

Airside **INTERNATIONAL** e

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RUNWAY PLANS ON TAKE-OFF



German Chancellor Angela Merkel was on hand at the opening of Frankfurt's newest runway

Many of the world's busiest airports are looking to expand as capacity begins to crunch; *Airside International* looks at the benefit of a new strip to Germany's busiest air gateway, plans for a new runway at one of the Far East's biggest airports and the conviction felt by two UK gateways that new runway capacity is essential to their own and the country's future development

AROUND THE WORLD, airports are dealing with more and more flights every day. As the traffic increases, so too of course does the need for those same gateways to have the necessary infrastructure and equipment in place.

And nothing is as fundamental to an airport's capacity to handle new services as its runways. Along with the increased volume of demand for flight frequencies in and out, bigger and bigger aircraft have taken to the skies over the decades, the latest being the A380 superjumbo and the B747-8 Intercontinental. These larger airplanes require – as a general rule – the longest possible take-off and landing strips. Likewise, demand for longer haul services from what have traditionally been seen as regional gateways calls for extended runways.

Hence the drive at so many hubs to lengthen and widen existing strips or, where possible, to build entirely new runways. Of course, there are immense challenges in such projects; there isn't always the space or the money to grow runway capacity, plus there are numerous other considerations to be taken into account, not least the environmental impact and the reaction of citizens dismayed at potential increases in noise.

The construction of a new runway at Frankfurt-Main International is an example indicative of both

“Creating sustainable growth opportunities for the city of Frankfurt and the entire state of Hesse”

Stefan Schulte

the ups and downs of building a new strip, while the plan to build a new runway at Hong Kong International airport (HKIA) also throws into sharp relief the challenges facing operators seeking to cope with the requirements for ever-growing flight frequencies.

Meanwhile, London Heathrow shows best, perhaps, how ‘people power’ and politicians can put a stop to plans for one of the world's busiest airports to ease heavy congestion by adding to its much-overworked runway capacity.

MIXED FORTUNES

Frankfurt-Main's fourth strip, Runway Northwest, became operational in October 2011 amid much fanfare, but it hasn't been an unmitigated success. The 2,800m long by 45m wide runway, which was designed and is used only for landings, raised the airport's capacity from 82 to a potential 126 aircraft movements per hour in a move seen as essential – at least by airport operator Fraport – to meet the needs of customer airlines.

Approximately 2.5 million cubic metres of earth was moved for the creation of about 440,000 square metres of paved surface (concrete and asphalt). The newly built runway was connected to pre-existing flight operations areas by two taxiways, which cross over high-speed train tracks, an autobahn and the airport's own ring road.

Five taxiway overpasses and two perimeter road bridges had to be built. The taxiing bridge East 1 alone is over 200m long and at its widest spans 220m. Also built were two transformer stations and a new fire station; more than 700 shafts were dug, about 100km of cable laid and about 60km of drainage channels put in.

Total construction costs associated with Runway Northwest are estimated by Fraport to have reached about 600 million euros (US\$791 million), while ecological compensation measures are thought to have cost about 160 million euros (\$211 million).

The new strip can be used in all weather conditions and was expected to help Frankfurt-Main cater to a projected increase in passenger numbers at the gateway to 90 million a year (coming, going or transferring at the airport). Stefan Schulte, Fraport's executive board chairman, has said that the fourth runway “laid the foundation for the future development of our company – while creating sustainable growth opportunities for the city of Frankfurt and the entire state of Hesse” (in which Frankfurt-Main lies).

He added that it represents “the necessary capacity gain to guarantee Hesse's and Germany's long-term international connectivity”. However, despite

Continued on page 2

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Fraport claiming that it would “do everything we can to minimise the associated burdens on people and the environment” and that it is “committed to active noise abatement”, soon after the runway’s inauguration large-scale protests began to make their weight felt.

Those people living on the approach flight corridor of the new strip were particularly vociferous, although many observers contend that the opening of the new runway was simply an opportunity for some to voice their lack of empathy with the expansion of what they regard as a noisy, polluting, and otherwise environmentally damaging facility that may or may not be on their doorstep.

These demonstrations were just one aspect of what has turned into a very difficult time for the airport, a period since late 2011 that has included the imposition of a night-flight ban that shows no sign of being rescinded and strikes that have affected the gateway’s operational performance. Together with the impact of an operating environment hard-hit by Europe and North America’s economic slump, these factors have in part offset the beneficial effect of new runway capacity causing, for example, Frankfurt-Main’s cargo volumes to tumble in comparison to the previous year’s.

PUSHING AHEAD

While Frankfurt may offer a salutary lesson to airport operators that the construction of a new runway is by no means an answer to all their problems and, indeed may create some of its own, other gateways are determined to press ahead with their own infrastructure development.

Hong Kong has long seen the need for a major expansion in its runway capacity. Its two strips can currently handle about 420,000 flight movements a year, yet it is predicting that it will be needing to host that many movements by sometime between 2019 and 2022. It believes that, with three runways, it will grow its capacity to an annual figure of 620,000 flight movements, meeting projections in demand until at least 2030.



Aerial shot of HKIA; credit: Hong Kong International Airport

“We are dedicated to carrying out this work in a highly prudent, transparent and professional manner as always”

Airport Authority Hong Kong

Thus, in 2011 the gateway’s operator launched a three-month consultation process to assess public opinion on the airport’s future expansion and last year – in the wake of the Hong Kong government’s approval in principle of adding a third strip – Airport Authority Hong Kong (AA) launched a multi-phase process which it has broken down into the three stages of planning, approval and implementation.

“We are dedicated to carrying out this work in a highly prudent, transparent and professional manner as always,” AA explains. While going, it notes, to great lengths to “avoid, minimise, mitigate and compensate for potential environmental impacts”, it has begun developing the design details required for facilities under a three-runway system. This planning phase, which incorporates assessment of funding options, is expected to take two years to complete.

The approval phase will involve securing the required environmental permit, going through the foreshore and seabed gazettal (the third runway and associated infrastructure will require the reclamation of about 650 hectares of land north of the existing airport island), and working out all the financial arrangements. This phase is expected to take at least a year to complete and only after this is entirely finalised will the AA proceed to actually seeking final government approval. In other words, it will take at least until 2015 before actual project implementation can begin – and this phase is expected to take eight years to execute.

According to the AA’s consultation document, the whole project will cost approximately HK\$86.2 billion at 2010 prices; that would be US\$11.1 billion today, but the figure will be much higher in real terms over the programme’s entire timeframe. As a result, the opportunities that will become available to suppliers to the project are likely to be huge – not just in the enormous volumes of equipment, materials and labour required for the land reclamation and construction of the runway itself but also in the development of taxiway systems; aircraft parking stands; navigation aids; passenger concourses and the expansion of the existing terminal 2; the extension of part of the airport’s midfield freighter apron; and the

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This springtime issue of *Airside International* looks back and looks forward. We consider how airports have coped with the Northern Hemisphere winter – most of them successfully, despite London Heathrow’s much-publicised problems once again this year.

As for the future, many airports are investing in new runway capacity, while others are investing in various airside infrastructure and equipment. Angela Gittens from Airports Council International (ACI) discusses what she perceives many gateways’ priorities will be in the next few years, while we also uncover some of the GSE investment decisions being faced by handlers.

The June issue of the magazine will include a review of the GSE Buyers’ Conference in Portugal, being held on 24-26 April. It promises to be a very worthwhile event, so do attend if you can. You might even catch a bit of sun while you are there!



MIKE BRYANT
EDITOR

Airside INTERNATIONAL
Exploring GSE, airfield equipment and infrastructure



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lengthening of the gateway's automated people mover, to name but a few planned developments.

Also likely to attract the attention of suppliers of materials and equipment are the proposed extension of the airport's baggage handling system; the improvement of the road network to both the gateway's passenger and cargo areas, as well as landside facilities such as car parks; a new water recycling system in the reclaimed area; and modifications required to existing marine equipment and infrastructure, such as aviation fuel pipelines and sea rescue facilities.

CONGESTION AND CONTENTION

While the UK's Coalition government has, at least for the moment, put the idea of a third runway at the country's busiest airport on hold, the need for new runway capacity there remains seemingly unquestionable, at least to some. Certainly, Heathrow's operator hasn't given up hope entirely. According to a spokesperson: "Our position is that we would like all options for improving hub airport capacity to be on the table, with the pros and cons of each option examined objectively and rationally side by side."

In November last year, the operator responded to the government's announcement of the full terms and references of its new Airports Commission, a body headed by Sir Howard Davies and the role of which is to identify and evaluate the country's needs for additional airport capacity in the short, medium and long term: "We hope the Davies Commission will build consensus on the UK's requirements for hub capacity and then rigorously assess every option against those needs."

Remaining positive but realistic of the numerous objections that have been raised to expanding what is already a huge facility, it added: "None of the options for hub airport capacity is easy. Every choice, including doing nothing, has its consequences."

In that regard, Heathrow points to the results of a recent study carried out by Frontier Economics that suggests the lack of capacity is currently costing the UK up to £14 billion (US\$22.4 billion) annually in lost trade business and that this figure could rise to £26 billion (\$41.6 billion) a year by 2030.

Colin Matthews, CEO at Heathrow, says that the study proves that only a single hub can "meet the UK's connectivity needs and the choice is therefore between adding capacity at Heathrow or closing Heathrow and replacing it with a new UK hub airport".



This Far Eastern hub is rapidly approaching its runway capacity; credit: Hong Kong International airport



Colin Matthews, Heathrow CEO (above); The congestion at Heathrow represents a powerful argument for those calling for an additional runway (below)



The Airports Commission is not expected to report until 2015 at the earliest and any significant expansion at the gateway would illustrate the huge time and expense that runway construction can involve. The operator of the UK's busiest airport, Heathrow Limited (prior to October 2012, this organisation would have officially formed part of the wider UK airport operator known as BAA), believes that a third runway's development might take up to 10 years – although the required planning enquiry could take up to half of that – and cost as much as £10 billion (\$16.2 billion).

But, with that amount of money on the table, private sector providers of the materials required for the runway and all the associated airfield equipment would be licking their lips if a green light were to be given. "There would be significant development in all infrastructure areas" in such an eventuality, the spokesperson confirms.

GEARING UP FOR ACTION

Other UK gateways have either announced their intention to expand or have already begun development work on their runways. London Gatwick is currently engaged in what it describes as "detailed studies" in regard to a second runway while Birmingham International airport is in the midst of a major runway expansion project. Birmingham, the UK's second-busiest airport outside London (after Manchester), handles approximately 9 million

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(Left) Unlike Heathrow, there is plenty of room to grow Birmingham's throughput; Birmingham airport built a new, higher tower as part of its runway extension project (above)

passengers a year at the moment but has the facilities in place to double that. At a time when the London gateways are approaching capacity, this regional airport is looking to make the most of its available terminal and handling capacity by extending its single runway strip by 405m to 3,003m.

Planning permission for the lengthening of Birmingham's runway was given in 2009, with final approval being received in April 2012. Work on extending the landing strip began in November last year and the expectation is that construction work on the runway will finish this autumn. This will be followed by resurfacing, with flight-testing to follow in the spring of 2014. The runway is scheduled to become operational later that same spring.

The runway extension is expected to cost approximately £33 million (\$53.2 million), all of it invested by the airport operator, with resurfacing the entire strip costing another £9 million (\$14.5 million). As part of the programme, a new, higher air traffic control tower that can view the end of the extended runway has already been built, while a new radar has also been installed. Both the ATC tower and radar are expected to go into operation in the spring of this year, at a total cost of £13 million (\$21 million).

Leading the construction programme is a joint venture made up of VolkerFitzpatrick and Colas, known together in this work as VFC. These engineering and construction companies are taking the lead not only on the extension of the runway but also on the slight rerouting of the A45 road linking Birmingham to Coventry where it runs past the airport and where it needs to be diverted away from the lengthened runway, a project known as the A45 Transport Corridor Improvement Scheme.

Birmingham airport notes that the runway extension will allow it to bring numerous long-haul destinations within range for the first time. It lists cities such as Beijing, Shanghai, Tokyo, Bangkok, Los Angeles, Las Vegas and Johannesburg as possible new direct connections.

The airport operator believes that the additional runway capacity will make the Midlands gateway a long-haul alternative to London and Manchester as it seeks to gain true national airport status. As communications manager Justine Howl explains, the gateway wants to be recognised as such by the UK government, a national stamp of accreditation that it could take to potential long-haul customer carriers. It also believes that this would take pressure off the overloaded airports in the south-east of the UK.

As well as improving passenger connections, the increased long-haul capability would also stimulate its cargo operations. While twice-a-day Emirates B777-300 services to Dubai offer significant freight capacity, there is little dedicated cargo activity at the gateway because of its night-flight restrictions. Increased widebody long-haul connections would therefore offer genuine scope for expanding cargo throughput.

EACH TO THEIR OWN

When giving a speech to an audience including Chancellor Angela Merkel at the occasion of the opening of Frankfurt's Runway Northwest in October 2011, Fraport executive board chairman Stefan Schulte described the strip's construction as having been "one of the largest infrastructure projects in Germany". The process of adding a fourth runway took the airport operator well over a decade, if planning, mediation and application procedures are all taken into account.

If Hong Kong goes ahead with its plans for a further runway that project is likely to take at least as long, while any expansion at London Heathrow would represent a massive initiative likely to have as many political implications as logistical.

Yet many of the world's gateways – and not just the biggest of them – are clamouring to handle more flight operations on additional or longer runways as demand quickly rises. Each must meet the associated challenges, be they financial, political or social, as best they can. ■



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Winter's challenges

A large proportion of the world's airports have once again faced a difficult winter, doing all they can so that the worst of the weather doesn't impede flight operations any more than is absolutely necessary. Generally, they have had a high degree of success in doing so

One gateway that can proudly boast that it has never closed its doors as a result of snow or ice on its runways is Chicago Rockford International airport. This gateway, less well-known than nearby Chicago O'Hare but still one of the 20 busiest cargo airports in the US as well as a domestic passenger service provider, has two teams of roughly a dozen individuals available to clear its 1.6 million square metres of pavement whenever snow and ice threaten operations. That huge area consists not only of runway, but also taxiways, ramps and even connecting roads.

In fact, says airport operations manager Zach Oakley, these teams – and the external contractors that are also called in on occasion – are employed as soon as there is even a trace of snow on the runway. They will work well before the conditions are a problem until well after there can possibly be a danger to flying, he outlines.

