

Regional GATEWAY

Dedicated to regional and business airports

Proving ground

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Cover credit: Skyports launched its next-level vertiport testbed in November offering an entire ecosystem to trial and develop the end-to-end eVTOL journey.

CONTENTS

Regulars

- 6 **ON THE RADAR**
Serving as a key regional gateway to Poland, Krakow Airport is on course to serve seven million passengers in 2022.



- 8 **HERMES AIRPORTS ON RECORD**
Making employment in the aviation industry attractive again is key to enticing new recruits, says Natasa Iacovides.

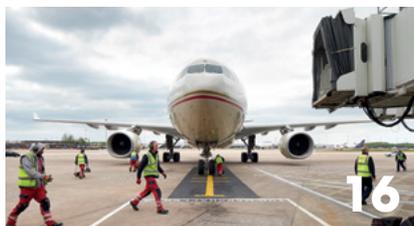
- 10 **AIRPORT EDIT**
Short stories, interviews and reviews from the global airport community.

- 14 **SUSTAINABILITY SERIES**
Our round-up of 'green' developments in the aviation sector.



- 49 **LAST CALL**
Alton Aviation Consultancy's Joshua Ng discusses the need to future-proof air transport hubs.

Features



- 16 **ROUTE DEVELOPMENT**
As passengers return, airports and airlines are busy restoring their destination networks.

- 20 **VIEW FROM THE TOP**
Skyports CEO Duncan Walker on the faster, smarter and more streamlined way to travel.



- 24 **UNCREWED AIRCRAFT**
Jennifer Beechener on how digital services are helping integrate uncrewed aerial vehicles into controlled airspace.

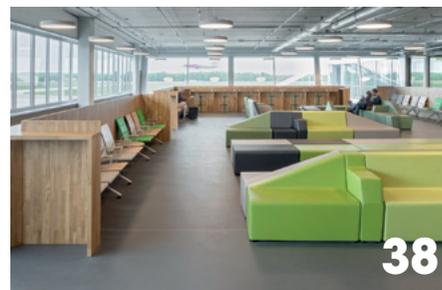
- 42 **BUSINESS REPORT**
Check out our round-up of highlights from the private aviation sector.

- 45 **SPOTLIGHT ON DUBAI**
Set to become one of the top 20 wealthiest cities in the world by 2030, Dubai is earning its stripes as a hotspot for private aviation.

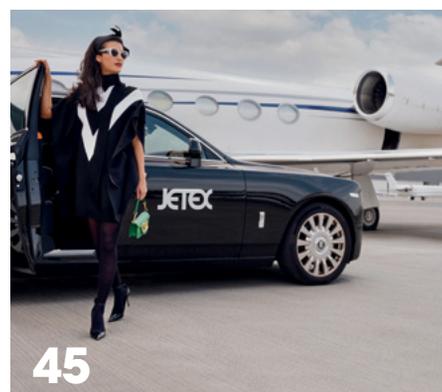


- 28 **RUNWAY REFURB**
Paul Sillers reports on how ICAO's Global Reporting Format for Runway Surface Conditions is impacting the airfield landscape.

- 32 **GSE EQUIPMENT**
The world of electric ground support equipment has witnessed plenty of innovations in the past two years, says Chloë Greenbank.



- 38 **AIRPORT SEATING AND INTERIOR DESIGN**
Emma Kelly looks at how terminal seating and interior design has evolved.



Editor's note

The future is now ...



Three years ago when I attended NBAA-BACE in the US, I remember having several conversations about the reality of electric vertical take-off and landing (eVTOL) vehicles. Many that I spoke to were sceptical about the nascent technology and its commercialisation.

However, even back in 2019, eVTOL prototypes were already taking centre stage and it was clear that we were witnessing the birth of a faster, smarter and sustainable transport system: Advanced Air Mobility (AAM).

To date, much of the focus has been placed on the vehicles themselves. But this is just one part of the AAM ecosystem. The ground infrastructure, airspace regulations and operational capabilities all underpin the evolution of AAM.

In this issue, Skyports CEO Duncan Walker took time out just days ahead of the launch of his vertiport test bed in Paris to explain why his facility based at the Pontoise-Cormeilles airfield isn't about some fancy futuristic sci-fi vision. Rather, it offers the entire ecosystem the chance to test and develop technologies and the whole eVTOL passenger journey in a safe and realistic environment.

On the subject of AAM, we also look at how integrating uncrewed aerial vehicles safely into controlled airspace is no easy task and how digital services for new airspace users are helping air navigation service providers do just that.

We also turn our attention to Dubai Bling – and no, I'm not talking about the latest Netflix reality show. With Dubai seeing a significant rise in the number of high net worth individuals, it is on course to be among the 20 wealthiest cities in the world by 2030. We look at how the UAE is leading the way in setting new standards for private aviation on the ground.

It's not all luxe-living and flights of the future, however, as we also explore the latest trends in electric ground support equipment (GSE), refurbishing runways, route development tools for airports and hear from Hermes Airport's Natasa Iacovides on how to make airports great places to work again.

I hope you enjoy reading this issue, and I look forward to catching up in person with those attending CONNECT Tangier at the end of February.

Chloë Greenbank, Editor, Regional Gateway

Munich's market returns



With the holiday season in full swing as this issue goes to press, we're delighted to see that Munich Airport is back with all the festive feels during its Christmas and winter market. The market has not been held for the past two years due to COVID restrictions.

Under a covered space, passengers and those visiting the airport can try ice skating and various culinary delicacies or browse the market stalls for Christmas treats. While the market offers added value for passengers, it also provides a great non-aeronautical revenue stream for the airport, attracting not just airline passengers but also local residents.

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Pride of

Serving as a key regional gateway to Poland, Krakow Airport is on track to serve seven million passengers in 2022. We find out why delivering the best possible customer service is at the core of the airport's business model for growth.

Situated in Malopolska in southern Poland, which was visited by 3.5 million foreign tourists in 2019 (1.9 million of whom arrived by air), Krakow Airport is not only a direct employer of more than 5,000 people, it indirectly employs more than 50,000 people.

The airport offers over 120 direct routes served by 25 airlines and has won global recognition for its customer service.

In September 2022, Krakow hosted Airport Council International's (ACI) Global Customer Experience Global Summit and is one of the first airports in Poland to have twice received the

association's Airport Customer Experience accreditation.

"We focus on the needs of our passengers on a daily basis. We listen to their feedback and analyse their comments," Krakow Airport's Press Officer Natalia Vince tells *Regional Gateway*.

Underlining the importance of digitalisation and new technologies in its customer service strategy, she adds: "We always put our customers at the centre of our airport strategy. It is their journey that dictates our strategy. To keep up with the 'constantly connected' customer we must embrace digitalisation and new

technologies to deliver an unmatched customer experience.

"However, we also acknowledge the need to support passengers who don't feel comfortable in a digitised world. We need to provide for them with the same level of service, but in a way that is comfortable for them."

Looking to the future and the anticipated growth in air traffic at the Polish hub, Krakow Airport is investing around a billion zlotys (US\$222 million) in the development of its infrastructure.

The modern terminal already features a stunning glass facade shaped like a prism to make better use of the natural sunlight. The airport's latest investment will see the construction of a new runway and cargo terminal as well as an extension of the apron.

"This investment is crucial as it will provide the airport with the infrastructure necessary for future, long-term growth," says Vince. ■





On the radar

Poland



Fast facts:

Krakow Airport (KRK/ EPKK)

Owned by: Międzynarodowy Port Lotniczy (MPL Services) Jana Pawła II Kraków – Balice.

Opening hours: The passenger terminal is open 24/7.

Number of runways: Currently one, however plans are in place for a second runway, which will be 2,800 metres long and 45 metres wide.

Fuel provider: Orlen Aviation Krakow.

Airlines serving the airport include:

Austrian, British Airways, easyJet, Eurowings, Finnair, Flydubai, Jet2.com, KLM, LOT, Lufthansa, Luxair, Norwegian, Ryanair, SAS, Swiss, Transavia and Wizz.

Ground handling providers:

LS Airport Services S. A. Kraków – Balice, Welcome Airport Services and Aviation Support Poland.





People first: Hermes Airports aims to create an environment that fosters employee wellbeing.

Making airports great places to work again

Making employment in the aviation industry attractive again is key to enticing new recruits and retaining key employees. Natasa Iacovides, Senior Manager of Human Resources at Hermes Airports and Chairperson of ACI Europe's Leadership and Human Resources Forum, explores the challenges and approaches being taken to do just that.

The "Great Resignation" has had a huge impact on most sectors, with aviation losing 2.3 million jobs globally during the COVID-19 pandemic, according to the Air Transport Action Group (ATAG). In addition, the uneven and sometimes sudden growth in demand for travel has created additional challenges when it comes to retaining and recruiting employees.

While ground handling and security sectors were the hardest hit due to the pandemic's impact on employee resources, no area of the airport environment has been left unscathed. Many of those who were furloughed or laid off have been slow to return, if at all, while others have retired early or been lured by the appeal and apparent security of other sectors.

We need to acknowledge that the perception of working in an airport has changed. What was once considered a safe, attractive sector to work in, is now often perceived as a vulnerable industry with low job security.

Add to that a competitive employment market and often physically demanding roles that are subject to unsociable shift patterns, and it's easy to see why recruiting employees into the airport community currently has its fair share of challenges.

As such, it is down to each airport to address these concerns and make sure their work environment and remuneration package are once again seen as attractive to potential candidates.

ACTIONS SPEAK LOUDER THAN WORDS

Airports need to work harder than ever to increase awareness and educate prospective employees and the wider audience about the different employment opportunities that are available and the appeal of working in an air transport hub.

But words alone are not enough. Airports need to demonstrate initiatives they're putting in place to create a healthy, sustainable work environment, to support employee wellbeing as well as growth through personal and professional training schemes together with clear progression pathways.

On-site careers days and employment fairs also offer a great opportunity to engage with prospective employees and students who might be considering a career within the airport community.

Hermes Airports, which operates both Larnaca and Paphos airports in Cyprus and collectively employs 149 people, facilitates two-way communication through many channels – one of which is its intranet "HermesHub", engaging staff with airport news and announcements, celebrating employee and company achievements, and providing information and resources around wellbeing.

It's also imperative that C-Suites and

Senior Management are visible, make time to talk with all employees and listen to their concerns as well as their suggestions for improvement. It's been shown on numerous occasions that a highly engaged, motivated, appreciated, and valued workforce will increase productivity and successfully deliver the business strategy.

Talking of changing perceptions, it's also not uncommon to hear employees are more aware of the fact that the aviation sector has real responsibilities when it comes to carbon emissions. The younger generation is particularly concerned with how companies are addressing climate change and sustainable growth.

The good news here is that collectively the industry is working hard to reduce the impact of aviation's activities on the environment. Again, how an airport is perceived comes down to effective communication from that hub on how it is decarbonising operations as well as being able to show tangible results.

Similarly, as automation and artificial intelligence (AI) become more widely adopted across the industry, airports need to show how they're using this technology to make the industry more attractive and sustainable in the longer term – complementing their employees' skills rather than replacing them.

REMUNERATION AND REWARDS

Salaries will always be a concern whatever industry you're in. As an airport operator that's committed to being a progressive and fair employer, every three or four years Hermes Airports has a company-wide pay review conducted by Deloitte, to see where we stand compared to the market and how we align with our competitors.

In the US and Europe, for example, there have been reports of the Transportation Security Administration (TSA) as well as airport operators offering signing bonuses to new recruits and investing in employee benefit schemes such as discounts on airport retail and

subsidies on public transport or car schemes. The latter can be key in attracting new recruits, especially as most airports are located outside a city centre, so the cost of travel to and from the workplace is an important consideration.

Airport ownership will also have an impact on how salary structure and recruitment budgets are allocated, as a state-owned airport won't have the same flexibility in terms of pay scales as a privately-owned airport. As such, airports need to think outside the box when selling the merits of their facility and the incentives they can offer.

It's also important to note that recruitment challenges continue beyond a job offer being made, as anyone applying to work in an airport is subject to an identity verification check – a process which can take as long as three months. In some cases, that's simply too long and new recruits in the meantime will seek employment elsewhere.

Some UK airports have taken steps to address this and help plug shortages, such as the relaxation of counterterrorism checks on new employees. While the relaxation of rules has enabled employees to be trained in airports without security vetting, they are not permitted to work airside until that vetting is complete.

INVESTING IN PEOPLE

Creating an environment that respects employees and their wellbeing, embraces diversity, individuality and human values, is at the core of Hermes Airports' business strategy.

Underpinning this is our Investors in

People accreditation held since 2012, and re-accredited at platinum level in 2019. The renewal of this accreditation in early 2022 has sealed Hermes Airports' confidence in its human resources as the driving force of the company's success. It also provides a valuable framework for our organisation in terms of tools and guidance for applying best practices in human resource management and development.

Ultimately, for any airport, overcoming recruitment and retention challenges begins with creating a workplace culture that embodies a healthy, safe and sustainable working environment, and being able to demonstrate that people are at the core of what you do and who you are. As the saying goes, "Every organisation is only as strong as its people" – and that's a motto every airport should embrace. ■



Born and raised in Limassol, Cyprus, Natasa Iacovides has 20 years' working experience in human resources. She joined Hermes Airports in 2007 as a Human Resources Officer before being promoted to the position of Senior Manager Human Resources in 2013. In addition, she served as a board member of the Cyprus Human Resource Management Association (CyHRMA) from 2013 to 2017 and in 2018 became a member of the Airport Council International (ACI) Europe Leadership and Human Resources Forum. In 2020 she was elected Chairperson of the forum.



The Airport Edit

Short stories, stats and reviews from the global airport community

September 2022 saw Aviation Africa return for its sixth summit after a two-year hiatus. *Regional Gateway* was delighted to be a media partner and to moderate on some of the panels. Read on for our highlights from the event.

Opportunities abound in African aviation



Leading the way: Rwanda's President, Paul Kagame, opened the sixth Aviation Africa summit.

The sixth Aviation Africa, which took place in Kigali, Rwanda, in September, saw industry, government and defence leaders come together to focus on key issues affecting the continent's aviation sector. Some 1,400 delegates from more than 85 countries attended the two-day summit, with *Regional Gateway* reporting live from the event.

Rwandan President, HE Paul Kagame, opened the summit, praising the industry for its role in delivering vaccines and its support during the COVID-19 pandemic. With travel and tourism now building up and getting back to normal he underlined that "recovery means increasing connectivity, stimulating demand and creating jobs". He also urged authorities to "open up the skies to help lead businesses to regional and global supply chains, boosting trade and investment".

