

LANDSIDE SECURITY COMPENDIUM

Products and Sources of Information

2019 | 1ST EDITION

Note: Reference to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement or recommendation by ACI EUROPE. The information is obtained from desk research and therefore should be treated as a guide only.

LANDSIDE SECURITY COMPENDIUM

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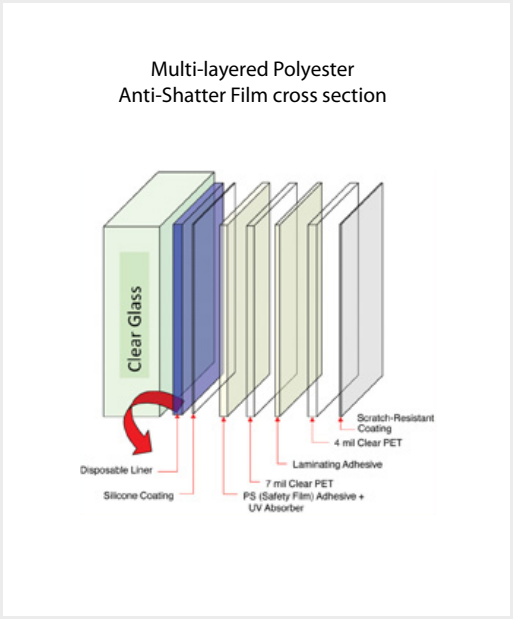
12 Terminal Departure & Arrivals Checkpoints

Blast Proofing & Blast Protection

Advanced Glass Technology (AGT)

http://www.agtwindowfilm.com/architectural/anti-shatter-film





Anti-shatter and blast mitigation film providing protection from flying glass in the event of bomb blast.
Eg. Erbil Airport, Iraq fitted with anti-shatter film.

Contact: +44 (0) 20 8938 3600

EBL

Arup

https://www.arup.com/expertise/services/planning/resilience-security-and-risk

ACI EUROPE WORLD BUSINESS PARTNER



AUH

Carry out threat and risk assessment as well as security planning for Explosive Blast Resilience. Eg. Abu Dhabi International Airport - Arup made design recommendations to improve the structural robustness and counter terrorist resilience of the 120m roof arches of the new terminal complex. Also provided an in-depth blast resilience review and blast engineering.

Contact: stacey.peel@arup.com

CPNI

https://www.cpni.gov.uk/protection-blast



Advice on developing physical protection and/or mitigation for blast protection.

Protection from ballistic attack: https://www.cpni.gov.uk/protection-ballistic-attack

KAAN Architecten

http://kaanarchitecten.com/kaan-architecten-design-new-amsterdam-airport-schiphol-terminal





AMS

Designing the new terminal at
Amsterdam Airport Schiphol.

Contact: s.vandamme@kaanarchitecten.com / +31 (0)10 206 00 00

Lindner

https://www.lindner-group.com/en/expertise/security-enhancement/



LHR

Blast protection; blast-enhanced glass partitions and doors;
blast-enhanced wall claddings; blast-enhanced suspended ceilings;
blast-enhanced raised floors; blast-enhanced waste bins.
Eg. Heathrow Airport.

Structura-UK

http://www.structura-uk.com/kalwall/KAL_Blast_Trans_GLA.php





GLA

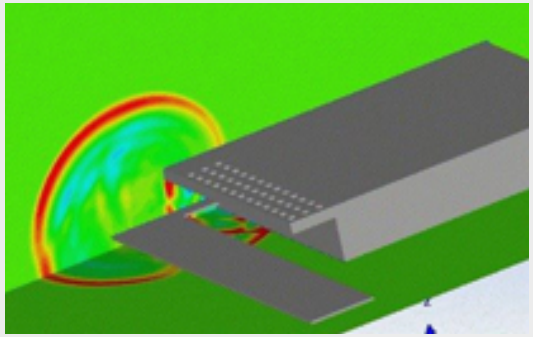
Providing blast resistant and explosion venting walls.
Eg. Glasgow Airport - The new extension to the airport includes a complete Kalwall elevation to the new security area. A translucent wall designed to withhold defined blast load and impulse.

Contact: kalwall@structura.co.uk

TNO

https://www.tno.nl/en/focus-areas/defence-safety-security/expertise-groups/explosions-ballistics-and-protection/







Blast consultancy for both new as well as existing buildings: threat and scenario assessment, blast load calculation, vulnerability assessment, development of and advise on protective measures, testing.

Contact: jolanda.vandeursen@tno.nl / +31 6 307 27 331

Trueform

https://trueform.co.uk/products/anti-terrorist-glazed-screens/







LHR

Has been working and operating within the airports sector for over 10 years.
Eg. Heathrow Airport.

Contact: sales@trueform.co.uk

1 2 3

(1) **Anti-Terrorist Shelter**. Large, strengthened glass screens that provide excellent all-round visibility and the Shelter is available in permanent and portable variants, making it ideal for temporary events. (2) **Anti-Terrorist Screens**.Bomb Blast Protected Glazed Screens. (3) **Blast Proof Portals.**

2

Bollards and Structures to Prevent Drive-in Attacks

Arup

https://www.arup.com/expertise/services/planning/resilience-security-and-risk



Provide engineering expertise in structural and façade resilience against blast and other extreme actions, hostile vehicle mitigation and evacuation/invacuation strategies.
Eg. Heathrow Airport.

