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Editor's NOTES

Mike Bryant
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Welcome to the Spring 2022 issue of *Airside International*, in which we take a good look at the hangar and hangar door business, as well as communications on the apron. The downturn in the aviation industry seems to have been ridden with some success by the big players in these somewhat niche markets.

Our third feature is a regular one – looking at high lifts and loaders – in which *Megan Ramsay* assesses the continuing move towards electric equipment – though this trend has also been affected by the pandemic and its impact on aviation.

We meet with Don Bergin, president of US-based ground run-up enclosure provider BDI, Inc, to see how his company has continued to flourish, as well as with ground power unit supplier Dynell and refuelling equipment manufacturer Elaflex.

Mallaghan director Niall Mallaghan explains how his Northern Ireland-headquartered company continues to put the focus on 'Innovation in Aviation', while start-up Waev Inc sees the GSE of the future being powered by electric batteries, and lithium-ion in particular. GSE provider Textron, too, is emphasising its green credentials, and is working with US automotive giant General Motors to strengthen its electric offering.

We also chat with a number of ground handlers – Aviator, Groundforce Portugal and Unifi – who offer their thoughts on how ground service providers can ride out the ongoing storm.

Finally, London Oxford Airport is an airport on the up, benefiting from one area of aviation that has actually done well out of the downturn in regular commercial air travel: business aviation.

We hope you enjoy the issue.

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Ups and downs

The shift to 'greener' technology is still a growing trend among the airside community around the world, and GSE manufacturers are working hard to keep up with rising demand for non-diesel high lifts and loaders. The pandemic has hindered progress, however

Tim Willett, operations director at materials handling and GSE lessor Rushlift, observes: "The GSE industry has had electric baggage tugs for almost 40 years. The electrification of other items of GSE has been slower; however, you can now purchase many different types of electric battery-powered GSE – conveyer belts, pushback tugs and high loaders to name a few."

He says Rushlift is seeing more and more demand for the latest electric equipment as the world comes through and out of the pandemic. More recently, hydrogen-powered under-wing loaders have begun to appear.

JBT Aerotech, for instance, is evaluating hydrogen-powered loaders as part of its commitment to finding greener alternatives to diesel. Its product portfolio also boasts a range of electric equipment (including cargo loaders).

There has already been progress with hydrogen-powered tow tractors, such as those developed by Plug Power and

One of dnata's ambulifts in action

MULAG for Hamburg Airport in 2019.

Describing the benefits of using hydrogen for GSE, Plug Power highlights the complete lack of emissions; 45% energy efficiency compared with 20% for diesel; and decreased maintenance costs due to fewer moving parts.

In addition: "Compared to battery-powered electric vehicles, fuel cells offer longer ranges and faster refuelling, with a hydrogen storage system that easily scales without taking up the space charging stations require."

Cost, however, could be a barrier to the development of this option. A study entitled 'Development of Business Cases for Fuel Cells and Hydrogen Applications for European Regions and Cities' commissioned by the Fuel Cells and Hydrogen Joint Undertaking in 2017 points out that "capital expenditures [are] expected to be significantly higher than for equipment powered by diesel and other fuels" and that "[the] business case [is] highly dependent on fuel prices with airport operators requiring a positive return on investment".

Plus, relevant infrastructure and logistics will be required to support hydrogen-powered equipment – so for now, it would appear that electric-powered lifts and loaders remain the frontrunners in the race to replace diesel units.

For instance, the most recent addition to GSE manufacturer Aviogei's range of lifts is the electric Thunderlift, which is designed for the boarding and disembarking of passengers with reduced mobility or injured persons on stretchers. It is suitable for all aircraft types with a height threshold between ground level and 5.9m.

Equipped with both solar panels and a lithium battery, the Thunderlift also boasts remote diagnostic control and software updates via FOTA (firmware over the air). "Our R&D department is very sensitive to new industry applications and to the need to improve GSE with new,

Aviogei's electric Thunderlift, designed for the boarding and disembarking of passengers with reduced mobility

enabling technologies," says Aviogei CEO Andrea Cesarini.

As for loaders, Aviogei's latest models include its TVP 7000 E electric transporter, which is designed for the transport and transfer of ULDs between container or pallet dolly and cargo loader.

Price point

The acceleration of the trend for greener high lifts and loaders is supported by the improved affordability of electric options. Cesarini notes that the rising cost of traditional options is making the shift towards electric GSE even more attractive.

"The difference between diesel and electric models has reduced year after year; the cost of thermal engines is increasing while electric battery and electric motor costs are shrinking. The electric operating costs are significantly lower so the initial price gap is recovered in a short time," he explains.

Willett agrees that the price of electric lifts and loaders is now on a par with diesel-engined units – but only if lead acid batteries are used to power the units. If lithium-ion is selected, end users should expect to pay a premium above internal combustion (IC) engine units.

He observes: "The use of lead acid is still preferred as it offers (in most locations) an affordable battery option that works well if water levels are maintained and if operators (who will always opportunity charge) don't run them completely flat; this causes huge issues for lead acid batteries.

"Lithium-ion has many advantages and disadvantages. It's lighter, works well in hot climates and doesn't mind being placed on charge for short periods. To offset this, the costs are higher, and weight savings aren't always an advantage for use in a 50-ton pushback tug that needs ballast to work. In addition to this, we still don't have a recycling infrastructure for lithium-ion units," Willett points out.

There are other variables that affect the price of electric GSE. For truck-mounted high lifts and ambulifts, this is very much linked to chassis choice, says Robert Powell, vice president, technical services at dnata. He also notes that electric and hydrogen options have yet to reach maturity in some locations, and this has a bearing on price, too.

"Electric loader options are much more mature, and our future purchases are more likely to be electric, where airport infrastructure supports it," he suggests. "However, the price differential does not seem to be too clear and can vary significantly upon comparison. OEMs [original equipment manufacturers] need to articulate and be visible in cost and TCO [total cost of ownership] variations across their power options."

Powell remarks that the reach of Far Eastern manufacturers is increasing significantly and that European manufacturers are gaining a greater foothold in the Americas. "The underlying factor that links these is quality," he points out. "Success is dependent on whether a manufacture can demonstrate a high-quality product, with

good service support, at the right price point and delivered on time."

dnata recently purchased two cabin cleaning high lifts, complete with Prochem Apex carpet cleaning machines, from Mallaghan Engineering. This purchase was part of a range of enhancements to the dnata cabin cleaning service offering at Dubai International Airport, to support the greater focus on hygiene as the world emerges from the pandemic.

"In the financial year 2022-23 we plan to purchase lower deck and maindeck loaders, as part of both our replacement programme and recovery growth," Powell advises.

Priorities

In addition to delivering the highest quality possible, sustainability is a priority for manufacturers of high lifts and loaders – hence the focus on developing electric models. Indeed, JBT Aerotech says that going green is no longer a trend: it is "the new norm".

At Aviogei, says Cesarini: "Our commitment is to support as best we can the transition of the fleet versus greener technologies. We are ready to help industry with conversion programmes based on our technology and services."

Another priority, naturally, is the safety of passengers, operators and aircraft that interact with GSE, including high lifts and loaders. Aviogei's global reach requires consideration of specific country regulations in the various markets it serves. All of the company's vehicles are designed and built in accordance with EU Machinery Directive 2006/42 CE.

"All our GSE comes out of the factory with a full [International Air Transport Association] AHM 913 'no-touch' policy compliant system installed: it is a result of our engineering activities, developed entirely in house and one of the best systems available today for the aviation industry," Cesarini says.

Furthermore, Aviogei's R&D department is developing a digital twin simulator based on virtual reality technology for operators' training and for maintenance management.

Electric-powered units inherently help improve safety on the ramp. They are cleaner than diesel equivalents in terms of on-airport emissions, for a start. In addition, their lower noise levels make for a safer working environment, as staff can communicate with each other more easily.

Electrification also has key advantages for maintenance service providers like Rushlift, with lower equipment down times due to reduced service schedules meaning more availability for airlines' and handlers' operations.

In Powell's view: "With an increased fleet conversion to sustainable technologies, this is a technology change for maintenance technicians, whether insource or outsource. We would like to see OEMs enhance their commissioning and technical training to support

technicians in knowledge transfer and updating their technical skills to match.

"In relation to technology, with a plethora of telematics and GSE monitoring systems now available, interfacing these can be troublesome. I would like to see these being able to share data more easily, so that we benefit from consolidated data."

Rushlift can offer the TREPEL CHAMP 70SE Neo cargo high loader

Bottleneck

One of the challenges affecting the high lifts and loaders market – among many others – today is the supply of materials to manufacturers, and of products to customers. High shipping rates, lorry driver shortages, interruptions to the mining of metals and minerals are all placing a strain on the supply chain, and having a knock-on effect on prices. It is likely this will continue during 2022.

"Of course the current shortage of materials and components is a bottleneck for the entire industry, Cesarini says, but: "Aviogei is stocking to avoid any problem to partners and customers in terms of delays in deliveries and price increase."

Going into more detail, Powell explains: "The immediate impact is on spare parts supply, and we are increasing inventory levels to insulate against operational impact. This is a mitigation we don't see being readily taken up in suppliers' inventories to share the risk, which it perhaps should? This also knocks on to production lead times and we are already seeing lead times and prices increase.

"This is not a great time for these impacts to be passed to handlers, and OEMs should plan to avoid this wherever possible through holding long-lead-time components in stock, so that they can respond to customer demand," Powell adds.

Plus, he feels that handlers should also consider reserving production slots. "Delivery times and agility to supply can often be a deciding factor and, depending on the circumstances or location, this might open up opportunities for providers of quality second-hand equipment," he posits.

The other challenge to the large-scale electrification of high lifts and loaders (and GSE in general) remains the availability of charging points.

"The move to electric-powered GSE has been slow but steady," Willett says. "It has been limited by the initial costs and the ability of airports to power electric units – much like electric cars (we are not able to charge at as many sites as petrol stations) – but the work to add more [charging] sites is steadily increasing."

Once again, supply chain issues are having an impact on the development of charging infrastructure generally, not just in the GSE market. For example, a report from electric vehicle charging consultancy Versinetic published in December 2021 points out that shortages in components are among key factors slowing the roll-out of the infrastructure needed to meet electric vehicle targets.

"While automakers ramped up electric vehicle production in 2021, especially in Europe and North America, both they and charge post manufacturers have disclosed how the worldwide shortage of computer chips has weighed on results and production," the report says.

"The shortage is primarily a result of coronavirus pandemic-related constraints on supply chains. It could prolong the world's sluggish transition to electric vehicles if chips remain scarce in the coming months."

In addition: "Demand for lithium has shot up, so materials scientists are working on two big challenges. One is how to cut down on the metals in batteries that are scarce, expensive or problematic because their mining carries harsh environmental and social costs. Another is to improve battery recycling, so that the valuable metals in spent car batteries can be efficiently reused," the Versinetic report says.

As these challenges are addressed in the automotives sector, electrification of the airside environment will no doubt benefit in turn.

Clearly, there are bumps in the road ahead. But nonetheless, Willet expects electric-powered GSE, including high lifts and loaders, to dominate the market by 2025 as affordability and charging infrastructure improve.

He also stresses the importance of smarter charging solutions for electric-powered high lifts, loaders and other GSE. By optimising charging, smart chargers reduce charging costs, ensure efficient charging of the battery, and improve batteries' longevity into the bargain. ■

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Keeping aircraft secure on the ground

AL-STAL provided the door for this jet hangar at Wroclaw, Poland

Aircraft hangars can be used for many things – typically, simply for storage, whether overnight or for longer periods, or as maintenance, repair and overhaul (MRO) facilities – but they and their specialist access doors are designed, built and installed by only a limited number of companies around the world. *Airside* met with a few of them…

"The future is looking exciting," says Jewers Doors director Jonathan Jewers. "There is real excitement at the moment about commercial aviation and the desire of so many people to once again be flying."

He continues: "Commercial airlines are starting to spend a lot of money on maintenance and returning aircraft to service." As a result of this, together with the fact that there are "just not enough hangar hours available", airlines are looking to invest in both new and existing hangars.

Jewers Doors stands ready to help meet that demand. The Biggleswade, Bedfordshire, UK-headquartered company specialises in sliding and sliding folding doors for industrial facilities and aircraft hangars. Its Esavian-branded hangar doors are a feature of many aircraft hangars around the world.