One team may be able to handle what Oakley describes as a smaller 'event', perhaps 5-10cm of snow, while everybody is called in for those prolonged, heavier snowfalls not unknown in this part of the US Midwest. These teams have worked for up to 32 hours to clear the tarmac during blizzard conditions, yet safety has never been threatened and the gateway has continued to remain operational in the worst of weathers.

The airport employs more than 20 pieces of heavy snow-clearing equipment, ranging from high-speed runway brooms to front end loaders and snow blowers. All of this heavy equipment is sourced from Oshkosh, the Wisconsin-based manufacturer.

Its most recent acquisition from Oshkosh was the purchase in 2008 of a new high-speed broom, but the airport operator intends to replace and upgrade much of its current snow clearing vehicle inventory. The airport will put a bid specification together on this and see what manufacturers can offer, Oakley explains.

Toronto has access to a large fleet of heavy snow clearance vehicles

The wind direction changes frequently at the gateway, requiring that cross-wind runways also be cleared and made ready for action

One option being considered is the acquisition of more multi-functional equipment, vehicles that can handle the different tasks associated with snow clearance on just one chassis. Oshkosh offers such capability in its HT-Series Multi-Tasking Equipment (MTE), for example, snow tractors that can employ a wide range of ploughs, underbody scrapers, material spreaders, tow-behind brooms, or combinations thereof.

The snow that is removed by broom from Chicago Rockford airport's pavement surfaces is pushed into windrows and then blown onto surrounding grass areas into snow-holding islands. It can then be hauled off-site if necessary, or simply left until the ambient temperature melts the snow.

CHILLY CANADA

North-east of Chicago is Canada's Toronto Pearson International airport. This gateway typically has between 25 and 30 snow and ice-related 'events' a year – an event here meaning weather liable to affect airport operations. Toronto's snow clearance teams, which number 189 in-house staff including seasonally employed personnel working on 24/7 operations as necessary, then go swiftly into action.

With up to a dozen clearances required a day during the worst of the winter weather, and a total of more than 2.7 million square metres of runway and taxiway supplemented by 1.5 million square metres of apron and stand space to clear, the job is a big one. And that doesn't include nearly 2 million square metres of groundside airport connecting roads and car parks, clearance of which is handled by an outside contractor.

Toronto Pearson has five runways, all of which are cleared during an event, a process that the gateway calls 'a full circuit'. As operator Greater Toronto Airports Authority (GTAA) manager apron maintenance Paul Schenk points out, the wind direction changes frequently at the

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Solar-powered snow clearance on tap

One company is taking the obvious fact that the sun melts snow on pavement to another level. The ICAX system collects heat from aircraft parking stands in summer by circulating water through an array of pipes embedded in the surface and transfers the heat below ground to where it is stored in what the firm calls 'ThermalBanks'. The energy is moved to these ThermalBanks by, again, using water circulating through an array of pipes.

The system monitors the aircraft stand temperature and, if there is a danger of freezing, circulates heat back into the surface in order to maintain a temperature above freezing and so prevent any ice forming. Snow landing on the heated area of pavement will quickly melt.

While no airport has yet purchased the London-based ICAX Limited's system, director Edward Thompson confirms that the company is "in discussion with a number of airports which see the advantages and accept that it works".

The technology certainly does work: it is tried, tested and proven, he insists, having been employed in road surface applications in the UK. Using the system avoids the need for airports to employ polluting chemicals, grits or salts to control the melting point of snow and ice, plus ICAX is automatic and does not require manual labour to clear snow from beneath parked aircraft. And it is on the stands, underneath aircraft, that this system is perhaps most obviously beneficial, because heavy vehicles otherwise used for ploughing and/or de-icing on runways and taxiways cannot work underneath the wings of a parked aircraft.

Finally, while there are certainly installation costs, ongoing running costs are marginal. The advantages are many but no airport has yet committed itself financially to this technology. Whether we will see widespread use of ICAX or similar systems at the UK's gateways, or others abroad, remains to be seen.

gateway, requiring that cross-wind runways also be cleared and made ready for action.

Additionally, high-speed exits from the runways are cleared; it takes about 10-15 minutes for one of its strips to be handled by Toronto's runway snow clearance team. Connecting taxiways are simultaneously cleared of snow and ice by other vehicles. As well as an array of trucks, sweepers and loaders used for dealing with the main runway, also part of GTAA's snow clearance inventory of vehicles are smaller sweeps for areas such as passenger walkways, bridgeheads and GSE parks, as well as de-icing vehicles and a number of inspection vehicles that will test that the runway is safe for flight operations.

In fact, on the apron surface, GTAA has approximately 20 of its own trucks, sweepers and loaders. Complementing this array of heavy machinery owned by the airport operator are the vehicles to which GTAA has access according to the terms of a support contract with a private company. Used as required on a scaled approach, these vehicles are left on-site at the airport between 1 November and 15 April. The contract primarily covers front end loaders, backhoes, skid steers and labour crews.

While GTAA has not of late added to its snow clearing fleet of ve-



Kevin Lacey and Paul Schenk of Greater Toronto Airports Authority

hicles, it has been replacing them as required according to the operator's five-year capital plan and appropriate lifecycle cost analysis, confirms Kevin Lacey, associate director of airfield operations.

CHALLENGES IN EASTERN EUROPE

Over the course of the last two years, Warsaw Chopin International airport has been closed due to winter weather just three times and for a total of just four hours. Heavy snowfall and periods during which the temperature moves just above or below freezing are the biggest problem, says the Polish gateway's spokesman, Przemyslaw Przybylski, and not the nation's frequent harsh sub-zero conditions.

During the Warsaw winter, snow clearance work is carried out simultaneously on the airport's runways, taxiways and apron. Snow is moved from runways and taxiways to the edge of the pavement, before being blown off the surface. As for the apron, snow is temporarily placed in assigned areas before being trucked to a dumping site.

Chopin's snow-clearing convoy involves eight snow removal vehicles followed by two snow blowers, a sprinkler/spreader for de-icing chemical distribution and then finally friction-testing units.

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To keep the operation going 24 hours a day when necessary, the airport authority can call on 19 snow removal vehicles (MB Actros 2041 truck tractors with a plough and Schörling P17, Oyer-aasen RS 400 and RS 200 runway sweepers), Boschung BJB 8000 compact sweepers with sprinkler/spreaders, Schmidt runway sweepers supported by two Unimog tractors with snow ploughs and sprinkler/spreaders, other sprinkler/spreaders of various manufacture, along with four snow blowers and two JCB loaders/excavators for the loading and unloading of granulated chemicals.

New Overaasen snow removal sets were recently acquired in an initiative that has allowed the airport to reduce the time needed to clear its pavement from 40 to just 20 minutes, Przybylski adds.

Not a million miles from the Polish capital is Germany's Leipzig/Halle International airport and that facility too has to handle some extreme weather conditions. On average, it has to cope with about 30 days a year when its staff – of which there are approximately 270 available to work on a three-shift pattern – are asked to clear snow from pavement surfaces.

Explains René Kirsten, project manager winter service at the airport: "Clearing convoys consist of 13 vehicles; the tarmac is cleared from one side to the other, depending on the prevailing wind direction. The snow that is removed is loaded onto trucks and then transported to dumping areas." Three friction testing vehicles are available for determining braking parameters following that.

Aebi Schmidt Deutschland manufactured about 95 percent of the specialised winter services equipment used by the airport operator, Kirsten notes, with a total of roughly 70 modern vehicles available at the gateway for snow clearing and gritting. Given this sizeable inventory: "The airport is not thinking of making any new purchases at the moment," he adds.

MOSCOW DOMODEDOVO

To the east of Leipzig and Warsaw is Moscow, whose Domodedovo International airport must also devote a lot of time and care to snow clearance if it is to operate through a harsh Russian winter.

On an average winter's day, Domodedovo sweeps its runways at least twice, or as many times as required in order to keep the runways safe, a spokesperson explains. The gateway employs a fleet of vehicles that takes in a dozen Schmidt TJS 630 and two Bucher Schörling P-21S jet sweepers that are used to clear runways and taxiways. It has five snow blowers, Schmidt SUPRA 4001 and 5001 blowers and Oshkosh H2723Bs that can be operated on different power settings

and are used according to the weather conditions and degree of snowfall.

Domodedovo also has eight CJS 914 compact jet sweepers that it uses on the apron in the restricted areas between aircraft stands and T-5

Continuous



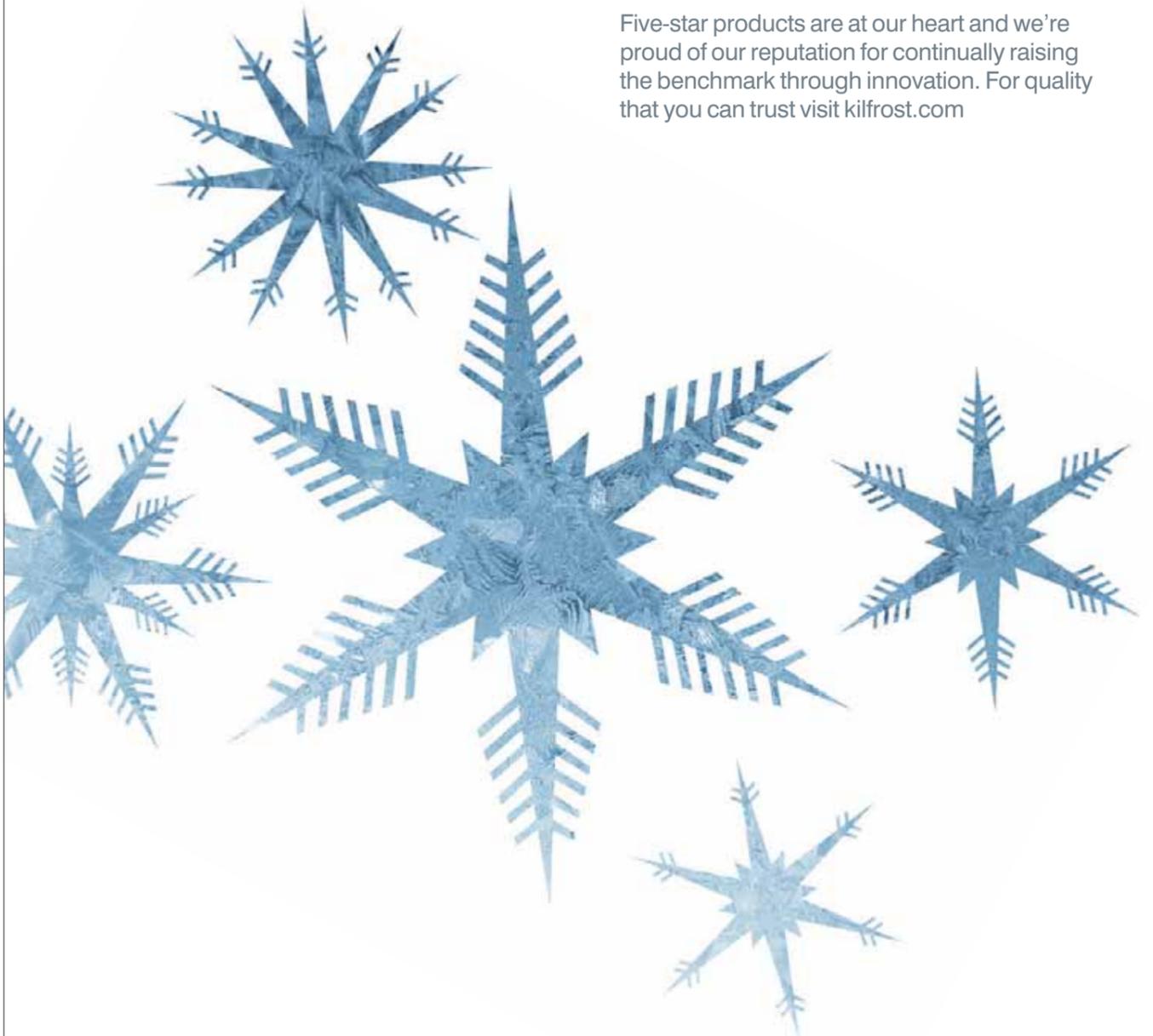
Przemyslaw Przybylski of Warsaw's Chopin International airport



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European contribution

Numerous European manufacturers are active in the production of dedicated airport snow clearance equipment. The division of Bucher which is active in this sector was acquired by Swiss company Zaugg in 2010. Along with Bucher Municipal's snow sweepers sub-division came its Rolba snow blowers, the product lines thereby acquired said by Zaugg to represent a "perfect complement" to its own snow ploughs and snow blowers.

Aebi Schmidt is one of the biggest of many European companies to manufacture heavy airport snow clearance equipment. It offers a range of jet sweepers and blowers that are used at numerous gateways around the world, from as far afield as Xinjiang and Seoul Incheon in Asia, to Moscow Domodedovo and Helsinki in Europe. According to Mike Moore, Aebi Schmidt UK's key accounts manager, Schmidt Airport Division has sold 650 jet sweepers and 400 cutter blowers to customers right around the world.

The company's MS snow ploughs are supplemented by SUPRA rotating snow clearers and jet sweepers. Schmidt also offers de-icing sprayers and airport spreaders, and machines combining the two capabilities.

Sweden's Volvo Construction Equipment is another manufacturer active in the field of airport snow clearance and it has

worked in partnership with Aebi Schmidt in a large delivery of snow clearing equipment to Swedish airport operator Swedavia.

Operating an unusual model in its Original Equipment Manufacturer (OEM) solutions business, Volvo Construction Equipment offers Volvo chassis – or 'part machines' – on which OEMs can add their own snow clearing equipment as desired or required by the end user. Thus, Volvo's A25 articulated hauler tractor unit has been supplied to Aebi Schmidt, which has added a sweeper, plough and blower for final equipment delivery to Swedavia.

The Swedish airport operator has 47 of these units, while Belgium's Brussels airport is operating another three. A further three A25s have been delivered by Volvo to Aebi Schmidt for integration with its snow clearing equipment; these vehicles are also destined for Belgium.

According to Esbjörn Fritzell, global director business development at Volvo Construction Equipment, these Aebi Schmidt snow sweepers are thus not only extremely capable but also extraordinarily reliable, boasting a 99 percent 'up-time'.

The OEM business model has the virtue of allowing Volvo to gain incremental revenue on equipment types in which it has particular expertise. It allows Volvo to leverage its existing products, Fritzell notes, not least through partnering with companies such as Aebi Schmidt.



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Friction Measuring Equipment (CFME) trailers for assessing the condition of the airport's runways.