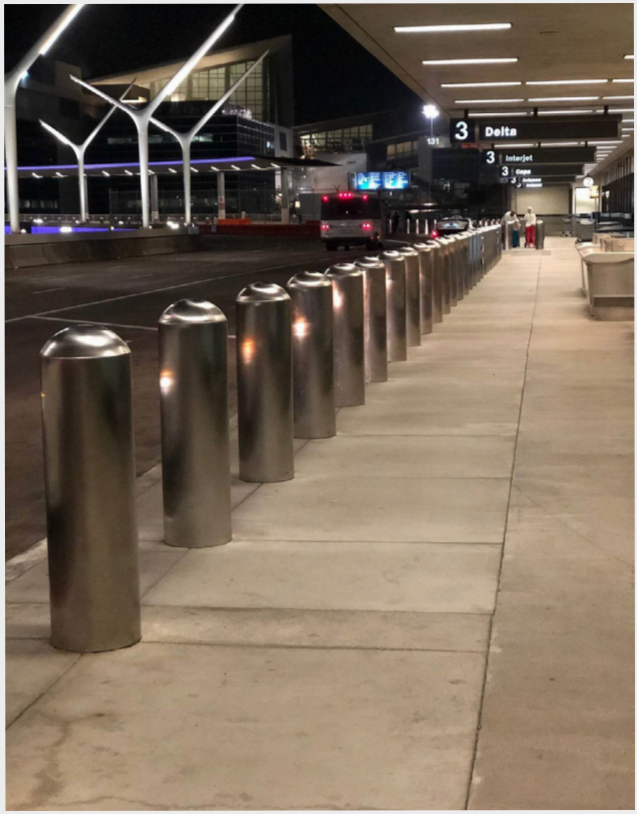
Contact: stacey.peel@arup.com

LHR

ATG Access

https://www.atgaccess.com/product-category/high-security-bollards/





AUH
LAX

Provide blockers, barriers, and bollards.
Eg. Abu Dhabi International Airport (left), Los Angeles International Airport (right).

Avon Barrier

http://www.avon-barrier.com/airports-ports-rail/





A global provider of Hostile Vehicle Mitigation (HVM) solutions & traffic control systems. They design, manufacture & install vehicle security barriers, road blockers, security bollards, sliding automatic gates & turnstiles.

Contact: sales@avon-barrier.com / + 44 (0)117 953 5252

Bloc Stop

http://www.blocstop-france.fr



Design, manufacture and
install concrete blocks.

Contact: contact@blocstop.fr / +33 6 87 97 38 90

CIS Street Furniture

http://www.cis-streetfurniture.co.uk



Design, manufacture and develop Urban Furniture, including Hostile Vehicle Mitigation solutions.

Contact: sales@cis-streetfurniture.co.uk / 01483 203388

CPNI / UK Department for Transport

https://www.cpni.gov.uk/hostile-vehicle-mitigation



Vehicle-borne threats range from vandalism to sophisticated or aggressive attack by determined criminals or terrorists. The mobility and payload capacity of a vehicle offers a convenient delivery mechanism for a large explosive device, although the vehicle itself may be used as a weapon. This section contains guidance that will help practitioners determine the vehicle-borne threat, assess site strengths and vulnerabilities, and identify suitable options for Hostile Vehicle Mitigation (HVM) measures.

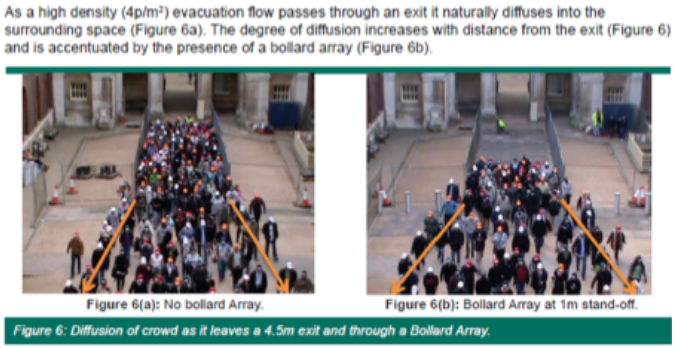
Determining the type of vehicle-borne threat being faced

When specifying the nature of the vehicle-borne threat it is important to understand:

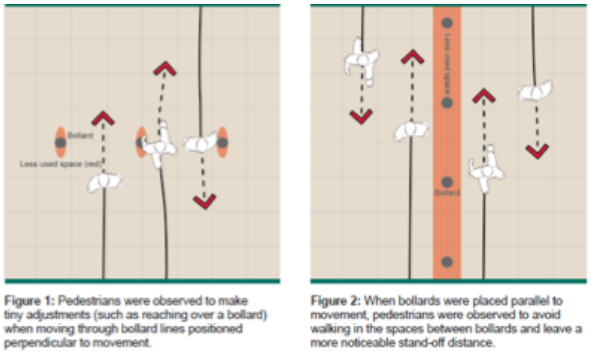
- Modus Operandi (MO). This includes parked, penetrative, encroachment, deception and duress or a combination of attack methods including surreptitious and forcible attack on the barrier with hand tools or explosives.
- Threat vehicle(s) - Unmodified road vehicles with specific characteristics - mass, speed and structure, as well as vehicle specific capabilities.
- Blast effect - especially if considering VBIED attack.
- Blast stand-off distance - must be considered in conjunction with the site operational needs and security plan.

CPNI / UK Department for Transport

https://www.gov.uk/government/publications/influence-of-bollards-on-pedestrian-evacuation-flow-tal-0116



Crowd diffusion and bollard array width



Bollard array effects on pedestrian crowd diffusion

Pedestrian movement based on bollard arrangement, more info on:
https://www.gov.uk/government/publications/tal-213-bollards-and-pedestrian-movement

Frontier Pitts

http://www.frontierpitts.com/products/blockers/security-road-blocker



BOH

Provide roadblockers and bollards.
Eg. Bournemouth Airport.

Contact: osmonds@frontierpitts.com / +44 1293 422800

Heald Ltd

https://www.heald.uk.com





Designer & manufacturer of innovative hostile vehicle mitigation systems (HVM).
Roadblocker (left), Shallow Mount Bollard (right).

Contact: sales@heald.uk.com / +44 (0)1964 535 858

London Metropolitan Police

https://www.met.police.uk/



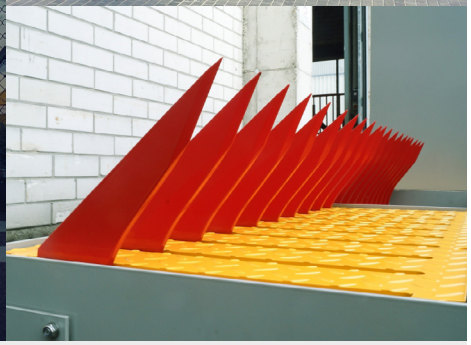
Talons - Hostile vehicle mitigation equipment, taking the form of a road spread net that incorporates tungsten steel spikes. If a vehicle fails to stop and drives over the net, the spikes will puncture the tires of the vehicle and the net becomes tangled around the front wheels bringing the vehicle to a stop.

