

John leach examines the latest dual-view screening technology and welcomes forthcoming legislation which will improve the security of freight shipping and handling

A SECOND LOOK AT CARGO

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Dual-view X-ray technology has been available for several years now, and is widely seen in the aviation and freight transport industries as the future of bulk screening. But new legislation due to enter the UK's statute books in less than a year will require that a dual-view screening device must be used to screen freight, putting the UK well ahead of the security curve. Currently, freight handlers are able to use single-view X-ray security screening equipment to screen their cargo, but they must complete two passes of the cargo at different 90 degree angles if the freight is larger than 1.3 metres. So, effectively, they must do the work of a dual-view screening device manually. This is potentially a very time consuming process for any handler that processes a lot of freight.

The next stage of the legislation will therefore set down that a dual-view screening device must be used to screen freight, following a phased approach which has allowed freight handling companies to make the necessary equipment and procedural changes. This will become law in January 2015 and will mean that single

view can no longer be used for screening objects excess of 1.3 metres.

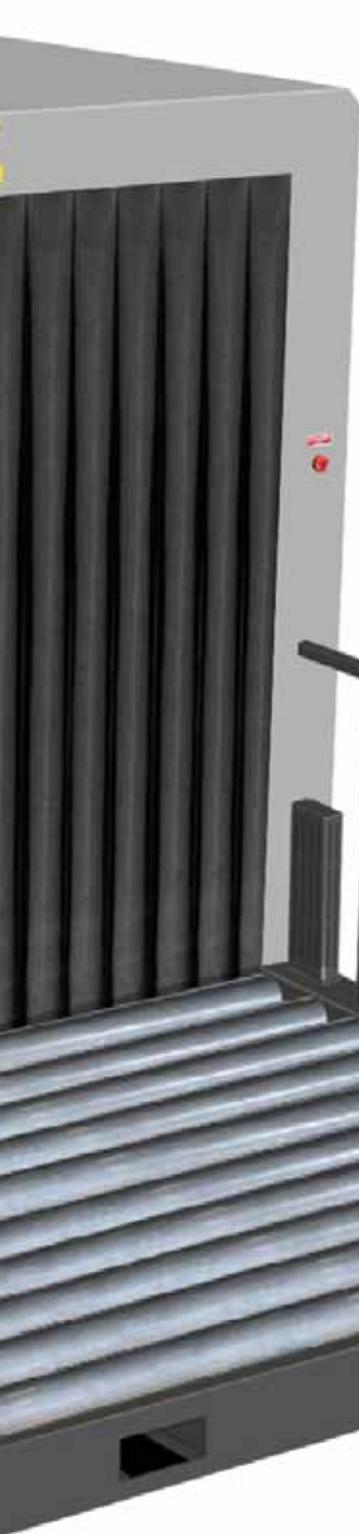
From a European Union perspective, the rules of compliance for dual view are already more stringent in the UK than the rest of the EU. Across the rest of the Union, the dates for compliance are much later; our EU counterparts have until July 2014 to start completing dual view screening using a single view machine, and they haven't even been given a deadline for the mandatory use of dual-view machinery. As the time and costs associated with using a single-view machine to carry out dual-view screening are so large, however, it is thought the changeover to dual-view machinery will occur naturally.

There have also been some further concessions for the rest of the EU based on the fact that many countries have been using smaller tunnel dimensions, which make it impossible for them to do the full 90 degree manual double screening. These cases have been allowed the concession of a smaller rotation up until 31 December 2015.

The dual-view legislation is important because ultimately it makes air travel safer. Freight is often carried on passenger flights, and dual-view enables freight



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handlers to see much more of the contents of freight, down to minute detail. Two views of the cargo give the screener a much clearer picture of what is inside the freight and enables them to be able to identify hidden threats much more easily.

Of course, technology in this field is constantly advancing as the aim is always to improve and stay ahead of potential threats. The next challenge is to improve the level of density that X-ray screening technology can screen to. Currently larger or more dense cargo such as metal liquid containers, or metal items such as machinery are difficult to screen adequately via standard X-ray screening because the machines can not screen to the full depth of the items. This means the costly and time consuming process of secondary screening is required; often the item to be screened must be opened up and manually interrogated. Undertaking this process requires permission from the sender and often from the person receiving the item too, so there can be a lengthy delay before the secondary screening can even begin.

There is currently software within X-ray screening devices designed to make this process simpler and take the decision-making out of the hands of human operators. The dense area recognition capability (DARC) alarm will automatically advise when a consignment has not been sufficiently penetrated by the X-ray machine.

If the machine cannot screen to a high enough density, an alarm will alert the screener that secondary screening is required. It has been rumoured that the

next piece of legislation to come in for the UK following dual-view will be around the DARC alarm; the software is

currently being trialled with the purpose of eventually introducing a standard

around it.

The risk of an alarm can be reduced, however, with the use of more powerful screening device. For example, a standard 200kV powered machine can screen to a depth of around 35-45mm of steel, whereas a 320kV powered devices can screen typically to a depth of about 80mm of steel. New products are also now entering the market which offer up to 7ma of current compared to the industry standard of 1ma.