The airport has continued to invest in its snow clearing equipment. For the 2012-13 autumn and winter seasons it bought a total of 10 new pieces of equipment – two SUPRA 5001s, two CJS 914s, two TJS 630s and four B60-30 Stratos de-icing spreaders manufactured by Aebi Schmidt.

THE FROZEN NORTH

Given the Scandinavian climate, Swedish state-owned airport operator Swedavia is well practised in the arts and skills of snow clearance at the 11 gateways for which it is responsible. Indeed, according to Christian Nyberg (Stockholm Arlanda's head of airside maintenance) and Ingemar Österlind (Arlanda's manager runway & field maintenance), their teams clear runways at Sweden's busiest airport about six times a day every winter.

With 3 million square metres of airside area at Stockholm Arlanda to be cleared, including three runways, taxiways, ramp, parking stands and transport routes for other vehicles, snow clearance at the capital's air gateway is a full-time occupation. A 2cm snowfall on the terminal aprons can mean that some 1,200 lorry loads of snow must be carried to two snow dumps, which have a combined capacity of 400,000 cubic metres.

Stockholm's snow clearance teams employ about 100 machines. On the runways and taxiways, combined plough, sweeper and blower vehicles are used, with up to 10 of these machines working in formation at any one time on runways. Smaller fleets of four vehicles might be used on aprons and three on taxiways.

De-icers follow the heavy plough/sweeper/blower vehicles on the runways, or a sand spreader might be employed. Following on from the clearance operation, two friction testing cars are available to ensure that runways are ready for use. Cars are meanwhile cleared with different kinds of front loaders.

The water that is created from melted snow at the airport's two snow dumps is collected in ponds and then transported by pipeline to a municipal water treatment plant.

Although snow clearance can of course disrupt flight operations, the airport never closes, Nyberg and Österlind declare. They point to the efficiency of snow clearance staff trained for three weeks before ever going airside, and a winter organisation that works in five shifts, 24/7 between October and April.

Keeping the runways operational during a Scandinavian winter is the result of collaboration between the airport's snow co-ordinator, the apron tower and the airport technical and operative supervisor, with priorities based on the current traffic picture. Among the top priorities for clearance is the runway in operation, the taxiways serving that runway, aprons and parking stands as required and emergency routes from the fire station to the runway in operation. Next in priority come additional runways and taxiways, as well as relevant airside access routes.

INEVITABILITY

It's been that time of year again for numerous airports in the Northern Hemisphere to have to deal with the myriad of problems associated with snow, ice and freezing rain. Those that haven't felt its impact this year may well do so in subsequent winters while, for some facilities, tough seasonal conditions can be guaranteed. As Chicago Rockford's Oakley remarks of winter snow: "It's coming, we just don't know exactly when." ■

Looking to the future

IATA talks to *Airside International* about what it is doing for the aviation industry by means of training and education and how the sector will reap the rewards

Dimitrios Sanos, product manager airport & ground operations training for the International Air Transport Association (IATA), believes that offering education and training to those active in airside operations is a vital role amongst the many that the trade body fulfils.

"All of us in IATA are committed to work towards the association's mission, (which) is to represent, lead, and serve the airline industry," he explains. "At ITDI (IATA's Training & Development Institute), we firmly believe that well-trained, knowledgeable and talented people are the cornerstone of our industry. And we don't just mean airline people. In order to create value and innovation for a safe, secure and profitable industry, we need to support all the sectors of our industry, including airports and ground service providers.

"It has been over a decade since IATA started offering training. Every year we train more than 55,000 people in a classroom or self-study environment, offering 300 courses in more than 140 countries," Sanos enthuses.

The help on offer has many benefits for those who take it up, he continues. For example: "Academic training is valuable for all senior management positions and soft skills enhancement. This is a different area of training and since our vision is to develop the next generation of air transport leaders, IATA has partnered with some of the world's leading academic institutions of executive learning to offer exclusive programmes for aviation management professionals.

"However I would like to believe that although the turnaround co-ordination of a B777 or A330 within 90 minutes is a 'science', this kind of training cannot be found in an academic setting. The fundamental goal of air transport – the safe and prompt transportation of people and goods from point A to point B – is the result of a team effort comprising members working in an office, in the terminal, above or below the wing.

"They are all experts who gain their skills through training and several years of experience. We try to blend proper training standards with the vast experience of our instructors, most of whom are active aviation professionals and recognised veterans," he points out.

Dimitrios Sanos, product manager airport & ground operations training for IATA



DIVERSITY

So what is actually on offer? "IATA offers flexible training programmes in-classroom, in-company, or within distance learning formats that motivate companies and individuals to meet their training needs and fill skill gaps, maximising the return on training investment. All of the programmes address current issues and reflect industry needs in areas like Environment and Fuel, Air Navigation Services & CAA, Cargo & DGR, Airline Management, Airport Planning & Management, Airport & Ground Operations, Safety, Aviation Security, Travel & Tourism, Quality and Audit, Fares & Revenue Accounting, Organization & Human Performance.

"Every year we make considerable investments, updating our existing courses and developing new ones," Sanos says. A total of 45 new courses will be introduced in 2013. Those that relate directly to airside operations and ground handling include: Aircraft Turnaround Coordination & Loading Supervision; Cost Effectiveness & Revenue Optimization in Ground Operations; Standard Line Maintenance Agreements; Air Cargo Operations; Oversight for Airports; and Active Container Handling.

"The aviation industry supports 57 million jobs and predictions show tremendous growth potential in future years," he notes. "It is essential to attract and retain young professionals in our industry. Training can play an important role by supporting young people to make a start and give them a vision for their future as an aviation professional, and their career progression opportunities.

"We organise our training in a way to show newcomers that they can learn the basics, then gain on-the-job experience and further training at a supervisory level, and later enhance their knowledge at a management level. Proven and transferable skills together with standardised training will help the industry to keep employees motivated and cover future needs."

SETTING THE STANDARD

IATA's training is just one arm of its overall efforts to move the industry forward, Sanos observes. "IATA supports the industry by setting globally applicable standards. It is a common effort between airlines, governments, regulators, and other stakeholders (IT providers, ground handlers, freight forwarders and many more)."

Areas in which IATA has made efforts in this regard include e-ticketing, the e-Airway Bill, and ISAGO (the safety audit for ground operations), as well as a tool that many *Airside International* readers are familiar with: the IATA Standard Ground Handling Agreement created with the support of IGHC (the IATA Ground Handling Council) members.

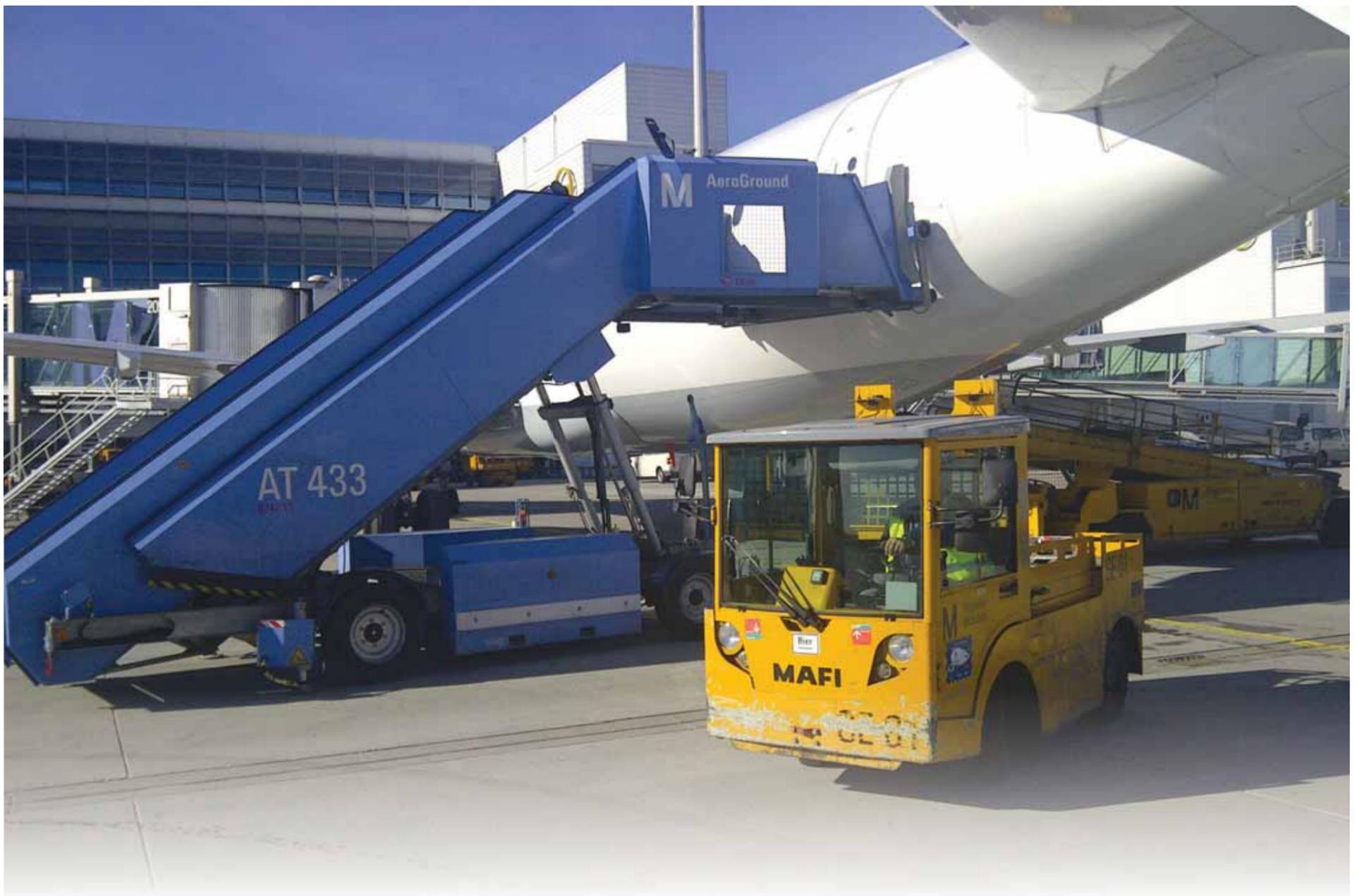
"These standards bring value to the industry, reducing costs and making the air travel experience more enjoyable for customers. Through operations and management training, we help our participants to meet the industry priorities. Similarly, IATA training programmes are designed to reflect these widely applicable standards, sharing best practices at a global level," Sanos concludes. ■

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SWISS PRECISION



Electric vehicles drive change

Amongst the many strands that make up airports' strategies to reduce emissions and improve their green credentials, electrically powered vehicles are playing an important role. David Smith reports

At Copenhagen International Airport, the use of electrical vehicles has become an important ethical question. Not only is the Scandinavian gateway eager to meet stringent environmental targets, but it is also concerned about the negative impact of emissions on health.

"We have an urgent challenge to reduce the ultra-fine particles produced by all our GSE equipment and jet engines," says Jesper Jacobsen, senior project manager in the airport's Environmental Department. "Doctors related the cancers of three employees to the possible inhalation of these particles from diesel, so we want to take away this risk. For us, green vehicle policies are as much a health issue as an environmental issue."

Three ground handling companies operate at Copenhagen – SAS, Novia and Copenhagen Flight Services. To earn the concession, they must conform to Copenhagen's policies when they purchase GSE equipment. And the gateway's guidelines have become more stringent over time.

In 2007, operator Copenhagen Airports introduced new rules designed to reduce emissions. "We wanted to say no diesel at all, but we had to be realistic," explains Jacobsen. "We brought in electric vehicles, but we also used better-performing diesel vehicles, which were likewise classified as 'green' according to the 2007 regulations."

Of Copenhagen's GSE equipment, 47 per cent was 'green' back in 2007. But part of the agreement with the ground handlers was to undertake an audit of the equipment each year. The aim was to gradually increase the ratio of green

vehicles, with the goal of reaching 70 per cent by 2012. "We exceeded this target, hitting 74.7 per cent, a great success for both the airport and the ground handlers," he notes.

But the mounting evidence of the health dangers of inhaling ultra-fine particles caused Copenhagen to update its green policies; in 2012, the concept of 'ultra-green' was introduced.

"This is a stricter definition. Now for a diesel engine to count as green, it has to have a particle filter attached, and it's hard to find filters which are effective for airport GSE," Jacobsen points out. "So, for us, ultra-green means either electric or anything else with very limited emissions, such as hybrids, or gas. The handlers at Copenhagen tend to look at electric for the smaller GSE vehicles and gas as an alternative to diesel."

The new regulations demand ongoing dialogue between the ground handlers and the airport. "We are aiming for 100 per cent green, but it also has to be feasible for the companies. They are very willing to co-operate, though. It is in their interests to protect their employees by using the greenest available machines."

At the moment, 50 per cent of Copenhagen's GSE vehicles conform to the ultra-green definition. But every time one is replaced from now on, the new vehicle should be ultra-green.

"If it's a hybrid, we say it's non-polluting. The old hybrids emitted a lot of diesel exhaust too, but the modern hybrid tractors are all plug-ins. They have diesel generators, but these are only turned on if the battery is too low, which is rare," said Jacobsen.

For example, SAS uses Kalmar towbarless tractors, which mostly come equipped with high-performing diesel engines. But already three of the fleet of 40 are hybrids, and tractors bought from now on will in all probability be hybrids too. "Now manufacturers can build ones that handle bigger aeroplanes, although they are 30-40 per cent more expensive at the moment," he observes.

Meanwhile, the smaller baggage cart tractors are mainly electrically powered and SAS is planning to phase out all of the diesel ones over the next few years.

Copenhagen is gradually building up its electric infrastructure in order to cope with all the new electric vehicles. "We've got a lot more electric conveyor belts, so we need more power connections. The costly part for the airport is cutting up stands and putting down electricity. Space is also a limiting factor. We have to be careful to have charging locations for different kinds of equipment located in different spots.

"Our aim is ultimately to limit the use of diesel to a bare minimum. We are not sure electric is feasible for our big buses and snow-clearing equipment, but we are looking at gas as another option. We're running a feasibility study, looking into cost, efficiency and the viability of building filling stations," Jacobsen adds.

AMBITIOUS GOALS AT MUNICH

Meanwhile, Germany's Munich International Airport has set ambitious targets to keep its emissions in check whilst simultaneously significantly expanding its capacity.