Perimeter Protection Group

http://www.perimeterprotection.net





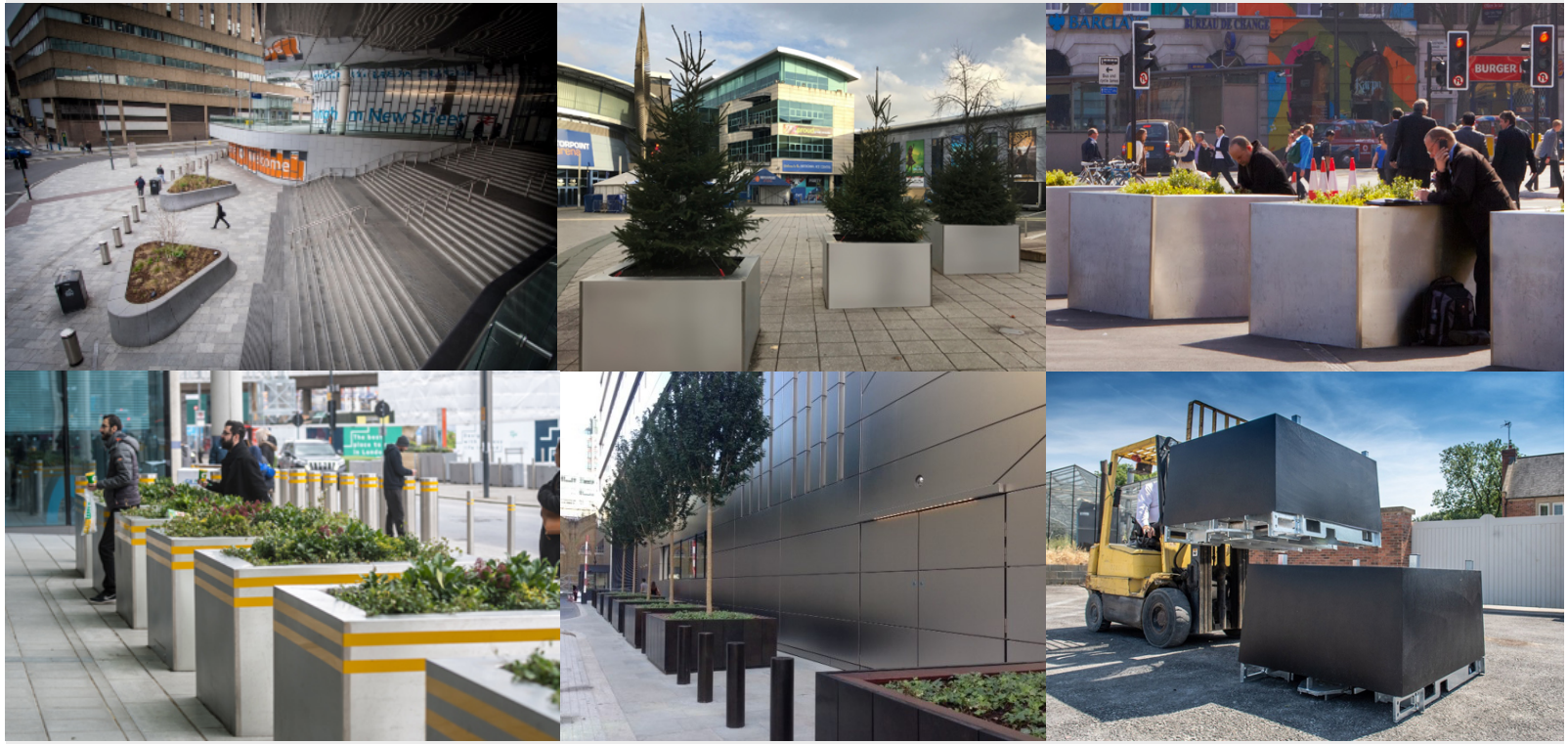


Suppliers of products for perimeter security and access control of vehicles and pedestrians.
Wedge Barriers (right, top).
Tyre Killers (right, bottom).

Contact: Johann-Reineke-Straße 6-10, 33154 Salzkotten, Germany / +49 5258 500 70

Securiscape

http://www.securiscape.co.uk

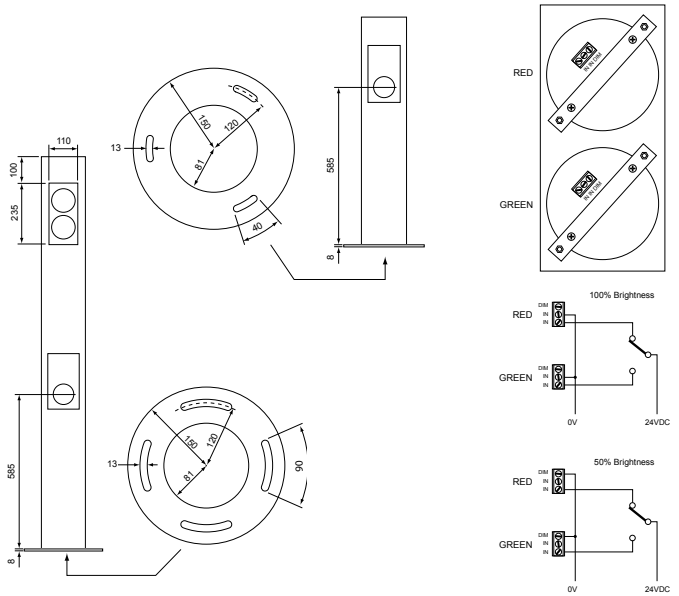


Supplier of airport exterior
security street furniture.

Contact: info@securiscape.co.uk / +44 (0) 1335 370979

Nortech

https://www.nortechcontrol.com/products/long-range-identification/anpr/anpr-stainless-steel-posts/



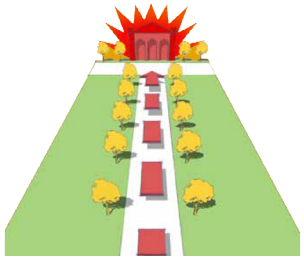


Stainless Steel Bollards Provide Attractive Housings for ANPR Traffic Signals -- People and vehicle access control specialist Nortech is now offering elegant stainless steel bollards to house the Nedap ANPR cameras. The SSP-ANPR and SSDP-ANPR stainless steel posts by Nortech are each designed to house either a Nedap ANPR Access or a Nedap ANPR Access-HD camera in an attractive roadside post/bollard. The SSDP-ANPR is a dual height post that includes integral traffic signals.

