

# Inspire

GATE'S MAGAZINE ON INNOVATIVE & SUSTAINABLE AIRPORT TECHNOLOGIES

GATE INSPIRE ISSUE 2023



## Climate-neutral Flying with Airbus

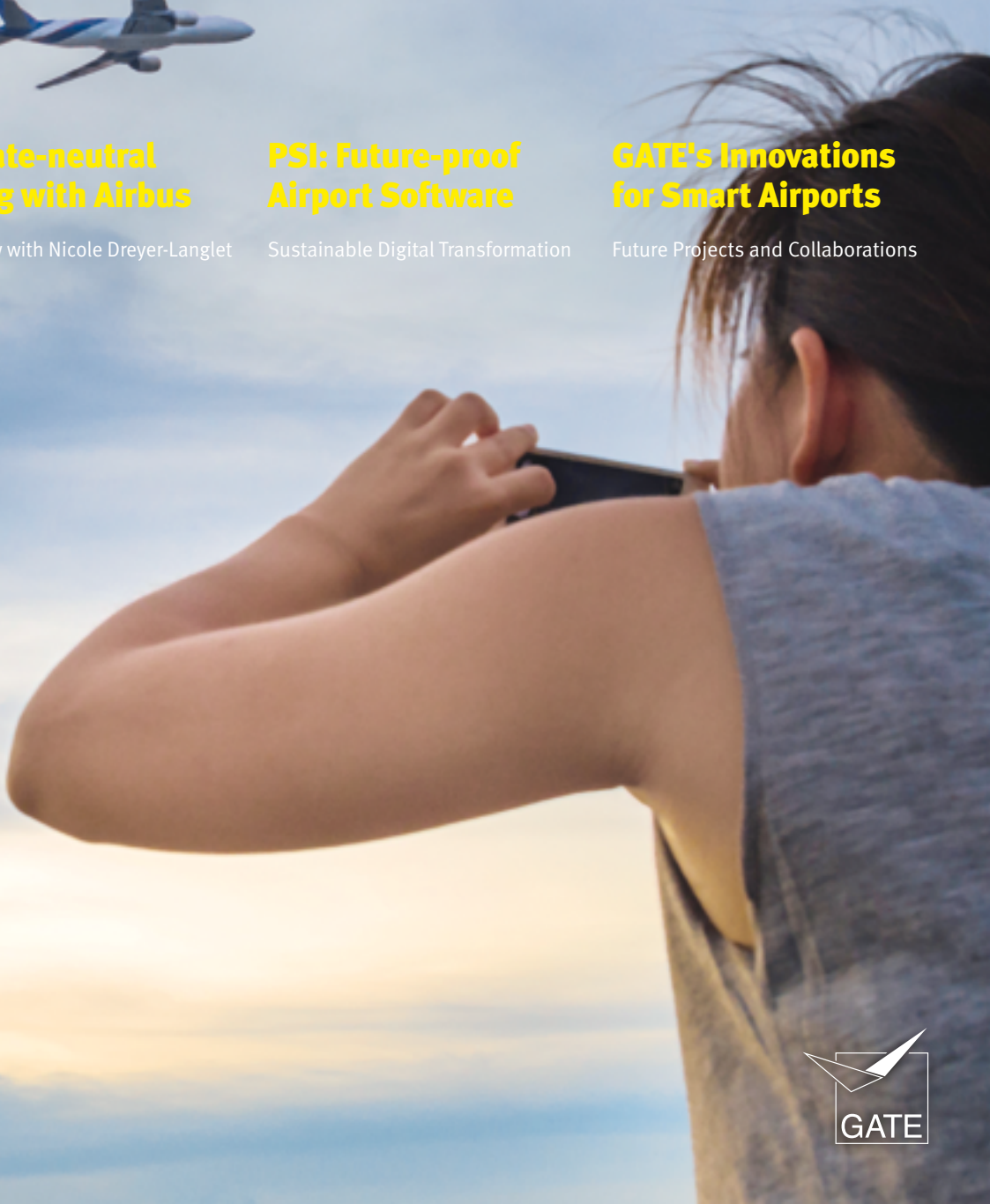
Interview with Nicole Dreyer-Langlet

## PSI: Future-proof Airport Software

Sustainable Digital Transformation

## GATE's Innovations for Smart Airports

Future Projects and Collaborations



30<sup>th</sup> March 2023

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- + Panel Discussions
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- + Networking Dinner

# GATE FUTURE 2023

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Hydrogen

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Logistics

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## Aviation at a Sprinting Pace



Jens Reinhard,  
Managing Director  
GATE Alliance

Dear Reader,

Our industry has made it - or are we being overly optimistic when we say that we have overcome corona and the associated impact on air traffic? I think we can be proud that our members, as well as the airports, have found their way out of the crisis. And, above all, we have learned the power of innovation during this time.