"Our overall aim is to go carbon dioxide neutral by 2020," comments Hans Langer, GSE-Fleetmanager of AeroGround, the ground-handling subsidiary of airport owner Flughafen München. "The benchmark is not to go above our total 2005 emissions by 2020, a challenging target because of the airport's rapid expansion. A new satellite will be completed in 2015 and we expect a continuous rise in passenger numbers. It means we have to save a lot of emissions by making vehicles more efficient."

AeroGround aims to halve its GSE fleet's energy costs by replacing diesel models. There are about 100 baggage tractors made by three German companies, Still, Linde and Mafi. Of this fleet, 25 are powered by electricity and there are plans to boost the ratio to 40 per cent in the next two years.

Since 1990, all of Munich airport's conveyor belts have been electric. Plus, 50 per cent of the passenger stairs are electric, a figure to be raised to 60 per cent by 2015.

This year, AeroGround purchased two Laweco 7-tonne electrical high loaders. "We've got 25 high loaders and we want the proportion of electric ones to rise to 30 per cent. This will reduce emissions considerably as these big diesel engines have a lot of engine running time in standby time," says Langer. "Fortunately, the cost has dropped a lot. These two are only 10 per cent more expensive than the diesel ones and we have calculated that we will save 50 per cent on running costs and fuel consumption over the life cycle."

Cost is, of course, a major factor when AeroGround calculates how it will invest in electric vehicles. "We ask how often we will use the electric vehicles and work out if it is a sound investment. We concentrate on buying machines with the highest degree of efficiency. We can save a lot of emissions and the costs are manageable," he highlights.

Electric power conveyor belts, for example, are about 20 per cent more expensive than diesel ones, but running costs are far lower. "We save money as there are fewer running hours and lower fuel bills. Fewer running hours also means less maintenance," Langer notes.

There are disadvantages in having large numbers of electric vehicles, however. "Each type needs its own charging station. It's different to diesel, where you can just have one station for all vehicles. So we need more space and money to make it happen," he remarks. Nevertheless, all the electric vehicles are charged during off-peak hours.



Electric vehicles are to be found inside as well as outside airport terminals; this electric passenger transporter is at Indira Gandhi International Airport

OVERHAUL AT SAN FRANCISCO

In the US, few airports have gone as far as San Francisco International Airport (SFO) in overhauling their fleets. SFO's stellar performance can be placed in the wider context of advanced thinking on the environment in the state of California. A City Ordinance on Global Warming and Climate Change requires all City Departments to reduce carbon emissions to 25 per cent below 1990 levels by 2017 and 40 per cent below that level by 2025.

Airport spokesman Doug Yakel explains: "The West Coast is, in general, further ahead in implementing various environmental initiatives than the rest of the US. Along the West Coast, California has usually pioneered environmental initiatives ranging from solid waste recycling, more strict emission standards for vehicles, and various global-warming initiatives.

"San Francisco is one of the most environmentally conscious cities in California and SFO naturally follows suit and is perhaps the greenest airport in the US. But other Californian airports are not far behind SFO in implementing environmental initiatives," he adds.

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The major changes to SFO's green policies came in following the adoption of a Clean Vehicle Policy in February 2000. The goal was to turn 100 per cent of airport and airport-permitted fleets into clean-air vehicles by 2012.

It has proved highly successful in a short space of time. For example, the majority of vehicles that ferry passengers around are now green. AirTrain, an automated people mover, has replaced the diesel-powered rental car shuttle buses, operating 600 round trips per day. Powered by hydro electricity, AirTrain eliminates all emissions for a service used by a quarter of airport customers. Additionally, BART, the near-zero-emission regional electric rail system, operates direct to the International Terminal.

Meanwhile, 600 buses, vans, taxis, and cars are run on Compressed Natural Gas (CNG). At the airport's two large CNG refuelling stations, pipeline gas is compressed to 4,500 pounds per square inch for delivery to 15 fast fill hoses. Two private operators, Trillium USA and Clean Energy, provide on-airport refuelling services.

SFO incentivises rental car companies to use clean cars, usually hybrids. The companies save 20 per cent on airport lease payments if a certain proportion of their rentals are at the top of the US Environmental Protection Agency's rankings for fuel efficiency and emissions.

The control of emissions from taxis is helped by San Francisco's forward-thinking policies. By City ordinance, taxicab companies are required to reduce greenhouse gas emissions by almost 50 per cent per cab from 1990 levels. As a result, almost all City cabs are now hybrid-electric, or CNG models.

SFO's Clean Vehicle Policy extends to the airfield vehicles used by the gateway's ground handlers, such as Menzies and Swissport. Now, some 350 pure electric GSE vehicles and 100 rebuilt diesels are in service. About half the off-road aircraft service vehicle fleet uses clean power, up more than 40 per cent in a decade. Meanwhile, major charter bus and scheduled airport operators have installed the most advanced particulate filters on about 90 diesel highway coaches.

SFO was the first San Francisco city department to operate all its own diesel vehicles – and a fireboat – on a 20 per cent biodiesel blend. "We will look closely at increasing the biofuel share to 50 per cent soon, specifying local fats, oils, and grease as the feedstock. Additionally, SFO is working with airlines to promote sustainable aviation fuel use," Yakel observes.

Currently, more than 3,000 CNG, electric, biofuel, and advanced diesel vehicles are in operation at SFO. These include 90 highway coaches (filtered diesel), 30 transit buses (CNG, filtered diesel), 1,350 taxicabs (hybrid-electric, CNG),



The usually diesel engine-powered TBL 50 tow tractor from Kalmar comes in a hybrid version used by SAS Handling at Copenhagen airport; credit: SAS

up to 1,000 rental cars (hybrid-electric), 450 airfield vehicles (electric, rebuilt diesel) and 130 AirTrain cars, and peak-period BART cars serving SFO (electric).

INDIRA GHANDI SETS THE TONE

On the other side of the world, Indira Gandhi International Airport (IGIA) in Delhi, has one of Asia's most successful environmental policies. It has quickly replaced all of its diesel baggage tractors with electric ones.

Tough policies on clean-air vehicles were forced on IGIA because of the rate of its expansion. In 2011-12, the airport handled 35.8 million passengers, but this is predicted to rise to 100 million by 2030.

IGIA has been run by Delhi International Airport Limited (DIAL) since 2006. DIAL took the decision to overhaul the airport's green strategy at the opening of the colossal new Terminal 3 in 2010. The terminal, which has the capacity for 36 million passengers a year, is the 24th-largest building in the world and the world's eighth-largest passenger terminal.

The policies have taken effect in a short space of time. "It's been done rapidly because we have succeeded in educating our four different ground handling companies in the advantages of electric vehicles," says Roy Sebastian, vice president airport systems.

"We saw a real change in attitude when they understood the benefits, especially costs. Despite the greater initial expenditure, electric works out cheaper than diesel over the life cycle. Pressure to conform has also come from the Delhi Government and the Indian aviation regulator, the DGCA."

IGIA now has a strong fleet of electric, hybrid and gas-powered vehicles. Within Terminal 3, there are around 100 electric vehicles, including passenger carts, trolley pushers, sweepers and ceiling maintenance equipment. Terminal 3's baggage handling area also has around 50 electrics in the make up/break up areas. The smaller Terminal 1 has around 15 electric vehicles. Meanwhile, there are 150 electric vehicles airside, including passenger buses, crew shuttles and light goods vehicles.

But IGIA is moving towards even greater efficiency. "Currently, our smaller GSE vehicles are green – either electric, or compressed natural gas – but the large push-back tractors are mainly diesel. We are encouraging the handlers to change them all to electric to meet our goal of becoming fully electric for all GSE operations by 2015," Sebastian reveals.

"But this is a dream and I'm not sure it will be possible. They have already had to spend a lot on the smaller vehicles. But I think we will get a lot closer to 100 per cent by 2015." ■



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North America: Business as usual



WFS operates large volumes of GSE, such as these tugs

Looking forward to the rest of 2013, airports and the aviation industry are facing challenges across the board from the chilly economic climate and the oft more than chilly real climate. Nevertheless, in North America, companies in the vital aviation ground services equipment and service business are getting on with the job. Ian McInnes investigates

Headquartered in Plainview, New York, Fortbrand Services Inc has been in the business of selling, buying, leasing, financing, renting and maintaining new and used aircraft ground support equipment for over 25 years.

Its core business lies in the provision and servicing of short-term rentals and long-term leases of aircraft GSE throughout the aviation industry. In addition, the company offers other services such as equipment appraisals and consulting, and acts as financial advisor to businesses looking to sell or buy aviation-related operations. Fortbrand also acts as the exclusive North American distributor for airport and airfield maintenance equipment, including Vammas snow removal vehicles and the Beam A8000 Multi-Task Airport Service Vehicle manufactured by Beam AS of Them, Denmark.

Fortbrand's GSE fleet on offer to operators – new and used – includes air starters, de-icing trucks, tow tractors, ground power units (GPUs), baggage carts, mobile stairs, belt loaders and more. Peter Stearn is Fortbrand's executive vice president and he shared his views on the North American market today with *Airside International*. "The market has been relatively steady over the past 12 months, without any significant upward or downward swings," he considers.

"The major carriers are continuing to manage their way through merger integrations and trying to optimise their fleet configurations. As ground handling companies win new contracts, they are trying to manage their costs as much as possible, so are often looking for used equipment or to procure equipment via operating leases or seasonal rentals."

Looking forward to the rest of 2013 in terms of the firm's needs and investment plans, Stearn explains: "At the moment, I do not see any major changes for 2013. Fortbrand's greatest challenge is identifying good quality, late-model, used equipment to add to our inventory. We always have our feelers in the market in order to obtain such equipment and, occasionally, are able to acquire such equipment via auctions or negotiated transaction from entities that are exiting the ground handling business."

HANDLING THE PRESSURE

With its corporate headquarters in Jamaica, New York, Cargo Airport Services (CAS) operates at many major North American airports. Founded in 1998 and commencing with a 5-year contract with KLM at JFK (New York) and IAH (Houston) airports, the company expanded quickly. CAS claims to be the largest ground handler in the US, serving 84 carriers in 29 facilities at 14 international airports.

While being committed to technology and innovation, CAS is also focused on attention to detail, including strategic communications with its customers. "We handle cargo and cargo only, so we excel at cargo handling. Through years



Mike Duffy, CEO of handler CAS

of experience we've learnt a lot," remarks CEO Michael Duffy.

Commenting on CAS's "steadfast transition capabilities and post-start-up commitment" to client carriers, Duffy adds: "We believe true relationship is born from collaboration, so we actively encourage customers to have direct contact with the people doing the work." Even in difficult economic times, CAS's growth looks to be continuing. In the late summer of last year, for example, it was awarded the cargo warehouse handling contract with Emirates SkyCargo at Dulles International Airport (IAD).

John Cardiello is CAS's assistant general manager at building 261 at JFK International airport and he is upbeat about the future. "I believe the current market in North America is stable right now, but I feel there is still room for growth," Cardiello reports.

"We are always looking for new business and 2013 is no exception. And if we are able to succeed we will need to expand our current GSE fleet," he observes. "We are also looking to expand our business to South America."

Yet, according to Cardiello, CAS's greatest challenge right now is "being able to provide our customers with the very best equipment and the best people to maintain such a large inventory. We are constantly evaluating and upgrading our equipment to ensure we keep up to our customers' demands and high standards."

COMPETITION

Worldwide Flight Services (WFS) is another handler that has a big say in the GSE market in North America and just one of CAS's many competitors on the continent. Moreover, it provides a broad array of ground services in over 100 of the world's major airports.

According to a spokesperson, WFS is continuously integrating highly developed information technology tools into its operations in order to keep the company at the forefront of IT developments, thus enabling "improved and expedited communication and business processes."

To get the company's current take on the North American GSE market we spoke to Scott Whitfill, WFS's director of maintenance. "The technology required to meet the ever-demanding reduced emissions standards for GSE continues to drive its cost up. As a result, the ability to inject new GSE into a company's fleet (has become) increasingly difficult," he notes.

WFS's greatest challenge at the moment, Whitfill believes, is "meeting the significantly reduced emissions standards that are being imposed on the GSE equipment industry when the manufacturers are barely, if at all, able to support that mandate".

And, he continues: "There is no question that operating with cleaner and greener equipment is something that we must do. To this end, WFS not only acquires equipment that meets all the latest emissions standards but has also



Zurich-headquartered Swissport is one of the world's biggest handlers; credit: Swissport

NO-FRILLS GSE

With its corporate offices in Zurich, Switzerland, Swissport is a major international player in the provision of ground support services. The company offers ground services for around 116 million passengers annually and handles 3.5 million tonnes of cargo operating out of over 100 warehouses on behalf of approximately 650 client companies. Swissport's workforce of around 39,000 people working at 192 airports in 38 countries on five continents generates over US\$2 billion in annual consolidated operating revenue for the company.

Swissport's GSE Maintenance and ULD (unit load devices) business unit is active at 20 airports across five countries, operating a GSE fleet in excess of 5,000 units. The business unit performs scheduled maintenance, unscheduled maintenance and complementary services such as engineering services, the phase-in and phase-out of equipment, material handling, warranty administration, in-shop operation training, field or tarmac use of equipment and the implementation of strategic asset management tools.

Peter Speck is Swissport's vice president and head of corporate supply and GSE maintenance management. He considers that the North American handling business remains a "very competitive market with a high number of players". There is "still a disproportionately high volume of self-handling among domestic carriers", Speck points out.

In terms of GSE: "In order to cater to such a market, manufacturers need to provide very basic, no-frill, no-engineering-gimmicks GSE that is dependable and gets the job done. Additionally, manufacturers who provide attractive R&M (repair and maintenance) contracts will be the most competitive in this very competitive market."

Speck says that Swissport this year "will continue to focus our efforts on cost leadership. We will stick to our continuous replacement plan and seek possible opportunities for growth to secure and extend our worldwide number one position." He identifies Swissport's greatest current challenges as relating to the "dynamic market environment and challengingly short start-up times"; all that paired with a limited number of suppliers. "We overcome these conflicting factors by standardising GSE and entering strategic partnership with key suppliers," Speck highlights.

TRENDS

A constant theme offered by these front-line GSE service companies seems to be a requirement for equipment that is robust with no frills, coupled with the need to meet higher environmental standards. A demand for simple, hi-tech ruggedness seems to be the order of the day. ■

taken steps to build in reduced emissions and even zero emission power for equipment that gets a zero-time rebuild.