The uptick in the commercial aviation business will be welcome, of course. Although there has been a noticeable downturn in demand for hangar doors and the infrastructure they complement during the pandemic, Jonathan Jewers admits, demand for military and government hangars and hangar doors has remained healthy – while business aviation has even seen growth.

Jewers Doors has by no means been without work during the pandemic, therefore. For example, it has just topped out (ie, completed the final piece of work on an installation) Type 126 Esavian doors for a hangar for the Belgian Air Force in Brussels. The hangar has a twin-bay area on one side of the structure for two A400M military transport aircraft, and a single bay on its other side for an A330 MRTT (multi role tanker transport).

Some years ago, Jewers Doors provided the doors for an A330 MRTT hangar at RAF Brize Norton in Oxfordshire, England.

Jewers Doors' Esavian doors are straight, sliding steel hangar doors, suitable for openings ranging from between 6m and 40m in height. They can be of unlimited width, and they

can employ any conventional profiled or glazed cladding system, including polycarbonates and glass reinforced plastic (GRP).

The company is also currently working onsite at Dubai South, at the emirate's Al Maktoum Airport, where it is installing hangar doors for an ExecuJet facility. ExecuJet provides luxury private jet charters and aviation services.

Jewers Doors is also involved in a project in Turkmenistan, where it is supporting the installation of no less than nine hangars for the president. Three will be able to house widebody B777s, six will take Code C size B737 Max aircraft.

And, in the Far East, Jewers Doors is providing doors for a Hong Kong Government Flying Service helicopter facility being built at the site of the old Kai Tak Airport. Because of the premium on space in Hong Kong, the facility is actually being built under a shopping centre. Jewers Doors is currently topping out the doors here.

The A400M hangar designed for the Belgian Air Force in Brussels has Jewers Doors' Type 126 Esavian doors; credit: Democo

Hong Kong's Government Flying Service is actually based at the new Hong Kong International Airport at Check Lap Kok (where Jewers Doors also installed some of its hangar doors more than 20 years ago), but was previously based at Kai Tak and is to open a new branch facility at the latter site that will include a helipad and helicopter storage facilities.

Like all of Jewers Doors' hangar doors, these projects involve totally bespoke designs. The company works closely with architects and of course the customer to create a design that meets all the needs

Inside one of many Schwarzmann aircraft hangars

of the user, in terms of operational requirements, architectural preferences and security needs, even taking into account customers' desires in regards to sustainability.

Jewers Doors handles the design, manufacture and installation of hangar doors to create "very specific solutions" for each and every customer, Jonathan Jewers explains.

Jewers Doors took the opportunity during the pandemic-induced downturn in the aviation market to move to bigger, more modern facilities not far from its old base in Biggleswade. It was much easier to do so then than when manufacturing is at full capacity, Jonathan Jewers points out. And having moved into bigger plant and office, the company is now excellently positioned to meet the expected recovery in demand.

The new facilities are state of the art and rigged out so as to suit these Covid-19-affected times. For example, there are no light switches: the lights are triggered by motion sensors. Doors open automatically as people approach; even the taps are of a no-touch design.

All Jewers Doors' staff work at the new site, socially distanced to keep employees as safe as possible from potential infection.

Schwarzmann: meeting 'a combination of client requirements'

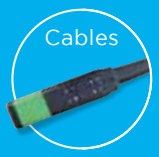
Meeting very specific customer needs is an important element of the offering of many of those businesses involved in the provision of hangars and of hangar doors. Polhov Gradec, Slovenia-based Schwarzmann designs, manufactures and installs bespoke hangars and other facilities in the form of steel structures covered by insulation panels or PVC membranes.

Customers sometimes prefer the latter in those cases where internal temperatures are not an issue – typically hangars used purely for storage – or where rapid installation is a priority. Steel hangars covered purely by a PVC membrane can be manufactured and installed in just a few weeks.

Schwarzmann has been designing, manufacturing and assembling prefabricated steel structure buildings and facilities since 1993.

According to Jožef Schwarzmann, co-owner and a member of the Schwarzmann supervisory board, a key advantage of prefabricated steel buildings has become increasingly important in recent years – their low environmental impact. Steel as a building material is 100% recyclable and relatively lightweight, he points out, and it allows for the prefabrication of elements of the structure that can be assembled quickly and easily onsite. This is especially important in highly regulated zones such as airports.

The design, manufacturing and installation of a typical Schwarzmann hangar will only take about eight months. "Each new hangar is made to meet a combination of client requirements and benefits from our many years of experience in the design, manufacture and installation of large steel structure



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buildings," Jožef Schwarzmann informs.

The company has continued to do well despite the pandemic. "We have not experienced any dips in demand. However, our supply chains have been affected and we have thus taken preventive measures in order to secure project timelines," Jožef Schwarzmann recalls.

As an example of new business, he points to a contract signed last year for the construction and installation of a 10,000m² MRO hangar in Germany. Able to accommodate four aircraft from the Airbus A320 family, the hangar will consist of a prefabricated, hot-dip galvanised steel structure covered with insulated steel panels. This job represents Schwarzmann's biggest ever hangar project.

Currently in the production stage, installation is expected to begin in February 2022, with completion before the end of July.

The hangar will be fitted with two vertical lifting fold-up doors. The design meets the client's very specific needs and represents "an extremely practical, energy-efficient and cost-effective solution" to their requirements, says Jožef Schwarzmann.

Schwarzmann has meanwhile been busy modernising its production facilities and reorganising many of its internal operating processes to allow for faster delivery of larger orders. Moreover, "With the purchase of a new cutting line, we have greatly increased both the accuracy and capacity of production, which has also shortened the delivery time for large facilities," Jožef Schwarzmann says.

The Voortman VB1050 automated line, which went into service in spring last year, has enabled a much greater degree of precise automation in the manufacturing process.

This year will see the business recertify for the ISO 9001 quality management accreditation, Jožef Schwarzmann declares, and after that, it intends to start the process for gaining ISO 14001 environmental management system certification.

"Furthermore, we are actively exploring the possibilities of implementing sustainable materials and processes into our hangar product division," he adds.

Schwarzmann designs, manufactures and installs custom-made hangars based on steel structures

'Learning a lot'

Lancut, Poland-based AL-STAL was established in 2004, primarily as a supplier of fire-resistant doors and windows made with aluminum and special steel profiles. The product line was quickly expanded to take in skylights and large-scale building facades and then – in 2010 – the company began designing large hangar doors.

Michał Ambroszkiewicz, head of AL-STAL's hangar door department, takes up the story: "We were asked by a general contractor working for a Polish aviation museum to supply the door for that building. The project was not easy and the client couldn't find any other companies in Poland that wanted to design the door."

The door had to measure around 20m by 10m and would be made of glass. The whole door structure had to look similar to the aluminium facade on the building's external walls. In addition, the customer wanted to hide the door's motors below floor level.

"We co-operated with engineers from Rzeszow University of Technology, we hired automation and construction engineers and we successfully designed this door," says Ambroszkiewicz. Since then, AL-STAL has work on various large aircraft hangar doors as well as shipyard doors – "learning a lot over the last 10 years", says Ambroszkiewicz.

AL-STAL moved into a new factory and headquarters in Lancut in 2010; then, in 2018, it occupied another factory and more office space in same area. Today, the company employs about 50 people.

Complete offering

AL-STAL offers all sorts of hangar door types: sliding doors (in many options), sliding folding doors, lifting bifold doors and lifting fold-up PVC doors.

"When a client comes to us, we first learn about their needs and about the building site's limitations. Then we perhaps propose a couple of options, advising on the best option to fit the client's needs," says Ambroszkiewicz.

"We believe there is no one answer to the question, 'which door type is the best?' It always depends on many factors and we treat all projects on an individual basis.

"Our biggest advantage is our flexibility – we say that we have absolutely no limitations: in terms of size; of cladding type (we can use glass, sandwich panels with foam or wool, polycarbonates, and so on, and we can use the same cladding as that found on the building's wall); of extra

features or special solutions like blast-proof doors."

Most of AL-STAL's hangar doors are to be found at airfields in Poland, but it has also installed doors in other countries, namely in Iceland, France and Slovakia. It also has upcoming projects in Europe in coming years that are currently at the design stage.

"We only started offering our doors abroad two years ago and we are looking for local partners in every country," says Ambroszkiewicz.

AL-STAL's most recent job was a hangar door for Airbus in Warsaw, Poland. The door size was 50m by 9m; it was of the sliding type, and included eight door leaves in a telescopic system. It was for an existing hangar whose old door also had to be removed.

The company's scope of work took in the door design, and AL-STAL had to redesign the building structure to offer a bigger opening height of 9m rather than 7m.

But: "We have building engineers in our company and it was not a problem for us," Ambroszkiewicz declares.

Currently, the company is involved in a new MRO hangar development in Katowice, Poland, being managed by a contractor based in Ruda Slaska called PROMUS. AL-STAL is supplying a sliding door measuring 88m by 14.5m, with four door leaves controlled by a multi-motor system and two doorways linked to a building access control system. The cladding chosen by the client and architect consists of 40mm-thick polycarbonate panels. Katowice Airport is expanding and planning to make further investments in its infrastructure in the coming years.

AL-STAL is currently involved in a new MRO hangar development at Katowice Airport

Champion Door offers multiple hangar door options

Experience

"Customers choose AL-STAL as a large hangar door supplier because we have over 10 years' experience in the design and installation of this kind of doors, and we have undertaken many projects demanding specialised engineering knowledge," Ambroszkiewicz asserts.

"Our team advises the client on the best solutions according to their requirements, while from the initial concept stage our engineers work together with architects and building designers to ensure that any building structure and door structure will complement and work well with the others (a very important part of the job).

"We are also very flexible – the client can be given many different options. Finally, we also always try to offer the most economical solution to match a client's expectations."

Covid-19 does not seem to have affected business unduly. In fact, says Ambroszkiewicz, "The last couple of years have been very good for us. We think it is because the aviation infrastructure business is a little bit separate from the general aviation market.

"Lots of hangar projects which are running now had been planned and budgeted for before the pandemic and they have not been stopped. Now, the future is also looking optimistic but things will depend on the global economic situation, as we see high inflation and energy costs rising all over Europe.

"But," Ambroszkiewicz concludes, "we are not worried about this because we have no influence over the global economy and we are focused on our job – to advise and supply the best hangar door solutions for our clients.

"Indeed, over the coming year we want to develop our research and development (R&D) department to design new door solutions for all door types. We also want to identify new partners all over the world [that can] offer our product in other countries."

Champion product

Far to the north, Nivala, northern Finland-based Champion Door manufactures a wide range of vertically lifting, fabric fold-up doors for hangars as well as shipyards and industrial facilities. They are especially well suited to harsh environments. While robust and durable, they are also light and can offer high levels of heat and noise insulation.

Founder and CEO Pekka Hosio explains that, while times have been tough during the pandemic and resultant collapse in the aviation industry, things are looking much more positive now. Champion Door has recently received a number of new orders, some of them taken from customers in the civil aviation business at the Dubai Air Show in mid-November, alongside many others from NATO and other military customers in recent months (one particularly notable deal being Champion Door's commitment to supply 64 doors for hangars housing US Air Force fighters based in Qatar).

The recent spate of aircraft orders announced by both Boeing and Airbus offers further cause for optimism. After all, these new aircraft will require improved accommodation, Hosio points out – namely, hangars.

Indeed, Hosio says, "While business is not yet quite as good as pre-Covid, today we are more positive and looking forward to a much better future."

Complementing its clients in the defence sector, Champion Door's main customers in the civil aviation sector include airfield and maintenance, repair and overhaul (MRO) operators. They are all benefiting from recent improvements that the company has made to its hangar doors. Hosio emphasises in particular new hydraulically operated door opening safety systems complementing unique door locking systems.

Indeed, one of the unique selling points of Champion Door is the built-in burglar protection capability which complements the doors' heat insulation properties. Not only does the latter prevent the heat generated within the hangar escaping in cold environments, it also contains air-conditioned, cooled air in hot environments.

Soundproofing can also be provided, while the company's hangar doors are designed to withstand a wide range of temperatures and significant moisture levels. They are resistant to dirt and wear, and the PVC material is resistant to aircraft de-icing chemicals.