Airbus is pioneering the decarbonization of aviation, and unmanned urban air mobility cabs are making their way into our infrastructure. In addition, the topic of hydrogen is making tremendous strides, especially in Hamburg. It feels like we're in a sprint right now, with players like Airbus, ZAL, and Hamburg's cluster policy in particular setting the pace in terms of sustainability. But let's not jump too far into the future, because the summer season - with its peak passenger numbers - is sure to be here again soon. With that, our association members know that we will be facing obvious challenges: optimizing baggage handling, security checks and boarding. Travel must once again become an experience - at least for all those who do not feel cornered by flight shame.

And if we look abroad, it quickly becomes clear that in many other continents there is a completely different dynamic. India is growing - and since the geographical conditions make it difficult to build highways and rail networks, the airport industry is also booming. The government plans to privatize up to 35 airports and build 100 more by 2024. The U.S. is also a country where flying is a major force and visions for the future are taking on an increasingly concrete shape - for example, at Cincinnati/Northern Kentucky International Airport, one of the most advanced airports in the United States.

You can read more about our industry's commitment at home and abroad in this second issue of our "Inspire" magazine.

Yours sincerely  
Jens Reinhard

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PHOTOS: AIRPORT LÜBECK, HAMBURG AIRPORT, DANIEL REINHARDT, GATE, AIRBUS, LILJUM

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QUBUS media GmbH  
Beckstr. 10  
D-30457 Hanover  
Germany

Reprints, including excerpts,  
only with the written permission  
of the publisher.

GATE Inspire is published once  
a year. Print run: 3,000 copies  
Distribution: Display at airport  
exhibitions and congresses,  
mailing to GATE members and  
airport managers

# Together for a Greener Future

## GATE: SUPPORTING THE INDUSTRY IN SUSTAINABLE AND INNOVATIVE SOLUTIONS

GATE, the leading network of the airport industry, is a source of ideas for global air travel and innovation drivers for airport operations. The members have expertise in all relevant areas of the airport and offer integrated concepts and technologies which optimize processes, increase passenger comfort and reduce CO<sub>2</sub> emissions.

These days innovations are not merely the product of R&D departments, but are more often the result of a joint effort by several project partners. The concepts and prototypes need to be exposed to real-life conditions as soon as possible in order to be reviewed and revised.

“That’s why GATE’s innovation program supports all members in developing and, above all, testing resource-saving solutions for processes in the airport and on the apron,”

comments Kevin Fischer, Head of Innovation at GATE.

To achieve this, GATE relies on partnerships with several airports and institutions, because decisive for testing and validating are suitable real conditions. Some members have already availed themselves of this opportunity.

### GATE innovation program: successful projects

*Sittig*, the German market leader for automatic announcement systems, have taken advantage of GATE’s innovation program and is revolutionizing the future of passenger announcements. The installation “PAXGuide Cloud” enables international passenger addressing - streamed from the Frankfurt-based company’s cloud. With the “PAXGuide Cloud” automated announcement system Sittig is testing the further development

of the prototype in the cloud, is increasing efficiency, all while improving customer comfort at the airport - from entering the terminal to boarding the aircraft. The automated announcements over the public address systems are a key aspect in the optimal routing of passengers.

- 1 Ibeo Automotive Systems AirPortMover
- 2 Kevin Fischer, Head of Innovation at GATE
- 3 Hydrogen powered airport bus from Cobus



**“That’s why GATE’s innovation program supports all members in developing and, above all, testing resource-saving solutions for processes in the airport and on the apron”**

Kevin Fischer,  
Head of Innovation – GATE



## THE GATE INNOVATION PROGRAM

### SERVICES:

- + TEST AREAS AT AIRPORTS
- + DEVELOPMENT OF INNOVATION STRATEGIES
- + ACTIVE TECHNOLOGY SCREENING
- + ESTABLISHMENT OF INNOVATION NETWORKS

### COOPERATIONS:

- + AIRPORT ROSTOCK-LAAAGE
- + HAMBURG AIRPORT
- + LÜBECK AIRPORT
- + DÜSSELDORF AIRPORT
- + ROTTERDAM THE HAGUE AIRPORT
- + CINCINNATI/NORTHERN KENTUCKY INTERNATIONAL AIRPORT

After about three years of research and development, Hamburg-based lidar specialist *Ibeo Automotive Systems*, together with the Christian-Albrecht University of Kiel and Airbus Operations, has also successfully completed the AirPortMover project with a demonstration of autonomous driving on the apron.