"However, these challenges have also helped WFS continually think out of the box and challenge how things are done. For WFS, one example of this was the decision by senior management to establish a specific location for repair and rebuild of GSE," says Whitfill. "Also, because there are good vendors available, WFS outsources its GSE maintenance at about one-half of its locations as a way to be more competitive."

Going forward, Whitfill explains: "WFS is focused heavily on ensuring that all equipment is utilised to its fullest. This also includes investing in the heavy repair of surplus GSE as well as the zero-time rebuild of GSE as a way to inject new life into the fleet and create cost savings through things like reduced maintenance and lower fuel use."

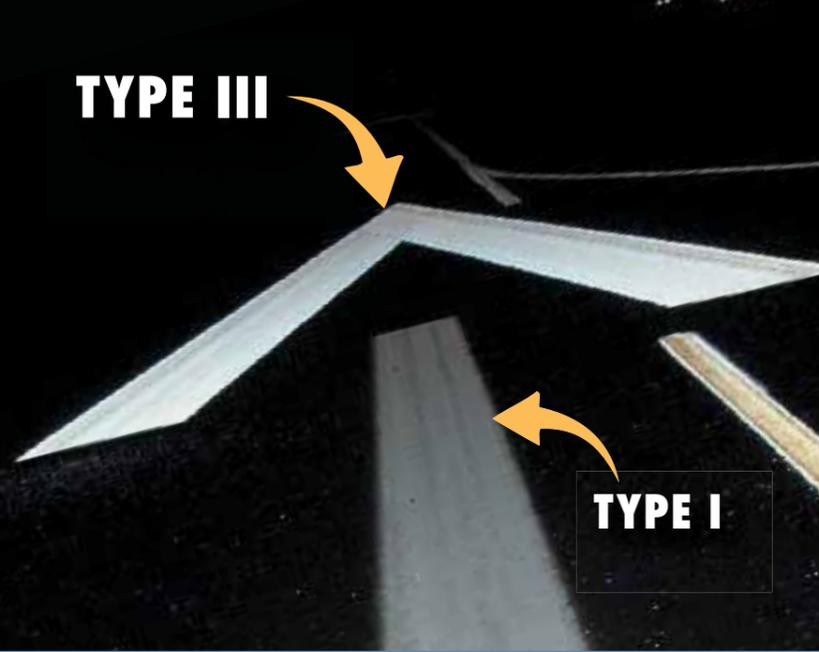
Furthermore: "While the WFS Rebuild facility is capable of many things, there are still certain types of equipment that do require upgrades. For example, older GPUs have a hard time operating on today's newer aircraft. Therefore, upgrading hi-tech equipment in the fleet, at a responsible pace, ensures equipment is available at the right cost and the right time."

"The market has been relatively steady over the past 12 months, without any significant upward or downward swings"

Peter Stearn, executive vice president, Fortbrand

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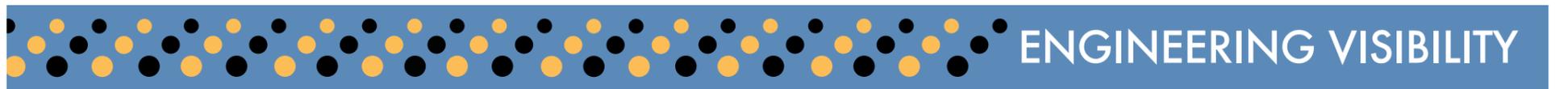
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Reaching the HEIGHTS

High lifts and loaders are the workhorses of any airport. They are used for loading and unloading cargo, the delivery of cleaning staff and their equipment as well as catering supplies to the cabin, cleaning the outside of aircraft and, in some cases, re-fuelling. And there are as many manufacturers and varieties of equipment as there are applications. So how do users ensure they have the right equipment for the job? Marcia MacLeod explains

Cargo handlers – the most frequent users of high lifts and loaders – usually opt for a scissor lift on a base, although scissors on a flat bed truck can also be applicable in some situations. Occasionally, a normal high lift loader is combined with a crane: the crane will be used to lift a heavy piece out of the aircraft for transfer to a high lift, and vice versa.

Catering and cleaning companies don't need the same size of lift; for them, a people-carrying platform is sufficient. The same type of equipment can be used for exterior aircraft cleaning and re-fuelling, although steps are frequently used instead.

Catering companies usually acquire their own equipment; some cleaning companies do, too. Generally, though, high lifts and loaders are owned by the ground handler or, in some cases, the airport. Fraport, Frankfurt's airport authority, has approximately 250 million euros (US\$333 million) worth of GSE, including high lifts and loaders, which is quite an investment, considering the range of equipment needed.

GETTING THE RIGHT TOOLS FOR THE JOB

Cargo loaders vary according to the type and size of aircraft being served, plus the type of cargo being handled. "Cargo loaders come in a variety of capacities," explains Paul Drever, technical expert at Menzies Worldwide. "You can get loaders with a capacity of seven tonnes, 14 tonnes, 20 tonnes, 30 tonnes and 35 tonnes – and some manufacturers offer a 28-tonne special loader to handle extra large pallets. In Australia, we can get a loader 3m longer than normal to lift a 20ft pallet.

"Different equipment is needed for wide-bodied, maindeck operations and for narrow-bodied lower decks. The standard lower-deck operation uses a 96 inch (approximately 2.4m) wide lift, whereas a wide-bodied lift is normally 128 inches (approximately 3.3m) wide."

The introduction of the A380 presented a new challenge, partly because it has three decks – requiring a higher lift – and partly because its extra capacity attracts larger, heavier cargo.

"You can't use a smaller loader on an A380 as the pieces of cargo might be too heavy," points out Terry Trainor, senior vice president operations support at Menzies. "You need strong, robust equipment to load and unload outsize cargo."

A scissor lift in action at Vitoria



An Atlas freighter takes advantage of the benefits of a scissor lift at Vitoria (above); A high lift being used by handler HACTL at Hong Kong International airport (below)

TBD and Tesco collaborate

Two high lift and loader manufacturers are bringing new equipment to their customers, by entering into an arrangement to sell each other's designs on their own chassis. TB Davies in the UK and Tesco in the US (no relation to the British supermarket group) are each developing new high lifts, loaders, maintenance platforms and catering trucks.

"The US and Europe have different requirements on things like emissions and lighting," explains Phil Summers, technical director of TB Davies. "That makes it impossible for us to sell our equipment in the US and Tesco to bring their products to Europe. So we are taking their high lift and service equipment design, but putting it on European chassis, and Tesco is taking our stairs, toilet and water trucks and putting them on US chassis."

"That means we will both be able to bring new products to the market and provide good local support. We are particularly interested in Tesco's high lift mounted on a heavy-duty pick-up truck, the sort of equipment that Americans do really well but which is not available in Europe."

Peter Speck, vice president cargo supply and GSE maintenance management at Swissport, agrees. "We have approximately 450 units," he says. "Most are lower-deck loaders, but we also have maindeck loaders and container transporter loaders. Each has a different job to do."

Sometimes a piece of equipment has to be altered to suit a particular application. "We had to enhance the platform, so it is a little bigger, for our container loaders used with B757s," Trainor explains. "It gives us greater flexibility with our equipment and, provided all equipment meets safety requirements, that is of huge benefit."

Safety is a big consideration when choosing high lifts and loaders. All modern equipment should have an automatic cut-out if it is overloaded. However, platform safety features vary: some just have a chain across, whereas others have a metal bar. "When a man is standing up there," says Trainor, "a chain does not give sufficient protection."

Environmental issues are also affecting the choice of equipment. Hong Kong Air Cargo Terminals Limited (HACTL), a freight handler at Hong Kong International airport, has increased its proportion of electronic GSE but, it says, "has not been able to find a cost-effective and efficient solution for larger ramp equipment".

Menzies, too, is looking at its carbon footprint. "We already have electric baggage trucks," observes Trainor, "but electric loaders are new on the market; we are evaluating them now."

The recession has stopped some operators from going greener. "There are electric loaders out there," points out Jimmy Brassil, general manager GSE maintenance and procurement for Servisair, "but the way the industry is at the moment, no one has the money to invest."

NEW PROBLEMS

Other types of modern equipment have introduced a new set of problems. "Manufacturers have worked on things like total cost of ownership optimisation, safety, operational efficiency and effectiveness," Speck comments. "Recent years have brought an addition of electronics and computers to equipment control. But in more remote locations, we actually prefer less sophisticated technology, because it requires fewer spare parts and is easier to maintain and repair."

Availability of equipment and availability of maintenance services both influence the choice of high lifts and loaders at any particular station. They also influence the decision to lease or buy.

"We have three equipment programmes," observes Trainor. "In some regions, we buy our own equipment; in others we lease; and in still others we buy, but outsource maintenance. It all depends on what equipment is available and how good the maintenance services are."

"If you take somewhere like Africa or Australia, which are more remote, it may be harder to find good maintenance service companies, so we buy and maintain our own equipment (there). At Heathrow, we benefit from a lease pool, which enables us to obtain an additional loader to cope with peaks or a delayed flight. But not every airport is as large as Heathrow and few have similar arrangements."

Swissport also bases its decision to buy or lease on each station's circumstances. But, like Menzies, it tries to build strategic partnerships with reputable manufacturers. "Standardisation of equipment helps us reduce our costs and enables us to meet the changing conditions found in an old market," Speck emphasises.

Servisair chooses to buy its equipment, as does Fraport. "We checked out leasing," admits a spokesman for Fraport, "but at the end of the day, it's cheaper to operate our own fleet. Whether to buy or lease is the standard general handling dilemma. Everyone says they will deliver quality, but really there is only so much you can deliver for a given price."

"Most handlers can't buy their entire fleet of equipment because they don't understand their costs. Also, maintenance of equipment is a ground safety issue; we have computer-based analysis that gives us an overview of every screw. We can see which piece of equipment is due for maintenance, which has a problem, etc."

HACTL also buys its equipment because it finds this strategy more cost-effective. All equipment is replaced after a certain pre-determined period.

Whether users buy or lease, they all agree that manufacturers have continually improved their products – but still have more to do. "The equipment is more efficient," says Brassil. "Technology is improving all the time. Support is good, too."

But some operators don't think it's good enough. Fraport wants "a real overnight parts service, a 24-hour after-sales service, and three years' warranty for parts and labour".

Swissport wants to see an upgrade of existing safety features and the development of new ones. "I'd like proximity switches and sensors or laser guidance systems to allow more precise positioning of loaders at the aircraft," Speck says.

Trainor goes further, throwing down the gauntlet to manufacturers. "We need a revolution in GSE at airports," he believes. "A lot of loaders are still made of heavy steel, despite the development of so many composite materials. Composites would be lighter, meaning we'd get better mileage and electric charging. It could be that lighter materials wouldn't be able to cope with the weight we have to lift, but we don't know that until someone tries it out."

"We need better protection, too. Too many loaders have no protective backing. GSE manufacturers need to do better to develop equipment that works better around aircraft." ■



Airport infrastructure projects in developing markets are worth a fortune for contractors, but there are challenges to be overcome. By Keith Mwanalushi

Gateway modernisation



New design for Kuwait International airport; credit: Foster + Partners

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Dubai International Convention and Exhibition Centre, Dubai, UAE.

This year began with yet another flamboyant event at Dubai International Airport (DXB): the initial launch of a phased opening of Concourse A, part of the gateway's Terminal 3 and the world's first A380 facility. Four of its 20 gates were brought into operation during the first week of January.

"Over the last few months, our preparatory work moved into high gear. We learned a lot from our experience with Terminal 3," explains Paul Griffiths, CEO of operator Dubai Airports. "We learned that the big bang theory is not the best approach when it comes to opening an airport. Soft launches following rigorous testing and operational trials are the only way to go."

The new concourse is spread over more than 500,000 square metres through 11 levels. It features 20 gates and 13 remote stands.

Even before the dust had settled, Dubai Airports announced that work would begin on the refurbishment of DXB Terminal 1 during the first quarter of 2013. Work being carried out on T1 includes the refurbishment and streamlining of baggage screening in the departures hall, the replacement of all check-in desks, the upgrade of baggage systems and the modernisation of all public areas.

It is in the Middle East that a sizeable chunk of the world's airport infrastructure development is taking place. Active right across the MENA (Middle East and North Africa) region, as well as in Eastern Europe, Turkey's TAV Construction has been involved in a number of particularly big airport development projects. According to managing director Umit Kazak, the company follows airport expansion projects in the emerging markets very closely.

"Given the growing demand for large infrastructure projects fuelled by the oil-rich economies, there are a lot of opportunities for both local and international contractors. Most of the leaders of these countries have the money and the vision to transition their economies so that they do not have to depend merely on oil revenues in the future. Therefore, they are bringing the necessary resources together to visualise these ideas," Kazak notes.

He outlines some ongoing projects involving TAV that include Qatar's New Doha International Airport and Prince Mohammed Bin Abdulaziz International Airport in Medina. Other Middle Eastern gateway infrastructure developments in which the company is playing a role include those at Muscat International Airport and SAEI Aircraft Maintenance Hangars at Jeddah Airport.

Nearby, the construction site at the Midfield Terminal Building (MTB) in Abu Dhabi will be a hive of activity over the next five years. Abu Dhabi Airports Company (ADAC) scrutinised numerous bids for the Dh10.8 billion (US\$2.94 billion) project and, in June last year, the company awarded the winning contract to the joint-venture company created by the Turkish construction group TAV, Consolidated Contractors' Company (CCC) and the UAE's Arabtec.

The new passenger terminal building is expected to be extremely impressive. Featuring an undulating roof, inclined facade and the use of advanced technology, it represents a significant endeavour in the quest to out-class the already high-tech projections at other terminals under development in the region.

The MTB project incorporates two key stages: the construction phase followed by the Operational Readiness Assessment phase (ORAT) where, during a nine-month period, thorough tests of all aspects of the terminal will take place to ensure operational and efficiency readiness from the first day of operation.

The 700,000 square metre terminal building will play a key strategic role. It will initially handle 27 million passengers per year and it is

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set to become the future home of national airline Etihad Airways.

More recently, TAV Construction placed a bid for the design and construction tender of Terminal 5 at King Khaled International Airport (KKIA) in Riyadh, Saudi Arabia. "KKIA in Riyadh is currently undergoing a major structural transition, to develop and modernise its infrastructure up to international standards and to improve its customer service levels across all business lines," Kazak observes.

In this respect, he points out that Terminal 5 at KKIA will aim to replace the capacity of the existing Terminal 3 and cover traffic growth over the next five years. "The scope of the work will comprise the new terminal building with an adjacent apron, along with a multi-storey car park and ancillary facilities," he says.