A highlight of this year's event was its co-location for the first time with the Union of Central and West African Airport Managers' (UGAACO) debut Salon Mondial des Infrastructures Equipements et Services Aeroportuaires (SMIESA) event.

Led by Daniel Lefebvre, UGAACO President and General Manager for AERCO, which operates three airports in the Republic of Congo, SMIESA brought together airport members from all 54 African nations to promote the continent's air transport hubs, as well as related services and suppliers.

"UGAACO's mission is to create a cohesive uniform framework to support our members with regulatory procedures, strategic objectives and sustainable growth," said Lefebvre.

Panel discussions during the two-day

SMIESA summit covered airport funding, operating and business models; embracing the digital era; strengthening collaborations between airports, airlines, tourism and trade bodies; and developing the continent's air cargo sector.

While weak infrastructure, a lack of funding, the lack of liberalisation and poor connectivity remain key challenges for Africa's airport community, Charles Habonimana, Managing Director for Rwanda Airports Company (RAC), enthused that networking platforms such as this year's Aviation Africa and UGAACO's SMIESA are vital to advancing the industry.

"For two days we have come together to address the challenges we face and speak with one voice," he said.

Forum: topics discussed at this year's Aviation Africa included resilience in aviation, preparing for the next crisis and encouraging diversity and inclusion.



Building Bugesera

While plans for Rwanda's Bugesera International Airport have been in the making for more than a decade, this year's Aviation Africa provided the perfect platform for international design consultancy Dar Group to showcase its new design for the air transport hub. Dar has been involved in the new airport since 2019 and started working on the design in January 2020. The greenfield airport, which covers an area of 2,500 hectares and has a runway of 4,500 metres, will be built in two phases with an initial capacity of 8.2 million passengers and 150,000 tonnes of cargo. It will feature a 120,000 sq m main terminal as well as a 6,500 sq m

presidential terminal for VIPs, cargo buildings, a state-of-the-art baggage handling system and air traffic control tower, MRO facilities and an animal control centre. Construction of the facility is already under way, with completion of phase one of the airport scheduled for 2026. In 2019, Qatar Airways signed an agreement with the Government of Rwanda through Aviation Travel and Logistics Holdings (ATL) to take a 60% stake in the airport, while Portuguese engineering firm Mota Engil is engaged as a building contractor. Once it is complete, Kigali's existing international airport will remain in operation for business and



general aviation, training and humanitarian flights as well as MRO activities.

Training to increase safety for Africa's ground handlers

AviAssist launched a new product for Africa's ground handling industry during the sixth Aviation Africa summit. The online course on Aeronautical Knowledge has been designed to help address safety within ground handling operations and consists of curated videos that can be watched on demand over a two-week period. The online element is combined with assessor-led live sessions in which participants are assessed for their knowledge. It

provides an appreciation of the risks and safety components related to the daily working environment at an airport. "We are thrilled that sponsoring of the course by Willis Towers and Watson and aircraft manufacturer ATR have enabled us to keep the price point for this course very low," said Tom Kok, Director of AviAssist. "That means its accessible to smaller handlers and even individuals keen to develop their résumé."



Making a market: Groupe ADP's Xavier del Valle and Arnaud Bertrand at Aviation Africa.

Roll up, roll up for secondhand airport equipment

Ever wondered how to go about purchasing secondhand airport equipment? Groupe ADP has the answer – its Airport Market, which it was promoting at the summit as a marketplace for used airport equipment. Whether it's runway sweepers, terminal seating or ground support equipment, the Airport Market can source "preloved" items from one hub and sell it on to another. All equipment is certified by the original manufacturer, with Xavier del Valle, Head of Airport Market at Groupe ADP, expecting to sell equipment through the platform for 15-25% of its original manufacturing price.





A no-brainer for keeping airports clean

Michel Spruijt, Brain Corp's Chief Revenue Officer, on the platform powering the world's largest fleet of cleaning robots.

We have more than 20,000 robots out in service and that fleet is growing all the time. Cleaning used to be a dirty word in the sense that it was something that should be kept out of view. But, after the pandemic, people and especially passengers travelling through airports and places with a high footfall want to see that cleaning is being done and that it's going on all the time.

Airports generally have an expanse of areas to be cleaned consistently throughout the terminal. Combine the large amounts of cleaning that need to be done with the current staff shortages and keeping an airport clean and sanitised without interrupting operations poses a challenge for most airports. Cleaning robots have a key role to play here – they can be used to clean big stretches of floor space so operators can then deploy staff to focus on high surfaces and washrooms.

Brain Corp doesn't actually manufacture the robots. Instead, our software platform is used to power existing cleaning vehicles that were previously operated by staff. We have designed the system to learn quickly from humans and an operator's cleaning routine – where they clean and how to avoid static and moving obstacles along the way. We have also developed an app

so operators can keep a track of their robots and adjust their routes if necessary. The app also provides data on what has been cleaned and how frequently, which helps gain a better overview of an airport's cleaning regime.

The novelty factor of cleaning robots is still a talking point for passengers.

They love a robot and are always interested to see how they work and often post videos and photos to social media of the robots in action.

Robot cleaners are suitable for any size airport. Especially now with the current labour shortage, the turnover of cleaning personnel can be up to 400% a year. Then you have to factor in the time and financial costs of retraining new staff and getting them the relevant security passes to be airside. Robots need maintenance, but they won't leave to work elsewhere,

they don't get sick. They are a reliable resource, but they are certainly not being deployed to replace human personnel. Cleaning robots should be seen as an added value to existing human cleaning resources, enabling airport staff to see to the jobs where they are needed most.

Keeping facilities clean is really the focus for our robots currently.

However, we are also exploring how we can develop robot services further and other ways we can analyse the cleaning data fed back from robots to further enhance operations. The robots can also be used for shelf scanning in retail stores, so we're constantly looking at tasks in the public sector where a robot could help the human workforce finish those tasks safely and efficiently. It's about looking at the different opportunities where "our" brain can help the human brain!

Brain Corp's software drives cleaning vehicles that were previously operated by airport staff.





Cologne's new control cockpit

Cologne Bonn Airport in Germany unveiled its ultra-modern Airport Operation Control Centre (AOCC) in October. The first full control tests are planned to take place from December, with full operation due to begin in February 2023. Centrally located in the airport's Terminal 1, the AOCC has a view encompassing the apron, cargo area and runway and is around 500 sq m in size. The central control room has 24 workstations and a 15 metre-wide video wall comprised of 20 screens to display all the information relevant to airport operations such as weather, airport apps and news. The AOCC will be a central point to plan, control and monitor all

processes relating to flight management, passengers and cargo at the German hub, with decision-makers from various departments including traffic management, baggage and ground handling, as well as service providers and partners represented.

"The AOCC will join up all the different threads," said Thilo Schmid, President and CEO of Flughafen Köln/Bonn. "Processes at the airport are multi-layered and highly complex. The new and centralised cockpit allows direct communication between internal and external partners, flexible planning and rapid, process-oriented decision-making, even during periods of disruption to normal operations."



Going up: \$31 million in grants have been awarded to nine US cargo hubs by the FAA.

Cargo supply chains to benefit from FAA investment

Nine cargo hubs in the US are to benefit from \$31m in grants that have been awarded by the Department of Transportation's Federal Aviation Administration (FAA). The investment has been allocated to expand cargo infrastructure and help expedite the movement of goods throughout the country. Chicago Rockford in Illinois, Huntsville International in Alabama, Greenville-Spartanburg in South Carolina, Bishop International in Michigan, Ted Stevens Anchorage in Alaska, Seattle-Tacoma in Washington, Eugene F. Kranz Toledo Express in Ohio, Stockton in California and Rhode Island will all benefit from projects including the construction of new and improved airport facilities, repairs to runways and taxiways, maintenance of airfield elements such as lighting and the purchasing of equipment.

Anyone missing a pasta maker?



No, you haven't stumbled across a typo in a headline. A pasta maker, alongside a rice cooker, massage table, basketballs,

hoverboards, cameras and guitars are just some of the lost property that went up for auction in November, having been left behind at Brisbane Airport. With around 60,000 passengers passing through its domestic and international terminals every day, the Australian hub is finding plenty of weird, wonderful and sometimes valuable items left behind. Unclaimed items are either donated to local charities or sold in Brisbane Airport's annual Lost Property Auction with proceeds going to a local children's charity. One standout item that went in the airport's 2022 auction, according to Lee Hames, Chief Operations Officer for Lloyds Auctions, was an IWC Schaffhausen Top Gun Pilot watch, which retails for between AU\$10k and AU\$30k.



Sustainability Series

From accelerating sustainable regional aviation to resolutions that will help airports achieve net zero emissions, here's our pick of 'green' aviation highlights.

Study identifies UK hubs likely to see AAM services as they become available



According to **ElectricAviation Maven** (EA Maven), there is not only a place for Advanced Air Mobility (AAM) services, but in many areas a real need. EA Maven was engaged by UKRI to assess the viability of AAM by

making a deep dive analysis of 20 potential routes across the UK. The consultancy chose 14 electric conventional take-off and landing (eCTOL) and six electric vertical take-off and landing (eVTOL) routes.

Based on these, and using a range of data sources as well as a bespoke AAM demand model, it determined the number of passengers who would switch from traditional road and rail modes of travel to AAM services based on a range of criteria. The report also highlighted EA Maven's UK Regional Air Mobility index, which was used to conduct a high-level assessment of 40 regional airports (excluding the London hubs) to identify which airports are likely to see AAM services as they become available.

In essence EA Maven has identified 390 potential AAM routes, which include both eVTOL and eCTOL routes. It also estimates that more than five million passengers per week could travel on these services. A large proportion of this traffic would come from people who would otherwise travel by car, helping to decarbonise regional travel in the UK.



Groningen Airport partners with Evia Aero to accelerate sustainable regional aviation

Situated in the Netherlands, Groningen Airport Eelde (GAE) has partnered with Evia Aero, a German company focused on developing the electric aviation ecosystem, to advance sustainable regional aviation.

Evia Aero is developing an airline that operates electric-powered aircraft and has selected GAE as its first future Dutch base of operations because of its market potential.

The airport features a 22MW solar park and the Hydrogen Valley Airport Project. Diesel ground support equipment (GSE) is being converted to work on hydrogen at the regional air transport hub, where an innovative electrolyser is also being developed.

"For us, GAE is a good future base," said Florian Kruse of Evia Aero. "The presence of locally generated green energy is a reason for us to choose GAE. The airport is working on a green hydrogen ecosystem which will power our electric and partly hydrogen-powered future fleet."

In line with GAE's ambition to become Europe's most sustainable airport in terms of hydrogen, it has also signed a letter of intent with TotalEnergies and New Energy Coalition to realise a hydrogen refuelling station (HRS) on the airport site.

The HRS will serve both landside and airside vehicles and is integral to the hydrogen ecosystem planned at the regional hub.

Resolutions approved to strengthen sustainability and resilience of global airport community



The ACI's World Annual General Assembly.

The end of October saw airport leaders from across the globe gathering in Marrakesh for the annual Airports Council International (ACI) World Annual General Assembly. The event concluded with the

approval of resolutions that will strengthen the sustainability and resilience of airports as key players in the aviation ecosystem.

Speaking at the assembly, ACI World Director General, Luis Felipe de Oliveira, said: "These resolutions will help airports deliver the long-term net zero carbon goal, restore economic equilibrium, support small, emerging and regional airports, and build aviation's workforce."

The resolution to "support and assist small, emerging and regional airports" seeks to reinforce engagement and support for this segment of ACI's

membership, which has different needs and interests than larger hubs or more established operators.

It is also recognition from ACI World of the important role that small, emerging and regional airports play within global connectivity and socio-economic development of communities worldwide.

ACI's resolution calls on governments and industry to support their capital and human resource development plans and facilitate their transition to renewable energy.



FLOW INSTEAD OF FALTER

Seamless travel made easy

We live in the digital age; all our devices are smart, count our steps, measure our pulse. They remind me to leave my apartment early enough and manage to avoid every traffic jam so that I arrive at the airport on time. Once there, however, neither my smartphone nor my smartwatch come up with a plan B: there is no detour for the way through check-in and security control. The waiting game begins.

After a study from the US luggage storage company Bounce between March 2021 and March 2022, the average security wait time at Miami International Airport – the largest gateway from the US to Latin America – was 24 minutes and 54 seconds. Average passport control wait time was 22 minutes and 3 seconds. That means a passenger was waiting 47 minutes only for these two control stations, not to mention the waiting time to drop off or pick up the luggage and passing through the terminal!

Are there also examples where you can speed through the airport quickly? Indeed, there are! It does not always depend on the airport's size or passenger number how long the travelers have to queue up. The system is crucial. More and more people use electronic passports, but an alarming number of airports and border crossing stations still control every passport manually. Automated border control (ABC) systems, though, are more efficient and offer higher security, because they avoid human mistakes and match the data within seconds. Flow instead of falter!

Fast check-in at smart kiosk

The German innovative technology specialist Muehlbauer has developed an airport and border crossing solution, where automated security systems take over the verification and authentication of travelers and their identity documents. The MB Easy Flow system allows the passenger to fill out their digital declaration forms via smartphone or computer before starting their journey. At the airport or border crossing checkpoint, the passenger can directly check in at a smart kiosk. The high-tech kiosk reads the traveler's biometric data from its ePassport or eID and performs a quick presence check via facial recognition, liveness and fever detection. For this purpose, the sophisticated system automatically moves to the height of the traveler's face and uses a built-in camera and thermometer to take the required data and match it with the appropriate database. Officials will immediately be notified if a passenger is considered unfit to pass or has incomplete travel documents. Of course, manual intervention is possible at any time, but the majority of passengers pass through the station without personal contact. This speeds up the process enormously and brings further advantages like the contact reduction during pandemic conditions.



Fast track: the MB Easy Flow system allows passengers to fill out their digital declaration forms via smartphone or computer before starting their journey.

Passport control without standstill

The intelligent system automatically passes on the information to the relevant authorities and the flight operator receives a notification when check-in and verification have been completed. After the flight crew gives their OK, the boarding gate is activated automatically. To board the aircraft, passengers now seamlessly pass through the last control station: Muehlbauer's smart gate. There is no need for stopping, the traveler just walks through the gate, pointing the head to the integrated camera screen. The gate checks if this person is allowed to access by facial verification on the fly and the passenger can proceed to the aircraft.