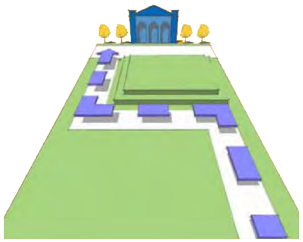
Contact: 01633 485533

CPNI

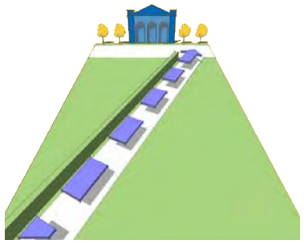
https://www.cpni.gov.uk/hostile-vehicle-mitigation



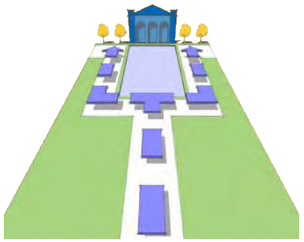
A direct route towards an asset allows a hostile vehicle to build up speed on approach.



Chicanes and offset approaches to an asset reduce hostile vehicle approach speed.



Moving a road, or an asset, to create an indirect approach will lead a hostile vehicle away from the asset.



Removing vehicle access from the front of an asset removes the potential for using a vehicle as a weapon and establishes a stand-off distance from parked hostile vehicles.

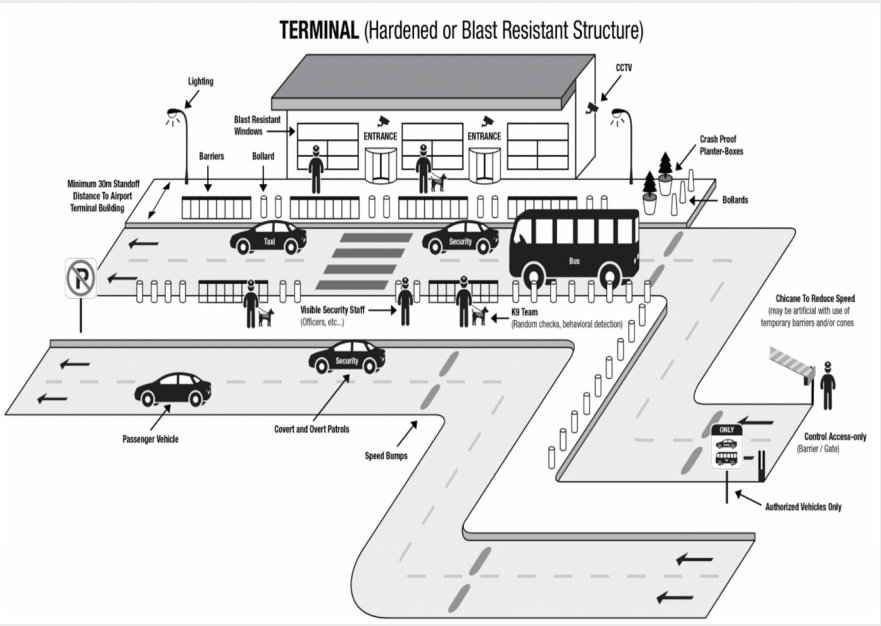
Provide a Guide for
Hostile Vehicle Mitigation.

PDF: https://www.cpni.gov.uk/system/files/documents/40/20/Integrated%20Security%20Guide.pdf

Gunnebo

http://www.gunnebo.com



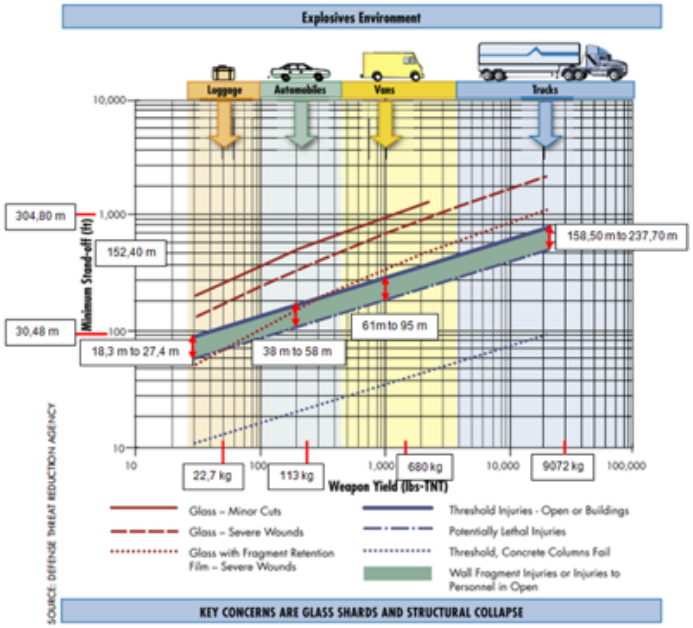


Provide Vehicle Entrance Control and Outdoor Perimeter Security through vehicle barriers.

Source (above): The International Civil Aviation Organisation.

FEMA

http://www.fema.gov



Drop-off and pick-up points.

Diagram showing minimum stand-off distance for different explosives environment based on a range of weapon yields. This diagram is an example only. Specialist blast engineers are required to survey the specific structures and details on any site.

Source (left): Risk Assessment: A How to Guide to Migate Potential Terrorist Attacks Against Buildings. FEMA 452 / January 2005.

3

Terminal Fitting Out and Furniture

Aecom Singapore

http://www.aecom.com/sg/projects/soekarno-hatta-international-airport-terminal-3



CGK

Provide design of infrastructure at the landside.
Eg. Soekarno-Hatta International Airport.