SMALLER GATEWAYS LOOK TO EXPAND

To mark the growing opportunities presented by airport development work in growing markets, airport leaders and industry experts from across Asia, the Far East, Russia and the CIS, the Middle East, Africa and South America convened in Dubai for the Emerging Airports Conference and Exhibition 2013 in January.

Aside from the more glamorous projects well known to many, significant attention was drawn to the development of smaller but increasingly key strategic airports such as Erbil International (EIA) in Kurdistan, Iraq. An international jury at the Emerging Markets Airport Show voted Erbil International as the best gateway amongst emerging market airports that handle less than five million passengers per annum across Africa, the Middle East and Asia.

Services from Erbil now connect to 15 different countries and 23 cities, with 21 airlines currently flying in and out of the airport, attracted by the business opportunities presented by the country's large oil reserves. During a presentation, EIA's director general, Talar Faiq, indicated that a radar project was now complete and that air traffic services are also subject to a major investment programme.

Not to be outshone, many other less well-known airports around the world are not sitting on their laurels. Brunei International Airport, for instance, is undergoing a significant upgrade. The project, scheduled for completion in November 2014, is expected to double the facility's handling capacity from the current 1.5 million passengers a year to 3 million passengers annually by 2014.

This current modernisation will see major improvements include an additional 50 per cent floor space, various new environmentally friendly features and the installation of a much-improved security and baggage handling system and access control. The number of check-in counters will increase from 19 to 40, while the number of immigration counters in the arrival hall will rise from 14 to 26, and in the departure hall the number of counters will rise from eight



(From left to right) TAV Construction managing director, Umit Kazak; The \$3 billion MTB will be fully operational by 2017; credit: ADAC

to 26. A new car park will be built which will be able to accommodate 600 cars, of which about 100 will be sheltered.

The passenger terminal at the airport, which has seen heavy growth in the number of users in recent years, has already been upgraded twice before.

ONGOING DEVELOPMENT

In the Far East, airside upgrade work continues at Taiwan's Taoyuan International Airport. The project entails pavement rehabilitation and extension of the existing runways and taxiways, plus upgrading of the airfield lighting system, Category III landing system (ILS) and an airport staff training programme. The main challenge of this project, according to Dutch airport consultancy and

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engineering firm NACO, which is overseeing the development, is to manage runway safety and availability while minimising the project's duration.

The runways and taxiways at Taoyuan will grow by 2014 to accommodate larger aircraft including the A380. Navigation facilities are also being upgraded at the airport in order to reduce the effects of bad weather on airport operations. Runway and navigation aid improvement projects are expected to be completed by May 2014.

Elsewhere, most of the key airports across Africa have seen a steep rise in passenger numbers and significant upgrade projects are being undertaken throughout the continent. Political interference, in some cases, continues to hamper progress, however.

Plans to modernise Jomo Kenyatta International Airport (JKIA) in Nairobi have so far only led to several postponements. Upgrade work that began in mid-2012 was halted in December last year, although work is scheduled to recommence in June this year. The \$141 million airport infrastructure project has fallen way behind schedule as competition intensifies with neighbouring Bole International airport in Addis Ababa, which is also being redeveloped.

In another example of political meddling, the Zambian airports regeneration project that aims to tackle the dilapidated terminal buildings across the country's airport network has got nowhere. In 2010, ambitious plans were set in motion to develop a sophisticated airport system in Zambia, replacing the outdated colonial infrastructure at the country's four principal airports, including the nation's main gateway in the capital Lusaka. After a much-hyped media event to highlight the plans, a government reshuffle took place and the multi-million dollar project's future hangs in the balance.

LATIN AMERICAN OPPORTUNITIES

Arguably, the most interesting airport infrastructure developments in the next few years will be seen in South America, in particular Brazil, as it prepares to host both the FIFA Soccer World Cup and the 2016 Olympic Games. Brazil is privatising airport infrastructure and opening up markets before the 2014 world cup. Airports are already being expanded and it seems likely that ground handling activities will also be opened up to more competition.

Umit Kazak from TAV Construction is well aware of the tremendous growth in airport construction projects in South America and Brazil. "Our sister Company TAV Airports Holding closely follows up on the projects in the region and TAV Construction will consider this market in the future in line with its expansion strategy," he concludes. ■

The 700,000 square metre MTB terminal building at Abu Dhabi will play a key strategic role for home carrier Etihad; credit: ADAC



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25th April 2013

DAY ONE

To be chaired by

Pete Speck - Vice President and Head of Corporate Supply, Swissport International &
David Anderson - Head of Operational Safety, British Airways

- 08.00 Registration opens
- 09.00 Chairman's opening remarks
- 09.15 The global perspective for GSE supply - where do the opportunities lie?
- 09.45 'ISAGO implementation: challenges and benefits for a GSE operator'
- 10.15 How is Ground Support Equipment changing and what can we expect from GSE a decade from now? Can GSE keep pace with the technology improvements we are seeing in other airport infrastructure and equipment and can it maintain pace with the requirements put upon it?
- 10.50 Questions and discussion
- 11.00 Break for refreshments and viewing of exhibition
- 11.30 Financing GSE and the suitability of fleet management, rental and operational leasing models. An appraisal of the total cost of ownership of GSE and what savings, if any, can ground services providers pass on to their customers?
- 12.30 Questions and discussion
- 12.50 A few words from our lunch sponsor - DENG
- 13.00 Break for Lunch and viewing of exhibition
- 14.30 Ground Safety Training - staff awareness and the need for adherence to safe procedures Employee safety and training are key factors in any successful ground handling operation. What is involved in maintaining a high level of professional training and a strong focus on safety in ground/ramp operations? The human factor.
- 15.00 Aircraft damage - equipment, procedures and training
- 15.40 Questions and discussion
- 15.50 Break for refreshments and viewing of exhibition
- 16.15 Handling the A350 and Other Composite Aircraft - are new types of equipment & training required to handle this aircraft? Do composite structures present new challenges?
- 17.00 Questions and discussion
- 17.15 End of day one

19.00 - 23.00 Evening Cocktail and Gala Dinner

26th April 2013

DAY TWO

To be chaired by

Pete Speck - Vice President and Head of Corporate Supply, Swissport International &
David Anderson - Head of Operational Safety, British Airways

- 08.30 Registration opens
- 09.00 Chairman's welcome
- 09.10 The Green Agenda - Airports are increasingly seen as intermodal hubs, playing a major role in economic growth, but can they combine commercial viability with the imperatives of the green agenda? What roles do the airlines and ground service providers have in helping airports meet increasingly stringent regulatory requirements?
- 09.40 TaxiBot Operations from a ground service providers perspective what makes the difference to present procedures? How does the ground handlers and airlines environment influence effectiveness of dispatch towing? Which basic prerequisites should be given for a successful operation?
- 10.15 Questions and discussion
- 10.25 Break for refreshments and viewing of exhibition
- 11.00 The effect on the value chain of more stringent environmental and related safety demands
- 11.30 Questions and discussion
- Winter Operations
- 11.40 Airport Winter Operations - snow clearance and deicing What challenges are being faced and how is technology moving forward?
- 12.20 Predicting and reacting to harsh winter weather How airports use long term weather forecasting and predictions to plan winter operations.
- 12.50 How are airports dealing with worsening winter conditions? Is global warming going to mean major changes? How will technology and systems have to change in the future?
- 13.20 Questions and discussion
- 13.30 Closing lunch Hosted by DENG

END OF CONFERENCE

EVA International Media Ltd reserves the right to make changes to the speakers or programme should this be necessary without prior notification.

Industry veteran hangs up his boots – well, partly!

Airside International talks to Mike Doane, who retired in January after 50 years' service with Douglas Equipment, about his career highlights and how the business has changed over the last half-century

Mike Doane was employed in the GSE business for 50 years, serving just one company faithfully through those five decades – Douglas Equipment, now a business unit of Curtiss-Wright Flow Control Company. He joined Douglas in 1963 on a 5-year engineering apprenticeship and left the business as its sales & marketing director.

He is spending his more than well-earned retirement in Cheltenham, also home to Douglas Equipment. And he has not withdrawn from the GSE sector completely. Having served the British Airport Services and Equipment Association (BASEA) for three separate terms as chairman and still a board member there, he recently accepted the post of honorary president. Moreover, he remains available for anybody in the GSE business who would like his help or advice, he confirms, and is of course still in touch with his many colleagues and friends from the industry.

HIGHLIGHTS

Fifty years in the business brought many highlights, Doane explains. Perhaps at the top of his list was seeing – and being a leading player in – Douglas Equipment's expansion, it now being recognised as a "truly global player in our industry".

Today, the company exports 95 percent of what it manufactures, he observes, its products being distributed to most parts of the world. It now employs 130 people in what remains a relatively niche market and has grown its after-sales and support services to ensure that the highest possible levels of client satisfaction are achievable. Douglas also led the way in bringing many technological developments to the



Mike Doane, now enjoying his retirement

Today, the company exports 95 percent of what it manufactures, its products being distributed to most parts of the world

industry, possibly most memorably bringing what Doane believes was the first really affordable towbarless tractor design to market.

Of course, there have been big changes in the GSE sector over those years. Most notable, he says, has been the increasing reluctance of airlines in particular, but also handlers and airport authorities, to involve themselves directly in the development of new equipment.

For manufacturers such as Douglas, which design their equipment around these customers, their involvement in the development process is vital, yet the carriers, handlers and other customers now prefer to dedicate most of their interest to well-proven equipment.

This could be because of less funds being available to them, it might be due to a more conservative psychology, or it might simply reflect the fact that GSE technology is now more mature and more stable. However, the trend could at least potentially hold back research and development – not a good thing in any industry that needs to keep growing and keep improving.

Another major change in the sector has been the consolidation and globalisation of handlers into a few large companies that now dominate their market, Doane points out. The customer base has shrunk as handlers come together in mergers and acquisitions, while fewer carriers undertake their own handling.

MOVING ON

There may be less stress and there may be fewer responsibilities now that Mike Doane has retired, but he clearly remains very active in the business. For 50 years he was a leading light in this industry and we wish him all the best for the years to come. ■

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Airport FOCUS

Airports Council International's director general discusses how she sees the future for the trade body's members and lays out some of ACI's current priorities

The future is going to be challenging of course, for airports as for every other part of an aviation sector that is changing rapidly on an almost daily basis. The last few years have been difficult for much of the industry – but for airports it has been a complex, mixed picture, as Angela Gittens, director general of Airports Council International (ACI) explains.

Challenges have depended to a large degree on geographical location. For gateways in North America and Western Europe, the economic meltdown suffered in those regions has led to a slowdown, or even stagnation, in traffic. This is not to say that the long-term trends of rising throughput and all the problems that go along with heavy congestion can be ignored; airports in the developed world remain extremely busy and investment in their future expansion has had to be maintained.

In parts of the world such as Asia, sub-Saharan Africa and Latin America, the recent history of gateways there has been one of continued rapid growth, with all the issues associated with boosting the capacity of airports remaining in stark focus. However, according to Gittens, many of the gateways in Asia have been particularly helped by national governments that have realised the “absolute driver to economic vitality” that airports represent. They also regard these gateways as a positive showcase of their country’s health and prosperity.

In Africa, the authorities are coming round to appreciating the value of the aviation sector and, indeed, for getting across large distances of the continent, let alone for trans-continental journeys, flying is by far the most practical way to get around. In this region, it is less the spatial constraints to airport expansion than the commitment to capital investment that has posed a challenge in airport development.

In Latin America, too, gateways have called out for modernisation and expansion and in places such as Brazil the government has understood the need and turned to the private sector for the necessary capital. The results of the region’s developing airport sector can be seen in such examples as Ecuador’s soon-to-open airport in Quito and the brand new terminal at Guayaquil’s José Joaquín de Olmedo International Airport.

SIMILARITIES AND DIFFERENCES

This is a very broad-brush summary, of course. All airports, on whatever continent they are sited, face markedly different challenges. Not only will those challenges depend on location (taking in factors such as climate, terrain and even the geometry of a gateway’s layout), but other variables such as the economic environment in which they operate, political factors and of course the culture of the society around it. Even at the local level, differences can be marked.

To take just one example, Gittens illustrates, New York has three major airports, all of which maintain an entirely different business model, even though JFK, LaGuardia and Newark are all operated by the same airport authority, Port Authority of New York and New Jersey (PANYNJ).

Despite the many differences, however, it remains indisputable that airports right around the world are also facing many of the same challenges. Most obviously: “The aviation sector is definitely going to grow,” she observes. “There will be winners and losers but growth is inevitable.”



Angela Gittens, director general of ACI

Thus a large proportion of the world’s airports will need to expand their capacity in the near or medium-term future. There is no shortage of models available as to how to do this – numerous consultancy firms and big engineering companies have offered their thoughts on various big development programmes – but for each gateway the approach is going to need to differ because of their own unique characteristics and challenges.

Certainly, as expansion at airports such as Frankfurt has shown, the right land planning strategy is vital, given the strength of today’s environmental and noise abatement lobbies at national and local levels. Moreover, the investment required for these sorts of expansion programmes is massive and the time-frame for development can run into decades.

To meet the needs of increased traffic, many airports will grow organically, but the industry will also have to become more efficient. Not only will gateways need to improve, so too will other aspects of the aviation business. According to Gittens, that improved efficiency will be seen in a number of areas, one of which is improved air traffic management (ATM) that will allow for increased numbers of take-offs and landings, as well as more crowded skies.

For example, greater automation of processes will mean smaller aircraft separation distances will be required, she considers. The sort of technology

that can move the sector forward is already there, Gittens points out; its introduction is more a question of overcoming political and/or cultural friction.

COLLABORATION IS CRITICAL

Greater efficiency at airports and across the aviation sector will come about in large part through much closer collaboration throughout the industry, she also contends. The three legs to the aviation stool – airports, airlines/aircraft and ATM – have grown up fairly independently, but they now need to work much more closely together, Gittens says.

What she calls “collaborative decision-making” should be the norm right across the industry, she continues. By working together, the various partners in the aviation sector can achieve much more than if they do not co-operate closely. Just as that is the case at the airport/airline/ATM level, so ACI works closely with bodies such as ICAO (the International Civil Aviation Organization, which regulates and promotes co-operation throughout the aviation sector), IATA (the International Air Transport Association, the trade body representing air carriers) and CANSO (the Civil Air Navigation Services Organisation, the trade body for ATM) to move the aviation sector forward in a collaborative and positive way.