The benefits of automated border control systems like Muehlbauer's Easy Flow are not only appealing for the traveler. Replacing manual processes saves time and reduces operating costs and personnel expenses. Eliminating human mistakes protects against forgery and increases data security. As cloud-based application, the system can be connected with a closed and secured network. This allows the operator to monitor and intervene in real time from anywhere. These smart solutions can be integrated in the existing infrastructure and do not need expensive alteration. Essentially, we could use and utilize our digital resources and our knowledge about artificial intelligence to offer a satisfying and comfortable experience to both the passenger and the employee.

Written by Katharina Schuldt

For more details go to: www.muehlbauer.de



Way to go

As airline passengers come flooding back, airports and airlines are gradually restoring their destination networks. Alan Dron reports on how airports are overcoming the challenges of route development.

As the airline industry rapidly moves back towards achieving pre-pandemic traffic levels, progress in restoring route networks differs between individual airports, with multiple factors affecting the rate at which routes are returned to active service.

As well as the pandemic recovery process, airlines and airports are having to face the additional problems of Russia's war on Ukraine and the resulting high fuel prices skewing the operational environment.

Even before the pandemic, regional airports have often had a more difficult existence than major hubs, as UK consultant John Strickland of JLS Consulting notes.

Strickland, a former airline network planner, reveals that many small European airports lose money due to a combination of high overhead costs and limited traffic.

"In the main, traffic volumes are smaller, tend to be more seasonal and have a

lower share of higher-margin traffic," he says. "If headwinds like COVID or high fuel prices come along, airlines will look to those areas in which to cut back."

Additionally, some airlines that specialised in flying into European regional airports have themselves disappeared, either because of the pandemic or more prosaic economic difficulties.

One of the most important was Europe's largest regional airline, Flybe – a resurrected, much smaller company carrying the same name is now flying once again – together with smaller operators such as VLM (Belgium), Skywork (Switzerland) and Ernest Airlines (Italy).

RESIDUAL COVID CHALLENGES

A spokesperson for the UK Airport Operators Association (AOA) underlines that, in addition to losing customers, "airports face almost unique challenges in their recovery from the COVID-19 pandemic," which in turn will impact

their ability to grow their route networks.

Even as the domestic economy began to recover from the depths of the disease outbreak, "international travel still faced a significant restriction, meaning that passenger numbers were still heavily restricted, and airports were unable to bring all their staff back until many months after the furlough scheme was brought to an end.

"Unfortunately, this led to many people understandably moving into new areas and has left airports with significant staffing shortages. The current labour market means airports are facing much higher turnover rates for staff, with the consequence that enhanced recruitment has become an ongoing necessity."

The spokesperson adds that airports had to take on debt simply to stay open during COVID-19. Nevertheless, airports are clawing their way back – although some are doing so more quickly than others.

STRONG REBOUND FOR DOMESTIC ROUTES

"I think there's a bit of a spectrum in terms of time span," Becrom Basu, Consulting Partner at LEK Consulting tells *Regional Gateway*. "Domestic has come back first, followed by short-haul leisure and then by long-haul. What's taking a bit longer will be classic business routes." A typical example of this is Edinburgh Airport.

"The fact we are now operating more leisure routes





Route development

than ever before, surpassing pre-pandemic levels, is an indicator that we're not only recovering our route network, but continuing to develop and enhance it," offers Pavel Halas, the airport's Senior Aviation Manager.

"It is clear many people have been taking the opportunity to go on that long-awaited holiday, and airlines have pivoted into leisure to take advantage of this. With SunExpress, Jet2 and easyJet among those bringing new leisure routes to Edinburgh, we're offering passengers more choice than before."

As well as traditional short-haul leisure routes to the Mediterranean, Edinburgh is rebuilding long-haul services.

"We are the only airport in Scotland with scheduled routes to the US and we are continuing to build on our overall transatlantic offering," says Halas.

"Delta has just announced a new direct route to Atlanta – a major step as we enhance our business and leisure connectivity – and this follows WestJet arriving in Edinburgh with a Toronto

service earlier this year and Virgin launching new flights to Orlando."

Edinburgh is currently operating 74 leisure routes, compared to 69 before the pandemic. Passengers can now fly to 41 different leisure destinations, compared to 38 pre-pandemic and international capacity has fully recovered to pre-pandemic levels.

GLOBAL DIFFERENCES

Airlines such as Emirates have now rebuilt their schedules to regional UK airports, while other regional centres such as Manchester and Glasgow have also re-established long-haul networks, adds Strickland.

Some markets remain difficult, most notably China, which is still placing restrictions on international flights due to the country's fervent "zero COVID" policy.

However, "the domestic side in the US and China is more or less back to

normal," says LEK Consulting's Basu.

"Domestic routes to Europe are a much smaller market, but short-haul leisure has come back pretty fast because of this pent-up demand. People had saved up money over the pandemic."

Basu says the best set of circumstances an airport can hope to have is to be oriented towards leisure rather than business flying and to have a solid base

A to B: domestic flights were among the first to recover in the wake of the pandemic.





Manchester Airport has now re-established its long-haul networks.

of low-cost carriers (LCCs).

Meanwhile, Strickland underlines that tourism boards are regaining their places at the table when it comes to restoring routes or developing new ones.

“Obviously, tourism took a huge hit during the pandemic and the roles of tourism boards in attracting new traffic dried up overnight, but tourism boards are pivotal players when it comes to instituting services.

“They have information and they have budgets. They can provide marketing support on a new route which can otherwise be expensive and time consuming. Tourism boards can step in to help airports and airlines.”

NOT EVERY CLOUD HAS A SILVER LINING

It’s not all positive. In the UK, Peel Group, the owners of Doncaster Sheffield Airport, announced in September that the regional airport would start to be wound down on October 31 after its major operator, LCC Wizz Air, ended services from the South Yorkshire facility.

Peel Group said that the airport had never achieved a critical mass of services and that Wizz’s withdrawal was the straw that broke the camel’s back. At the time of writing, the airport’s fate remains uncertain.

And some airports have had their route networks drastically altered by events outside their control. Finnair,

“Domestic routes to Europe are a much smaller market, but short-haul leisure has come back pretty fast because of this pent-up demand. People had saved up money over the pandemic”

Becrom Basu, Consulting Partner, LEK Consulting

anchor airline at Helsinki Vantaa, for example, has had to significantly restructure its route network as a result of the conflict in Ukraine.

For decades, Finnair has had a niche product that saw it take a “short cut” over the North Pole to a number of Far East destinations.

But these routes have become untenable due to the closure of Russian airspace and the Finnish flag-carrier has had to reorient its long-haul services to transatlantic routes.

Other major carriers are also trying to negotiate an environment that has changed since COVID started to fade:

“Long-haul flights remain a challenge,” says Thomas Jeske, Lufthansa’s manager, Airport IT Services. “Because the situation is so fluid, we don’t always know which destinations will work out. Even if they are popular, new restrictions could be introduced and consequently a high amount of reservations are cancelled at very short notice. Sometimes we need to pull out and try again somewhere else.”

TECHNOLOGY TOOLS

Against this backdrop, airports are increasingly turning to technology to help them attract airlines and set up new routes:

“On the one hand, there is a goal of making the schedule as profitable as possible by flying attractive routes at preferred times and making valuable connections at airport hubs,” says Yannick Beunardeau, SVP Airport & Airline Operations, EMEA at Amadeus.

“On the other hand, each schedule must be operationally feasible and thus obey various crew, maintenance, gate, slot, aircraft and other constraints and also reliably be on time.

“As such, the principles of automation and optimisation are needed using specialised software to examine all possible schedules and find the ones that provide the best trade-offs between commercial and operational objectives.

“As one of the largest technology providers in travel we have unmatched levels of data relating to booking trends, the competitiveness of different routes

and trends in traffic patterns. More specifically, it tends to be airlines that decide which routes they serve, based on their commercial strategy.

“SkyCAST is one of our solutions for helping airlines to forecast network profitability of proposed schedules.

“The system uses advanced mathematical techniques to simulate passenger choice behaviour, whilst factoring in passenger traffic trends, flight costs, competitive dynamics and market share to recommend a preferred route network.”

With SkyCAST, network planning teams can continually assess the impact of proposed changes to an airline’s network.

Extensive co-ordination and collaboration between airlines and airport authorities is also part of the

schedule development process. Airport authorities can provide critical advice on underlying passenger demand patterns, as well as data on slot constraints, gating rules, local curfews, maintenance options, local rules for making passenger connections, etc, thus helping airlines decide attractive route options.

“Passenger demand has shifted, with routes that serve diaspora being particularly resilient and important during the past two years,” adds Beunardeau.

“Amadeus data based on traveller search demand shows that demand for secondary leisure destinations has also been a clear trend for UK outbound travel this year.”

For airports seeking to attract new airlines, a cloud infrastructure means the airline can have its passenger servicing

technology up and running rapidly, much more quickly than the traditional approach.

Amadeus has positioned its Airport Cloud Use Service (ACUS), to help airports transition away from their own servers and fixed network connections, with agents instead connecting to the multiple airline systems they need when serving passengers.

“This helps airlines to launch new routes more quickly and to test the viability of those routes without committing to a lengthy IT project at a given airport,” says Beunardeau.

“This test and learn approach is a trend we’re seeing in the industry, with many airlines now able to react to changing passenger traffic trends more quickly.” ■

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Skyports opened its vertiport test bed at Pontoise-Cormeilles airfield, Paris, in November 2022 in collaboration with Groupe ADP and Volocopter.

A vertical approach

Fresh from the launch of his next-level vertiport in Paris in November, Skyports CEO Duncan Walker talks to Chloë Greenbank about the faster, smarter, more streamlined way to travel.

With electric take-off and landing vehicles (eVTOLs) expected to be in operation within the next few years, attention has now turned to the infrastructure that will support eVTOL activity.

At the end of September 2022, the Federal Aviation Administration (FAA) in the US marked a milestone for Advanced Air Mobility (AAM) when it released design guidelines for vertiport infrastructure that include safety-critical geometry and design elements, safety

standards for batteries and charging equipment and even a Vertiport Identification Symbol.

One company already carving out a name for itself as a leader in vertiport infrastructure is UK-headquartered Skyports. In November, it unveiled a fully integrated vertiport test bed at Pontoise-Cormeilles airfield in Paris in collaboration with French airport operator Groupe ADP and aircraft manufacturer Volocopter.

The launch of the terminal represents

the start of a new era for AAM, as the facility allows advanced testing of critical technology and passenger processes, explains Skyports co-founder and CEO Duncan Walker.

“People get distracted by the physical building, but that’s actually the easiest part of constructing a vertiport,” he tells *Regional Gateway*.

“The complex bit is the airspace and the passenger vehicle interface. The passenger journey through the terminal must be as seamless and efficient as possible, but it’s not a place designed for people to hang around. They might have a coffee, quickly download emails, but if passengers are there for too long then frankly the ecosystem isn’t working.”

Walker launched Skyports in 2018 with his business partner Simon Morrish. While Walker’s background was in property investment and development, Morrish was involved in investments with an environmental angle.

“We were talking about cities and urban environments and how they might be changed by emerging and particularly



“The purpose of our vertiport in Paris is to provide a working environment for multiple eVTOL manufacturers to try out their aircraft.”

Duncan Walker, co-founder and CEO, Skyports

autonomous technologies,” recalls Walker. “That led to further discussions around the electrification of aviation more generally and the progress and investment being made by vehicle manufacturers into this sector.

“Starting a vehicle manufacturing company was too far removed from our skill set. However, we both knew about cities and infrastructure, so we established Skyports in response to the demand for infrastructure to support the emerging AAM market for both passenger and cargo transportation.”

FRENCH INVESTMENT

It hasn't taken long for the company to stake its claim in the AAM market, with various projects announced over the last four years. But it's the new facility in Paris that is currently cause for celebration.

Serving as a test-bed that is aircraft agnostic, it offers the entire ecosystem the chance to test and develop technologies in a safe and realistic environment.

“The purpose of our vertiport in Paris is to provide a working environment for multiple eVTOL manufacturers to try out their aircraft,” says Walker.

“We're using an existing airfield, which is owned by Groupe ADP [one of Skyports' shareholders], who also bring valuable experience in understanding airside operations.”

He adds that the facility is an opportunity to learn about situational awareness, managing the airspace and the logistics of multiple electric vehicles moving around on and above the ground, as well as understanding and testing the charging infrastructure that is required.

Skyports has previously worked with

individual manufacturers in terms of the logistics around the ground infrastructure for eVTOL vehicles. However, the facility in Paris marks the first time it has looked at the interfaces between multiple vehicles.

Walker says: “For example, imagine coordinating the movements of a Joby [a fixed-wing, six-propeller aircraft that can travel at 150 km/hour] with a two-person Volocopter [a rotor craft which travels at around 60 to 80 km/hour]. Trying to sequence them and get them moving around an airfield at the same time with very different operational requirements is the sort of challenge we can now address.”

OFF LIMITS TO HELICOPTERS

It is these dynamic operations and complexities around airspace use, new regulations and charging requirements that make vertiport infrastructure different to heliports. So, while Walker admits he's not trying to recreate the sector from scratch, there are some key differences between existing heliport infrastructure and what he hopes to achieve with Skyports.

He says: “There are plenty of heavily used heliports around the world. However, vertiports are designed to accommodate a high-volume throughput with very quick turnarounds and electric charging capabilities. Demand will be much more dynamic than it is currently at traditional hubs, which are likely to have schedules planned way into the future.”

Walker also notes that because of their compact, modular design, vertiports can be used in denser areas of cities, which have previously been off limits to helicopter traffic.

The launch of Skyports' terminal at Pontoise-Cormeilles represents a new era for advanced air mobility, as the facility enables the testing of critical technology and passenger processes.





“Vertiports are designed to accommodate a high-volume throughput with very quick turnarounds and electric charging capabilities.”

As for passenger and baggage screening, Walker says this is an interesting discussion point.

“If you get on a helicopter today for a quick domestic flight, there’s no screening or security processes. But we believe that once there’s a higher volume of eVTOL traffic, requirements will be put in place for additional security. Finding that balance now is key, so that when the time comes and demand for electric air taxis starts scaling, we are ready to transition customers smoothly while embracing the necessary security and safety requirements.”

To minimise the human interface, all Skyports facilities will be fitted with biometrics-enabled checks. When passengers arrive, they will proceed through the facility using facial recognition.

SITA has been tasked with providing its digital solutions and expertise in airport technology to develop bespoke biometric and vertiport passenger processing solutions in line with Skyports’

vision for the customer experience.

The technology will be a fundamental component of the journey through a vertiport and will be based on existing airport technology with a light-touch process using just a mobile or facial biometric to complete the various steps in the journey.

THE POWER OF PARTNERS

SITA is one of multiple innovative and forward-looking partners to have engaged with Skyports.

