount of accompanying equipment, which allows the system to be packed away in a small and easy-to-carry backpack.

Choosing a suitable X-Ray source relates to the type of objects that are usually inspected. A very large selection of X-Ray sources is available on the market and it is crucial to verify the chosen source is suitable for the field conditions (such as resistance to specific weather conditions). Vidisco recommends Golden Engineering's portable battery based X-Ray sources for fieldwork, its systems are fully compatible with most other X-Ray sources in the market. Golden Engineering offers a unique, relatively small, X-Ray source in the shape of the XR150 (with 150kV X-Ray voltage), which fits in a small bag. This can penetrate up to 50mm steel. If the operator usually inspects steel or iron objects, they may consider choosing a larger source, the XRS3 (270kV) with an 80mm penetration ability, which can fit in a small bag, but takes up more room due to its larger size.

The best choice of display is a tablet, which fits easily into a bag and is held in the palm. The tablet should be hardened, so it is suitable for fieldwork, and the screen should work well in direct sunlight.

It should also respond to touch with gloved fingers so that the bomb-disposal expert is not required to remove them when acquiring and interpreting an image. Vidisco offers the GETAC F110 with an 11.6in screen, which is the ideal size for analysing an X-Ray image in the field. The tablet comes with a convenient handle, has no rivals for operation in direct sunlight and can be used with gloves.

The operator also needs to choose the communication means according to the combat doctrine. For example, when using a disruptor while handling an object, there is no point wasting space and weight on the wireless system; instead a cable

VIDISCO'S ONE PLATFORM PROVIDES THE OPERATOR WITH A CUSTOMISED LIGHTWEIGHT SYSTEM

can be fitted into a bag. The opposite is also true: when using a wireless system there is no need to add a cable as it adds extra weight. The Vidisco Combox integrates the two communication means (wired and wireless) in one device, enabling the operator to switch between these communications means without changing modules.

Moreover, if the reception range is critical, Vidisco provides a variety of solutions ranging from several tens of meters (weighing some tens of grams) up to a

powerful solution that still comfortably fits into a small bag for one-mile reception.

The bag must be able to protect the equipment from knocks and drops. This valuable system cannot be used without suitable protection. Vidisco has a large variety of bags to suit all needs and configurations, from 10kg equipment bags to full equipment weighing 30kg. Furthermore, if the operator already uses specific bags, Vidisco can customise them for the requested system configuration, thereby maintaining the purchasing uniformity of that particular unit.

The mobile system relies on software that is responsible for synchronised activation of the system's components and image processing. Vidisco's VEO software provides the optimal solution for the field work scenario. It is user-friendly, offers an intuitive workflow and is the recipient of rave reviews. The software provides graphic touch features fit for working with gloves. The white screen background is suitable for work in the sun and includes unique tools for interpretation of the image at the touch of a button.

Looking to the future, the CBRN area is viewed as a developing threat and requires new technology to counter it. The ability of a terror organisation to set up a dirty bomb in a crowded place has changed the rules of the game. Naturally, the X-Ray solutions and the lightweight backpack systems in particular will become a necessity for EOD teams to handle suspicious objects; especially when neutralising a dirty bomb by employing a disruptor is not an option. With Vidisco systems you can do it today ●

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This table compares between two panel generations. The FlashX panel, from the previous generation and the autonomous Alpha panel from the new generation.

	Alpha 43X35	FlashX 43X35
Weight	2.8kg	4.5kg
Thickness	16mm	
Bottom dead space	Less than 10mm	30mm
Integrated wireless	Yes	No
Battery operation	Up to 9 hours	No



The flexibility of being able to carry an X-Ray system in a backpack is vital for when working in the field