Arup

https://www.arup.com/expertise/services/planning/resilience-security-and-risk

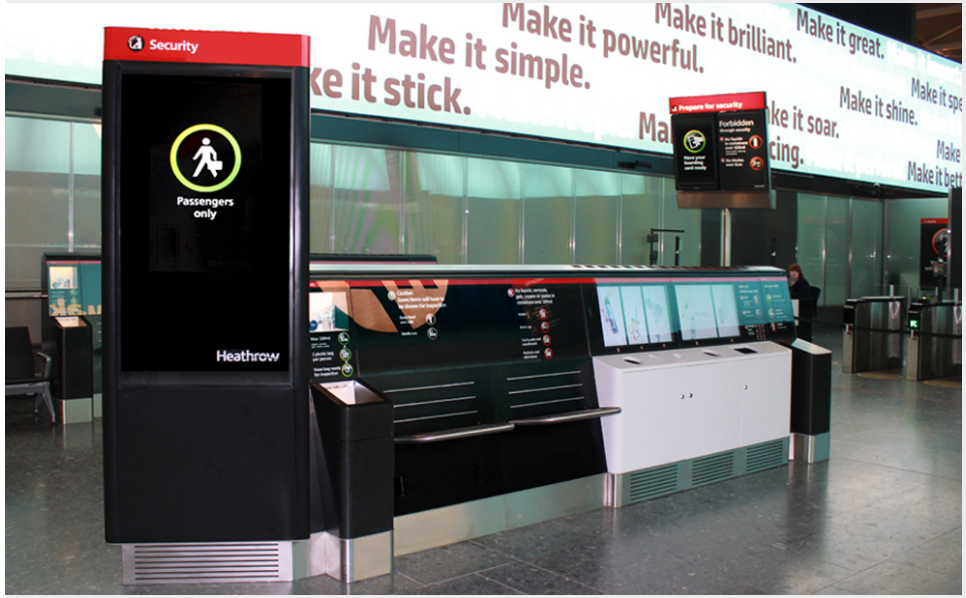


Provide planning and engineering expertise in airport security by design.
Risk-based approach in terminal design & security-by-design (Measuring the risks and design infrastructure to reduce them).
Eg. Perth Airport.

Contact: stacey.peel@arup.com

Bakerbellfield Ltd

http://bakerbellfield.co.uk





LHR

Offers Aviation Security In Airport Development (ASIAD) compliant check-in counters and hybrid check-in counters, security preparation (liquid aerosol gels) furniture, wayfinding monolith and beacons, wall linings, passport control counters; and airside works including retail frontages, gates counters, customer podiums, card reading shelves, vat counters with anti-bandit glazing screens, and immigration counters with swing gates.
Eg. Heathrow's Terminal 2, designed, manufactured and installed all check-in and associated desk / counter furniture packages.

Contact: info@bakerbellfield.co.uk / 01952 677 411

Bombproof

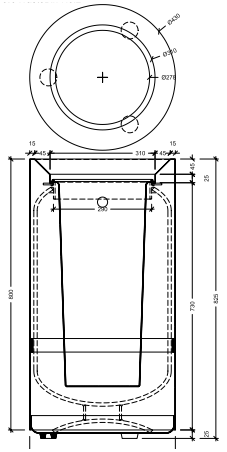
http://www.bombproof.eu

København Lufthavne CPH

The demands of functionality were huge. Emptied almost 14.000 times daily and 18 million travellers per year – the waste bin has to function!

Therefore we developed our waste bin in cooperation with the cleaning department of the airport. The result is a conic inner bin, where the waste bag is fastened with a special designed ring, which makes it easy to change the bag. The ring is gummed, which makes the changing of the bag almost noiseless – which both the personnel and the guests appreciate.





Provide blast-proof waste bins for airports.
Eg. Copenhagen Airport, developed the waste bin in cooperation with the cleaning department of the airport.

Contact: +45 6614 1476

CPH

Changi Airport Planners & Engineers

http://www.cai.sg/consultancy/airport-planning-engineering/



SIN

Provide terminal planning.
Eg. Changi Airport Singapore.

Energetics Technology Ltd

http://www.energetics-technology.com





LGW

Design, test and manufacture blast protection products, including blast mitigating and bomb resistant litter bins, trash cans and suspect package isolation units.
Eg. Gatwick Airport - Halo 80 Litter Bin on the new departure level.

Contact: enquiries@energetics-technology.com / +44 (0) 1283 732339

ZWINGO Waste Management

http://zwingo.de/index.php?language=en



Design safety waste bins made of plastic or metal solutions for waste separation in different environments, large capacity waste containers, ashtrays for floor, wall, desk applications.

Contact: karina.ullrich@zwingo.de / +49 (0) 30 / 343 529 08-0

4

Stand-off Explosive Detection and Mass Transit Metal Detection Equipment

Evolv Technology

https://evolvtechnology.com



LHR

Non-contact explosives and firearms detection equipment. Also has built-in facial recognition and image acquisition.

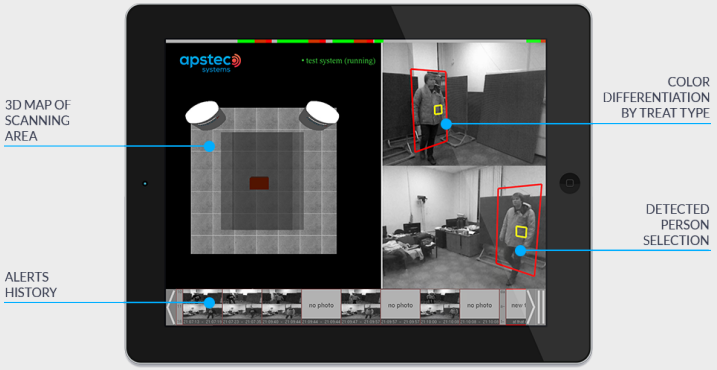
Contact: mgilardoni@evolvtechnology.com / +41.79.210.9738

Apstec Systems

http://apstecsystems.com/



Apstec Systems' Human Security Radar (HSR). Fully automatic real-time mass people screening solution, to boost security in landside areas.



Contact: grisha@apstecsystems.com

TNO

https://www.tno.nl/en/focus-areas/defence-safety-security/expertise-groups/energetic-materials/



Independent testing and validation of detection equipment with real explosives (including Home Made Explosives) and weapons in a laboratory environment and in (simulated) real-life scenarios. Advise on optimal deployment of detection equipment.