In October, Joby announced its collaboration with Skyports to develop a Living Lab passenger terminal as a test-bed to help define how passengers will experience vertical flight in the future.

Over the next year, the Living Lab will be showcased at various locations throughout the US and will be instrumental in efforts to engage regulators, government officials and the public.

There are also plans to develop a passenger air taxi vertiport at Brent Cross

Town – a 180-acre development in north-west London, being regenerated as a new £7 billion mixed-use park town for the capital.

The very fact that vertiports are being planned for construction in mixed-use neighbourhoods such as Brent Cross Town demonstrates the direction in which the industry is moving.

Further underlining its commitment to advancing AAM in the UK, Skyports also acquired a heliport in East London at the beginning of 2022.

“It is currently open and operational for helicopter traffic and caters for around 20 landings a week,” says Walker. “However, ultimately it will be developed as an integral node on our vertiport network, as we’re also using it as a live testing environment for a lot of our technology.”

Meanwhile, in the Asia-Pacific region – and following partnerships with AirAsia in Malaysia, Jurong Port in Singapore and the Tokyo Metropolitan Government in Japan, as well as investment from Japanese trading conglomerate Kanematsu Corporation – Skyports opened a base in Japan at the end of October.

“There is considerable momentum for AAM in the Japanese market,” says Walker. “This, coupled with strong political engagement, a clear road map for implementation, capital investment from Kanematsu and a growing portfolio of projects in Osaka and Tokyo were all drivers for us opening an office there.”

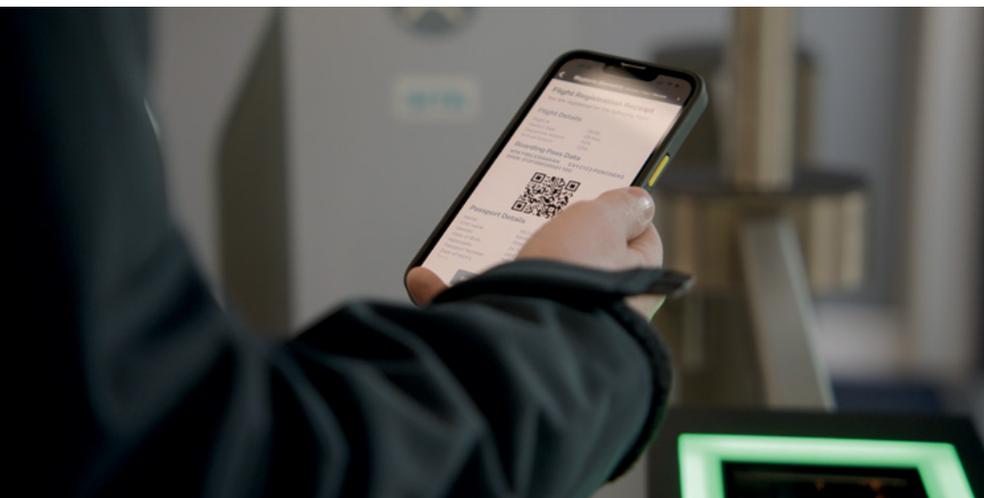
INTEGRATING AIRPORTS

Underlining the important role that existing airport infrastructure has in any vertiport network, Walker asserts that the airport to downtown traffic is a key driver of demand.

“These hubs are an important node on our network whether we have a financial involvement or not,” he says. “We need to work alongside each other in terms of directing traffic and supporting each other.”

Walker says that discussions and involvement with airports range from simply alerting them to the launch of a

Made to measure: SITA is drawing on its expertise in airport technology to develop bespoke biometric and vertiport passenger processing solutions. Photo: Skyports





View from the top

“We need to work alongside each other in terms of directing traffic and supporting each other.”

vertiport network within their vicinity to working on configurations and helping airports understand what operating a vertiport requires as well as the costs involved.

The cost of a Skyport can be anywhere between US\$3 million and US\$10 million depending on the location, size and relative requirements.

The big question for airports currently is how to get a high value 737 landing

alongside a small eVTOL, whether it's a Joby carrying four passengers or a Volocopter carrying just one person.

“Airspace integration is a huge factor in managing all this traffic going forward,” says Walker. “Airports sequence different aircraft depending on their weight and size to account for the turbulence created by the different weight forces. Adding smaller aircraft such as eVTOLs into the mix adds another layer of complexity. It can all be achieved, but it's complicated.”

ARE EVTOLS THE FUTURE OF MOBILITY?

Walker's enthusiasm is infectious – however, there are many who remain sceptical about eVTOLs ever taking off.

“It's not a question of if, but when,” says Walker. “We're not talking about thousands of eVTOLs suddenly taking to the skies overnight. These vehicles still

need to be certified and there remain production challenges. However, in some cases they are already flying.”

He cites a recent public demonstration flight he attended in the US conducted by Joby, adding: “The electrification of vehicles is already happening and the evolution of Urban Air Mobility (UAM) and AAM is under way.”

Having transitioned from a career in property investment to AAM, does Walker have any regrets?

“There's not many opportunities you have to do something which could be game changing,” he says. “What we're doing with Skyports could really change the way people and things move in and around cities and that's what motivates me every day. There's the positive impact on society and the environment that AAM will have, but more than that, it could be revolutionary. And that's super exciting!” ■

Vision thing: an artist's impression of how a Skyports vertiport of the future will look. Photo: Skyports

“What we're doing with Skyports could really change the way people and things move in and around cities and that's what motivates me every day.”



Sight unseen



Integrating uncrewed aerial vehicles safely into controlled airspace is no easy task. Jennifer Beechener looks at how digital services for new airspace users are helping air navigation service providers do just that.



Drone operators in the US have been using the Federal Aviation Administration's (FAA's) automated Low Altitude Authorisation and Notification Capability (LAANC) for almost five years to access controlled airspace near airports.

This collaboration with private industry partners enables the FAA to authorise thousands of drone flights without adding staff costs while at the same time

supporting the burgeoning uncrewed aerial systems (UAS) sector.

Applying concepts like LAANC on a wider scale, however, presents many challenges, as the industry strives to integrate new airspace users safely into controlled airspace.

The civil drone market is estimated to grow 8.3% annually according to the latest Drone Market Analysis 2022-

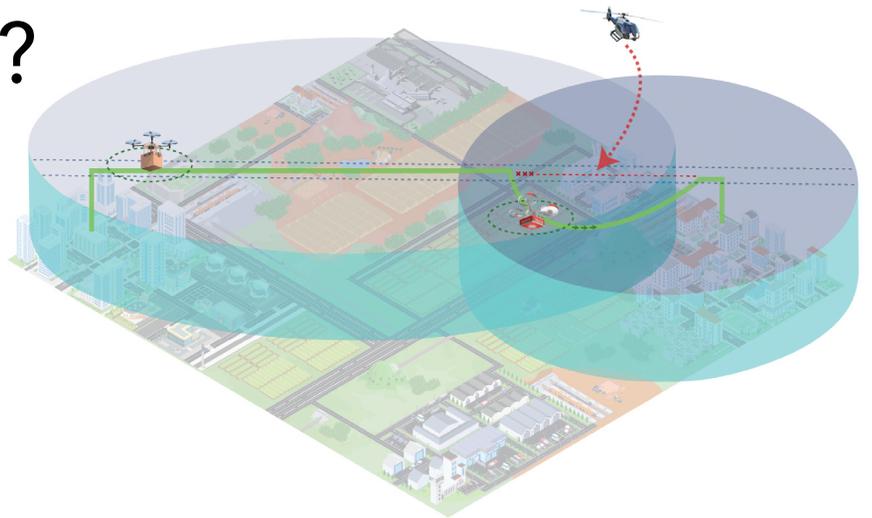
2030 from Drone Industry Insights, rising from US\$30.6 billion in 2022 to US\$55.8 billion by 2030.

Yet drone services remain limited to visual line of sight (VLOS) unless given special permission from the national regulatory authority.

Moving to beyond line of sight (BVLOS) operations by rule rather than by exception depends on a range of

What is UTM?

Uncrewed Traffic Management (UTM) is a set of systems and procedures used to coordinate uncrewed vehicles with crewed vehicles operating in low altitude airspace below 120 metres. Designed to accommodate multiple drones flying simultaneously, UTM makes use of digital technology to allow drones to fly in the most automated and safest way possible with U-space service providers delivering the services needed to ensure safe flight.



Uncrewed traffic management

Safety first: below, Altitude Angel is working to support the integration of emerging airspace users into low-altitude airspace. Bottom, the company's software solutions include drone safety maps.



supporting and enabling capabilities, many of which are identified in ICAO's preliminary framework for a typical Uncrewed Traffic Management (UTM) system.

Establishing a safe operating environment is the first step to enabling the drone industry to grow – whether conducting surveys, inspections, agricultural tasks, medical services, package deliveries, search and rescue or, most ambitious of all, urban transport.

SAFE DRONE OPERATIONS

Several countries are working hard to accelerate the process, led by Switzerland according to the *UTM Global Readiness Guide* published by Unmanned Airspace.

Skyguide became the first air navigation service provider (ANSP) to introduce a network remote identification (ID) UTM service and write legal obligations for all UTM stakeholders in 2021.

The Swiss U-Space Implementation (SUSI) public-private partnership launched by Skyguide in 2018 includes over 35 industry players, each playing a part in building an effective UTM



ecosystem and including U-space service providers, data providers, technology providers, drone operators, ground control station or flight control manufacturers.

To ensure these multiple elements can support safe drone operations, Swiss regulator FOCA expects its new regulatory structure to come into force in 2023.

Other European states are embracing prototype U-space services to test their performance and identify infrastructure gaps. In Belgium for example, U-space operations to support multiple drone missions are already under way at the

Port of Antwerp, where the authority provides geo-zone services in collaboration with UTM technology partner Unify; and in Norway, Avinor Air Navigation Services is working with Frequentis and Altitude Angel to implement a UTM system at 18 airport towers across the country – they are currently testing the first two towers in a real-world environment.

In October, the Dutch Port of Rotterdam announced a two-year programme with industry partner Airwayz to establish U-space across the ports industrial complex.

Oscar van Veen, Head of Digital

Innovations at the Port of Rotterdam Authority, said: "Increasing the operational safety of crewed and uncrewed traffic in the port area is one of our main motivations for the U-Space Airspace prototype," adding that the UTM system will serve as an example for other installations.

In Denmark, Naviair UTM has been testing its UTM platform and API Developer Portal since 2020 to enable stakeholders to access information necessary for low level flight operations, and Austro Control is among several states to have already introduced registration and license requirements for drone operators and pilots.

French ANSP DSN selected eight companies as part of its nationwide U-Space Together programme in which U-space service providers are delivering "minimum viable product" solutions at 12 sites – including Nice Côte d'Azur Airport, Lille Airport and Paris aerodromes.

NEW RULES

These activities will gain momentum with the arrival of new Europe-wide regulations from January 2023 under Implementing Regulation (EU) 2021/664. The ruling requires states to develop minimum requirements for UAS operators and U-space service providers, opening up this competitive service market.

This is also the ambition of US rule-makers, where the FAA established seven dedicated test sites across the country in partnership with local agencies and service providers to demonstrate UTM services.

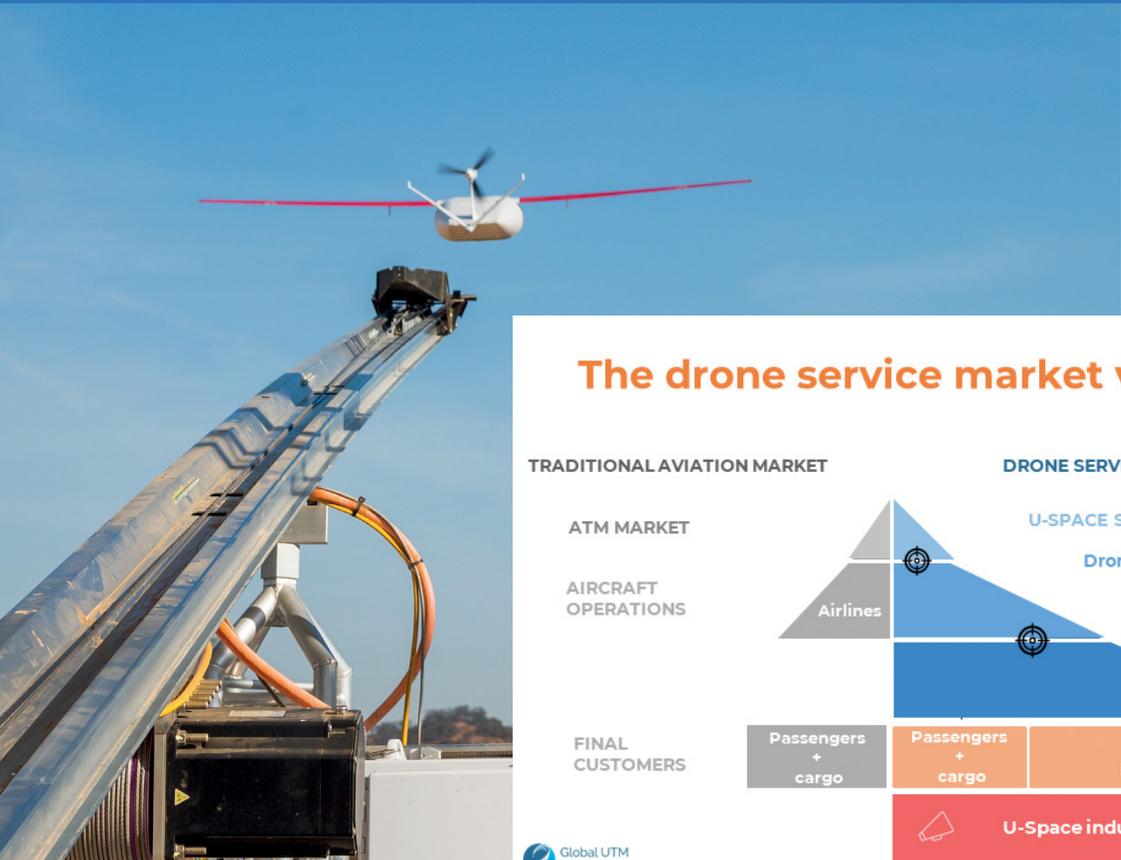
The FAA's Uncrewed Aircraft Systems (UAS) Integration Office Executive Director, Jay Merkle, says the silo structure of aviation is changing.

"In traditional aviation, the interface between the operator, the airspace and the aircraft – those boundaries have been fixed for so long that people can work in silos. In the automated drone world, those boundaries are not as clear."

An Advanced Aviation Advisory Committee (AAAC) made up of industry representatives is helping the FAA develop performance-based rules for the sector.