“Unless we do work together, we run the risk of strangling ourselves,” Gittens declares. Similarly, if the needs of other parties are not taken into account – the need to protect the environment, for example – therein lies danger. “We need a balanced, collective approach across the industry” to meet the needs of tomorrow, she urges.

INVESTMENT

Of course, not all problems can be solved purely by more effective co-operation. For some challenges, significant investment is also required. That is certainly the case in regard to the heavy congestion that so many airports now face – a problem that is likely to worsen as passenger and freight traffic is forecast to continue to increase rapidly.

Congestion at, and on the way to and from, airports can be eased in part by better transport links to the gateway (the responsibility of local and national governments), while within airport terminals speeding throughput will largely depend on greater automation. A lot of good work has already been done in this area, Gittens enthuses, such as introducing self-service check-in and encouraging passengers to do more at home in preparation for their flight prior to leaving for the airport.

The time taken to screen passengers and freight at airports has long been a bugbear and ICAO is certainly looking at this issue in depth. A good deal of

“The aviation sector is definitely going to grow. There will be winners and losers but growth is inevitable”

experimentation and testing is being undertaken in this regard, for instance in improving screening technology that will be able to handle higher volumes of people at a faster rate. But the answer will also have to lie in streamlined processes, including advanced screening such as through ‘preferred shippers’ in the freight world and ‘trusted travelers’ in the passenger environment.

The bigger, and sometimes heavier, aircraft filling our skies also have to be handled at the world’s airports, requiring further investment in infrastructure. But, according to ACI, much of the additional spending that it seemed at first would be required might in fact not actually be needed. For example, many of those airports handling the ultra-large aircraft such as the A380 are serving well-travelled trunk routes and are well used to heavy equipment and large aircraft – while gateways in regions such as the Far East that are handling the aircraft also have plenty of space in which to expand their stands and other facilities as required.

BEYOND THE OBVIOUS

ACI has other priorities that it is seeking to address. One of them is safety. “As an industry, we are always looking to drive down the accident rate but rapid growth can cause problems of safety,” she observes.

Furthermore, ACI is not content to deal with just accidents and those ‘incidents’ that have the potential to turn into accidents. “We are also focusing now on the ‘safety environment’,” she says. This means introducing a ‘safety culture’ at gateways, ingraining safety as a priority in all aspects of an airport’s operations.

It is doing this within a programme it calls APEX ‘Airport Excellence in Safety’. Within this initiative, ACI performs safety reviews on-site for airports, identifying gaps in safety culture and offering an implementation plan as to how that culture can be ingrained in all day-to-day operations. Part of the strategy is to ensure that all individuals at an airport “feel safe to say when something isn’t safe”, Gittens explains.

Other developments in the world of the airport will see much greater use of social media in the future, she believes. Everyone is customising their service, Gittens highlights, and airports are no different. With passengers so much more comfortable with this sort of technology, airports will utilise social media more and more frequently for functions such as parking, ticketing, screening and even shopping.

Finally, she is expecting airports to make even better use of their valuable land assets. With revenue from on-site retail activity now such a vital part of so many airports’ revenue streams, this and other businesses including high-end hotels are only likely to grow in importance for airports, Gittens concludes. ■

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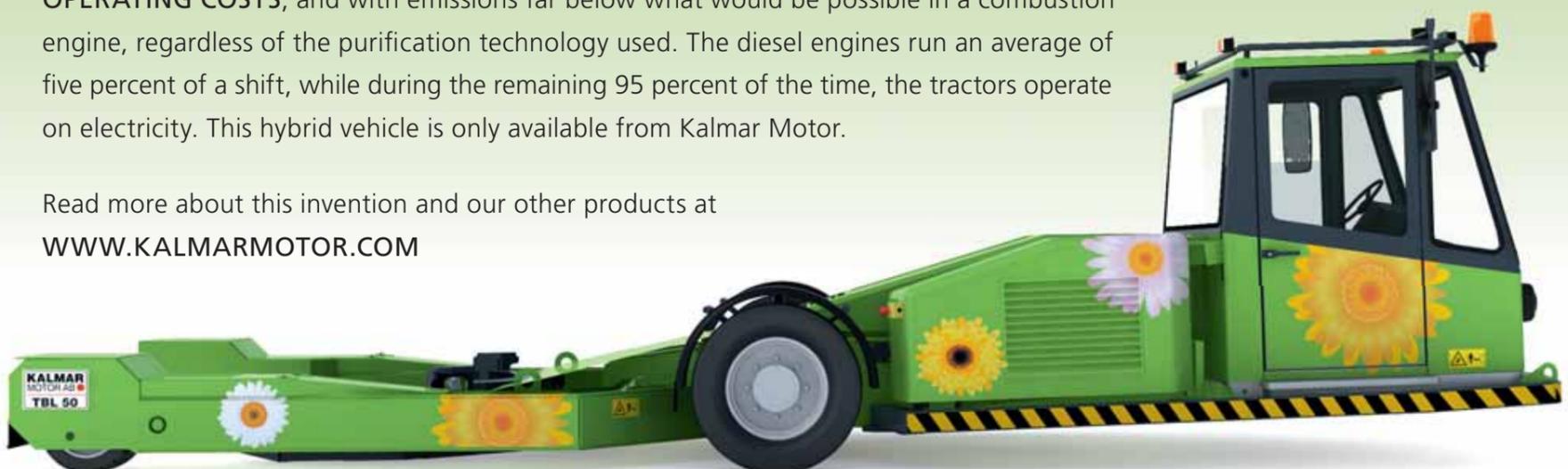
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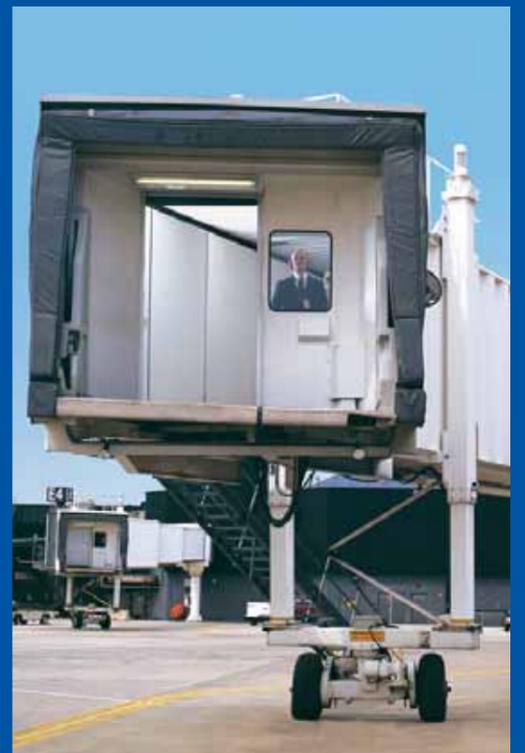
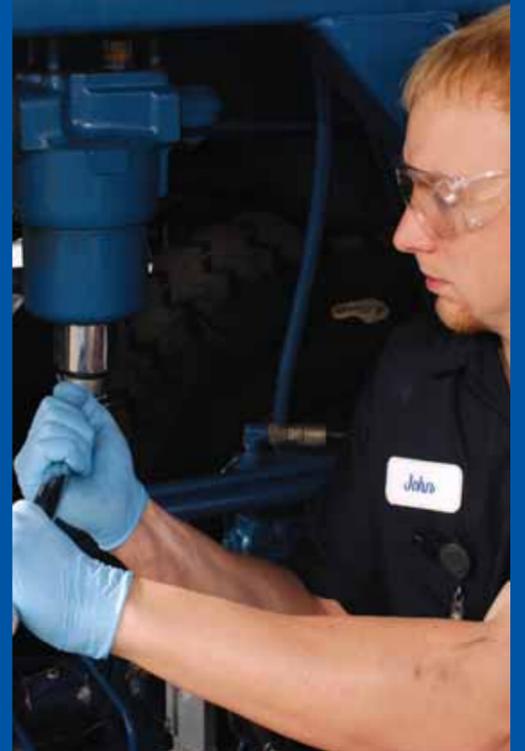
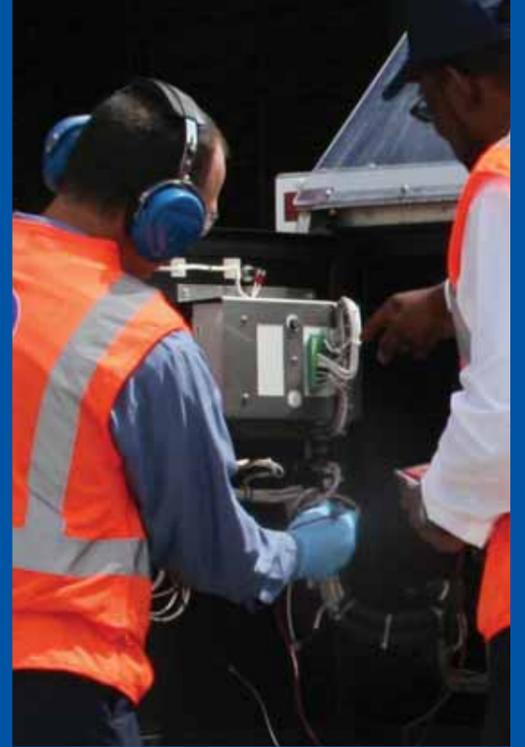
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Swissport is one of the world's biggest handlers and among the big three at AIA

GSE buyer interview — Athens

Athens International Airport has faced hard times in recent years, along with most of the rest of the country. Life goes on, however and *Airside International* looks at the GSE needs of the gateway's handlers

Athens International Airport (AIA) plays host to a number of handlers, all of which must continually reassess their GSE procurement requirements. Goldair Handling's operations at the capital's airport are just part of a wider operation taking in 26 airports across Greece as well as two in Bulgaria at Sofia and Burgas (through a subsidiary company) and two in Cyprus at Larnaca and Paphos (through a joint venture, LGS Handling).

Offering passenger, ramp and cargo handling services, its client carriers include the likes of Etihad, Qatar Airways, Lufthansa and Air France-KLM; it also handles some of the operations of flag-carrier Aegean Airlines at Athens and other gateways. Goldair has an extensive inventory of GSE vehicles and equipment (something like 870 different pieces), incorporating everything from passenger stairs to loaders, tractors, conveyor belts, bowsers, toilet units, pallet transporters, high loaders, de-icing units, air-conditioning units (ACUs), ground power units (GPUs) and forklifts.

According to Goldair's operations auditor, John Alexanian, this large fleet of vehicles and other equipment expanded massively in 2011 as the handler grew its footprint across many Greek gateways both that year and during the following 12 months.

Boasting an average equipment age of just eight years, some replacement and updating will certainly be required, but any major new acquisition of GSE is likely to stem from developing new business at other air-

ports. And this is exactly what Alexanian expects to see happen, pointing to the likelihood of Goldair establishing new operations at two further airports in 2014. This is despite what he admits is a tough, unpredictable market in Greece at the moment, although Alexanian is expecting "the picture to become much clearer" next year.

OLYMPIC HANDLING

Another big handler both at Athens' Eleftherios Venizelos airport and across Greece is Olympic. Olympic Handling has a GSE fleet of more than 700 units just in Athens and more than 4,000 units across the 37 gateways where it operates.

Just at AIA, Olympic Handling employs more than 270 baggage carts, 90 container dollies, 40 pallet dollies, 20 passenger ramp buses, four air starters, seven medical lifts, eight aircraft push backs, 35 passenger steps, 12 towbars, 30 baggage tractors, five ACUs, 14 GPUs and 20 forklifts.

Last year, the handler bought more than 20 new units, confirms Olympic Handling's commercial director Efstathia Vassalou, including electric baggage tractors, lavatory service vehicles and GPUs. "It is an ongoing investment programme and (further) new orders will be defined once a better update of summer 2013 is available," Vassalou notes.

Olympic Handling's GSE fleet requirements are assessed twice a year, based on the summer and winter flight programmes. However, she observes: "With the addition of new customers, all operational needs, including GSE, are examined on an ad hoc basis as well."

It has been handling flag-carrier Olympic Air for three years, while other client carriers include Austrian Airlines, Iberia, EgyptAir, Air China and Transavia, to name just a few. As well as the number of customer airlines for which it works, the handler's GSE requirements are also a function of many other factors, including aircraft type, volumes of flights and frequencies of operations. Furthermore, some service level agreements (SLAs) require the use of additional equipment, she points out.

Olympic Handling has turned to a number of different GSE manufacturers to fulfil its equipment needs – companies including Cobus, Man-Neoplan, Schopf-Rafan, Goldhofer, Trilectron and Hobart. Plus, when it comes to repairing equipment, the handler has its own capability. It maintains a "state-of-the-art GSE workshop" in a 4,000 square metre facility, Vassalou says, employing a "strong workforce of technicians and support staff". These employees often work with engineers from GSE manufacturers on site to repair or rebuild units as required.



George Varsamis, manager ground handling services at Athens airport

'RIGOROUS' GSE REPLACEMENT

Swissport is the third of the big three general cargo handlers at Athens. It employs a variety of GSE applicable for both wide-body and narrow-body aircraft that offers its customers "reliable, cost-effective quality services", explains Swissport's vice president and head of corporate supply and GSE maintenance management, Peter Speck. With 540 staff at AIA, it handles approximately 16,000 flights a year through the gateway, 27,000 tons of cargo and about 3.2 million passengers.

The handler maintains a "rigorous, continuous GSE replacement plan throughout its system", he continues, one which has as a primary focus minimising the total cost of usership and ownership in order to maintain what Speck describes as "cost leadership".

As well as that replacement plan, procurement needs are also driven by customer activity, not only its changing client carrier base but each of those airlines' flight schedules. "The actual need is determined locally (at the country level) and then passes through a standardised approval process," he notes. "Equipment sourcing and selection is done centrally at HQ global corporate supply (with the exception of local products such as cars, vans and so on)."

Speck also observes: "It has been Swissport's procurement strategy for many years to standardise GSE (in terms of both equipment specifications and the supplier base). This helps us to control cost in relation to maintenance and spares supply and allows us to redeploy GSE within our worldwide network."

COMPETITION

Goldair, Olympic and Swissport are supplemented by DHL's own handling operation at the gateway and, together, these handlers offer an efficient and competitive service to the gateway's numerous airline visitors, says George Varsamis, manager ground handling services in AIA's Aviation Business Unit.