GATE also teamed up with Hamburg Airport and the airport bus manufacturer and member *COBUS Industries* to test the all-electric passenger bus e.COBUS on the apron in order to minimize the environmental impact of airport operations. In 2023, a hydrogen-powered passenger bus will be in use to help Hamburg Airport achieve its ambi-

tious climate protection goals. "With this cooperation, GATE shows that numerous airport equipment suppliers have already developed many sustainable technologies. The test with the e.COBUS is primarily intended to illustrate that an electric bus is capable of running a normal shift and thus replacing a diesel model," notes Kevin Fischer.

**What's next - GATE's future plans**

Implementing new technologies in a short time and bringing them to market is often a very complex undertaking in the operation of an international airport. High passenger volumes and lengthy decision-making processes do not always make it easy to integrate innovations quickly.

**Because of this, GATE continues to promote exchanges with airports. Open to new ideas and technologies is also one of Germany's northernmost airports: Lübeck. This is the reason we met the Managing Director Prof. Dr. Jürgen Friedel on site. Miriam Schönrock, Head of Marketing at GATE, went to learn more about his visions.**

**Prof. Dr. Jürgen Friedel, what distinguishes Lübeck Airport from other airports?**

**Prof. Dr. Jürgen Friedel:** Lübeck Airport is 100% privately owned. Our owner shapes everything we do here and puts his heart and soul into it. Committees, many shareholders,

and the influence of politics often slow down decisions. Thus, you can only agree on a compromise, but you can't move forward quickly. That's different with us. We take unusual paths. With our own airline, Lübeck Air, we want to make aviation pleasant for passengers again. Our aim is not to make everything bigger and cheaper, but to meet the requirements of passengers who are also prepared to pay a reasonable price for such a quality product. Another example is our construction projects: We don't have to put projects out to tender, so the award process can run much faster. This allows us to remain flexible in all of our projects.

**What innovative ideas do you have planned for the future?**

We are in the process of initiating a research project. The university RWTH Aachen approached us with the demand for a cooperation, because we are also in a position to be an operator for electric aircraft because we have our own airline. That is a unique selling point for Lübeck. We need to adapt our infrastructure and operating concepts. Bookings and boarding will take place in a completely different way than on a Mallorca flight, and we are happy to help develop something like that. The small vessels offer enormous potential.



I could imagine test flights from here to the Baltic Sea. At some point it will become part of our mobility, I'm firmly convinced of that. The great advantage of aviation is that I don't need to build any roads. With these new devices, I don't even need a runway. If we succeed in flying without emissions, aviation will be unbeatable. We are ready for anything!

**You have just acquired the adjoining business premises. What are your plans for it?**

Lübeck is an exciting location for both tourism and business and has increasingly become an economic hub for industries of the future. We hope we can attract start-ups that can use our infrastructure.

Of course, the already established companies are also important: Especially in the field of medical technology, we have two flagships with

Euroimmun and Dräger that are known worldwide for quality and innovation. In this respect, it is conceivable that Lübeck will also become a location for medical logistics in order to further develop unmanned flights for the transport of medical goods. The proximity to the Baltic Sea means we offer more possibilities than at airports located close to major cities.

For exactly these approaches, we need partners like GATE, which has excellent contacts to leading industrial companies worldwide. I could imagine setting up a future lab here for developing the technologies of tomorrow together. We are very powerful - the flexible, lean structures are a great advantage. GATE's ideas are finding fertile ground here - I look forward to a successful collaboration.

Prof. Dr. Jürgen Friedel and Miriam Schönrock exchange ideas about future plans



PHOTOS: AIRPORT LÜBECK, GATE, COBUS, IBEO AUTOMOTIVE SYSTEMS

# PSI Offers Future-proof Airport Software

SUCCESS FACTORS FOR A SUSTAINABLE DIGITAL TRANSFORMATION

PSI Logistics presents, among other things, the video monitoring module PSIAirport/CCTV with new functionalities. With an advanced assistance system for dynamic dispatching, the software developers have also expanded the application spectrum of PSIAirport Solutions with a module for further digitalization steps and more sustainability through AI-based, automated resource efficiency.