These characteristics have helped Champion Door to sell its products into 55 countries around the world, and Hosio is optimistic that that number will further increase in the near future. ■

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Aviator follows path of GSE sustainability

When acquiring ground support equipment to cope with new business, aviation services provider Aviator Airport Alliance looks to go for environmentally friendly electric equipment as part of a wider focus on sustainability

Aviator Airport Alliance, a major provider of aviation services at airports across the Nordic region and a member of the wider aviation service business Avia Solutions Group, took on new business last year at a number of the airports at which it handles. Indeed, Jo Alex Tanem, Aviator Airport Alliance's CEO, recalls: "2021 was a truly successful year for Aviator, with a great deal of new partnerships established as well as prolonging existing contracts."

To support the expanded operational requirements, Aviator invested in a large quantity of new GSE, and it was careful that the equipment would have as little impact on the environment as possible.

"To meet the needs and demands of our clients, who expect quality and professionalism every step of the way, we have invested in a [large] amount of new equipment," Tanem says. "A large part of Aviator's GSE is already electric, yet we always strive to buy electric GSE when possible, which will increase the number of our sustainable machinery significantly over the years to come."

He continues: "We have a great relationship with such well-known manufacturers in the GSE market as Kalmar Motor, MULAG, JBT, Vestergaard, Mallaghan, and providers [such] as TCR and HiSERV; thus I have no doubt that sustainable GSE... will be the majority [of] our fleet within the short term."

Today, Aviator has a total of 1,297 GSE units on its books, not counting dollies and trolleys. Approximately 70% of this equipment is to be found in Sweden and Norway, where the company has the majority of its stations.

"Currently, the number of GSE units in our other serviced countries, Denmark and Finland, amounts to 380, yet we plan to introduce new equipment to meet our customers' planned growth," adds Johan Selen, Aviator's GSE Repair Shop manager.

Operating sustainable GSE is one element of the eco-friendly operations envisaged in the company's sustainability plan. Aviator hopes to be carbon-neutral within about five years.

Magnus Söderberg, Aviator's business improvement director, observes: "Electric ground handling machinery saves the company on fuel costs and lowers our environmental impact.

"Such GSE allows us to operate equipment in closed gate areas with zero emissions, no small particle pollution and with practically eliminated equipment noise," he continues. "In addition, we will save a lot in

service and maintenance as the newer machines do not require service as frequently."

Tanem admits that there are challenges associated with operating electric GSE. "At the moment, our biggest challenge is de-icing," he says. "Doing de-icing procedures on just electricity becomes an issue, as a lot of electricity is required to heat the de-icing liquid. But I believe that in no time we will have efficient electric equipment that will be able to do that without an issue."

Staying strong

While Aviator did win new business last year, the last couple of years have certainly represented a challenge. Says Tanem: "There's no denying that the global Covid-19 pandemic has had a negative impact on the whole aviation industry. Unfortunately, Aviator was not an exception. We are still working towards reaching the results of our record year 2019.

"But regardless of the hurdles, we did manage to remain strong, retain our clients and sign new contracts. I believe that it is all thanks to the great team we have at Aviator, their continuous efforts and extreme professionalism."

Aside from following the mandated requirements of national governments in the Nordic countries as well as various recommendations from more local authorities, Aviator provided protective equipment for its staff and introduced social distancing as far

as was possible. It also, says Tanem, "optimised our operations and provided employee training" as a response to the new pandemic-affected operating environment.

Aviator's operations were primarily impacted by changes in demand for services, so it had to rethink some of the ways in which it operates. "But demand is slowly getting back to normal and, with that, our operations as well," Tanem confirms.

Aviator provides services at 15 airports across the Nordic countries, just the same number as it did pre-pandemic. And, says Tanem: "All our stations saw improved results in 2021 when compared to 2020.

"Last year, we managed to extend and add additional services to our existing long-term partners that include well-known and respected names like the largest low-cost carrier in Europe, Ryanair, as well as Scandinavian Airlines (SAS), Finnair, easyJet, FedEx and UPS.

"Additionally, we have gained the trust of brand-new clients, such as the new Norwegian airline Flyr, and a new Icelandic low-cost airline, PLAY."

Currently, about half of Aviator's GSE is electric, and the service provider plans to increase that ratio by 10% each year. "I have no doubt that we will be able to reach that goal with no problems," Tanem insists.

For example, "Last year we acquired Vestergaard Company's fully electric 12-ton [de-icer] chassis as well as a Kalmar FB600EL, a fully electric tow tractor for pushback and maintenance towing of widebody aircraft, as well as a Kalmar TBL190 electric pushback."

The Vestergaard 12-ton de-icer and Kalmar FB600EL are already in operation, while the Kalmar TBL190 electric pushback will be delivered later this year.

Aviator's focus on sustainability has its supporters outside as well as within the business. "All the airlines we partner with have sustainability on their agenda, and it is very important to them that we have green initiatives as well," says Tanem. "Airport authorities are also working with us and want to form a joint green strategy."

Such support complements the other benefits offered by electric GSE. "The initial cost may be higher, but the running costs are normally lower with electric GSE, so over time, it will save costs," Tanem considers. "However, going green or carbon neutral is something we all have a responsibility towards; hence, in Aviator's view, there's no alternative."

Unprecedented challenges

"The pandemic showed that at any time we might have to face unprecedented challenges and that we have to always be ready for that," Tanem remarks. "I believe that businesses will have to more closely monitor their procedures, constantly look for ways to optimise and digitise operations and introduce more intricate contingency plans.

"As the world is slowly returning to normal, even with the dip seen now in the first quarter of 2022, we are recruiting and training a large number of employees to be ready for the summer traffic, which will be the largest volumes Aviator has ever seen in the Nordics." ■

This handler for American Airlines is using David Clark equipment

Communicating safely and effectively on the ramp

Wireless communication systems that link members of a ground handling crew with each other and with an aircraft flight deck are fast being regarded as a safer and more efficient option than traditional wired ramp communication systems. But the big suppliers in the airfield communications market offer a range of products – both wired and wireless – to suit all requirements

Worcester, Massachusetts-headquartered David Clark Company offers both wired and wireless headset systems for airport ramp operations. It has been a prominent brand in the aviation industry for nearly 50 years. The company helped pioneer the first noise-attenuating headsets for use by both military and general aviation pilots in 1975 and these 'green domes' are known worldwide for their comfort, durability and reliability.

Then, in the early 1980s, David Clark was among the first companies to offer headset systems for aircraft de-icing operations. Since that time, it has expanded its product offering to meet a wider variety of communication needs for pushback, maintenance and general ramp communications.

Its ramp communications product range includes the Series 3800 wired system used primarily for de-icing and anti-icing, and the Series 9900 wireless system for a variety of airside operations including pushback, de-icing, and general ramp and maintenance operations.

The value of wireless communication in a congested and potentially dangerous ramp environment is certainly not lost on David Clark. "With the additional benefits of our Series 9900 wireless system, there is a growing consensus among the airlines that clear voice communication is a welcome enhancement to traditional hand signals and safety protocols," says Bob Daigle, systems manager at David Clark Company.

David Clark's wireless headset systems include noise-attenuating headsets, belt stations and wireless gateways. Headsets are available in a variety of styles, including dual-ear, over-the-head style, with

a boom-mic optimised for airport ramp environments, as well as headset-mic shield (or 'muff microphone') models with snap/strap assembly for clear, hands-free communication in very noisy environments.

All headsets feature earphones with stainless steel retainers and immersion-proof M-2H noise-cancelling microphones for clear communication.

Series 9900 belt stations transmit and receive all system audio to and from the gateway and the user's headset.

Wireless gateways, which lie at the heart of these communications systems, utilise advanced digital enhanced cordless telecommunications (DECT) wireless technology with an operational range of a minimum of 300ft/90m (greater, depending on line-of-sight constraints) – more than enough range, the company notes, for pushback, de-icing and other ramp operations. (DECT is also used in wireless phone systems to connect a cordless phone to a base station.)

A single gateway can connect up to four wireless users at a time with hands-free, full-duplex intercom (ie, capable of communication in both directions between multiple parties) and push-to-talk (PTT) capability for communicating with a flight deck.

Clear communication

During aircraft pushbacks, wireless systems enable clear communication between wingwalkers and a tug driver, as well as between a tug driver and a flight deck, all while offering handlers greater freedom of movement than wired systems. For aircraft de-icing applications, improved communications can help avoid personal injury or aircraft damage, as well as minimise the waste of costly de-icing fluids.

Wireless systems also reduce the danger to ground handlers posed by lightning, because ground support personnel can communicate with one another and with a flight deck without any wired connections between headsets and an aircraft, and a lightning charge can travel along any wire into a headset.

Finally, wireless headset systems contribute to improved, on-time performance for carriers. "At David Clark, we believe, as do forward-thinking airlines, that keeping planes in the air starts with better communication on the ground," says Daigle.

In the US, David Clark has supplied wired and wireless headset systems for the majority of domestic major and regional airlines, as well as third-party ground handling contractors. Military users include the United States Air Force and Air National Guard, as well as many National Aeronautics and Space Administration (NASA) and National Oceanic and Atmospheric Administration (NOAA) ground support operations.

David Clark offers communications systems ideal for aircraft de-icing teams

In Europe, its systems are in use with Lufthansa and International Airlines Group (IAG), which includes British Airways, Air Lingus, Iberia and Vuelling. Air France-KLM, Norwegian, Austrian Airlines and Air Europa are among other European customers.

In the Far East, Asian sub-continent

and Australasia, China Southern Airlines, China Eastern, Air China, Singapore Airlines (SIA), Cebu Pacific, Cathay Pacific, Malaysia Airlines, Air India, Virgin Australia and Air New Zealand are all David Clark customers. In the Middle East, users include Emirates, Etihad, Qatar Airways, Oman Air and Saudi Arabian Airlines, as well as Turkish Airlines and Pegasus Airlines in Turkey. The company also counts the world's biggest air cargo carriers, such as DHL, UPS and FedEx, among its clients.

Market dynamics

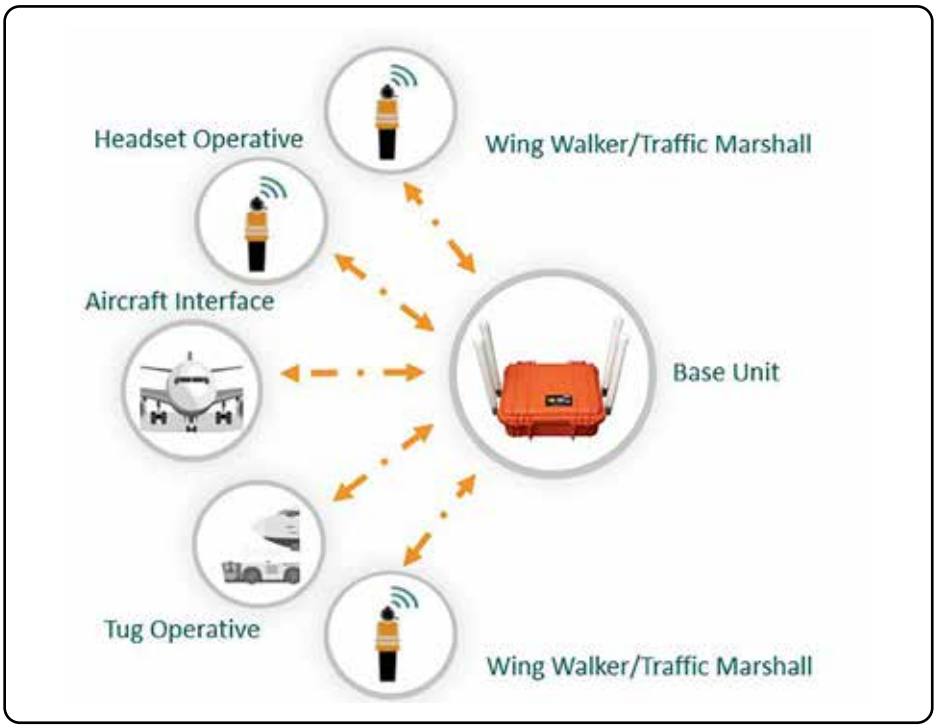
Throughout the pandemic and despite the consequent collapse in the aviation industry, David Clark has found that many of its existing customers and prospective customers have remained willing to invest in appropriate and helpful technology, including wireless headset systems, which have the potential to mitigate factors that can have a negative impact on already adversely affected bottom lines (such as ramp incidents that can cause injury to ground support personnel or aircraft damage).