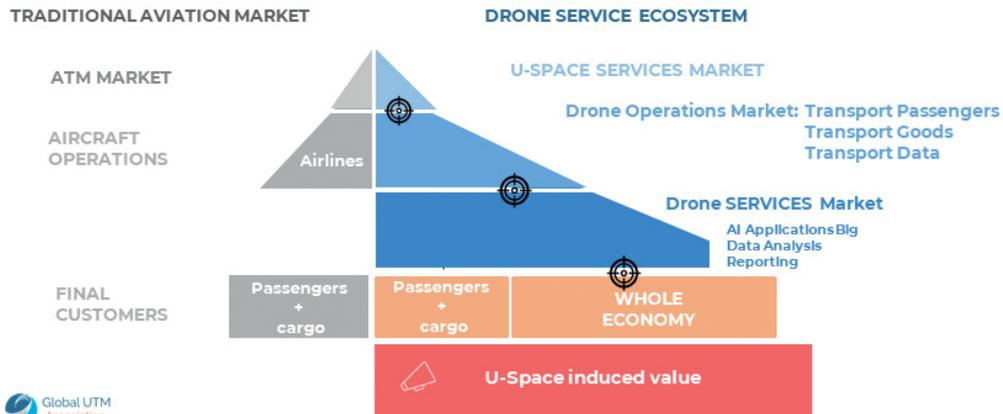
"The whole ecosystem has to move towards automation. Without digitisation we cannot embrace the future."

Sebastian Barbiarz, Co-president, Global, UTM Association



Taking off: left, a Zipline delivery drone is launched. The civil drone market is estimated to grow 8.3% annually. Below, the drone service market value pyramid.

The drone service market value pyramid



Uncrewed traffic management

As another state implementing a national UTM programme, Australia downselected three consortiums in September 2022 under phase four of its Flight Information Management System (FIMS) working prototype project.

Airservices Australia is working with Altitude Angel, Frequentis Australasia and OneSky Systems to develop a system that will support the safe and efficient integration of emerging airspace users, including drone operators and air taxis, into Australia's low-altitude airspace.

FIMS is the basis of an enhanced air traffic system that will enable Airservices to share flight information between air traffic control, traditional aircraft, and new airspace users – ensuring crewed and uncrewed flights can operate safely together.

OVERCOMING CHALLENGES

The pace of change, however, still falls far short of that sought by the drone industry. In Africa, for example, companies including Swoop Aero, Zipline and Wingcopter have been delivering medical supplies between remote regional communities for years.

David Guerin, Safety, Regulations and Airspace Integration Advisor to the African Drone Forum, said at the RAeS UTM conference in October that the industry is flourishing despite the lack of any UTM services.

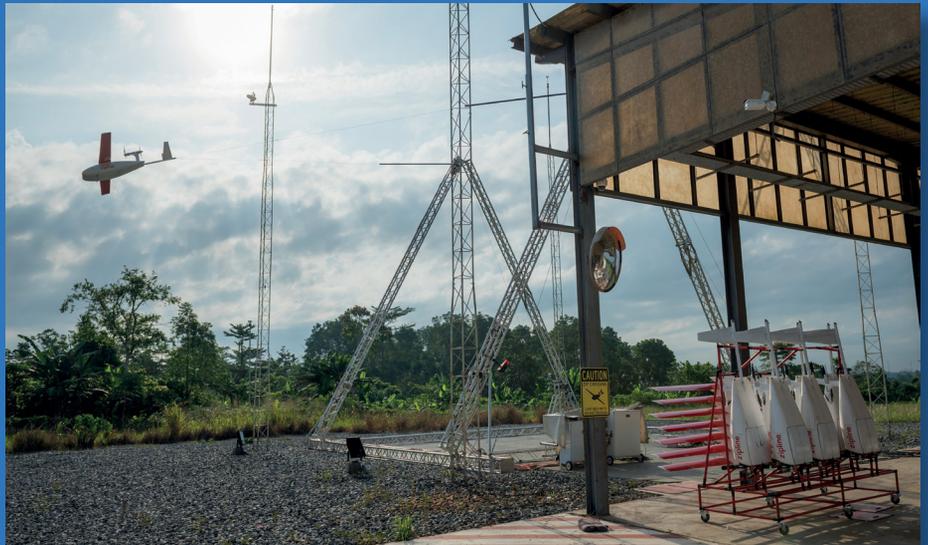
"Eighteen countries have enacted drone regulations over the past decade and 14 are drafting rules. That still leaves 45% of the continent with nothing".

Guerin sees this as "an opportunity to harmonise regulations" using European legislation as a template.

"Regulators need to keep in mind the very different infrastructure of the global south," he added.

Concern over slow progress led UK ANSP NATs to launch a BVLOS Operations Forum in response to operators having "outgrown the available capacity".

Russell Porter, forum chair and head of UTM programmes at NATS, said the forum is helping the "integration



Ahead of the curve: in African nations such as Ghana (pictured), drone delivery services are well-established.



Stately progress: Altitude Angel is seeking to develop a series of UK 'drone superhighways'.

pathway" by defining roles and services needed for new entrants to operate in controlled airspace.

Launched with a dozen participants in mid-2022, a further 34 organisations wish to join, including the military. Many are already part of Europe's U-space initiative launched in 2017, backed by EC Horizon 2020 research funding.

Dozens of exploratory research projects and tests have since taken place to demonstrate U-space services in a variety of environments and inform the regulatory process.

The Global UTM Association (GUTMA) says cross-industry collaboration is needed to speed up progress, recently

establishing the Aerial Connectivity Joint Activity (ACJA) with the Global System for Mobile Communications Association (GMSA) to help develop performance requirements for cellular links used by U-space service providers.

Co-president Sebastian Barbiarz said: "The whole ecosystem has to move towards automation," adding: "Without digitisation we cannot embrace the future."

Expanding drone services also delivers the means to monetise the market moving forward. Barbiarz concluded: "ATM is largely analogue and human-centric. To scale up, we need automated services." ■



Ramp to runway

A year on from the introduction of ICAO's Global Reporting Format for Runway Surface Conditions, Paul Sillers reports on how this safety requirement, and the implementation of supporting new monitoring and lighting technologies, are impacting the airfield landscape.

Runway excursions, often caused by erroneous data on surface conditions being relayed to pilots, has driven the instigation of the Global Reporting Format for Runway Surface Conditions (GRF), which became globally applicable in November 2021.

GRF rules require airport operators to implement a mix of detection technologies around the airfield – especially around runways.

The data then has to be processed and relayed via aeronautical information services channels to ATC, pilots, and airport ground crew, flagging critical issues in cases of adverse weather.

Crew can then take appropriate actions. For example, pilots apply the appropriate level of braking when landing, and ground crew can be deployed to de-ice wings at the stands.

THE RIGHT TOOL FOR THE JOB

A good example of how this is all playing out is at Torino Airport in Italy, which has implemented AirportGRF, a GRF-compliant runway monitoring platform designed for airports to enable them to evaluate runway conditions and share real-time information.

The platform has been developed by the airport's managing company, SAGAT. Twenty-three Italian international and regional airports, plus London Heathrow, Ljubljana, Zagreb, Tirana and Kukës and Amman, are currently using the platform.

Andrea Andorno, CEO of Torino Airport, says: "Initiatives such as AirportGRF allow Torino Airport to meet the needs of air transport quickly and effectively, spreading the benefits of digitalisation and creating shared value with a collaborative approach."

Effective sharing of information through the platform significantly reduces data processing times and minimises errors while exchanging information, the airport's operators say.

TEMPERATURE SENSITIVE

Of course, different locales tend to focus on different parameters. For example, Finnish airport operator Finavia says that the GRF rules affect the flow of traffic at Nordic airports operating in extreme winter conditions.

Runway surface conditions such as snow, ice, water and friction level affect the flow of air traffic. Snow poses challenges in Lapland, while ice is a challenge at Helsinki Airport.

Henri Hansson, Finavia's Technical Director, says: "In terms of airport winter maintenance, this is the most significant change in 50 years. To implement the new methods, Finavia has taken part in extensive international cooperation and has been investing in planning and training our employees for several years. For our runway maintenance operations, this means the adoption of a completely new operating model."

By contrast in Singapore, Changi Airport's tropical climate necessitates continuous monitoring of the level of running or standing water on the runway



Airfield operations



OTT Hydromet's Lufft MARWIS mobile weather detection sensors are in use at Hamburg Airport (right).

surface; measurements of runway surface friction levels; and checking of individual airfield light photometric output using specially equipped vehicles. Passing showers, common in Singapore, sometimes wet only one part of the four kilometre-long runways.

To tackle this, Changi has deployed Differential Scanning Calorimetry sensors (using direct lasers to measure levels of water on the runway surface to an accuracy of +/-0.2mm). Sensors placed at every one third of the runway measure and report the rainfall intensity in real time to the airport's GRF-compliant runway condition reporting system.

"This new capability enhances the safety of aircraft operations against the backdrop of higher frequencies and intensities of local rainfall brought about by climate change," says Calvin Yeung, Manager, Innovation and Process Enhancement, at Changi.

NON-INVASIVE MONITORING

For regional airports with modest budgets, what this means in terms of physical upgrades and refurbs across the

airfield environment is that rather than rip up runways and embed new sensor devices and lighting systems, operators are turning to non-invasive monitoring equipment to keep costs low and mitigate disruption to airport operations.

Martin Maly, Senior Marketing Content Specialist at OTT HydroMet, says: "Smaller airports are asking how to implement GRF without changing the runway infrastructure, because with traditional sensors you have to tear up the tarmac – and you lose a lot of time as you cannot fly during that operation. That's why customers are looking at non-invasive optical sensors."

OTT HydroMet's Lufft MARWIS mobile weather detection sensors work in conjunction with the company's GRF-compliant ViewMondo software to detect runway conditions and enable it to interface the data with airport reporting systems. The technology is already active at Hamburg, Frankfurt, Lübeck, Paderborn, Cologne/Bonn and Milan Bergamo airports.

The MARWIS module attaches to the back of runway patrol vehicles and can

detect temperature, relative humidity, dew point and runway surface conditions (dry, moist, wet, ice/snow, chemical wet). It then determines ice percentages and calculates the runway surface friction, before transferring the data continuously in real time via Bluetooth to a tablet in the driver cab. This data is subsequently relayed via the cloud to the airport's operations centre where it can be viewed using ViewMondo software.

USING AIRCRAFT AS A SENSOR

Another approach to monitoring runway conditions is through RunwaySense, developed by Airbus subsidiary NAVBLUE. The GRF-compliant system is installed on Airbus A320 and A330 aircraft equipped with Braking Action Computation Function software which reports the condition of the runway during landing.

"By transforming the aircraft into a sensor we're maximising the airports' knowledge of their runway performance and increasing safety for aircraft and airports," says NAVBLUE VP, Thomas Lagailarde.

NAVBLUE recently inked a deal with Finavia, under which it will access RunwaySense data via SoftAvia's Global Runway Reporter Alert software. Six of Finavia's airports (Helsinki, Oulu, Kittilä, Kuusamo, Ivalo, and Rovaniemi) have implemented RunwaySense. They will use the GRF-formatted data sent back from the aircraft's actual braking action to inform runway clearing activities, particularly relevant for runways subject to snowy conditions.

"Initiatives such as AirportGRF allow Torino Airport to meet the needs of air transport quickly and effectively, spreading the benefits of digitalisation and creating shared value with a collaborative approach."

Andrea Andorno, CEO, Torino Airport

Airfield operations

“The typical annual cost of runway electricity is around £50-60,000 in a conventional system. Sunshine is more economical.”

Dmytro Kuczeruk, Business Development Director, S4GA

BRIGHT IDEAS

Of course, with all this runway and ramp condition detection activity, it helps to have some light on the subject. But with escalating energy prices, keeping check on operating costs is key, especially for smaller airports working to tight margins.

Warsaw-based airfield lighting company S4GA supplies a variety of solar-powered lights for runway approach, threshold, taxiways, and illuminated airport guidance lighting, which are for implementation at regional and larger scale airports.

“Running costs for solar lighting systems are minimal,” Dmytro Kuczeruk, Business Development Director of S4GA, told *Regional Gateway*. “The typical annual cost of runway electricity is around £50-60,000 in a conventional system. Sunshine is more economical.”

Maintenance costs for traditional wired systems are around 10% of system CapEx annually, whereas solar maintenance is usually under 1% of system CapEx yearly, due to solar being low voltage and maintainable by regular airport staff.

S4GA’s implementations at regional airports include Ethiopia’s Jijiga (Wilwal) Airport, where electrical power supply is intermittent due to an unstable electrical grid. S4GA, together with its partner Alpha Airport, provided a solar LED airfield lighting system equipped with five-level protection against system failure.

In another scenario at Lithuania’s



Daylight savings: S4GA’s solar-powered airfield lighting solutions offer low running costs.

Aleksotas Airport, when municipal authorities decided to renovate the airport for business and GA use, a hard-wired runway lighting system was beyond the airport’s budget.

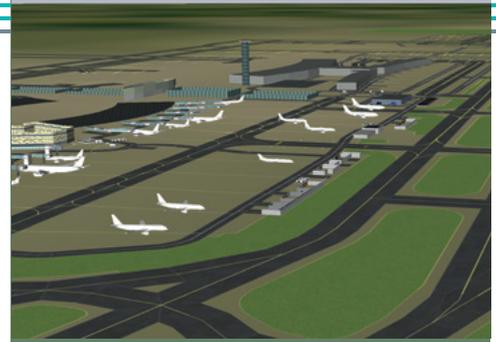
S4GA, in collaboration with airfield system integrators FIMA, implemented a permanent ICAO-compliant solar runway lighting system incorporating a specially designed mounting assembly that could be installed without disrupting operations and without drilling into the runway.

It is often assumed that solar lighting is only feasible in sunny regions. However, as Kuczeruk explains: “Airports such as Scotland’s Campbeltown, where we installed solar lighting, generate enough power during the winter to provide around three hours of lighting per day. For them that’s enough for the low frequency of flights during low light conditions.”

In situations where a single runway airport needs to be closed for several months for refurbishment, a parallel taxiway can sometimes be activated as a temporary runway during the construction.

“These airports don’t want to abort operations while they refurb the main runway,” says Kuczeruk. “But they can continue to operate using solar lights, and so this is how our system is also used.”

S4GA is currently offering a free trial of the system to interested airports.” ■



AirTOP can be used to simulate scenarios and configurations on the runway.