He and his colleagues work closely with each of these handlers to ensure that they offer the best possible services, he adds, particularly in four specific areas: service quality; safety; security; and environmental awareness. All handlers must come through a competitive tendering process – as part of which they are required to submit to AIA a detailed business plan that demonstrates they understand their various potential responsibilities – and each must have those SLAs mentioned by Vassalou that set mutually agreed targets with the airport. To be successful in their application, they must also be licensed by the Hellenic Civil Aviation Authority.

Their performance monitored on a monthly basis, should any handler not meet the required operating standards, meetings will be held with the airport operator to identify any problems and rectify the situation as soon as possible.



Goldair Handling has a large inventory of GSE at Athens International Airport

As well as providing that oversight role, Varsamis also sees it as the gateway's role to provide the required, modern infrastructure within which the various handlers operate – this does not extend to operational GSE but does include all the other infrastructure required by any ramp, passenger or cargo handler to operate efficiently.

The legal framework that has provided for effective competition in the handling arena at AIA has certainly brought benefits for Athens' airline customers, Varsamis considers. Efficiency has been ensured, while prices charged by the handlers are kept low.

The framework within which Athens airport's handlers now operate has certainly not precluded extensive investment in GSE. Goldair, Olympic and Swissport have all seen the need to maintain a quality inventory of equipment at the gateway as an integral part of ensuring a high level of service to legacy and low-cost carrier customers. He notes that AIA undertakes annual GSE inspections, part of the process required for its ground handlers to obtain the necessary apron access permits.

The handlers' current GSE fleet is "perfectly suited" for the job they fulfil, Varsamis concludes, and Athens' ground handlers strive "to maintain the GSE in accordance with manufacturers' highest standards." ■

Goldair, Olympic and Swissport are supplemented by DHL's own handling operation at the gateway and, together, these handlers offer an efficient and competitive service to the gateway's numerous airline visitors

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Image courtesy of Osram

Seeing the way forward

Docking guidance systems have come a long way since the days when aircraft wheels passing over pneumatic hoses and inductive loops in the apron gave a signal to a display that lit a lamp. Radar-based systems followed and in the 1990s laser-based docking technology took the lead; it remains at the forefront today. While marshallers may still wave their wands, increasing volumes of traffic at modern airports call for ever-more sophisticated and precise docking technology. Bernadeta Tendyra looks at what is on offer

Visual Docking Guidance Systems (VDGS) or Nose-In Docking Guidance Systems/Stand Entry Guidance Systems (SEG) – such as the Parallax Aircraft Parking Aid (PAPA), which tells flight crews when/where to stop – are among the most popular forms of stand guidance. Azimuth Guidance for Nose-in Stands (AGNIS) guidance systems, often combined with PAPA, consist of two lights side by side. If the pilot is on the stand centreline, he will see two green lights; if he is off the centreline, one of the lights will appear red and the pilot will steer towards the green one.

Both systems have their limitations, however. AGNIS VDGS is cheap to implement and reliable, but relatively imprecise, while PAPA relies on the position of the viewer and will not give accurate distance information to aircraft that have deviated significantly from the stand centreline.

Consequently, more and more airports are adopting Advanced Visual Docking Guidance Systems (A-VDGS), with electronic displays performing the functions of an AGNIS/PAPA installation with greater accuracy. FMT Aircraft Gate Support Systems AB, based in Trelleborg, Sweden, developed its first radar-based systems known as APIS in 1989.

Initial systems were installed at Sydney and Copenhagen airports; however, frequency and interference problems led to a laser-based alternative, which launched in Sydney. "This first laser-based docking system entered the market in 1992 and it's still the leading technology for docking today," says Joachim Brink, sales and marketing manager at FMT. "We are also the only ones using independent azimuth guidance."

The latter system tells the pilot whether he should turn right or left, while the laser gives distance measurements and stopping information. "It's a very straightforward technology," Brink points out. "The laser is high-performance; it scans 10 times per second, and we can collate and analyse a lot of measurements in order to provide a very high level of accuracy. Azimuth guidance is independent of the laser and this is really important because the pilot needs this information as early as possible. We can give him it before he is on the lead-in line, before the laser has spotted the aircraft."

APIS++ can also be equipped with traffic lights in order to make the stopping information even easier to understand. In addition, the traffic lights can be operated manually as a fall-back procedure.

The system can operate 'stand-alone' or be integrated with the airport's

central database through an open interface. When interfaced, APIS++ can be automatically activated. APIS++ is always integrated with the passenger boarding bridge (PBB) to provide safety interlock functions. FMT can also offer automatic or semi-automatic docking by co-ordination between the PBB and APIS++. After block on, APIS++ gives information for automatic adjustment of the PBB's position and for connection of it to the aircraft.

When interfaced with the airport's central database, APIS++ receives information such as aircraft type and series, flight number, etc, and submits information such as block on time and stopping position back to the central system.

When FMT's central stand management system, Atlantis, is installed, interface can be established with any airport system to allow comprehensive control of all different IT systems at the airport. For example, Atlantis could be used to control stand allocation, ground support equipment, billing systems, apron lighting, CCTV and so on.

FMT's Airpark is a guidance system featuring traffic lights and azimuth guidance, but not laser, and is operated manually by a marshaller. It can be interfaced with other airport systems and the PBB, so that the safety interlock function ensures that the bridge will not move before the aircraft is properly docked. A signal to the PBB confirms that the aircraft is parked correctly and that the connection can be made.

Stephen Driscoll, group operations director at Jersey airport, chose APIS++ VDGS, saying: "Our technicians found the system very satisfactory and resilient, as have the users, as it gives reliability and the accuracy they need. The units are programmed with all the aircraft that visit us and these are displayed and easily accessed, so the system is very simple to operate."

He adds with hindsight that the networked system option would have been preferable, allowing integration with the stand allocation; nevertheless, "cost, service and durability" influenced choice of this "good, sturdy system".

INTEGRATING FUNCTIONS

Fredrik Johansson, product leader for Safedock A-VDGS at its manufacturer, Sweden-based Safegate International, cites safety, efficiency and reducing carbon emissions as core functions of his company's docking system. Safedock is based on laser technology that scans the apron and gate area for obstacles, creating a three-dimensional image that facilitates security checks and safe and correct docking. Safedock's high-performance laser range finder and LED display guide pilots to within 10cm plus/minus of the 'stop' position. "The fact that we have a three-dimensional scanner, which some of our competitors do not, makes us look to more than just the centreline and where aircraft are expected to be," explains Johansson.

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“We look at the complete gate or the apron area instead of just the aircraft nose and docking area,” he continues. The automated docking sequence meanwhile limits emissions, operational costs, time at the gate and resources.

Safedock A-VDGS Type 1 is the most advanced of the three types, giving the longest range of stop positions and greater accuracy and superior performance on long and short distances. A new, lateral scanner will deliver a broader and longer view of the gate and help to detect small or distant objects.

Safecontrol-Apron Management (SAM), formerly Gate Operating System (GOS), networks all airfield systems (such as stand management tools) to provide real-time gate status and monitoring, minimising disruption here and improving ramp safety. SAM involves visual guidance of each aircraft to ensure that it gets to the right gate as well as central monitoring of the docking process, giving an overview of airport stand status and smoothing docking operations.

Johansson has a broader perspective of the function of the gate docking system: “It is becoming increasingly important and popular to use the docking system as a message board to show information to the ground crew or the pilot, related to the turnaround process of flights arriving and departing.” Such data can range from timetabling to bag numbers to be loaded onto aircraft. “Increasing numbers of airports are looking to utilise our Safedock system for more than just docking aircraft,” he adds.

Future streamlining activities in the gate area, for example, could involve integrating Safedock with the lighting system from 10 miles out to the ‘stop’ of the gate.

Minimising tarmac delays and fuel costs were the original business goals of American Airlines (AA) in choosing Safedock. According to Pilar Geist, IT senior manager, operations technology and realtime systems at the carrier, the main benefit has been the “capability to park aircraft without waiting for ramp crews. This has a positive impact on customer service since we enable passengers to deplane when a ramp is closed due to weather conditions. It also reduces fuel costs.”

At London’s Gatwick airport, airfield duty manager Glenn Lindup describes Safedock A-VDGS as very easy to operate and flexible around upgrades and programming. He regards the system as “extremely reliable and we haven’t seen any major failures in terms of maintenance, with spares utilisation being low”. Gatwick Airport Limited (GAL) is working to network its entire raft of 141 Safedock systems.

GAL, in conjunction with Mirror Technology, is meanwhile pursuing the tactic of precision parking of aircraft using mirrors. Nose-loaders move in and out or up and down; hence, aircraft need to be positioned correctly and must stop at an exact point every time, with the nose-wheel stopping on a painted mark on the ground as viewed through a mirror.



“The fact that we have a three-dimensional scanner, which some of our competitors do not, makes us look to more than just the centre-line and where aircraft are expected to be”

Fredrik Johansson of Safegate

Other systems have a tolerance of 20-60cm, which can be significant when trying to align an aircraft door with the bridge. Pilots also require different seating positions, while there is a reaction time regarding visual reference for stopping and applying brakes. For a small aircraft, this can be 20cm but for a B747, it can be 60cm. The system does not apply to larger aircraft types, but works well for smaller aircraft such as the B737.

THE HUMAN FACTOR

In the USA, Hobart Ground Systems’ J&B Aviation has developed the JB1900 Gate Park System, with both human (ground handling agent) and mechanical components guiding aircraft on a taxi-line into docking position, informs Ann Roberts, the company’s marketing manager. The system gives guidance on both the lateral position and forward motion of the aircraft.

The JB1900 signal can be turned quickly to red, allowing the ground handling agent to alert the pilot in an emergency. In mechanical terms, the JB1900 comprises aircraft alignment and a fail-safe feature to stop the aircraft; the human aspect allows the handling agent to control aircraft parking while visually observing critical ramp operations to ensure there is no debris in the envelope area.

A single, JB1900 hand-held controller can manage multiple parking devices via a selector switch. The ground-handling agent can easily designate a parking device by switching from a to b, for example, which is particularly effective at gate positions where different types of aircraft are positioned, requiring multiple centrelines. Each Gate Park System can be set at a different height to accommodate different aircraft, from a 737 to a 757, for example.

“The JB1900 Gate Park System is extremely cost-effective as compared to other laser solutions on the market,” Roberts considers. It also uses energy-efficient and highly luminous LED lights rather than standard bulbs. The system is installed at most major US airports, including recently at 29 gates at JFK International Airport.

The J&B Aviation Gate Park System, often referred to as an ‘Aircraft Docking System’ is used exclusively at Atlanta’s Hartsfield-Jackson Airport’s new International Terminal as well as at the rest of the gateway.

Docking Guidance Systems may be focused on safety on the ramp; however, the advance of technology is expanding the potential of such systems to encompass the turnaround process of aircraft arriving and departing, and the information beneficial to people involved in that process. As to the broader picture, Safegate’s Johansson believes that “we’ll start thinking more and more about efficiency, safety and giving value to customers, and about the complete airport, with greater integration between the systems.” ■

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PRODUCT UPDATE

What's new in the world of GSE?



MALLAGHAN HANDS OVER LATEST DE-ICER TO STOBART

ON 5 DECEMBER last year, Northern Ireland-based GSE manufacturer Mallaghan delivered 'Cand-ice', an aircraft de-icing rig, to Stobart Air at London's Southend airport. Cand-ice is the sixth piece of equipment manufactured by Mallaghan to go into operation at the airport.

Each Eddie Stobart truck is identified by a unique girl's name. The first Eddie Stobart truck was named 'Twiggy' by Edward Stobart, after the 1960's supermodel, and the new Mallaghan de-icer has been given the very apt 'Cand-ice' moniker.

Stobart Air is the operator of London Southend, the capital's newest international airport. The Stobart Group purchased its lease in December 2008 and since then the gateway has undergone huge redevelopment; it is expected to see further substantial growth in the coming years. As part of Stobart Group's redevelopment, a new passenger terminal has already been built. ■

GOLDHOFER ACQUIRES SCHOPF

TWO OF THE big names in airport GSE have come together. At the beginning of this year, Germany's Goldhofer – a well-known supplier of equipment for various airport applications – acquired the Stuttgart-based Schopf Group.

According to Stefan Fuchs, Goldhofer CEO: "Goldhofer and Schopf are the perfect combination for quality ground support equipment for airports worldwide from a 'made in Germany' double. In future we will be able to offer this market one-stop shopping, and that will make us even more attractive for our customers and enable us to cater even more for their specific needs."

Hermann Brüggemann, hitherto majority shareholder and managing director of the Schopf Group, commented upon the inking of the deal: "Goldhofer was definitely our ideal choice of partner; it is a traditional medium-sized organisation from the region that has the same values as Schopf." ■

AVIRAMP OFFERS ALTERNATIVE TO CONVENTIONAL STAIRS

AVIRAMP, THE SHROPSHIRE, UK-based manufacturer of aircraft boarding ramps and mobile jet bridges, continues to expand its product offering. Launched in January 2011, Aviramp is now in full production of its second-generation answer to the problem of handling 'passengers with reduced mobility' (PRMs), a solution it says is especially applicable to smaller airports that can't afford conventional 'ambulift' or 'passenger aid unit' vehicles.



Aviramp is now available in five different models that cater for aircraft ranging in size from the ATR42 to the B777. The equipment makes use of gently sloping ramps which the company says can "easily, safely and comfortably" handle wheelchairs and even catering trolleys if required, while simply being more convenient for elderly passengers or those with babies or toddlers.

Aviramp's portable step can be folded up and carried within the cargo hold of an aircraft, while the company's latest 'Lite' model – made from lightweight aluminium and galvanised steel, and easily moved around an airport by hand – has also been in demand and has been recently stationed at the UK's Exeter airport for trial. An Aviramp is already in use at Réunion airport, as is one at Perpignan in the south of France (and the gateway has another on order).

Furthermore, Kansai International Airport in Japan and Dallas/Fort Worth in the US have units on order, while Australia's QantasLink has five Aviramp Lite models and the hope is that a significant contract can be agreed with the carrier in the near future.

According to Stéphane Courtois, ground handling manager at Saint-Pierre Pierrefonds International airport on Réunion island: "Two years ago, we decided to acquire new stairs. As feedback from PRMs was not good about the previous stairs, we decided to look for an ambulift. We finally decided to buy the new Aviramp, which answered to our needs.

"We have been very happy with it and customer feedback is also very good. We discovered that this kind of equipment is useful for all kinds of passengers – ones with wheeled hand luggage, ones with children and even passengers who would slow down on the stairs. Disembarking and boarding go a lot faster now," Courtois notes. "We are so happy with the product that we are thinking of buying the Lite model for the ATR72s we handle." ■



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