Plus, one feature of the pandemic-impacted, 'new normal' ramp environment of late has been the wearing – either by choice or mandate – of masks, which can muffle speech even in low-noise environments. To combat this problem, David Clark wireless systems offer easily adjustable VOX (voice level) settings via the belt station connected to the user's headset. Ground handling personnel can fine-tune the VOX sensitivity to the optimum voice level as they go to ensure speech intelligibility even while wearing a mask.

The pandemic has also raised concern among ground crews regarding personal hygiene issues relating to the use of shared equipment. David Clark Company has designed its wireless headsets for easy cleaning and disinfecting. Its wireless headsets feature head pads and ear seals made from non-porous polyurethane material, making them easy to clean and disinfect after each use.

"As long as ground personnel continue to work on the ramp, we'll solicit their feedback and continue to do anything that is required to keep them safe and efficient at whatever they do," Daigle declares.

This ground handler is able to communicate with the rest of his team through his David Clark headset



dBD Communications equipment can enable wireless communication amongst up to five users on the same network

dBD: a growing presence

Duplex radio frequency (RF) and microwave communications specialist dBD Communications has had a tough time during the crisis but has stayed strong, and is looking to better times ahead. The Basildon, Essex-headquartered company has been forced to let go of some staff – about 20% of its payroll – over the past couple of years, as Covid "definitely took its toll on us", confirms owner and managing director David O'Connell. However, it has not lost customers and

has in fact gained some new ones – of which more later.

dBD Communications' background is in the rail business and its wireless headset systems remain the market leader in the rail duplex communications domain, where they are responsible for about 80% of the communications systems used to connect rail workers with cabs safely and efficiently, O'Connell advises.

The company has maintained its dominance in this market and, meanwhile, it continues to grow its presence in the aviation sector. dBD has "many hats" when it comes to product lines and revenue streams, O'Connell remarks, and this has been a significant advantage to it during the pandemic.

Given that it really only entered the on-airport wireless communications market space some five or six years ago, the fact that its customers include globally active handlers such as Menzies and Swissport, while GSE manufacturer Vestergaard has bought dBD Communications headsets for open-basket de-icer teams, is impressive.

dBD has sold into countries as far afield as Australia and New Zealand in Australasia, Singapore, Thailand and Malaysia in the Far East, and Qatar in the Middle East (and it has also seen some "strong interest" from Saudi Arabia), as well as in its home market of Europe.

Moreover, O'Connell reports to *Airside* that just recently dBD Communications sold its first systems into both the US and China, markets with huge potential for the company. This goes to show that demand still exists and investments will still be made even during a pandemic, he remarks.

In addition, around Christmas, things were "generally picking up", and that was despite the fears over the then fairly newly discovered Omicron variant of Covid-19. As a sign of the company's confidence, it has taken on a number of new sales agents to help promote the dBD Communications brand and its products in markets where it currently does not have a significant footprint.

Changing times

dBD Communications has had to evolve, and the industry has changed, over the past couple of years – in ways that may well mean that the aviation industry will never be quite the same again, O'Connell believes.

One interesting development in the UK that he points to is declining availability of RF engineers. Communications does not appear to be an area of study that is enticing students in the country, he opines, and that has led to a shortage of the sort of skilled engineers that dBD Communications looks for. O'Connell is himself a systems engineer by trade background.

More widely, something that has become increasingly clear is that ramp operators, and self-handling airlines in particular, are now much more fully recognising the benefits of wireless headset technology for those working

This Swissport handler is equipped with a Global-Sys apron communications system

on noisy, congested and potentially very dangerous airport aprons.

Despite that, says O'Connell, not all apron workers yet fully exploit the benefits of wireless duplex technology. Some ramp handlers continue to walk in the footprints that they have trod around aircraft for many years when they were restricted by 12m communications cables plugged into an aircraft nose, he suggests; now, with wireless systems, handlers can have much greater freedom of movement – but some of them are not always making the most of it.

It's an interesting point that, in the rail industry, wireless communications is regarded as attractive for safety reasons, whereas in the aviation industry those acquiring wireless duplex communications systems are largely doing so on the grounds of efficiency, O'Connell suggests. If ramp handlers are then not benefiting fully from the increased efficiencies available, that is an issue that perhaps needs to be addressed by third-party ramp handlers and self-handling airlines.

O'Connell asserts that self-handling airlines are buying into wireless, and indeed represent good potential customers for a business like dBD because they purchase in bulk. Handlers, which would seem to be a potentially lucrative clientele, actually buy in smaller numbers in terms of individual deals, because purchases are made locally rather than under centralised contracts covering large numbers of handler stations.

Both third-party ground service providers (GSPs) and self-handling airlines are looking into autonomous technologies that would speed up aircraft turnaround processes. Automated tugs are already in use at a number of airports, for example. And, as O'Connell notes, it makes little sense to have remotely operated tugs if handlers have to remain close by because they are tethered to an aircraft by their headset communication cables.

Finally, he agrees that future demand for the latest wireless duplex communications systems for use on the ramp might also be spurred by health safety needs as part of any post-pandemic, 'new normal' operating environment.

It makes good sense for health reasons to have personalised headsets for each individual handler, and preferably these would be wireless, O'Connell advises: although whether that will happen will depend on numerous factors, not least the financial capability of handlers to invest in new systems.

Multi-directional communications

Bonneuil Sur Marne, France-based Global-Sys offers both wired and wireless systems for multi-directional communications. Its core business is the aviation sector (both civilian and military), where it has been active since it was established in 1997, although it also sells products into the naval and maritime markets too.

The company's primary wired ramp headset for commercial users is the HEA 371, which offers high-quality audio over a maximum cable length of 12m. The

dBD's Minerva, seen here with radio connection

headset comes with a waterproof, wind-protected differential microphone and a push-button-to-talk capability.

Global-Sys' wireless communication option is full duplex, enabling multi-way communication between up to four parties on the ground, or five including a pilot on a flight deck.

The Airlink 2085 base unit is attached to an aircraft, this enabling encrypted communication with up to four mobile handsets worn by ground handlers. The base unit communicates out to a maximum range of 300m and is powered by easily removable lithium or standard AAA batteries.

Airlink 2085 integrated headsets worn by up teams of to four handlers working around an aircraft are powered by lithium or AA batteries. Although they usually communicate via the base station, direct headset-to-headset communication is also possible for ramp operations such as de-icing.

They employ 1.9GHz DECT technology as opposed to Wi-Fi or Bluetooth communication, which offers a high degree of reliability, Global-Sys believes, as well greater range.

As an alternative to headsets, handlers might choose an Airlink 2085 mobile unit or beltpack, which also enable full duplex communication via a base unit by means of the same DECT technology while using any brand's wired headset.

For military customers who prefer wireless communication, Global-Sys offers the Airlink 3085 system which, says sales and marketing manager Romain Gareyte, consists of a similarly capable base unit, cordless integrated headsets and mobile unit or beltpack options. It's much the same system as the Airlink 2085 with slightly different hardware, plus sophisticated features that maximise audio quality in the harshest of operating environments.

Global-Sys' commercial customers include GSPs, self-handling airlines and airfield operators who undertake some aircraft handling tasks. Increasingly, Gareyte notes, Global-Sys' customers are looking to opt for wireless communication options. Wired systems are well-established, legacy products that still have a place in the market, he observes, but ramp operators are increasingly attracted to the extra levels of flexibility and safety that wireless systems offer.

The latter's cost can be an issue, but Global-Sys points out that over the medium- or long-term life of the wireless product, it more than pays for itself through its greater ease of use. Moreover, wireless can be considered a mature technology, well proven for a number of years now in its value for ramp (and hangar-based) operations.

Of course, the pandemic has affected demand for ramp communications systems, but Gareyte points to a dramatic recovery in the market in late autumn last year. Like O'Connell, he is hopeful that the recovery will continue despite the latest challenge posed by the Omicron variant of Covid. ■

Keeping the noise down

A rendering of the state-of-the-art GRE that will be installed at Bombardier's Global Manufacturing Centre next year

Reno, Nevada-based Blast Deflectors Inc. (BDI), a specialist in solutions for minimising the noise and jet blast impacts of aircraft engine run-ups, has been contracted by the Canadian manufacturer of business jets, Bombardier, to design, manufacture and install a ground run- up enclosure (GRE) at Toronto Pearson International Airport. The GRE will protect local buildings and neighbourhoods from the noise and jet blast from the engine run-ups, some of which up will be at take-off power

Toronto Pearson will be home to the 770,000 square foot Global Manufacturing Centre (GMC) currently being built and in which Bombardier is investing US$400 million. On track for completion in 2023, it will provide a new home for the Global Manufacturing Centre currently located in nearby Downsview, Ontario.

The BDI GRE at the new site will be used for pre-delivery engine testing of all of Bombardier's Global business jets, including its flagship Global 7500 business jet.

While construction work has started at

the site, the GRE itself will not actually be installed at the Global Manufacturing Centre until 2023. Early engagement in the GMC site design ensured that this important facility has a place allocated that is convenient for the aircraft manufacturer.

"BDI is honoured to have been selected for this project," says BDI president Don Bergin. "We have a long history with Bombardier, and we appreciate that our experience and expertise in the field of aircraft acoustics and aerodynamics was a driving factor in our selection."

He describes the Bombardier GMC as a massive project, with BDI's GRE being one of the final elements to be installed there.

Bergin notes that the aerodynamic requirements of this particular GRE are what really set it apart. "We had to design a noise attenuating GRE that allows high-powered engine run-ups to be undertaken, primarily in challenging wind conditions, without imposing aerodynamic restrictions that would negatively impact facility use," he informs.

Key to GRE performance is controlling airflow through the facility (aircraft engines are sensitive to unstable or turbulent air), so high performance GREs are designed to provide an adequate supply of smooth air while also reducing the acoustic impacts of engine noise. To this end, a number of BDI patented technologies are to be used, including the company's Vertivent deflector system and Stabile Flow acoustic walls.

All three walls of the GRE will be vented to permit run-ups in sidewinds or tailwinds, while the vents, not dissimilar to louvres, will themselves be carefully angled to minimise noise emittance while maintaining airflow; they are also 'acoustically treated' – ie, lined with noise-absorbing materials – to further reduce noise passing through the vents.

"BDI's engineers worked closely with Bombardier's airframe and powerplant teams to ensure that all design criteria were carefully considered and addressed," Bergin confirms.

"The result is a run-up facility that will provide a stable aerodynamic environment suitable for consistent testing of Global aircraft in a wide variety of wind conditions with, of course, an emphasis on acoustics that will benefit the community surrounding the airport."

This is not the first time that BDI has worked with Bombardier (or with Learjet, a Bombardier subsidiary). BDI also designed and built a heavy-duty jet blast deflector for the Bombardier regional jet facility at Montréal-Trudeau International Airport, for example.

It has also been active elsewhere in Toronto. In April 2017 Billy Bishop Toronto City Airport (BBTCA), a smaller gateway located on an island in Lake Ontario and home to Porter Airlines, officially opened a new GRE that BDI had constructed. The GRE was part of a three-year, multimillion-dollar airfield improvement project that included pavement rehabilitation, the reconstruction of taxiways, signage and lighting for the runways as well as the construction of a three-sided GRE.

While the GRE at BBTCA was required primarily for turboprops rather than jets, and the facility was tucked away on a relatively remote part of the gateway, the airport operator, PortsToronto, wanted to "be a good neighbour", says Bergin, bearing in mind that the Toronto urban environment is not too far away and turboprop noise can be very intrusive to nearby communities.

The BBTCA GRE's 14m-high walls are fitted with Vertivents and the Stabile Flow technology allows the facility to be used in virtually all wind conditions.

The size of the GRE required for BBTCA and for the Bombardier facility at Toronto Pearson are not far apart; the first is primarily used by Bombardier Q400 turboprops and the latter for the similarly sized Global business jets.

South of the border, BDI has also been active in the US market. Its most recent work there saw it install a GRE at Melbourne Orlando International Airport in Florida. The big challenge here was that the site of the facility is in the centre of the airfield and close to runways, so the design of the facility had to take into account significant restrictions due to its proximity to the runways on the airfield.