Improving runway design and capacity and minimising congestion

With air traffic on the rise, understanding movements on the airfield and planning enhancements to improve infrastructure is integral to optimising efficiency and futureproofing airports. Transoft Solutions’ AirTOP offers a gate-to-gate fast-time airport and air traffic modelling simulation tool that can be used to monitor, assess, and improve runway, taxiway, and apron operations by replicating an airport’s physical and procedural characteristics. If an airport wants to improve its runway capacity or carry out runway maintenance for instance, AirTOP can be used to simulate different scenarios and configurations to test performance or determine when the optimal time would be to close a runway for refurbishment. In a recent project, AirTOP was used to estimate the capacity of the runway system at Olbia Costa Smeralda Airport, in northern Sardinia, to demonstrate that rapid exit taxiways were a valid way of increasing traffic volumes by reducing runway occupancy time for arrival flights. AirTOP can be used in conjunction with AviPLAN, which is used for airside design and planning and allows for a more geometric level of detail in terms of the spatial requirements that aircraft and vehicles require when manoeuvring around the runway, taxiways, and apron, or parking at the stand.

AviPLAN offers a geometric level of detail in terms of spatial requirements.



PLAN, DESIGN AND ASSESS RUNWAY, TAXIWAY AND APRON OPERATIONS WITH SPECIALLY DESIGNED SOFTWARE

AVIATION SOFTWARE FROM TRANSOFT SOLUTIONS

AirTOP | Air traffic and airport complexity modeling, simulation and assessment software

AviPLAN | Aircraft maneuver and parking stand simulation and visualization software

Other available software, AeroSTRIPE for airside pavement marking design and SkySAFE for aerodrome obstacle limitation analysis





Going, going, green

Electric ground support equipment (GSE) is not necessarily anything new. However, there have been plenty of innovations in this field over the last couple of years, as Chloë Greenbank discovered at the 2022 GSE Expo.

With airports focused on decarbonising operations in line with aviation's goal of net zero emissions by 2050 or sooner, GSE suppliers are increasingly turning to eco-friendly solutions.

Until recently, most GSE has been powered by diesel or other fossil fuel-burning engines.

However, fuel-guzzling machines working round the clock at an airport are slowly being phased out amid concerns about their environmental impact

Pushing sustainability to its core, UAE-based global airport services provider dnata announced plans in May 2022 to replace all its vehicles and equipment with electric ones, as part of a US\$100

million investment in green operations over the next two years.

Across Dubai and Jebel Ali alone, dnata has around 30,000 pieces of equipment, including motorised and non-motorised trolleys, 124 hybrid cars and thousands of tractors, all of which will be replaced with electric alternatives.

KEEPING IT COOL

dnata's commitment to reducing carbon emissions was echoed by suppliers across the show floor at GSE Expo, which was held at Paris Le Bourget back in September.

Vestergaard was in attendance, exhibiting its first fully electric de-icer,

the e-mini MY Lite, for which Lars Barsoe, VP Sales and Marketing at Vestergaard, explains there was plenty of interest.

"After the show we sent out close to a dozen proposals, with a couple of customers wanting to purchase the e-Mini MY Lite during the show. The first two units will be deployed and operational in France and Turkey this winter."

Electric vehicles (EVs) are of course a tried, tested and well-used solution, with plenty of airports already using EVs in place of fossil-fuelled cars on the ramp. So what are the latest trends for eGSE?

"Up until now, most of the eGSE has been either smaller pieces of equipment or large units with very little movement from its position," says Barsoe. "We are now seeing heavier equipment being electrified and also equipment that moves over longer

"Meeting the industry's net zero goals is a huge undertaking and it will require all stakeholders to actively work on mitigating the environmental impact."

Matt Chaffin, VP and GM, Textron GSE



distances inside the airport, such as buses, tow tractors, catering vehicles, water and toilet service vehicles as well as de-icing equipment.”

Vestergaard has a clear pathway in place to reduce carbon emissions.

“We aim to electrify all our products by 2024 and to have 75% of all our deliveries be electric. Our ambition is to phase out fossil solutions over the next seven to eight years,” says Barsoe.

ALL HAIL HYDROGEN

Also in attendance at GSE Expo was Bliss-Fox Panus, which was showcasing its electric tow tractors.

A spokesperson for the company tells, *Regional Gateway*: “The main advantage with our electric tow tractors for airport ground handling teams is the reduction in carbon footprint. However, there is also a huge reduction in costs in terms of preventative maintenance.”

For airports transitioning to electric GSE, he adds: “They first need to invest in the charging infrastructure and then consider the usage of electric GSE. Investing in GSE with the same charging

“We aim to electrify all our products by 2024 and to have 75% of all our deliveries be electric. Our ambition is to phase out fossil solutions over the next seven to eight years.”

Lars Barsoe, VP Sales and Marketing, Vestergaard

protocols to standardise the fleet and charging facilities is key.”

Looking forward, Bliss-Fox Panus believes that hydrogen-powered vehicles will be the next solution for GSE, with the spokesperson adding: “Infrastructural changes alongside the need to source suppliers that can provide worldwide aftersales coverage for this kind of fuel technology remains a challenge.”

Addressing this challenge is Aviogei, which was showcasing a prototype for its hydrogen hybrid powertrain at the trade show.

“Hydrogen is set to change the energy scenario,” says Andrea Cesarini, Aviogei’s CEO.

“We have been collaborating with the University of Cassino for our hydrogen

project and for electrical motorised wheels for our GSE. Our goal is to have totally green equipment.

“Our hydrogen project will be available mid-2023, for which we anticipate airport infrastructure will require a photovoltaic plant, an electrolysis plant and a storage system.”

Cesarini adds that while airports and their ground handling teams benefit from lower maintenance and fuel costs, as well as improved efficiency from the use of electric GSE, “the war on Ukraine has expedited the need to electrify fleets to minimise the dependency on fossil fuels. It has also underlined the need to disengage from supplies coming from countries with geopolitical instability.”

He stresses that keeping an open-minded approach is key to Aviogei’s





Ground support equipment



Bliss-Fox Panus showcased its electric tow tractors at this year's GSE Expo.

“Creating cleaner products enables us to reduce our environmental footprint and enables our customers to reduce theirs as well.”

Matt Chaffin, VP and GM at Textron GSE

strategy for growth, especially when it comes to new energy vectors that will have a positive impact on the environment.

“Our R&D department is currently focused on developing hydrogen technology and the use of electric lithium batteries. However, we remain flexible and open to new developments in line with our commitment to be at the forefront of innovation in this sector.”

CLEANER, GREENER SOLUTIONS

Underlining that it will take collaboration and cooperation from all stakeholders to achieve the industry's net zero goal, Matt Chaffin, VP and GM at Textron GSE, says: “Creating cleaner products enables us to reduce our environmental footprint and enables our customers to reduce theirs as well. Meeting the industry's net zero goals is a huge undertaking and it will require all stakeholders to actively work on mitigating the environmental impact.”

Textron launched its TUG Endurance baggage tractor, which is available with a lithium powertrain, in September.

“Interest has been exceptionally strong

and customers are eager to receive a demonstration of the unit,” says Chaffin.

In line with Textron GSE's goal to have 80% lithium or hybrid availability across its product categories by 2035, Chaffin also reveals that the company is “continuously looking at new battery chemistries and other technologies that could provide a faster, better, or less expensive path to sustainable GSE”.

RETURN ON INVESTMENT

Cost is naturally a concern for airports of all sizes when considering the transition

to electric equipment. However, Chaffin reiterates that typically, electric vehicles offer a lower cost of ownership, which means over the life cycle of the product they are less expensive to operate.

An example of this would be the lower maintenance costs associated with electric products.

“Internal combustion products require specific fuel storage, as well as oil or hydraulic changes, additional labour and they have more wearable parts,” says Chaffin.

“When you consider the average lifespan of GSE and the number of units, that translates into a significant expense. The operational costs saved using electric vehicles is compounded with the benefits of operating with zero emissions.”

Looking to the future, Chaffin concludes that it is important to consider the evolution of the ramp and look beyond just delivering an electric solution.

“Infrastructure continues to be a challenge for many customers,” he says. “The TUG Endurance addresses this concern as it is designed to use charging infrastructure prevalent in the automotive industry. This charging approach can be found in buses, catering trucks and high lifts today. As automotive manufacturers transition to only building electric vehicles, it will become more commonplace.” ■

Forward-looking: Avioge is keeping an open mind as to which energy vectors will win out.



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GSE at a glance

From eGPUs and environmentally friendly toilet service trucks to compact charging solutions, here's our pick of the latest eGSE innovations ...

A greener approach to GPUs

According to ITW, in Europe alone there are approximately 4,000 diesel GPUs running day in and day out. If 1,000 of those were replaced with eGPUs it would correspond to removing the emissions from 48,000 cars every year.

ITW's GSE 7400 eGPU (Ground Power Unit) offers a complete clean tech concept. It can cover all aircraft power requirements for emission free GPUs at stands without fixed installations, as well as in remote areas and in hangars as well.

ITW also offers a Power By The Hour (PBTH) solution, providing a flexible subscription plan created for its



battery powered eGPUs, as well as other GSE products.

The PBTH plan is fully scalable both when it comes to the number of units included in the plan and the number of hours of usage per month.

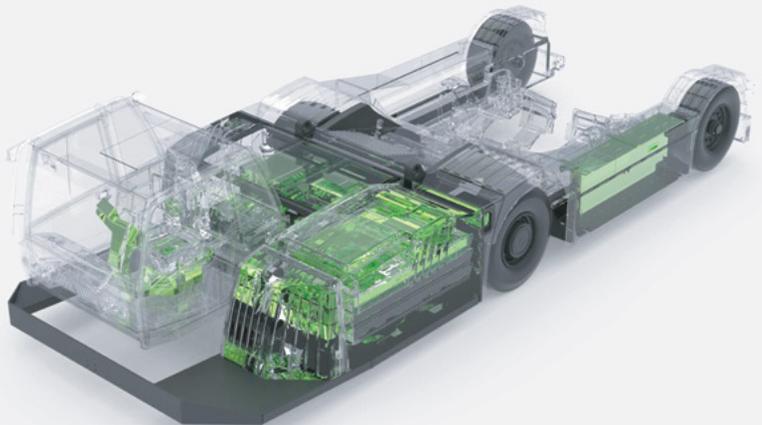


Bagged and boarded

Having launched several new products demonstrating its commitment to sustainability in recent years, Textron GSE launched its TUG Endurance baggage tractor at GSE Expo 2022. Available with a lithium powertrain designed to withstand the rigours of ground support applications, the TUG Endurance uses the J1772/ CCS1 connector for level 1 or 2 AC charging and DC fast charging. It also has electronic steering that provides superior manoeuvrability with a maximum drawbar pull up to 2,722 kg.

Going for gold

In April 2022, Goldhofer announced its collaboration with ARADEX powertrains to equip its zero-emission SHERPA E cargo and pushback tractors, as well as its PHOENIX E towbarless aircraft tractor with battery-powered motors and inverters. The electric powertrains developed by ARADEX offer high torques as well as balanced and finely tuned power transmission.





Ground support equipment

Electric toilet tales

To help meet environmental goals, Aviogei recently unveiled its electric toilet service unit. The VSTM 2000E is a self-propelled unit designed for flushing and cleaning toilet tanks. It is equipped with a hydraulically operated service platform. The toilet service unit is complemented by the VASM 1500E, an electric potable water unit featuring a lithium battery with a remote-control system, high performance pump and antifreeze temperature control system.



All charged up

PosiCharge has a range of compact chargers for a variety of electric airport GSE that require fast or opportunity charging. Typical customers for its SVS100 include regional jet organisations, GA and FBO operators. It can provide up to 10kW of power in a single port, which is ideal for electric belt loaders, baggage tractors and other electric equipment that are not under extremely heavy use or demand fast charging. Meanwhile, the PosiCharge MVS400 is a multiple-port, multi-vehicle fast charge system which can charge up to four industrial vehicles (e.g. tow tugs, baggage tractors, belt loaders, etc) at the same time.



Lite work

Vestergaard recently unveiled its first fully electric de-icer, the e-Mini MY Lite. While the original model of the de-icer, which was designed for smaller regional hubs, had a 12 tonne electrical chassis with diesel heaters, the latest model features an electrical chassis with fluid heated electrically. It comes with a 40 or 62 kwh battery and can handle 8-12 de-icings depending on the rate of contamination/ fluid needs. It can also drive 40-75 km on a single charge.



All aboard

A completely new design concept compared to conventional airport buses, the COBUS VEGA is a purpose-designed, fully electric bus. It offers the largest passenger capacity of any airport bus in the market, which will translate to reduced

operating time and costs. It features seven doors in total, with four passenger doors on the right side of the bus allowing for rapid boarding and deboarding. It can be equipped in a modular system with two to four NMC3 batteries.



Setting the scene

With airports feeling the push to create a positive passenger experience, Emma Kelly reports on why comfort, accessibility, sustainability and the ability to contribute to a sense of place are all key priorities when planning an airport's interior design and seating.

Airport seating has evolved considerably over the past decade. The utilitarian, minimalist seating of airport terminals of years gone by has been replaced with a new breed of seating solutions.

Far from being designed in isolation, seating is recognised as having an important role to play in the wider interior terminal design, creating a welcoming environment, a sense of place and, most importantly, a positive passenger experience.

All of these factors are uppermost in the design considerations of airport furniture specialist Arconas, which offers a variety of seating for airports – including tandem, lounge, casual and sculptural.

The company's seats are installed at airports worldwide, including Australia's Gold Coast Airport, and the US airports of Memphis International, Missoula Montana, San Antonio, Orlando International, Kansas City International and Wyoming's Jackson Hole.

Its latest solution is Avro, designed in collaboration with London-based studio Pearson Lloyd and built for the future, according to the manufacturer.

"It's a complete, high-performance seating ecosystem thoughtfully designed to meet the evolving needs of the modern traveller," says Lynn Gordon, Arconas's Vice President of Business Development.



Avro features elegant design, advanced engineering, integrated power and comes in a variety of vivid colours.

"[It] has an ingenious universal beam structure that allows all seat types to be easily and intuitively installed, removed or replaced – making it simple to maintain, clean and reconfigure as the needs of the passengers change," Gordon adds.

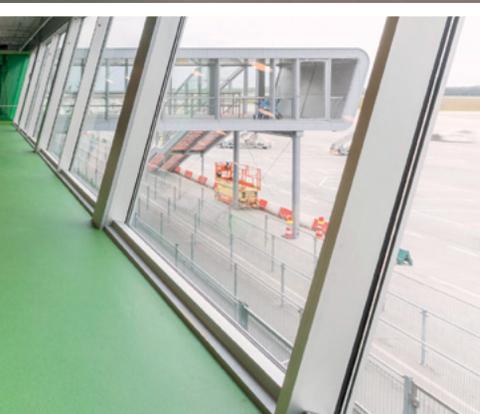
Avro incorporates a number of trends. "The most significant trend is the inclusion of diverse types of seating – from tandem to lounge to sculptural – that not only give a sense of place, but provides options for all types of passengers," says Gordon.