Contact: jolanda.vandeursen@tno.nl / +31 6 307 27 331

6

CCTV cameras

CCTV Cameras / Types

Credits: http://www.weiskytech.com

CAMERA TYPE	PURPOSE	REMARKS	IMAGE
Bullet Camera	Designed to capture images in a fixed area.	May be referred to as ultra-bullet, distinguished by their smaller size and cheaper price.	
Dome Camera	Designed for in-store installations.	Unobtrusive but visible to warn people that the area is protected by a CCTV network and gives comfort to its clients for its security.	
Infrared Camera	Designed for evening lookouts.	Captures images with the help of its infrared lighting surrounding its lens.	
Day/Night Camera	Used for 24/7 installation	These cameras compensate light conditions with its wide dynamic range to function in glare, direct sunlight, reflections and strong backlight.	
Varifocal Camera	Designed to allow zooming in and out without losing focus on the image.		
Network Camera	Allows transmission of images through the internet with controlled bandwidth.		
Wireless Camera	Cameras that may or may not be connected to the internet.	These cameras use signaling devices to transmit images from camera to viewing area.	
Pan-Tilt-Zoom (PTZ) Camera	Cameras that can be moved. They are programmable and are manually controllable.	Allows viewers to have more freedom and control on viewing things.	
High Definition Camera	High resolutions lens allows the capture of finer detail on taken images.		
Spy/ Hidden Camera	Cameras in disguise.		

Aralia Systems Ltd

http://www.araliasystems.com/intelligent-surveillance





Specialise in intelligent surveillance solutions for airports.

Provide a three-part software for intelligent surveillance solutions, firstly through video surveillance, including analytics, recording, viewing and historical search. Secondly, Aralia provides a Digital Control Room that manages the security, alarm distribution, configuration and upgrade of large surveillance systems and can be configured to respond automatically to alarm conditions raised from video servers without operator intervention.
Thirdly, retrospective searching allows you to search for relevant video data according to definable video features.

Bosch Security Systems BV

https://www.boschsecurity.com/xc/en/industries/airports/#answer





Provide Building Integration System (BIS), a single web-based cockpit to monitor and regulate all the systems typically involved in an airport – from security to safety, from communication to building automatic systems.
Eg. Xi'an Airport, China, delivered 3,500 loudspeakers, 1,600 security cameras and an intelligent platform linking access control, flying zone alarms and perimeter alarms. | Intelligent video based solution at Budapest Airport.

Budapest Ferenc Liszt International Airport

XIY
BUD

FLIR

https://www.flir.co.uk/discover/security/thermal/airport-security-and-the-thermal-camera/



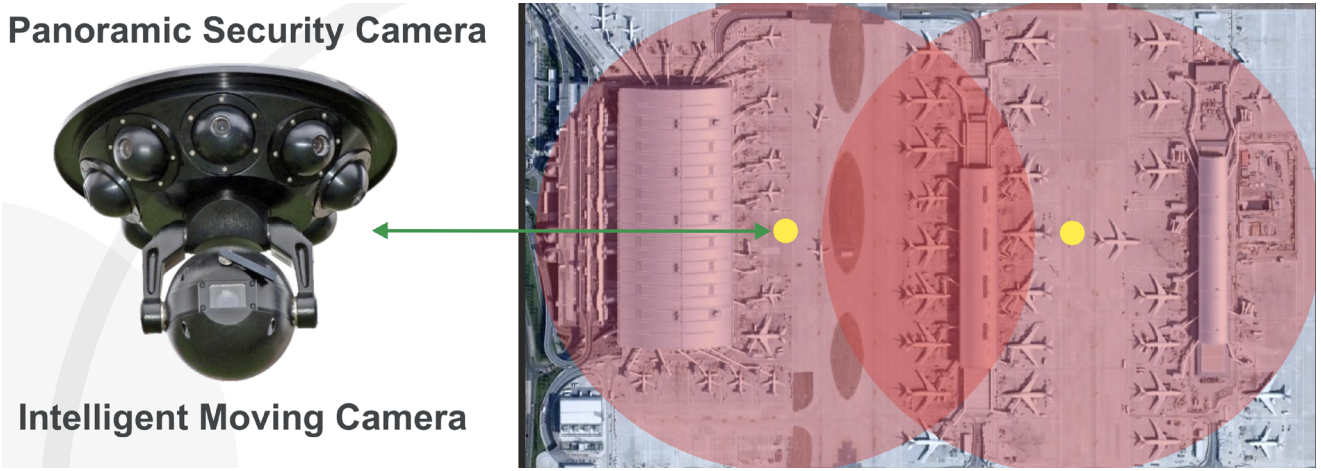


HPN

Provide thermal cameras that allow airport security operators to see in total darkness. While their other cameras only work during the day, thermal cameras see clearly 24-hours a day.
Eg. Westchester County Airport.

Viseum

http://www.viseum.co.uk/cctv-product-solutions/panoramic-security-camera/



Long Range 360° Panoramic Security Camera that operates automatically. Can integrate facial recognition and thermal security.

Contact: +44 (0)1322 405724

6

Car Parks at Distance From (Entrance to) Buildings/Terminals and Remote Bag Drop

Denver International Airport

https://www.flydenver.com/traveler_services/bags_inc



DEN

Denver International Airport. Free bag drop service allows passengers to check bags in from the comfort of their car before boarding the shuttle to the terminal. To use the service, passengers should follow signs in the Pikes Peak and Mt. Elbert parking lots to the bag drop kiosk where a greeter will remove the luggage from the car, check in the passenger and even print boarding passes. Then, the passenger proceeds to park, boards the shuttle and heads directly to security once arriving at the terminal.

Tampa International Airport

http://www.tampaairport.com/tpa-innovates-new-remote-bag-check



TPA

Tampa Car Rental Hold Baggage Bag Drop Facility. The Rental Car Center (RCC) is serviced by an Automated People Mover system that transports passengers 1.4 miles to the Main Terminal Building. One of our goals in operating the system was to be able to provide a convenient bag drop off facility at the RCC so that passengers could check their bags, print boarding passes and check the status of their flight. The contract company controls the bags and delivers them to the Main Terminal, whereby they input them into the airports automated bag sort/inspection system.