> ***We have kept our team intact and are now well positioned for the future***
>
> ***Don Bergin***
> *BDI*

That GRE – not the first BDI installation at Melbourne Orlando – is now in operation, primarily for business jet engine run-ups following maintenance or final assembly. It utilises BDI's cloud-based run-up management system (RMS) that provides facility scheduling and reporting data for users, owners and other stakeholders.

Acceptance testing was extensively conducted with an Embraer Praetor aircraft in February 2021.

BDI also designed and supplied the only other GRE in Florida, at Tampa International Airport.

Uptick

BDI felt the impact of the pandemic on the aviation industry, Bergin reveals. There was a slowdown in demand as some projects in the planning stage were postponed for better days, while others were scaled back or even cancelled.

However, he continues: "There has been a real uptick over the last six months or so, and we are seeing plans resurrected and progress made on new tenders. We are seeing more confidence in the market." BDI is active right around the world.

Moreover: "We made no redundancies [during the pandemic]: we have kept our team intact and are now well positioned for the future." ■

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Mallaghan's new 6x6 Fire Rescue Stair was first publicly displayed on the NAFFCO stand at the Dubai Air Show in November 2021

Mallaghan offers 'Innovation in Aviation'

In January, Dungannon, Northern Ireland-headquartered GSE manufacturer Mallaghan announced that it was looking to recruit at least 40 more staff at its home base, as well as perhaps 10 or so more employees at its facility in Atlanta, Georgia. These additions to the workforce are a happy necessity as the company's order books become ever fuller

The additional 40 employees at Mallaghan's Dungannon base are required to fill positions as automotive electricians, welders, assembly fitters, hydraulic fitters, plasma operators, tube laser operators and spray painters – just about all the roles across the company's manufacturing team.

Mallaghan is using radio advertisements and used local media to recruit. County Tyrone, where Mallaghan is based, is a hotbed of engineering for the whole of Ireland – so while there are plenty of capable, qualified engineers locally, plenty are also required to support the region's manufacturing, farming and quarrying industries; thus there is also plenty of competition for the most capable.

These people are, happily, much needed as Mallaghan ensures it can meet the demands of new business it has attracted in recent months, as the aviation industry struggles once more to its feet and orders begin to pick up strongly.

"The Covid-19 pandemic has had a serious impact on aviation but finally, we are seeing the green shoots of recovery, with demand for air travel on the up," says director Niall Mallaghan.

"This increase in demand is reflected by an uplift in orders for Mallaghan products which has opened up opportunities for up to 40 positions at our Dungannon site as we deliver product to major airlines and airports right across the world."

Despite the challenges, Niall Mallaghan and his colleagues are confident of finding and employing the right people. "Working at Mallaghan is much more than a job, it's a career," he says. "Through ongoing training and development, our teams are supported to meet their full potential."

Niall Mallaghan adds that Mallaghan employees also benefit from competitive salaries and overtime; the availability of a health care plan; a pension; life assurance; high street, gym and insurance discounts; long service awards; and even a 'cycle to work' scheme and an early finish on Fridays.

The new employees will be needed to work across just about all of Mallaghan's

product lines as well as in many different types of engineering and manufacturing trades, Niall Mallaghan confirms: helping in the manufacture of its catering trucks, its Bendibelt baggage loading systems, motorised and non-motorised passenger steps, catering trucks, bus assembly, and its water and toilet service units.

Strong order book

Mallaghan retained some three-quarters of its staff over the course of the pandemic and the resulting collapse of the aviation industry that has hit so many other GSE suppliers extremely hard. Its bulging pre-pandemic order book and the new orders it received during the pandemic have seen it through the crisis, and now things are looking much more positive.

Niall Mallaghan points to restrictions on cross-border travel being lightened in many countries, not least in the UK and Ireland, as giving plenty of cause for optimism. People are once again booking holidays, boosting the aviation industry, and Mallaghan is now receiving plenty of interest from old and prospective new customers, he observes.

***Niall Mallaghan** with the company's all-new i-tec branding line*

"Our phones are a lot busier, with more interest and more orders," says Niall Mallaghan. "The industry is now looking to have a very, very bright future."

In fact, the additional staff that the company is now recruiting may only be the first phase in an ongoing process of expanding its manufacturing capacity in both Northern Ireland and at the company's facility in Georgia, he suggests.

The competitiveness of the local Northern Irish labour pool is not the only challenge Mallaghan is meeting and overcoming. Ensuring component deliveries as required is today an issue for manufacturers in many industries, and GSE suppliers are not immune from the problem.

The bottlenecks in the semi-conductor supply chain out of Asia are perhaps the most well-known difficulty just now, and they can have a significant impact on delivery and lead times.

Today, "Stock is king," Niall Mallaghan believes. To this end, the company is stocking up on parts and components, and ensuring that it plans well ahead to make sure that it can deliver all its GSE when and as promised.

Mallaghan launched its new all-electric airport bus late last year at London Gatwick Airport

New products, new designs

Despite the challenges of the last couple of years, Mallaghan has continued to invest in both wholly new products and in improvements to existing GSE product lines.

In the last few months, it has, for example, unveiled a new 6x6 Fire Rescue Stair at the Dubai International Airshow and an all-new electric bus at an event at London Gatwick International Airport.

The 6x6 rescue stair is a new line for Mallaghan, though it also offers a smaller model, a 4x4. The new Fire Rescue Stair is designed to enable the rapid evacuation of passengers from widebodied aircraft such as B747s and A350s in the event of an emergency.

The stair is equipped with emergency lighting, beacons, water tanks, foam tanks and hose reels, and can be customised to the exact requirements of the customer.

The first of the new 6x6s was handed over last year to Dubai-based firefighting equipment supplier NAFFCO, which showed it off at the air show in the emirate in November.

"There was a serious amount of interest in the Fire Rescue Stair at the show," recalls Niall Mallaghan. "We can now compete in some [firefighting equipment] tenders that we wouldn't have been able to previously."

NAFFCO has been delighted with the new equipment, he observes, and is "very excited by its potential".

"We believe that we will win further orders for this equipment," Niall Mallaghan continues. "It's not a volume product [in terms of sales numbers], but it is a specialist one and one that goes to prove that we can offer highly capable, state-of-the-art GSE."

Then, in December, the company showed off its new electric airport bus. The battery-powered Árbus, which underwent trials with ABM Aviation, is a battery-powered variant of Mallaghan's Árbus 50W bus that was itself only introduced to the market as recently as 2019. The Árbus is already in use at more than 10 airports across Europe.

The all-electric Árbus has the longest-lasting battery range of any airport bus on the European market and can be easily charged with infrastructure found today at large airports. Plus, because Mallaghan can supply the vehicle with different numbers of batteries (they are fitted on the vehicle's roof), its flexible battery capacity makes the bus suitable for use at smaller regional airports or major hubs.

Mallaghan offers three models of Árbus of different sizes, with a capacity of up to 118 passengers – the largest airport bus capacity currently on the market.

Prior to ABM's testing, and before the first vehicle left the Mallaghan factory, the vehicle had undergone extensive trials at the latter's own test track located adjacent to its Dungannon factory, which involved thousands of kilometres of driving.

Indeed, Mallaghan undertakes stringent testing of any new product prior to launch. This commitment has proved its worth many times over, says Niall Mallaghan, not least with the electric bus and the 6x6 Fire Rescue Stair.

More than 50 people attended the launch of the electric bus at Gatwick at the end of last year, including potential customers and media. And they left feeling "very positive" about what they had seen, Niall Mallaghan remarks. That would not be surprising given that the Árbus was developed because of the interest shown in electric buses by Mallaghan customers, he recalls.

And, with many of the airport remote stands that have been temporarily closed over the last couple of years because of the collapse in the aviation industry now once again starting to open up, the need for airport bus capacity is likely to grow

quickly, Niall Mallaghan believes. With so much interest now in environmentally friendly airport buses, the Árbus looks to have a promising future, he suggests.

Going electric

The electric Árbus is just the latest battery-powered variant of existing GSE product lines that Mallaghan has introduced, all of which form part of its i-tec brand of electric GSE. The process of developing new battery-powered GSE lines will continue into the future, as Niall Mallaghan explains: "To go electric is a big thing for us, and it will be important right across our future product range."

He continues: "This is a very exciting time for the company as we further develop our i-tec range that will have a direct impact on reducing carbon emissions within aviation.

"Innovation has always driven all we do at Mallaghan and we are so proud to be playing such a critical role in reshaping the industry as it strives to achieve net zero carbon emissions by 2050."

And, with regard to the role in this process that the new Mallaghan employees will play, he declares: "We are very much looking forward to welcoming talented new members to the team who will be instrumental in the ongoing development and future success of our i-tec portfolio."

The i-tec brand has been very well received, Niall Mallaghan says. Large numbers of ground service providers and airports have set targets on carbon neutrality and he believes that this drive towards electric GSE is only likely to grow in intensity.

Mallaghan already offers electric versions of many of its product lines, including its Bendibelt, its motorised stairs and – as we have seen – its airport bus. It expects to roll out an electric truck chassis for its catering and other vehicles soon.

A fully electric de-icer will be a challenge, Niall Mallagahan admits, because it takes so much energy to heat de-icing fluid, but the company's engineers are looking into the potential for a fully battery-powered de-icing unit.

"Innovation is so important," Niall Mallaghan observes, "and this is reflected in our company's motto of 'Innovation in Aviation'. We listen to our customers and we find out what they want that they don't already have." The result is new individual products and whole new product lines, such as those of the i-tec brand.

The company has also invested, and continues to invest, in its own staff, facilities and processes. The current search for new engineers is testament to that, as is Mallaghan's recent purchase of new equipment including two lasers for material cutting to ensure that it can exploit the latest manufacturing techniques.

The future looks bright, Niall Mallaghan concludes. ■

The Elaflex hose trolley in use with a DN100 refuelling hose connected to a hydrant dispenser

Elaflex upgrades and expands its offering

Hamburg, Germany-based refuelling equipment supplier Elaflex has continued to develop new products and upgrade existing lines throughout the pandemic

The Elaflex HTR-AF hose trolley

Elaflex's latest improvements include the VHD WearAdvice®, an aircraft refuelling hose that includes a coloured wear indicator, as well as neon marking on the hose surface, as recommended by EI Standard 1529. VHD WearAdvice® was launched late last year at *inter airport* Europe in Munich.

The Energy Institute's EI Standard 1529, which pertains to aviation fuelling and hose assemblies, states: "The outer casing of the hose should contain spiral stripes to identify the type of hose and brightly coloured stripes to aid location and identification at night. A coloured wear indicator may also be included

beneath the cover."

Elaflex's aircraft refuelling hoses take in its HD-C hose with two textile braids, and its VHD-C hoses with three textile braids. The new WearAdvice® orange-coloured wear indicator is now standard with Elaflex's VHD 38, VHD 50 and VHD 63 hoses.

Also new are BD hose beads that enable easier hose handling. The beads have a simple design, being put into place with just two clamps and employing neither bolts nor nuts. Elaflex says they are hard to break but also easy to put in place or take off.

Hose beads are often fitted to reel or deck hoses of aircraft refuelling vehicles. They are used to allow a hose to glide easily along an airport apron, thereby minimising abrasion on the hose and enhance visibility of the hose during refuelling.

Elaflex's BD hose beads are specifically designed for the aviation market and can be fitted to its DN 38, 50 and 63 aircraft refuelling hoses.

Another new product is Elaflex's hose trolley, which is designed to facilitate easy handling of intake hose assemblies (of DN 100/4 inch) on fuel dispensers, as well as to increase their longevity.

The company's HTR-AF hose trolley comes in two materials – aluminium or steel (either carbon or stainless), brightly coloured for the sake of visibility and safety. The trolley has two rubberised freely rotating wheels intended for heavy-duty, intensive use on the apron. A fixed or swivelling handle can be fitted.

Plus, Elaflex now offers a new expansion joint in its ERV range of joints. Its ERV-G AF expansion joint designed specifically for piping systems for aviation refuelling dispensing vehicles is available for 50-200mm DN equipment and is the

Elaflex's WearAdvice® coloured wear indicator, seen here on an Elaflex VHD 50 hose

Elaflex offers the new ERV-G expansion joint for aviation fuelling

Elaflex Hose Beads: BD 50 and BD 63 models

first expansion joint to feature a rubber compound that complies with the limit values for fuel-soluble matter, fuel contamination and fuel discolouration set out in EN ISO 1825 and EI 1529.

