

# Early adopters provide important Standard 3 lessons

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**As European airports grapple with the EUR3-billion upgrade to Standard 3 hold baggage screening, what clues can be gleaned from early adopters in the United Kingdom? *Philip Butterworth-Hayes and Ben Vogel report***

European airports must upgrade their hold baggage screening (HBS) systems to ECAC Standard 2 to Standard 3 by September 2020 (2022 in special cases), but the UK government via the Department for Transport (DfT) set a more exacting deadline of September 2018.

It was always recognised that upgrading to Standard 3 technology would be a huge challenge for European airports. To adopt the February 2002 phrase from then US Secretary of Defense Donald Rumsfeld, there were three “known unknowns”: cost, slower baggage speeds, and disruption to the overall security screening process.



*Inside the baggage hall in the main terminal (T1) at Glasgow Airport, which was among the first in the United Kingdom to complete the transition from Standard 2 to Standard 3. (IHS Markit/Ben Vogel)*

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Standard 3 machines deliver a 3D image to the operator with richer, more pliable data than Standard 2 systems, which produce a 2D picture of hold baggage. In terms of cost, the new computed tomography (CT) equipment is up to five times more expensive than legacy Standard 2 HBS

equipment, with costs varying from about EUR500,000 (USD580,000) to almost EUR1.4 million per unit. In some countries, airports have been able to access government funds to buy the equipment, but reconfiguring baggage halls has cost more in many cases than was originally planned.

“We’ve found that a large proportion of airports have had to rebuild their hold luggage halls because they can’t accommodate the new size of the equipment,” said David Trembaczowski-Ryder, head of aviation security at ACI Europe. “They need to have the floor loading, or if they have a mezzanine they need to make sure they can take the extra load. The cost of the infrastructure changes is normally more than two to three times greater than the machines themselves. For many of the smaller airports this is a major issue.”

Baggage processing rates with Standard 3 equipment tend to be marginally slower than Standard 2 (see table below). “The system may need more queuing conveyors than the system it replaces – most manufacturers maintain that the system is only slightly slower,” ACI Europe states in its briefing document, ‘Study to Assess How Best to Introduce EDS Standard 3 Equipment at EU Airports’. Airports also have to factor in greater preventative and corrective maintenance, which can be three to six times more expensive than with Standard 2 systems.

Another unknown has been how to integrate the larger, heavier, and slower Standard 3 hardware (see below for table of certified systems) into existing baggage-handling systems (BHSs). “The main concern is that EDS Standard 3 equipment that has passed the EU/ECAC detection requirements will have been tested using a specific tote/tray (or no tote/tray),” the ACI Europe document notes. “Only the specific tote/tray (normally provided by the manufacturer of the EDS equipment) or one with the same specifications may be used or otherwise a separate ECAC test is required.”

It is not just the BHSs that require a re-think: Standard 3 CT systems have higher power requirements than their predecessors, meaning airports must consider natural ventilation and cooling of the machines with vitiated exhaust air.

There have also been unforeseen consequences from the transition to Standard 3. “The first thing that hits [airports] is issues with operators,” according to Andy Aldridge, a baggage engineering specialist with independent UK consultancy CHS Engineering Services. “That learning curve can be anything from two months to six months. With the old 2D picture, an operator examining colour-coded targets was given 15 to 20 seconds to do this, after which the image is timed out and goes for further re-evaluation automatically. In the new system you get an image, but because you are using a CT scanner it might pick up multiple targets rather than one. You click on the targets and then the 3D image cuts in and it takes a long time and experience to evaluate all the data that suddenly appears. Standard 3 screening needs consistency and certain skillsets.”

This means that many airports have experienced much higher training costs than originally envisaged. While the initial training is covered by the project and manufacturer, once the equipment is handed over the cost burden moves to the airport operator. Again, smaller airports are disproportionately affected, because their security personnel are often needed to perform other roles.

“Another critical factor is the production of all the equipment and the availability of integrators and project managers who can undertake these types of projects,” said Trembaczowski-Ryder. “Everyone wants to do the work at the same time and some might not make it, especially as most airports will want the work to be done in their off-peak season.” ACI Europe has developed a catalogue of equipment, providing real-life feedback on operational factors, which has become a focal point for sharing data on equipment and availability of resources.

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## **Technical factors**

There are small, technical issues with Standard 3 equipment which must be considered.

“It is critical to match the input conveyor belt speed to the conveyor on the Standard 3 machine – tolerance in some machines is only +/- 20 mm, so it is easy to move the bags out of position,” said Aldridge. “All Standard 3 machines require a minimum 300 mm gap between bags to maximise throughput capability, but that can be very hard to achieve. It means no speed changes in the bag preparation area for at least four conveyors prior to the Standard 3 machine. Even if the Standard 3 machine is capable of 25 bags a minute, the existing baggage systems feeding can be the limiting factor on the throughput. The best I have ever seen achieved with a Standard 3 machine in live operation is 18 bags per minute with 12 to 15 being nearer the norm.”

**[Continued in full version...]**

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