Taoyuan International Airport

https://www.taoyuan-airport.com/ITCI/eng_mobile/index.html



Taoyuan International Airport In-Town Check-in Service. By Train, High Speed Rail & Taipei MRT: route from Taipei Railway Station.

1	2	3
6	5	4

1. CHECK-IN
2. X-RAY
3. TRANSFER
4. PACKING
5. LOADING
6. UNPACKING

TPE

Biometrics

IDEMIA

https://www.idemia.com/border-security-passenger-journey-facilitation

ACI EUROPE WORLD BUSINESS PARTNER

Integrates special tools into manual control booths to check biometric passports and visas. They are used to compare document data with a national (AFIS) or European (BMS) database.

E-Counter allows travel document reading and authentication, multi-biometric document verification, traveller uniqueness verification, and traveller eligibility verification.

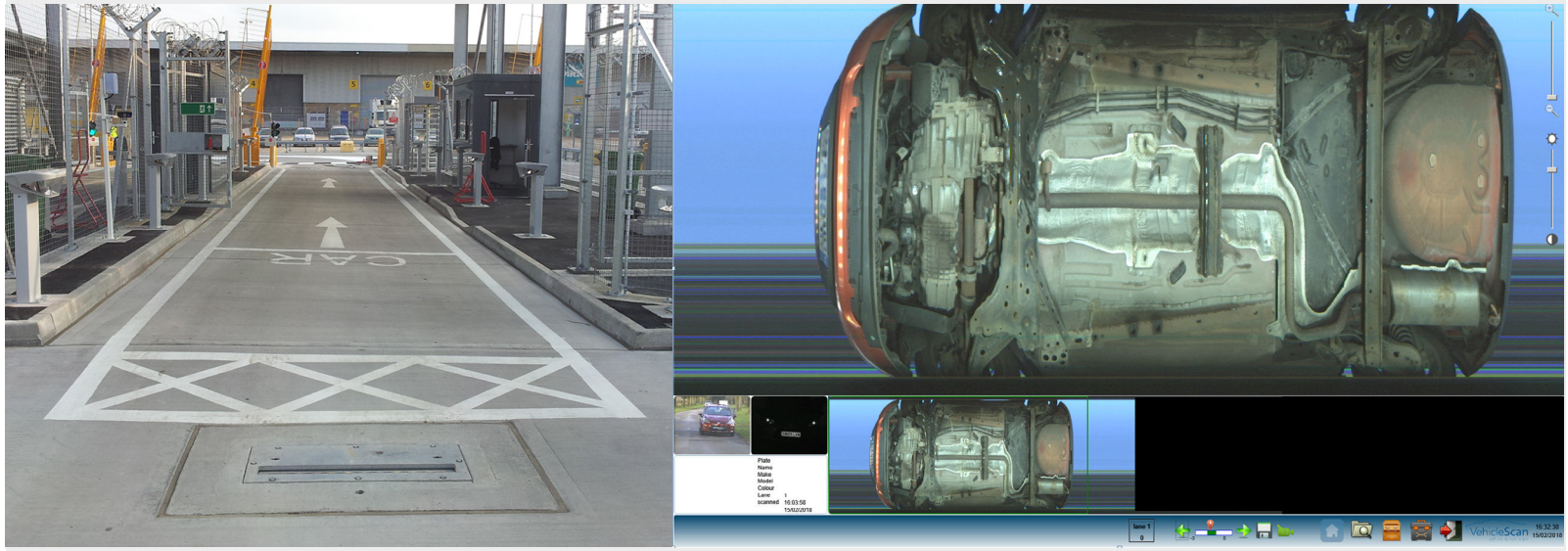
MorphoWay, fully-automated e-gates read biometric data contained in travel documents and compare it with the document holder's biometric data.





Chemring Technology

http://www.chemringts.com/news-and-events/news/news-2014/pr-2014-09-29



VehicleScan. Currently installed at Gatwick Airport, under-vehicle surveillance solution, using high-resolution line-scan technology to deliver full color images of the underside of a vehicle with millimetre-scale detail.

Contact: james.horne@chemringts.com / +44(0)1794 833488

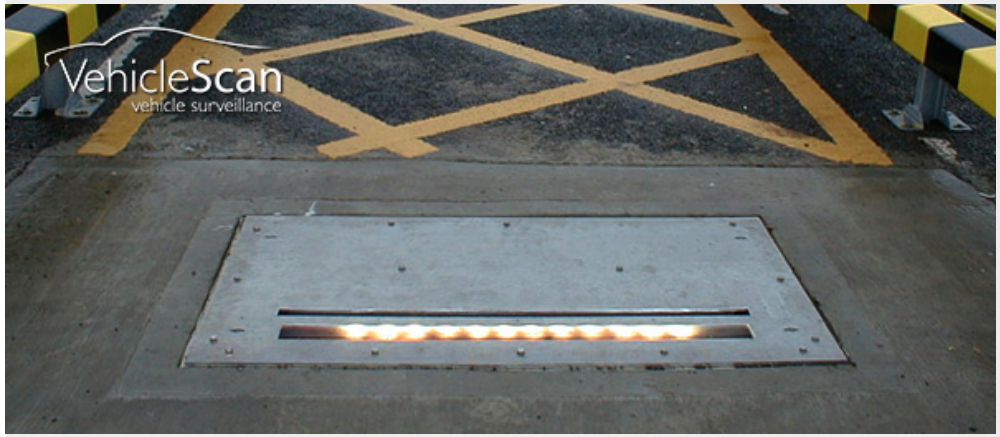
LGW

8

Automatic Number Plate Recognition

Chemring Technology

http://www.chemringts.com





Automatic Number Plate Recognition (ANPR) - VehicleScan will cross check each vehicle against the airport database to ensure all vehicles are approved to access the airfield. ANPR will also enable Airport to report on vehicle queue times, which can then be used to improve the efficiency of staffing rotas, as well as better understand who is on and off site.

ANPR is deployed at airports is done so through pre-booking, as the vehicle registration number can link the vehicle approaching the airport to the associated booking.