"Overall comfort is a priority and that includes things like in-seat power/charging capabilities, cup holders, larger tablet arms – all things that add to the passenger's overall experience."

Seating and interior design



Colour scheme: Poltrona Frau Group seating installed at Eindhoven Airport in the Netherlands. Photo: Poltrona Frau Group.



Chic: Arconas's new seating solution the Avro was designed in partnership with Pearson Lloyd.

“Overall comfort is a priority and that includes things like in-seat power/charging capabilities, cup holders, larger tablet arms – all things that add to the passenger’s overall experience.”

Lynn Gordon, Vice President of Business Development, Arconas

Accessibility has become increasingly important, with Arconas responding with seats that are slightly higher than standard seats, providing easier access, as well as configurations allowing for lateral transfers from wheelchairs, companion seats and convenient access to power.

The environment and sustainability are also priorities, with a shift to sustainable materials, especially ones requiring less upkeep and maintenance, and environmentally responsible production and distribution processes.

“Avro’s structural components are crafted from endlessly recyclable aluminium and all components are designed to be easily replaceable to minimise waste and maximise Avro’s lifespan,” says Gordon.

In addition, the seating shells are stackable for efficient and economical

shipping, while the fully demountable system is engineered for ease of on-site assembly.

MATERIAL CONCERNS

Materials are an important consideration, concurs Italy’s Poltrona Frau Group, which has an airport seating range, including the Aetos, Onda, Flyair and Cove, as well as high-end products for waiting areas and lounges.

The company’s seats are installed at regional airports including Italy’s Turin-Caselle, Bologna’s Guglielmo Marconi and Naples International, as well as Eindhoven in the Netherlands. It is working on new airport seats for launch in 2023, although details are still to be confirmed.

“It’s important to consider a lightweight, flexible material, with high abrasion resistance and superior mechanical properties,” the Italian company explains. “Additionally, two-component polyurethane foam satisfies the need for resistance to wet cleaning and anti-bacterial properties.”

Colour trends have also changed, with

Poltrona Frau working with colours that match the building design and deliver soft lines.

Gone are the days when black was the safe and only bet, notes Arconas’s Gordon. Instead, airports are choosing “a more sophisticated palette”, making “bold decisions” and using colours that are personal to them or reflect their location.

Seat manufacturers don’t work in isolation, but contribute to the overall layout design.

“Airport seating isn’t just about providing seats in the hold room any more,” says Gordon. “It is about creating a welcoming environment that positively enhances the passenger experience. We call that ‘placemaking’ and the make-up will vary depending on the type of airport, passenger mix and community character.”

Montana’s Bozeman Yellowstone International Airport, the gateway to Yellowstone National Park, for example, features Arconas’s Bernu Aero seating with red upholstery and black beams, with the burnt red reminiscent of sunsets and the iron-rich soil found in the park.



The terminal's high natural wood ceilings, stone fireplaces, large windows, artwork and seating all contribute to the sense of place.

At Gold Coast Airport, the seating in shades of blue and green represents the hinterland and coastal environment.

INTERIOR LANDMARKS

Airport operators are seeking to leave a lasting impression on passengers, says Kasian Architecture, Interior Design and Planning. Going digital, creating zones, using art and visual impact to facilitate wayfinding, and bringing the outside in are all trends that contribute, says Martin Nogger, Senior Associate and Transportation Design Lead.

Digital trends, such as touchless passenger processing, mean that passengers spend less time in check-in halls, allowing airports to optimise their space for a seamless customer experience, focusing on value-added retail, hospitality and entertainment services.

Creating zones results in an increase in comfort, the introduction of new colours

Sounds good: Vancouver's Pier D expansion features an immersive acoustic experience.



“Having a strong understanding of the local culture and community the airport serves are key.”

Cara Seeton, Interior Designer, Kasian

and finishes to break up space and allows passengers to customise their experience, says Nogger, pointing to quiet rooms, conversational groupings, recliners, work surfaces or unique feature seating that may provide the passenger with a different view of the airport.

“Creating areas for pet relief, worship, exercise and relaxation can create a more personal travel experience and makes a passenger feel cared for,” he adds.

Artwork also plays its role. “Using interior ‘landmarks’ creates an easy way for passengers to navigate the space, as well as creating an unforgettable experience,” says Cara Seeton, Interior Designer at Kasian, who adds that bringing the outside in, providing access to nature or at least the feeling, can play a calming role, provide visual impact and connect with the overall thematic.

Kasian has worked to achieve this at

airports including Vancouver, Toronto Pearson, Kelowna, Waterloo, Calgary and Abbotsford.

LOCAL INSPIRATION

Vancouver Airport is renowned for its sense of place, thanks to an intuitive design that optimises flow and the passenger experience and its visual theme.

The airport is designed as a series of chapters, telling stories of British Columbia's land, sea and sky, featuring indigenous art, columns that represent trees, walls like rock formations and places of rest designed like islands.

Vancouver's most recent Pier D expansion, for example, includes an outdoor atrium, timber tree columns, tidal pools, vignettes of stormy skies, sunsets and wildlife projected onto the ceiling, and an immersive acoustic experience.

Creating the wow factor comes down to two things, says Seeton – community awareness and creating a design that aids passenger flow and creates a sense of place.

“Having a strong understanding of the local culture and community the airport serves is key,” she adds. “This means working with local stakeholders, the community and the businesses that are served by the airport and finding

Screen time: vignettes of stormy skies, sunsets and wildlife have been projected on to the ceiling at Vancouver International Airport's Pier D. Photo: Vancouver International Airport.





Seating and interior design

“Creating areas for pet relief, worship, exercise and relaxation can create a more personal travel experience and makes a passenger feel cared for.”

Martin Nogger, Senior Associate and Transportation Design Lead, Kasian Architecture

those unique qualities that can be articulated through the design. Then you really have to get your passenger flow right and ensure your processing and movement through the space is effortless and flexible.”

Johan Berhin, Founder and Designer at Green Furniture Concept (GFC), says the thinking behind modern airport design flow is changing how seating is used to generate business and improve the passenger experience.

He points to Iceland’s Keflavik International Airport as an example, where a recent redesign in the shopping area using GFC’s Nova C seating has created a welcoming grand hall where passengers want to stop, resulting in increased revenues in shops and restaurants.

A sense of space was created through natural materials and colours of lava, ice and soil, with “seamlessly flowing seating lines” thanks to eight waves of seats, creating a natural feel and higher seating density than before.

GFC has also worked with Edinburgh, Nice and Hobart airports, with placemaking improving the passenger experience and increasing revenues.

COVID’S LEGACY

The pandemic has had an impact on seating and design, often accelerating developments that had started to emerge.

Poltrona Frau Group seating installed at Bologna’s Guglielmo Marconi Airport.



While Poltrona Frau says health and safety has always been a consideration in seat and layout design, additional steps have been taken as a result of health and safety requirements.

“We have been adding more single seats, like the Cove, and have been using a polyurethane foam to resist bacterial attacks and viruses,” the company says.

Passengers now prefer to have more personal space if it can be accommodated, says Arconas’s Gordon, adding: “There is also a renewed excitement in the travel experience, post-COVID, and that journey begins at

the airport. Travellers are demanding more positive experiences.”

Kasian’s Seeton says: “Many of the trends driving change in this sector existed pre-COVID, but COVID simply heightened their importance and supercharged their relevance.”

She points to contactless solutions delivering a more seamless experience, adding: “It all comes down to speeding up passenger processing even before arriving at the airport, so passengers can spend more time doing other things, like working, shopping, eating or simply relaxing.” ■

Welcoming atmosphere: Green Furniture Concept has worked with Edinburgh Airport to improve the passenger experience and boost revenues. Photo: Green Furniture Concept.





The business report

From Jet East's expansion in North Carolina and Gulfstream's collaboration with ExecuJet Aviation Nigeria to 50th celebrations for Avfuel, here's our business aviation highlights.

Million Air adds to its portfolio

The former Marathon Jet Center at Marathon International Airport in Florida has been acquired by Million Air, becoming the company's fourth FBO in Florida and the 34th in the Million Air network. Although the sale was finalized at the beginning of 2022, the full transition and rebrand to Million Air Florida Keys was unveiled in October. Two phases of construction are now expected to begin in spring 2023 with a new 9,948 sq ft FBO featuring a full-service indoor/outdoor restaurant with a park-like green roof which will be open to both FBO guests and the local community, as well as a new fuel farm facility. Phase two will include two new hangars, and a ramp and taxiway

connector expansion providing 16 acres of ramp space, which will be completed in 2024. Centrally located between Key Largo and Key West, the FBO provides easy access to all the islands of the Florida archipelago and offers a less congested alternative to Key West International Airport.



Avfuel gears up for jubilee celebrations

January 2023 will see aviation fuel provider Avfuel marking its 50th birthday with a line-up of jubilee celebrations planned throughout the year. "To say we're excited to mark this milestone is an understatement," said Joel Hirst, Avfuel's Senior Vice President of Sales.

When it started operations in 1973, Avfuel was a small, regional fuel supplier primarily serving Michigan and surrounding Midwest states. Craig Sincok acquired the company in 1985 with a vision to grow and nurture the company.

"When we leapt on to the market, no one was doing what we set out to do," said Sincok. "We didn't know we shouldn't compete with major oil companies, who were the aviation fuel suppliers at the time. It maybe wasn't the best business plan, but it worked. We were the first fuel supplier to offer a complete suite of services that surround the fuel, including pilot rewards, in-house aviation insurance, trip support and contract fuel for corporate flight departments."

Looking ahead, the business is constantly seeking new ways to push the envelope, agreed Avfuel's Executive Vice President C.R. Sincok. "When we look to the future, we're excited and inspired," he said. "In another 50 years, will we be a fuel company? Perhaps. Or perhaps, more likely, we'll be an energy company, providing solutions for electric, SAF and hydrogen power sources, for instance. Whatever Avfuel will be, it will exist to serve its customers and the industry we love."

North Carolina acquisition sees Jet East expand operations

Gama Aviation Company, Jet East, has agreed to open a full-service flagship maintenance facility in Statesville, North Carolina, in the US. The site will complement Jet East's current footprint which includes coast-to-coast maintenance bases and an expansive AOG network. Originally built in 2004, the main hangar Jet East has acquired in Statesville remains in immaculate condition and is fully equipped with LED lighting, fall protection and a fire suppression system.

There is also a secondary hangar that was built in 2007. Combined, the two facilities cover 75,000 sq ft of hangar space and an additional 40,000 sq ft of office and back shop space. There is also some additional land available for future

growth. The launch of the new facility is anticipated for Q1 2023.

Statesville Regional Airport Manager, John Ferguson, said: "We are extremely pleased that Jet East selected Statesville as the location for its newest maintenance, repair and overhaul facility. This exciting partnership will bring additional corporate aircraft into the Statesville Regional Airport from all over the world."





Airbus partners with helicopter operators to advance UAM in Japan and Latin America

Japanese helicopter operator Hiratagakuen is partnering with Airbus to develop urban air mobility (UAM) services in the Kansai region and beyond. The collaboration will see the two companies organise a simulation of ideal routes, concepts of operations and the necessary equipment for safe electric vertical take-off and landing (eVTOL) flights.

Commenting on the partnership, Mitsuhiro Hirata, Vice President,

Aviation Operation Division of Hiratagakuen, said: "We are aware that a revolution in air transportation is now approaching in the Osaka area and we expect CityAirbus NextGen to play a central role in this revolution."

Meanwhile, in Latin America, Airbus has signed a memorandum of understanding with Ecocopter to collaborate on the launch of urban air mobility services in Chile, Ecuador and



Peru. The partnership will include joint activities to develop urban air mobility (UAM) operations throughout the continent, as well as ways to target first use cases and pilot cities and regions.

All rise for North Texas Regional Airport

FBO service provider Rise Aviation, formerly Lake Texoma Jet Center, has relocated to its multi-million-dollar facility at Texas Regional Airport in Sherman/ Denison. The first of three planned construction phases, the new FBO terminal is a welcome addition for passengers and crew, boasting a comfortable and spacious passenger lobby with multiple seating zones and the latest amenities.

"This new FBO terminal has been needed for a long time," said Mike Livezey, Rise Aviation's General Manager. "With growth in the DFW Metroplex continuing to move rapidly north toward Grayson County, many business owners or investors considering expanding,



relocating or starting a new venture in Grayson County will arrive at North Texas Regional Airport in a business aircraft.

Rise Aviation's new FBO terminal will be an attractive and welcoming 'Front Door' and customers' first visual cue that Grayson County's elected and business leaders are proactive with planning, investing and building infrastructure necessary to accommodate any growth they are considering." And according to local Grayson County Regional Mobility Chairman, Robert Brady, Rise Aviation's investment serves a significant role in the overall economic development of the local area and the airport itself.



Gulfstream expands footprint in West Africa

ExecuJet Aviation Nigeria (EJAN) is partnering with Gulfstream on a new authorised warranty and maintenance facility in Lagos, which will cater for Gulfstream G450, G550, G650 and G650ER aircraft in West Africa. EJAN's facility is the largest of its kind in the region and is adjacent to Murtala Muhammed International Airport. It is also located in a free trade zone for parts and maintenance. The 275,000 sq ft VIP facility encompasses an international departure/arrival terminal, FBO and maintenance facility and is the largest in sub-Saharan Africa. It also includes a 50,000 sq ft hangar space that can accommodate up to four G550 jets simultaneously. "As we have expanded our service network with new, modern facilities, we are also expanding our footprint of authorised warranty facilities as the Gulfstream fleet continues to grow around the world, including in West Africa," said Derek Zimmerman, President, Gulfstream Customer Support. "We are pleased to partner with ExecuJet Aviation Nigeria as our latest service provider to give our customers in the region a new option for their warranty and maintenance needs."

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Spotlight on Dubai



Lap of luxury: left, designed by architects Perkins & Will, Jetex's flagship FBO offers Rolls-Royce airside transfers. Above, the reception and, below, the lounge features Zaha Hadid sofas and Arne Jacobsen chairs.



Money talks

Dubai is on track to become one of the top 20 wealthiest cities in the world by 2030. Chloë Greenbank talks to two leading FBO operators to find out how the UAE and its population of ultra-wealthy residents are leading the way in setting a new standard for private aviation on the ground.