Like the VHD WearAdvice® aircraft refuelling hose, the ERV-G AF rubber expansion joint was launched at *inter airport* Europe in November last year.

Elaflex's rubber expansion joints are used to reduce vibration and noise, to compensate for movements and assembly inaccuracies, and as pipe insert pieces to facilitate inspections.

According to Elaflex, "Our 'ERV' expansion joints are distinguished by a large axial, lateral and angular range of allowable movements, low reaction forces and low inherent resistance. They are perfect noise dampers and ideally qualified to reduce vibrations – the major part of the piping's structure-borne noise and the low-frequency noise generated by fluids is eliminated."

Furthermore: "Due to swivelling flanges and smooth bolt holes assembly is easy. A high burst pressure, integrated sealing surfaces with a wire core and a premium quality production are advantages which ensure a long service life."

Safety in mind

According to André Bilgenroth, director of Elaflex's aircraft refuelling business unit, all aircraft refuelling equipment must come with "a high level of safety, not only on the airfield itself, but across the entire transport chain. We are globally known as a leading system supplier of safe and innovative aircraft refuelling equipment."

At Elaflex: "Quality and safety are always our top priorities," he asserts.

This emphasis on safety was very much in mind when it came to the design and development of these new products. Thus, for example, Bilgenroth recalls: "We decided to improve our hose accessories. Most of the accessories available in the market have up to now not been specifically developed for use on airfields.

"Our BD hose beads fulfil the stringent requirements of the EI 1522 standard (which was reissued in May 2021) in terms of flame resistance, being highly break resistant (even at low temperatures) and furthermore, they do not contain any bolts and nuts due to the 'Click-Fix Design', allowing an easy assembling and disassembling as required by the JIG six-month inspection."

He continues: "Our VHD aircraft refuelling hose is well known in the market but we have now added a further safety feature to follow the recommendations of EI 1529. The new type VHD WearAdvice® clearly shows the wear limit of hose abrasion to increase safety on airfields."

All these newly launched products are unique in the market, Bilgenroth confirms. They add to the wide-ranging product range that Elaflex offers; in fact, it has "one of the widest product portfolios in the aviation refuelling industry", he says.

Alongside that premium on safety, Elaflex's products are well known for their reliability and durability. Moreover, "We ensure compatibility and the possibility to combine complex and special customer design requirements, all conforming to the latest aviation standards," Bilgenroth declares.

"Due both to our own local personal knowledge and the close relationship we have with our customers, we are able to understand market issues, to develop appropriate products and to provide solutions to problems." ■


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Unifi has a large fleet of GSE which it uses as part of its day-to day operations, such as here at Las Vegas McCarran International

Unifi stays strong

Despite the harsh downturn in flight operations in its key market, US aviation services provider Unifi continues to handle for most of the big American airlines that operate strong domestic networks. And it is looking to expand, whatever the future of the industry

Unifi dates its history to Delta Global Services (DGS), a wholly-owned subsidiary established by Delta Air Lines in the late 1990s to provide aviation services – particularly ground handling – for its narrowbody domestic flights at airports across the US.

A little over 20 years later, Argenbright Holdings – a US-based provider of aviation services and contract security – took over management of the DGS business, which by then was providing various aviation services for other US carriers as well as Delta; the deal became a reality on 21 December 2018.

With DGS and Argenbright then becoming one under the Unifi brand, a new name in aviation services was born. The process of rebranding all necessary elements of the business to Unifi continues today.

Unifi provides a wide range of aircraft services across more than 200 airports in the US. Its portfolio of aviation services include ramp handling, passenger (including those in wheelchairs) handling, aircraft cleaning, airport janitorial services, airline shuttle bussing, aircraft de-icing, cargo handling, fuelling and even facility security.

Unifi handles something in the region of a million flights a year, with its primary customers continuing to include legacy and low-cost US airlines active on domestic routes, as well as cargo airlines such as Amazon. It has more than 22,00 employees on the weekly payroll, though this number is down slightly from a pre-pandemic staff closer to 30,000 strong.

All its services are entirely airport/airline-based, explains chief strategy officer Ying McPherson: it does not, for example, offer facility services outside airports, and has no plans to do so. Its biggest station is Hartsfield-Jackson Atlanta International Airport, Atlanta also being the home city of Delta, where Unifi has upwards of 3,000 employees, whilst at its smallest stations it is only handling one or two flights a week.

Although Unifi currently operates exclusively at US gateways, there are plans to expand into the European and also Latin/South American markets, McPherson confirms.

On the subject of the pandemic, McPherson points out that, while 9/11 was perhaps worse in its immediate impact on the aviation industry, the collapse of the sector due to Covid-19 has been much more prolonged. Furthermore, she points out, the crisis is not yet over and it is not clear when any sustained recovery toward pre-pandemic levels of flying might take place.

Nevertheless, while international passenger numbers have nosedived,

domestic flying behaviour has not been affected in quite the same way – which, given Unifi's business model, has been of benefit to it.

Unifi has taken steps to avoid the impact where it can. In particular, McPherson explains, the company took steps to diversify away from just ground handling, and the range of its service portfolio today is testament to that. In fact, she notes, some elements of Unifi's business have actually grown in value during the pandemic – for instance, its electrostatic disinfectant service has proved a welcome addition to its popular aircraft cleaning offering.

And, while passenger numbers have fallen away dramatically as a result of the ongoing health crisis, cargo has retained its importance, and indeed perhaps increased in significance given the need to fly large quantities of vaccines around the world. As such, Unifi is keen to further develop its role in the air freight sector.

In addition to the intention to expand Unifi's geographical footprint, McPherson believes that there may be opportunities for expansion in areas where other aviation service providers are not able to survive in such difficult times.

A Unifi handler marshalling at Palm Springs last year

Of course, some airlines are also struggling and more might go to the wall. Others have and will continue to consolidate their networks. Another challenge, says McPherson, lies in the US labour market for workers that a company such as Unifi is looking to employ. Many handling staff have begun work in other industries and it might not be easy to tempt them back.

However, says McPherson, Unifi believes that staying true to its core values of focusing on frontline employees and enhancing their work experience with high levels of employee engagement will help it win in the long term. ■

Building capability to meet increasing demand

The UK's fifth-busiest business aviation gateway, London Oxford Airport, has announced a significant enhancement of its rescue and firefighting capability. This represents just one example of how London Oxford is developing its capacity as operational intensity at the airport grows

London Oxford Airport, a privately owned airport located in Southeast England's Thames Valley region, has invested in various lines of equipment to support an ongoing expansion in operations through the gateway.

Amongst the most expensive of the new equipment are new firefighting appliances. The bringing online of more capable vehicles made possible the recertification of the Rescue and Fire Fighting Services (RFFS) capability at London Oxford Airport by the UK's Civil Aviation Authority (CAA) to Category 6 status, confirming that it can now safely handle much larger aircraft.

It is no small change. The requirements of the airport's RFFS team changed considerably as a result of the move to Category 6. Richard Oakes, the gateway's fire services manager, explains: "We now need over three times the amount of water on wheels and over twice as much foam discharge rate.

"Our new vehicles are fitted with technology and equipment that enables a more effective delivery of firefighting media. Plus, to ensure a consistent resource requirement to support the TRA [see panel for details] for Category 6, London Oxford Airport increased

headcount with a successful recruitment at the end of 2021."

The new appliances in which London Oxford has invested are three Angloco 6x6 vehicles. These allow a driver to operate the firefighting monitor from the cab and thus do away with the need for an individual to work aloft as a pump operator.

According to Oakes: "The firefighting delivery methods on the new fleet support an expeditious attack promoting survivability at an incident. These vehicles are built on a domestic Scania chassis that will support attending incidents within a 1,000m response [range].

"The appliances are currently in the final stages of construction. Angloco has supported our position by providing interim appliances that match the ability of the [vehicles that have been ordered]. We currently have a Rosenbauer Panther and a Carmichael HRET [high reach extendable turret] as our primary response [vehicles]."

Stringent processes

London Oxford Airport's RFSS went through a stringent process of gearing up for certification to Category 6 status. Fire services manager Richard Oakes explains that the RFFS team made changes following the guidance of the UK CAA's CAP1150, which describes the stages that should be considered when carrying out a Task and Resource Analysis (TRA), as to what is required in terms of qualified/competent personnel for delivering an effective airport rescue and firefighting service.

Using a qualitative risk-based approach focused on credible worst case scenarios, London Oxford Airport's TRA sought to identify the numbers of personnel required to undertake response tasks in real time prior to support arriving from external services.

The RFFS TRA team worked through credible worse case scenarios to come to a qualitative risk assessment of principal objectives. Each of these scenarios was drilled in order to confirm a thorough understanding of what would be required.

London Oxford Airport also collaborated with the Durham Tees Valley-based International Fire Training Centre (IFTC) in a hot fire training exercise, Oakes informs. The resulting assessments identified the task criticality and pinch points that feed into personnel, equipment and vehicle requirements to support the RFFS's objectives.

The CAA was incredibly supportive throughout, he says, and at the end of the process a CAA status change was approved with 'Nil' conditions. ■

All of the airport's RFFS personnel underwent extensive training and competency assessments for these interim appliances before they were brought on line. And this process will be replicated with the Angloco vehicles.

Category 6: business as usual

London Oxford had previously been a Category 6 request airport, dependent on additional resource and vehicles being brought on line when required in order to handle larger aircraft. This was inconvenient for aircraft operator customers, who want uninhibited flexibility. It was also a hindrance to passing business aviation. The gateway can now consistently offer RFFS services to aircraft up to but not including 39m in length, with a maximum fuselage width of 5m. Category 6 is now "our business as usual", says Oakes.

The newly enhanced firefighting capability as defined by Category 6 status is now available 24 hours a day, supporting in particular – as already noted – the larger business jets that now frequent the airport. A further advantage, especially for operators coming in with those larger business planes, is that the airport now represents viable alternative for weather-related (or other) diversions from elsewhere.

James Dillon-Godfray, the airport's head of business development, observes: "This new assured Category 6 capability gives aircraft operators and flight planning organisations even greater confidence that access is assured for their larger aircraft types – all the time."

Our new vehicles are fitted with technology and equipment that enables a more effective delivery of firefighting media

Richard Oakes
Fire services manager at London Oxford Airport

And Will Curtis, London Oxford Airport's managing director, adds: "This latest development is testament to our investment in and dedication to safety and service, particularly as movements in large cabin private jets at the airport continue to grow."

Continuing growth

Last year, London Oxford Airport saw business jet movements through its facilities rise by 33% compared to 2020. In fact, the year represented the best performance for the gateway in the 15 years since the Reuben Brothers had acquired the airport from BBA Aviation.

Around 66,000 aircraft movements and 10,000 passengers were handled through the OxfordJet FBO (fixed base operator) at London Oxford last year. This figure compared with 46,000 aircraft movements in 2020 and 48,000 in 2019. Total aircraft movements were 57% up on the decade's average and were up by 44% over 2020.

As well as the increase in business aviation operations through the gateway, there was also a significant resurgence in pilot training at London Oxford, where one of its new schools – Leading Edge Aviation – has grown from nothing to 200 students and 18 aircraft in the last two and a half years, despite the pandemic.

The pandemic itself has represented a significant boost to private aviation because people are choosing to fly in healthier bubbles and are not using larger airports. Moreover, the decimation of

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pre-pandemic commercial airline services and the much-restricted flight schedules that have been a feature of the last couple of years have also led some to choose to move to private aviation.

This has perhaps benefited London Oxford more than it has many other general aviation gateways. Certainly Dillon-Godfray believes: "With business aviation activity 38% up compared with pre-pandemic levels, London Oxford Airport is well positioned to support the prerequisite demand for leading bizjet operators for routine, no-hesitation access."

London Oxford Airport is ideal for those looking to reach the north and west of London as well as the Thames Valley region. Moreover, Dillon-Godfray opines, "Our popularity as an alternative London airport is partly due to our excellent operating hours – available from 06:00hrs to midnight, seven days a week."

The airport can handle regional airliner types such as the Embraer E195 with 100-plus seats on charters, Boeing BBJ (B737) and Airbus Corporate Jets ACJ320 series bizliners, and the new TwoTwenty (A220 derivative).

Facility development

The airport's facilities were developed to support both the larger number of aircraft coming to London Oxford and the increased size of some of them. Most recently, November saw the opening of Hangar 15, a 63,000ft^2 (6,000m^2), 140m long structure, able to take up to six Bombardier Global or Gulfstream-sized aircraft. The new hangar was financed internally and was finished in October last year.