Eagle Tech Security Solutions

http://www.eagletech.net/automatic-number-plate-recognition-systems-anpr.php

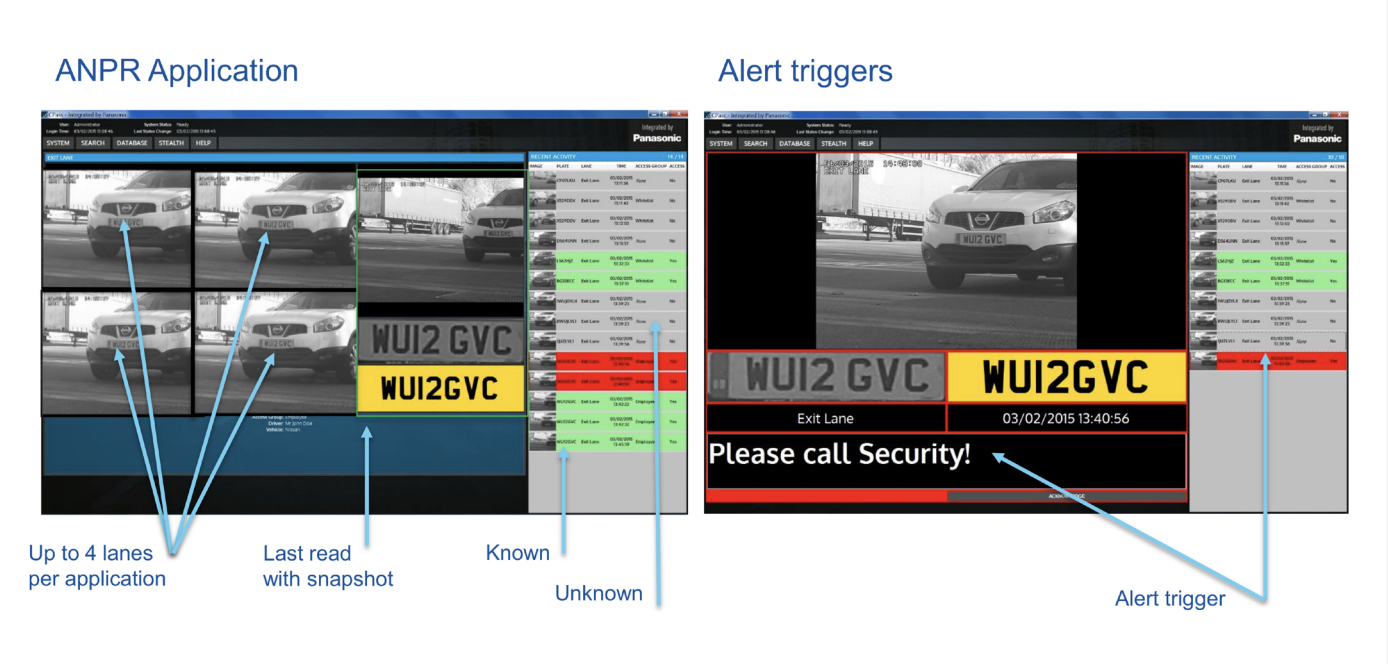


Provides ANPR.

Contact: 0845 6344 600

Panasonic

https://business.panasonic.co.uk/security-solutions/sites/default/nfsfiles/security-solutions/technical_downloads/ANPR.pdf



Provides Automatic Number Plate Recognition (ANPR).

Contact: +44 (0) 2070226530

Sensor Dynamics

http://www.sensordynamics.com.au



SYD
MEL
PER
BNE

Provided ANPR for Australian airports
(Sydney, Melbourne, Perth, Brisbane).

Brisbane Airport

Contact: sales@sensordynamics.com.au / +61 3 8727 6000

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Enhanced Lighting in Vulnerable Areas

Arup

www.arup.com/projects/terminal2-dublin-airport



Provides electrical engineering and lighting design in terminals.
Eg. Dublin Airport Terminal 2.

DUB

CNPI

https://www.cpni.gov.uk/security-lighting






From left to right

'Glare' lighting to deter the intruder by creating a feeling of uncertainty. Glare lighting directly illuminates an intruder, making it difficult to see what may be facing them behind the lights.

Area lighting - High Pressure Sodium lamps in floodlights providing both operational as well as security lighting.

Event Activated lighting - lighting that may only be switched on when an intruder approaches the protected area. In this case it is usually activated by a Perimeter Intruder Detection System (PIDS) which senses the intruder's presence.

Detection lighting - To provide light to assist the detection of intruders. Whether using CCTV or just patrolling guards a well illuminated perimeter will permit the observation of intruders, left objects or damage to the fence line.

PDF: https://www.cpni.gov.uk/system/files/documents/9f/fc/Security-lighting-guidance.pdf

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Vehicle Checkpoints on Approach Roads

Brussels Airport

https://www.brusselsairport.be/en/passengers

Brussels Airport. Trained enforcement officers/soldiers in behaviour detection spotting suspicious behaviour on roads leading to terminal drop-off.



BRU

Ben Gurion & Istanbul Atatürk Airports

http://www.iaa.gov.il/en-US/airports/bengurion | http://www.ataturkairport.com/?language=EN





Ben Gurion Airport





Istanbul Atatürk Airport

TLV
IST

Advanced Communication Techniques

CPNI

https://www.cpni.gov.uk/employee-vigilance



Trust your instincts.
We do.



If it doesn't feel right
we'd like to know about it.



If someone's hanging around this,
we'll want to know why.



If they're looking at this,
we should be looking at them.



Not all of our surveillance
equipment is electronic.



Not all of our surveillance
equipment is electronic.

CPNI has developed an Employee Vigilance campaign helping instill vigilance behaviours in employees.

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Terminal Departure and Arrivals Checkpoints

Istanbul Ataturk & Brussels Airports

http://www.ataturkairport.com/?language=EN | https://www.brusselsairport.be/en/passengers

Istanbul Ataturk Airport
Law enforcement standing at terminal departure and arrivals entrance to deter threat and detection suspicious behavior.

Brussels airport
Passenger screening in temporary tents before entering terminal after the attack in March 2016.

IST
BRU



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ACI EUROPE represents over **500 airports** in 45 European countries. Our members facilitate over 90% of commercial air traffic in Europe: **2.3 billion passengers, 21.2 million tonnes of freight** and **25.7 million aircraft movements** in 2018. These airports contribute to the employment of **12.3 million people**, generating **€675 billion** each year **(4.1%) of GDP** in Europe.

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