As 2022 draws to a close, it is set to see one of the United Arab Emirates' largest millionaire net inflows on record. More than 4,000 more millionaires are expected to move to the region in 2022 than those who will leave, according to figures published in the *Henley Global Citizens Report*.

The report also highlights that the number of dollar millionaires and billionaires is expected to increase by 40% in the UAE over the next decade.

Dubai already boasts more than 67,000 millionaires, including 13 billionaires and

202 centi-millionaires (individuals with a net worth of more than \$100 million).

For its well-heeled residents, Dubai offers a lifestyle that is awash with luxury apartments and villas, world-class shopping, gourmet restaurants, high-end recreational sports, international schooling, attractive business opportunities and one of the world's most competitive tax rates.

Given its high population of ultra-wealthy residents, it's no surprise that Dubai is also earning its stripes as a hotspot for private aviation – with

significant growth experienced in this sector in recent years.

While 2021 marked the busiest year yet for global business jet activity, the Middle East region alone showed some of the strongest growth in business jet demands, notably from the UAE, which was up by 73% compared to 2019.

According to the Middle East & North Africa Business Aviation Association (MEBAA), which is hosting the ninth edition of its trade show in December 2022, the business aviation market in the Middle East has maintained its growth momentum in 2022, with flights up by 74% in May, in comparison with the same period in 2019.

MEBAA's founder and Executive Chairman, Ali Ahmed Alnaqbi, says: "The private jet market in UAE is predicted to see the number of aircraft doubling by 2025 to reach 250 aircraft from about 150 private aircraft currently. The UAE is strongly positioned to capitalise on

“We also made the decision to upgrade our facility at DXB to enhance a sense of comfort and familiarity for our guests.”

Dumani Ndebele, Regional FBO Director, ExecuJet Middle East



increased foreign investment and high net worth individuals (HNWIs) driven by a strong influx of international wealth and support from the Dubai government to make the emirate the private jet capital of the region.”

PRIVATE JET CAPITAL

As one of the first independent companies to offer business aviation services in the region in the late 1990s, ExecuJet (which is part of the Luxaviation Group) has seen the market in Dubai evolve significantly over the past 20 years.

“During this time, we’ve witnessed an increase in other private jet operators

who have started to run their businesses here,” Dumani Ndebele, Regional FBO Director, ExecuJet Middle East, tells *Regional Gateway*.

Echoing the figures found in the *Henley Global Citizens Report*, Ndebele says this increase is most likely due to the growing population of Ultra-HNWIs, which has resulted in a greater demand for private jets.

Additionally, he notes that Jetcraft’s Five Year Pre-Owned Jet Market Forecast, which was released in September 2022, reveals that an increased number of younger buyers are now entering the market.

“In fact, in the Middle East and Africa, buyers under 45 account for 38.5% of overall transactions,” he says. “This trend is set to continue over the next five years, in line with the swelling UHNWI population.”

With ExecuJet’s FBO at Dubai International Airport (DXB) currently operating smoothly at full capacity, the company is looking forward to opening its new facility at Dubai Al Maktoum (DWC).

“We’re counting down the days until we can unveil our brand-new facility to the world,” says Ndebele.

“Featuring 33,000 square metres of state-of-the-art amenities, including an air-conditioned hangar, the new FBO will provide passengers and flight crew with a full complement of ground-handling and concierge services.

“These will include aircraft, passenger and baggage handling, fuel, aircraft valet and hangarage, security, customs and immigration, in-flight catering and limousine transfers.”

The FBO will also feature a double-storey crew lounge with viewing deck and games room, as well as discrete working and rest areas, duty-free shopping and prayer rooms.

“Our mission is to accommodate every individual who steps foot in the facility,”



Extra capacity: above and below right, ExecuJet’s FBO at Dubai International Airport. Below left, the company is looking forward to opening its new facility at Dubai Al Maktoum.





Spotlight on Dubai

says Ndebele. “As such, our experienced staff will happily assist with any other special requirements and attend to concierge duties on behalf of clients.”

Ndebele also highlights that the new facility at DWC will also provide the fastest fuel stop in the UAE, with eight dedicated fuel hydrant points capable of fuelling multiple aircraft at one time.

“We also made the decision to upgrade our facility at DXB to enhance a sense of comfort and familiarity for our guests,” he says. “We’ve carefully blended sophisticated details with modern designs, whilst maintaining the authentic Arabic features that are unique to the region. The refurbishment of DXB establishes ExecuJet as the only ‘truly private’ airport experience across both regional hubs.”

By the end of 2023, the DXB facility will also have two dedicated aircraft hangars for aircraft storage and MRO activities.

AWARD-WINNING LUXURY

Having been established at the Dubai Airshow in 2005, Jetex, which offers executive aviation services across the globe, still has its headquarters at DXB. Its trip planning, fuelling, ground handling and concierge services are all coordinated 24/7 from this operations centre.

Meanwhile, the company’s flagship FBO is based in the private VIP terminal at DWC and, according to Jetex, is the “biggest and most luxurious facility in Dubai”.

Jetex has won multiple awards for its FBO service and facilities, including five stars by the Global Star Rating System for Services.

Adel Mardini, Jetex’s President and CEO, tells *Regional Gateway* that the secret to the FBO’s success is that it goes above and beyond any other airport experience.

“We have set the bar high in terms of the end-to-end hospitality we offer,” he says. “The focus is on providing the highest level of comfort and our facility is more like a hotel lobby – from which passengers are driven to and from the steps of their aircraft.”

With its focus on five-star hospitality, the FBO, which was designed by architects Perkins & Will, features iconic furnishings, including Zaha Hadid Design furnishings and Arne Jacobsen chairs.

In keeping with the luxury lifestyles of its customer base, those using the FBO can also enjoy a lavish cigar lounge and Rolls-Royce airside transfers.

As is the case across the sector, Jetex is seeing similar growth through 2022 as it did in 2021.

“We certainly saw a shift as a result of the global pandemic with customers who had previously flown on commercial airlines turning to private jets,” says Mardini. “Additionally, lots of HNWIs relocated to Dubai during the pandemic because of the lifestyle.”

Major sporting events such as the FIFA World Cup in Qatar have also helped drive the growth of business aviation traffic in Dubai.

Mardini says: “During the World Cup, Jetex will serve as a base for those attending football fixtures in Qatar.”

Reflecting the figures seen in Jetcraft’s market forecast, Jetex is also seeing a shift in its passenger demographic.

“Whereas previously, our customers typically fell into the 50 to 80 age category, we’re now seeing a higher quota of younger customers, between the ages of 25 to 50, many of whom work in the tech and crypto industry,” says Mardini.

In line with this new customer demographic and expected growth, Jetex is embracing the digitalisation of its services and is focused on delivering a smarter, more seamless experience for its customers.

The company recently partnered with Leon Software to bring a next-level suite of digital services to business aviation that will further enhance operational efficiency and seamlessly integrate communication with clients.

“But that doesn’t mean we are shifting away from the personalised five-star service that our customers know and expect,” adds Mardini.

With plans to now expand its presence in Saudi Arabia, which is already ranked in the top 20 countries with the highest number of UHNWIs, Jetex is certainly up to speed on how to cater for the ultra-wealthy travelling by private jet. ■

Helipark

In response to the demand from ultra-wealthy tourists and business travellers in the region, a new heliport opened in Dubai at the end of 2021. Operated by Air Chateau International and located in the Mohammed Bin Rashid Aerospace Hub close to the VIP terminal at Dubai South, the Dubai Helipark features a lounge to meet, greet and brief wealthy passengers. It has also been designed to accommodate the largest helicopter sales showroom and training centre in the UAE, as well as helicopter MRO services. Delivered in two phases, the



By popular demand: the Dubai Helipark, which opened at the end of last year, is designed to cater for ultra-wealthy tourists and business travellers in the UAE region.

first section of the site is up and running, with the second phase due to be complete by the end of 2023.

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Taking off or grounded?

If there's one key lesson the global airport community has learned following the pandemic, it is that air hubs will need to serve a wider purpose beyond facilitating air connectivity if they are to continue thriving. Alton Aviation Consultancy's Joshua Ng discusses the need to future-proof air transport hubs.

It is increasingly clear that air hubs – airports that capture local flows as well as serving as a transit point to capture traffic from other end-markets – will need to do more than simply facilitate air connectivity if they are to continue thriving in the future.

This might sound surprising given that connectivity has formed an important part of their success so far, but a new white paper from global aviation advisory firm Alton Aviation Consultancy, entitled *Future of Air Hubs: Staying Relevant in a Changing World*, describes the important role air hubs have played in the past, how they were hit hard during the COVID-19 pandemic, and how they need to evolve if they are to enjoy continued relevance in the future.

Air hubs have traditionally served as a key component of regional and intercontinental air travel due to the success of hub-and-spoke airline models, which aim to consolidate demand, maximise flight offerings and seamlessly connect cities where direct flights might not be technically or commercially viable.

For consumers, they also offer a cost-effective alternative to non-stop long-haul travel, given the tendency for airlines to discount connecting itineraries.

All of which might seem sufficiently beneficial to ensure the future viability of air hubs. While this might once have been the case, things have changed following the pandemic.

RESPONDING TO THE GLOBAL PANDEMIC

COVID-19 devastated connecting passenger volumes. Border restrictions and strict quarantine rules were imposed, with many air hubs forced to suspend transit operations due to government restrictions.

The pandemic also shifted passenger preferences, with flyers increasingly opting for non-stop services in order to avoid complex testing and quarantine restrictions, as well as a perceived higher risk of infection when travelling through major air hubs.

With a few notable examples – in which governments stepped in to keep

hubs in business – the fall in the number of services at air hubs also resulted in their overall connectivity levels dropping.

The good news is that many air hubs have already demonstrated they have the agility to respond to a drop in passenger traffic. This has included a pivot to developing cargo businesses, with air freight remaining relatively robust during the pandemic, boosted by multiple external factors, including consumers' increased use of e-commerce services during lockdown periods.

Pandemic-induced supply chain issues also turbocharged air cargo demand, which was driven by major bottlenecks within other transport methods.

It was during this pivot to cargo that a number of major air hubs, including Brussels in Belgium, Frankfurt in Germany, Chicago O'Hare in the US, and Singapore in Southeast Asia, took advantage of the global rush to distribute vaccines and positioned themselves as leading air cargo hubs for pharmaceutical products.

While many of these air hubs had cold-chain capabilities pre-COVID, the nature of COVID-19 vaccines, subject to stringent temperature constraints during shipping, required further investment and improvements in their pharmaceutical handling capabilities.

The infrastructure and process improvements made at air hubs to handle these sensitive, high-value shipments will continue to provide these hubs with a competitive edge in cold chain logistics in the post-pandemic era.

Last call

A MOVE TO REGIONALISATION

The pandemic also highlighted the concentration of manufacturing. Coupled with geopolitical and strategic considerations, this has prompted growing interest in the localisation and regionalisation of manufacturing and export centres.

Should this materialise, a shift in global trade flows can be expected, which would alter the flow of air cargo and business travel. Intercontinental business travel could see continued subdued demand, with intra-regional business traffic becoming more prevalent.

While it remains to be seen whether regionalisation will displace globalisation



Meet the author

Based in Singapore, Joshua Ng is a Director at Alton Aviation Consultancy, a global advisory firm serving the aviation and aerospace industries. He brings nearly a decade of experience in the aviation and aerospace industry with significant expertise in business strategy development, market demand forecasting, supply chain management, operational performance improvement and financial modelling.

Joshua's fellow authors on the *Future of Air Hubs: Staying Relevant in a Changing World* report are Alton Managing Directors Umang Gupta, Raffi Kasparian, Mabel Kwan and Engagement Manager, Alan Lim.

No. of destinations	Dubai (DXB)	Doha (DOH)	Frankfurt (FRA)	London (LHR)	Hong Kong (HKG)	Singapore (SIN)
Pre Covid (Dec 2019)	224	167	254	188	165	153
During Covid (Dec 2020)	174	149	186	162	83	77
Present (Dec 2022*)	218	169	231	182	114	121
Net Gain/Loss over 3 years	-6	+2	-23	-6	-51	-32

Source: Alton analysis, Cirium Note: *Filed airline schedules for Dec 2022 as of July 2022

in the long term, air hubs should remain vigilant and develop strategies to realign their networks and infrastructure needs in the event of such a shift.

For large air hubs, this could be an opportunity to grow their intra-regional networks and cement their position as regional consolidators and integrators.

BOOSTING AUTOMATION AND DIGITALISATION

Airports had to contend with lockdowns and safe distancing measures during the pandemic, while falling passenger numbers forced many airports to lay off workers to stay afloat.

These developments pressured air hubs to accelerate digitalisation efforts to improve manpower efficiency while creating a safe environment for travellers.

Though it could be said that these measures were necessary because of the pandemic, those air hubs that have successfully implemented automation and digitalised processes are also better equipped to respond to a post-pandemic era of higher costs and staff shortages.

Many air hubs have recognised this reality, with SITA's 2021 Air Transport Insights survey finding that the vast majority of airports (81%) expect IT spend will remain stable or grow in 2022 compared to 2021.

EMBRACING SUSTAINABILITY

Decarbonisation will be a core theme in the ongoing transformation of air hubs as countries and regulators around the world commit to net zero emissions.

Air hubs' role in driving the industry to this goal are even more important, given that they are highly public symbols of commercial aviation and are often the main passenger touchpoint in

the air travel journey.

Air hubs should begin to explore environmental sustainability by considering transitioning their energy requirements to carbon-free sources of energy, such as renewables.

Air hubs situated in areas of high solar irradiance are particularly suited for these applications.

An example is Delhi Indira Gandhi International Airport (DEL), which has transitioned to solar and hydro power for 100% of its energy needs beginning in June 2022, achieving the highest Airports Council International (ACI) airport carbon accreditation level in the process.

A BRIGHT FUTURE

Despite recent challenges in the form of COVID-19 and technology advances in longer range aircraft, air hubs will remain important players in the commercial air transport value chain, with connecting traffic continuing to be a major component of intercontinental and long-haul travel.

Despite this, achieving success as an air hub in the future will require more than just a strong commercial flight network. Rapidly developing trends such as the drive to sustainability will shape the development of existing and aspiring hubs.

Equally, air hubs should monitor the growth of the digitalisation of processes and touchpoints in a new normal in which accessing both manpower and materials will remain challenging, while pandemic-related health and safety considerations will continue to be relevant.

If de-globalisation persists, air hubs should also develop a strategy for realising their roles in intra-regional trade and connectivity. ■



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