This combination of high power and high current can provide a huge 2,247 watts total power, providing clearer imagery to a greater depth. Such high-powered devices allow items like engines to be seen far more clearly than lower powered screening devices which otherwise would not provide imagery to the whole depth of the engine. When using such lower powered X-ray devices, secondary manual screening would be required in order to ensure the object was safe. As discussed previously, secondary screening is extremely time consuming as permissions have to be acquired from the sender of the object before the further screening process can begin.



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A SECOND LOOK AT CARGO

Case Study

Freightnet installs high-powered security screening
In early 2014, Freightnet Handling installed the first 320Kv X-Ray security screening device in the UK. This is significant as it allows the company to efficiently detect via screening previously none detectable threats within large and dense cargo. Such cargo was previously impenetrable to full depth.

The X-ray security screener has been supplied by Totalpost Services Plc and manufactured by Astrophysics Inc. It is one of only a half dozen security screening machines supplied worldwide with this level of power output. This 320Kv device enables the operative to see more deeply and clearly into a screened object. In particular it is efficient in screening items such as liquid drums and metals.

Types of cargo typically being screening by Freightnet include chemical drums, powders, oil-filled equipment, motorbikes, generators and pumps. They can even screen whole tractors. This type of freight screening operation would previously have been delayed because additional screening would have been required. Lower penetration screening devices simply cannot handle the density of such items.

Speaking about the acquisition of the machine Daz Salmon, Aviation Security Consultant at Freightnet, said: "Our priority is passenger safety, and this machine helps us to improve this because our security screening operatives can see so much more using this machine. The nearest power output level available commercially in the UK market is a 200Kv X-ray security screening device. We have historically used this level of machine, but increasingly we were

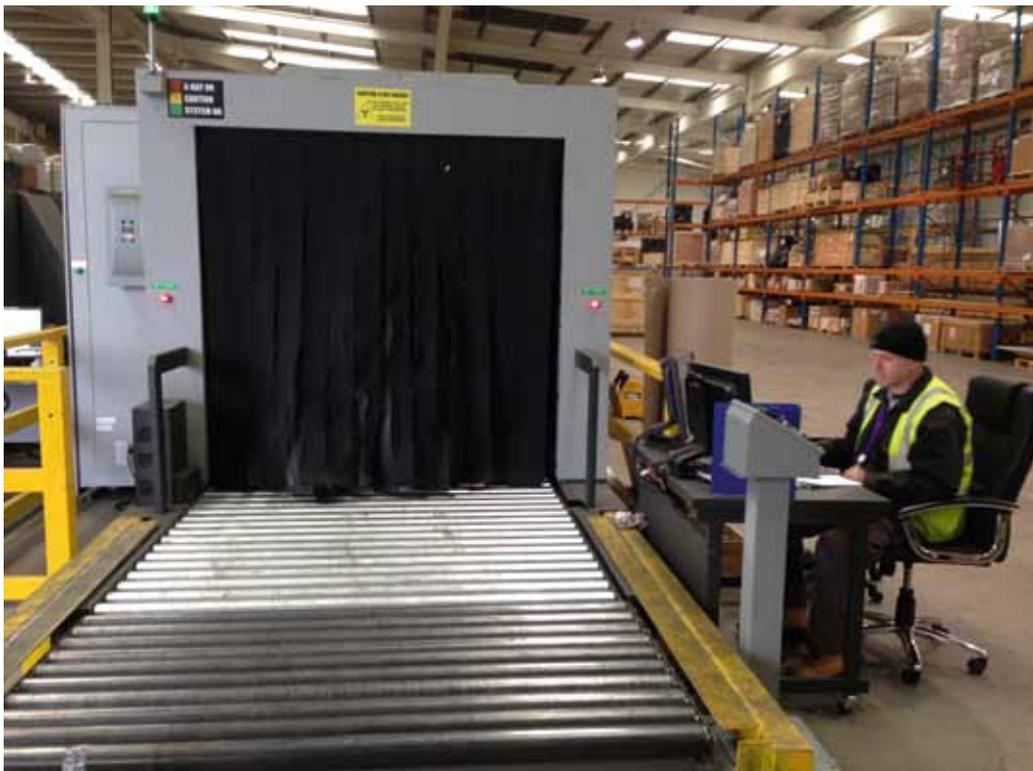
aware that we needed to invest in a higher powered machine in order to be able to deal with demand for screening high density cargo. This machine has enhanced our capacity. On the busiest day we've had so far this machine screened half a million tonnes of freight in a single day."

The company is using a large-scale machine specifically designed for use in the cargo industry. It has an internal tunnel size of 180x180cm and a low conveyor for easy loading. The length of the machine is the same as a standard bus, and theoretically three smart cars could fit end-to-end inside the machine (although cars are screened differently). Despite this, the actual footprint of the device is relatively compact, making it ideal for freight forwarding applications where space is at a premium.



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Bulk inspection: 320Kv X-ray screening systems allow the operator to see more clearly and deeply into dense cargo



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John Leach is Technical Director at Totalpost Services. An expert in X-ray security screening and mailroom equipment, John leads an international team of field and support engineers. Additionally, he undertakes all liaisons with UK-accreditation agencies and the manufacturers, Astrophysics Inc, for matters of compliance and new UK development testing.