But much had been done previously to lay the foundation for the increased operational intensity of the airport. That included strengthening the runway to a PCN (pavement classification number) of 38, as well as improving new apron areas up to a similar strength. London Oxford also widened its runway to a Code 3C classification (at the same time as strengthening the runway, back in 2006). The apron areas were reinforced between 2006 and 2008, while a new apron area was also built around the new hangar opened last year.

As well as this latest hangar, other new hangars have been built over recent years. Plus, the airport has invested in higher capacity ground power units (GPUs), an air start unit (ASU), baggage conveyor and new tugs, all to cater for the larger aircraft types now using the airport. All this new GSE was brought in last year, most of it in the latter part of 2021.

Operating the new GSE is an expanded ground handling team. London Oxford performs all its own ground handling, and its handling team has grown by about 20% over the last 18 months. Meanwhile, "Retraining and recurrent training [of members of this team] is a constant" regardless of the size of the handling staff and the equipment they use, Dillon-Godfray confirms.

"As the airport evolves, we will continue to grow our capabilities to ensure we maintain our industry-leading standards across the board," he advises, telling *Airside*: "I think the [traffic] levels that we saw increase during the pandemic will remain [steady] now – people have the appetite to stick with the joys of private aviation.

"In our specific case, with our new CAT 6 [RFSS] capability available all the time, we ought to see more of the larger jets coming in, especially in the spring to autumn months as a new London-region option that has that guaranteed capability.

"Likewise, our new hangar brings new aircraft residency and as such we should see more activity directly related to having more tenanted aircraft."

Moreover, Dillon-Godfray is looking beyond business aviation for custom. "Although primarily focused on the business aviation sector in terms of these various capability enhancements, they open the doors to some more regional airliner charter operations and even potentially some scheduled activity.

"We are not proactively chasing airlines at all but the fact is that London Oxford now has exactly the same capabilities as some much larger 'commercial' regional airports hosting scheduled operations.

"Where we have no restrictions to host any form of commercial/scheduled, pay per passenger operations, some of our peers very specifically cannot host such flights under their planning constraints.

"Now, if a commercial airline flight with up to 70 passengers for instance can't get in to its intended destination due to weather or some other crisis, we can be used as a diversion/alternate and we could readily cope with rescuing that flight on the ground with the capabilities, amenities and equipment we have," he concludes. ■

Groundforce Portugal: quality assured

Portugal's biggest handler had to make cuts at the five Portuguese stations at which it handles, but it has continued to sign up new carrier customers and points to this as evidence of its focus on safety, quality and meeting client airlines' demands

In January this year, ground handling services provider Groundforce Portugal – a subsidiary of national flag-carrier TAP Air Portugal – confirmed that it had been recognised once again by the Associação Portuguesa de Certificação (APCER, in English the Portuguese Association for Certification) as consistent with the standards of ISO 9001:2015 quality management.

Groundforce Portugal is ISO 9001 quality management certified at its Lisbon, Porto, Faro and Madeira stations. The certification confirms best market practices in relation to high-quality management and that the recipient of the certification offers high standards in terms of safety as well as quality of service.

A Groundforce statement noted: "The renewal of this certification, almost two years after the beginning of a pandemic that disproportionately affected the aviation sector, is a source of immense pride and a demonstration that, despite the many uncertainties that surround us, everyone in Groundforce Portugal always puts the most important thing above everything else: providing a high-quality service and in total safety to their customers."

APCER stated: "Despite the atypical circumstances experienced and the profound changes that the company and the sector are going through, the organisation maintains its Integrated Management System operative and effective."

The APCER audit highlighted such strengths of Groundforce Portugal as the resilience of the business given the highly adverse operating conditions created by the Covid-19 pandemic; the value of its search for other, less traditional business lines, while maintaining the quality of service provided to customers; the experience of Groundforce Portugal's technical team; its implementation of biosecurity measures to prevent the spread of Covid-19; and the evaluation of customer satisfaction, with a score of 88%, an excellent result in spite of the current situation and in line with previous years.

Positive steps

The recertification of the quality management standard is just one result of the efforts that Groundforce Portugal has made over the last couple of years to maintain the highest possible degree of quality service, says the business' operations general director Arafat Tayob.

The intensive APCER audit lasted for four full days, between 13 and 16 December 2021. The continuing use of high-quality management systems and procedures in accordance with the standards of ISO9001:2015 represents, says Tayob, "an additional guarantee to our clients that, despite the changes and disruptions brought by the pandemic, we continue to operate at the highest levels of quality and safety".

Groundforce Portugal had to adapt its operations to the needs of the pandemic, as all ground service providers were required to do. Says Tayob: "Since the

beginning of the pandemic, Groundforce has strictly followed – and continues to follow – the recommendations made by the Portuguese Government and the Portuguese Health Authority (DGS).

"These measures have been demonstrated to be effective, given the reduced number of infections occurring in the workplace. Many protective measures are still in place, and are constantly being updated, following all DGS recommendations."

The handler did have to draw down its operations because of the downturn in flight operations caused by the pandemic. In fact, says Tayob, "We had to scale back our operation in all airports, given the dramatic decrease in flights. Things are now consistently returning to normal, even if we are still significantly below 2019 levels, with the exception of our cargo handling business, where in the last months of 2021 we were able to surpass 2019 figures."

Indeed, later in January, Groundforce Portugal announced that it had handled a total of 14,148 tons of cargo in December 2021, an increase of 46% over the same month of 2020. According to a statement: "This new maximum demonstrates the resilience and increasing importance of our customers' air cargo business and proves Groundforce Portugal's ability to accompany them in this growth."

Growing customer base

Portugal's biggest handler grew its airline client base last year. In October 2021 it confirmed that it had recently signed ground handling contracts with six new airline customers, while also renewing the contract with 10 existing client carriers. The six new customers were Lot Polish Airlines of Poland, JetPak of Belgium, TAROM of Romania, Airseven of Denmark, Swiss International Air Lines of Switzerland and Ukrainian flag-carrier Ukraine International Airlines.

Tayob believes that this illustrates the flexibility and adaptability that Groundforce Portugal has to meet different customer needs.

The business has, it believes, a 70% market share of the handling market in Portugal, and benefits from about 75 years of experience. Employing approximately 2,700 staff, Groundforce Portugal currently operates at five airports: Lisbon, Porto, Faro, Funchal on Madeira and Porto Santo. These gateways are all either on the Portuguese mainland or Portuguese islands.

It currently handles for a total of 68 airlines, including TAP Air Portugal, Azores Airlines, IAG Group carriers, Air France/KLM, Emirates Airline, Lufthansa, Swiss, Delta, United, Royal Air Maroc, Aeroflot, Azul Brazilian Airlines and Beijing Capital Airlines, thus – says Tayob – covering the main markets of Europe, Africa, Asia and North and South America. In November 2021, Groundforce Portugal handled 12, 428 flights, approximately 26% below pre-pandemic 2019 levels. ■

Dynell's vision to revolutionise

Mistelbach bei Wels, Austria-headquartered Dynell specialises in power systems for the aviation industry: in particular, diesel ground power units (GPUs), solid-state GPUs, charging systems, pit systems, coils and 400Hz connectors. The company says that an "innovative mindset" is at the heart of its approach to product development, and this was reflected when its solid-state converter with plug-and-play Dynell Inverted Modules (DIMs) design received the innovation award in the terminal category at the *inter airport* Europe exhibition held in Munich in November last year. Head of sales and marketing Michael Brandstoetter tells us more about the DIMs and about Dynell

What does the solid-state GPU with DIM enable that other solid-state converters do not?

When Dynell started we had a vision to revolutionise the solid-state converter market by introducing new groundbreaking solid-state converter technology that would set a new benchmark in the industry.

The goal was to design a completely modular unit in terms of power modules, control and other related parts. At the core of our solid-state converter design are the so-called DIMs that guarantee modular operation and a redundancy capability. They are also able to offer customised solutions, as each DIM has a power capacity of 22.5kVA (scalable up to 180kVA – units can also be up- or downgraded).

As all DIMs are identical, the customer can exchange them as necessary without the need for any special configuration – just plug and play. At only 9kg, the DIMs can be exchanged within 30 seconds to ensure minimum downtime.

They also offer a redundancy capability – if one DIM fails, the other modules will take over.

Thanks to the fact the DIMs employ the latest semiconductor technology, overall system efficiency is more than 96.2%; in other words, the highest in the industry. In times of rising energy costs, the customer saves up to €1,200 (US$1,370) per unit per year compared to existing units in the market, which is another significant sustainable contribution.

Winning the innovation award at

last year's *inter airport* Europe show in Munich was an award for the whole company and a reward for the hard work that everybody put into that product.

When did you make this new design available for sale? Has it been sold to any customers and is it yet being used operationally?

The first time this technology was shown to the public was during the *inter airport* exhibition in 2019. We had hoped that the design would be well accepted, and the feedback was indeed outstanding and overwhelming – customers couldn't wait for it to be made available, as the advantages and benefits were already clearly visible then, though sales weren't actually possible until the third quarter of 2020 following intense testing and product verification.

There is a triple-digit figure of Dynell units already in the field and fully operational. Customer feedback has been great, especially in regards to their modularity, efficiency and IoT [Internet of Things] readiness.

Have you designed and developed any other new equipment/products of late?

The DIM design will form the core element of all our future GPU/solid-state converter developments and yes, we are already working intensively on the next development which will be a carbon dioxide-neutral, battery-powered GPU application.

Dynell is already in the midst of the product's verification and testing. This battery-powered solution, called DEM 025-180 (its power output between 25 and 180kVA is suitable for any aircraft in the world), will be available for sale in the coming months.

It uses the latest lithium battery technology, and again modularity will be key to scale with the battery in service based on the power needs of applications and customers.

During the GSE Expo in Paris scheduled 'for later this year, in the autumn', customers will be able to experience the new DEM product.

Dynell is still a relatively new company; is it achieving the goals that you had hoped for?

Dynell's initial vision was clearly defined: to become the technology leader in the aviation market for ground power supply. Starting a new adventure is never easy but so far we can't complain, as word of mouth references of Dynell are spreading fast and we see a positive upswing in terms of project recovery in upcoming weeks.

We are in talks with most major airports as well as with other important airports around the world. Once we have the chance to sit and talk to new potential clients, we are really able to introduce them to the benefits of our new solid-state concept.

We have also modified our company goals during the pandemic and were able to overcome Covid without the need to lay off any staff. During the Covid pandemic we have also used the time to align our internal quality and production process, implement a new ERP [enterprise resource planning] system and gain ISO9001 and 14001 certification.

***Michael Brandstoetter** proudly shows off Dynell's innovative DIM technology*

In what ways do you think Dynell is particularly strong and well placed in the market?
It's a niche industry, where most of the industry players know each other. We at Dynell see ourselves as an extremely flexible company and we work out appropriate solutions based on the needs of the customer, no matter whether these are adapted standard products or new, special developments.

With our experience of almost 15 years in the aviation industry among the team, we know what to do and what needs to be considered to offer a satisfying solution based on customer requirements.

Additionally, we are dedicated to supporting our customers all the time – that's why all Dynell units are equipped with modems or Modbus/TCP connections as standard so that we are able to analyse and monitor these products 24/7.

This not only helps the customer to reduce potential downtimes but also reduces potential after-sales trips, because we can offer effective remote support immediately as we already know what is going on with the affected equipment.

How many people do you now have working at Dynell? Are they all based at Mistelbach bei Wels?
Today, there are almost 40 people working for Dynell, some are working remotely but most of them are based in Mistelbach bei Wels.

Mistelbach bei Wels is surrounded by beautiful scenery of mountains and apple and pear plantations. People at Dynell highly appreciate escaping from busy cities and letting their creativity for ground power supply technology flow in this environment. We are a small family with the same passion and are enjoying it more than ever before.

Has the pandemic and its impact on the aviation industry hit your business? How have you sought to mitigate its effect on you?
It's undoubtedly a fact that the pandemic hit the whole industry with an unexpected impact that nobody could imagine.

I clearly remember myself when I was confronted with the situation of flying back from abroad and I luckily caught the second-last flight back home to Austria before the worldwide lockdown was enforced in March 2019.

Subsequent weeks were characterised by uncertainty and extremely unpredictable behaviour among customers, and nobody could have imagined that we are still talking about the pandemic two years later.

On the one hand, starting a mission with a new company and getting hit by these worst of times was something unpredictable and on some days we questioned how we would overcome that. On the other hand, this time also ensured that the team grew even closer as we all pulled together to accomplish our mission of becoming a new,

Vienna Airport benefits from Dynell technology

Stefan Hammerl, project manager airside infrastructure and facilities at Vienna International Airport, offers his thoughts on the value of Dynell's static converters and plugs.

Vienna operates Dynell 90kVA, 400Hz static converters and 400Hz plugs for supplying power to aircraft on stands at the airport. The various Dynell units were acquired last year and Vienna has been happy with both their performance and reliability, Hammerl reports.

"The products are well designed and have good power efficiency. Due to their modular construction, individual parts can be easily changed and in the event of a partial failure, the system still operates with less than maximum power."

Plus, the customer support provided by Dynell has also been "fast and professional", he says.

"We think that Dynell products will play an important role in the future" at Vienna, Hammerl confirms. ■

important player in the ground power supply industry.

Plus, we also had the opportunity and the time to intensively test our products and not go with chancy prototypes, as we know that or certain customers we only have one chance of convincing them.

We are proud to say that all units we have supplied so far are satisfying the high expectations of our customers. Luckily, we were also working on bigger projects, especially for pit systems where we could bridge the impact of Covid even better. We are positively looking forward to the rest of 2022, as we are sure that the desire and wish to travel again is undoubtedly higher than ever before.

How and where do you hope still to grow, both internally and in terms of markets and sales?

In times like these, you can reflect more often on whether you are on the right track and what could be done differently – it's an ongoing process for us, which gives us the chance to grow together.

One thing is clear: although we see an exponential growth curve for Dynell thanks to the projects we are currently working on, we also need to be careful which markets we enter as we do not only want to supply just a product – for us, the service we provide and taking care of the products after sale is key to ensure stable growth [of the business].

Even though it's a small industry, the chance to grow is certainly big, especially for those involved in new technologies like Dynell. Customers who began operating our units from the outset are starting to place repeat orders, which is a sign of commitment that they are happy with Dynell and its products.

For the rest of this year, we are planning in particular to strengthen our core market in Europe and also to increase our presence in Asia and the Middle East. ■

Satisfaction at Hamburg

Another gateway benefiting from Dynell systems is German's Hamburg Airport. Martin Schneider, an electrical engineer in the real estate management division at Hamburg is, amongst other things, responsible for the 400Hz, 180kVA Dynell converters in operation there.

These systems, acquired just last year, are used to support Code E and F aircraft operating through Hamburg. Schneider has been more than happy with the equipment, pointing in particular to their design, performance and high degree of reliability.

In fact, he says that the airport has plans to acquire one 90kVA and three more 180KVA units. ■

Manufacture of the Tiger lithium-ion tow tractor

Waev Inc acquires tow tractor supplier Taylor-Dunn

Anaheim, California-based Waev Inc has acquired the Taylor-Dunn and GEM businesses from Polaris Inc in a management buyout that was completed on the last day of last year. Polaris purchased Taylor-Dunn in 2016 and GEM in 2011, and announced its intention to sell the businesses in October 2021

Waev was founded by five former Polaris executives as an electric mobility provider to manufacture, distribute, market and support the GEM and Taylor-Dunn brands. According to the start-up, it will "strategically place the GEM and Taylor-Dunn brands at the forefront of the business".

Under the continued leadership of these five individuals, the business will be "optimised for growth and refocused around the customers, dealers and partners GEM and Taylor-Dunn serve", a Waev statement informs.

GEM is a specialist in low speed vehicles (LSVs) in the electric vehicle (EV) market. Its EVs shuttle people and goods across colleges and universities, city centres, residential communities, government campuses and other micro-environments. It commercially produced

the first street-legal LSV in the US.

Taylor-Dunn has more than 70 years' history of manufacturing industrial vehicles, and is active in the GSE space with its tow tractors. From airports to zoos, the company has a broad portfolio of vehicle models designed to move people and goods with electric, LPG and gas-powered, customisable options.

Keith Simon, Waev co-founder, president and CEO, comments: "Waev's ownership of GEM and Taylor-Dunn represents an exciting new era in the legacy of these brands.

"We are bringing new life to these businesses, enabling growth well into the future. Greater demand for electric vehicles along with advancements in EV technology open up opportunities for GEM and Taylor-Dunn in new applications and markets that we will invest in and pursue long term."

He tells *Airside* that, "Initially, Waev is solely focused on the purchase and transition of GEM and Taylor-Dunn from Polaris. These businesses represent a great foundation for Waev to build upon and grow from."

The GEM and Taylor-Dunn brands will remain in existence, though the businesses are owned by Waev. "GEM and Taylor-Dunn are the foundation for this business and those brands will continue to lead in the urban mobility and industrial markets for years to come," Simon insists. "We have no plans to rename those product lines."

Waev's Tiger and Bigfoot battery-powered vehicles

Anaheim connection

When GEM production moved to Anaheim in 2017, it joined Taylor-Dunn manufacturing and established a southern California-based electric vehicle centre.

Essentially, GEM and Taylor-Dunn share operations in Anaheim (at the site which also now serves as Waev's headquarters), but the integration of

'Deep appreciation'

The buyout of GEM and Taylor-Dunn was made by five former Polaris leaders that for the better part of the last four years had been leading these businesses, Simon explains.

"This group has a deep appreciation of the legacy of these brands and their roots in a broad set of mature and growing markets. There is also a lot of excitement around the prospects for new and emerging markets," he declares.

"Waev plans to drive growth in the business by centring on these brands, our employees and dealers, providing a more agile, customer-driven approach that is unconstrained by a larger corporation.

"Our focus will continue to be on mobility, and primarily electric and sustainable solutions that keep us and our customers at the forefront of that transformation in the urban and industrial markets we serve.

"As an independent company, we are transitioning into systems established around the needs of our GEM and Taylor-Dunn customers. We were locked into processes before that didn't always suit the commercial business model and we have the opportunity now to set things up directly to benefit our customers and make us easier to do business with."

Customer-centricity is going to be key. "We're establishing an operating structure that is more efficient and agile, enabling responsiveness to market and customer dynamics in the fast-moving markets we serve. Speed to market is critical, and we've demonstrated our ability to lean forward with new products, demonstrated by the recent launch of the lithium-powered Tiger tow tractor and Bigfoot utility vehicle."

Big cat

The lithium-ion Tiger tow tractor was launched at the International GSE Expo in Las Vegas late last year and orders are being taken for the Tiger now.

The unit is available in two models: the Tiger 30/60 and the Tiger 30/60 XD. The Tiger 30/60 has a fully steel body-on-frame with bolt-on chassis components. The design requires little to no specialised operator training and includes many common GSE parts, simplifying operations and maintenance.

The Tiger 30/60 XD has a 100% steel, unibody frame design. The integrated frame, counterweights, floorboard, front and rear bumpers, and cowling are welded together for added rigidity and durability in the harshest environments. Front and rear leaf spring suspensions provide a smoother ride and controlled handling over uneven pavement. Pedal placement, extensive legroom, spacious steering placement and the plenty of room between operators are designed for operators of all sizes and to minimise fatigue.

The XD model is said to be ideal for operators looking to upgrade to a premium, heavy-duty frame, and fleet managers who want their users to have more control, easier ingress and egress, with more space to operate.

According to Waev, both fully electric Tiger tow tractors are built on industry-proven chassis, have up to 60,000lbs of towing capacity, and are equipped with simple, easy-to-use operational controls, hitch options and durability features. ■

Keith Simon

these businesses goes much deeper than this, says Simon. "There is overlap in the markets and customers these businesses serve, so naturally the sales and marketing team, customer operations team, and channels fit well together.

"Within Polaris, both GEM and Taylor-Dunn were part of the Polaris Commercial brand and run by many of the leaders and team that run the business under Waev."

But, Simon continues: "The 70-plus year history we have in California is just the start. Anaheim has been and will continue to be home to our EV manufacturing, design and engineering operations that are strengthened by our highly skilled and dedicated team."

He is looking forward, he adds, to building on the "strong foundation of these businesses as we pursue new and emerging markets with greater agility and responsiveness". ■

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Textron and GM collaborate on EV technology

Textron GSE will leverage synergies of GM EV innovations across its TUG™, Premier™, Safeaero™ and Douglas™ products

In December, Detroit, Michigan-headquartered car giant General Motors (GM) announced that it was looking to broaden its electric vehicle (EV) technology into new automotive applications. One of those new applications is ground support equipment and it is now collaborating with supplier Textron to support various elements of the company's electric GSE vehicles

GM's strategy will enable it to reach out to a larger, more diverse group of commercial customers, while also helping companies and organisations meet growing demand for zero-emissions technology and achieve their own sustainability targets.

Travis Hester, vice president of electric vehicle growth operations at GM, notes: "GM has an established strategy, network of integrators and co-development agreements to apply an extensive array of components and solutions to a broad range of customers and use cases.

"As companies across many industries look to reduce their environmental impact, GM is uniquely positioned to serve as a leader not only through exciting new EVs across our brands, but through additional technology applications, and we look forward to bringing customers – existing and new – along with us on our zero-emissions journey."

One of the markets where GM will begin looking to offer greater EV support is the airport/aviation business and, in what it describes as "a strategic collaboration" with Textron, it is providing EV components to electrify the latter's TUG™ line of baggage tractors, cargo tractors and belt loaders.

GM components are used in Powertrain Control Solutions (PCS) technology that integrate various parts into lithium-ion electric powertrains.

Providence, Rhode Island-based Textron is "excited to collaborate with renowned technology leaders GM and PCS to incorporate proven lithium technology into several Textron GSE electrification

Textron GSE is committed to building a more sustainable world

Matt Chaffin
VP at Textron GSE

initiatives", says Matt Chaffin, vice president at Textron GSE.

He explains: "Textron GSE will leverage synergies of the innovations across its TUG™, Premier™, Safeaero™ and Douglas™ product offerings where it can deliver sustainable solutions that benefit customers and the industry."

Co-operation with Textron is not new. "Textron GSE has a long-standing relationship with both GM and PCS," Chaffin observes. "The decision to collaborate with GM was made because of their expertise in lithium technology, commitment to future innovations and their impressive research, development, and testing processes.

"GM has been trusted to provide lithium vehicles for decades and has extensive expertise designing, developing, and supporting high-capacity lithium batteries."

Meanwhile, "PCS is known throughout the aviation industry for its ability to deliver high-performing transmissions, drivelines and electric control modules to vehicle manufacturers. A supplier to GM, PCS is familiar with the technical requirements and specifications of the technology."

Such collaboration helps Textron to innovate further in its product offerings. Says Chaffin: "Textron GSE is always looking for ways to strengthen its product portfolio to bring reliable, exciting ground support equipment to market and continually evaluates companies that offer technologies and solutions that align with its strategic roadmap.

"Textron GSE is confident that together with GM and PCS it will deliver highly efficient, sustainable products and technologies that offer unmatched performance for its customers."

Sustainability

GM EV technology fits well with Textron's corporate strategy and how it wants to move forward with environmentally friendly GSE. "Collaborating with GM and PCS, Textron GSE can expand its product innovations that support company and industry sustainability initiatives," Chaffin notes.

"Textron GSE is committed to building a more sustainable world and controlling its impact through environmentally friendly products and technologies, green facilities, community stewardship and employee engagement."

As such, it can support the wider industry effort to minimise the aviation sector's impact on the environment. "Textron GSE is proud to play a leading role in delivering sustainable product solutions," Chaffin declares.

"In fact, electric product offerings are already available in our lines of tractors, belt loaders and pushbacks. Additionally, our Intellimix™ technology designed for the Safeaero™ 220 de-icer has environmental benefits in the minimisation of water consumption and minimal chemical waste created during the de-icing process."

Textron GSE forms part of Textron Specialized Vehicles (TSV), which in turn includes E-Z-GO. In 2017, E-Z-GO introduced its line of ELiTE lithium-powered vehicles. This range has been extremely successful, with over 110,000 of these lithium-powered vehicles now operating throughout the world.

"This sort of expertise with lithium technology allows Textron GSE and other TSV companies to leverage shared knowledge of existing and emerging technologies," Chaffin points out. ■

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