The analysis, provision, processing and visualization of data has become a decisive success factor for companies. This also applies to the operating companies of the multifunctional service center airport and the operational processes in the airport environment. A huge volume of data in a wide variety of formats is being generated from an increasing number of sources, and this data needs to be filtered and used efficiently in order to create added value for those involved. At the same time, according to the European Union's climate targets, the CO<sub>2</sub>-emission-free airport should be reality by 2050. Airports are making huge investments to achieve this goal. Stuttgart Airport will invest around 2.4 billion euros by 2040 in the areas of energy efficiency and generation, smart grids, as well as mobility and transport. Munich, Nuremberg, Berlin, Dortmund and Friedrichshafen airports are using LED lighting connected to the intranet, among other things. The lights each have their own IP address-

ses and can be controlled individually. Thanks to its high energy efficiency, Munich Airport already saves around 12,000 tons of CO<sub>2</sub> annually. The above-mentioned requirements demonstrate the high importance attached to the extensive IT landscape as an important component of environmental management for airports.

## Closed Circuit Television (CCTV) functionally enhanced

Back in 2018, a study commissioned by Amadeus IT Group from Arthur D. Little's business consultants highlighted how new technologies can increase airport efficiency and reduce costs, and how digital transformation can help airports meet the rising expectations of passengers, airlines and stakeholders. In this technological mix, PSI Logistics has set standards with its PSIAirport Solutions for automated baggage handling (PSIAirport/BHS) and baggage reconciliation (PSIAirport/BRS). With the current releases, the systems offer users further

savings and optimization potential in the digital transformation and resource-efficient process management.

For example, Closed Circuit Television (CCTV), an innovative system for AutoID, tracking and documentation in automated baggage handling, has been put into operation at Hamburg Airport, and also at Cologne/Bonn and Rostock airports by using artificial intelligence (AI) methods and processes, neural networks and deep learning. The video monitoring module PSIAirport/CCTV can individually identify the baggage items without additional scanners by image capture alone and document their path on the conveyor systems by using neural networks. The module detects any damage to the baggage items, automatically reports corresponding changes and supports the determination of the cause. Investment into additional scanner technology is no longer required, the error rate is reduced, resources for rework are eliminated, which in conventional processes at airports can account for up to ten percent of the baggage volume, and the service level is increased. In the current release, the software automatically recognizes and processes baggage, differentiates the size and color of between hard suitcases



**"THIS OPTIMIZES DOCUMENTATION AND SUPPORTS QUICK ACCESS IF A PIECE OF LUGGAGE NEEDS TO BE REMOVED AGAIN BEFORE TAKEOFF."**

ANDRÉ BECK, SENIOR PROJECT MANAGER

and soft travel bags, and records equipment features such as handle design and number of rollers. "This optimizes documentation and supports quick access if a piece of luggage needs to be removed

again before take-off," says André Beck, Senior Project Manager for PSI Logistics.

### Big data management for dynamic dispatching

The enormous computing speeds achieved via AI and neural networks also enable efficient Big Data management against the backdrop of resource efficiency and sustainability. "With their AI-supported functionalities, PSIAirport Solutions open up a multitude of levers where targeted analyses lead to significant savings and process optimizations within the framework of Big Data concepts," says Beck.

For example, reliable forecasts of passenger and baggage volumes can be created by evaluating existing archival and actual data. On the basis of these forecasts, baggage handling operations can, for example, plan baggage volumes in advance and operate and control sorters in line with demand, or shut them down in a planned manner if there are gaps in capacity utilization. The same applies to the route-optimized apron allocation and distribution of gates and sorter drop-off points for fast ground handling or the X-ray screening equipment. "Such intelligent processes and system planning with temporary shutdown and optimal use of resources already opens up significant savings potential without having to invest in the replacement of hardware components," says Beck. "Further adjusting screws for the green airport can be named according to the analysis results, for example, with the optimization of temperature losses through uncontrolled hall door opening in the sorting halls."



- 1 Display system at Hamburg Airport
- 2 Capturing a piece of luggage with PSIAirport

For such an equalization of traffic peaks and an even utilization of work areas and resources, PSI Logistics has now launched an AI-based assistance system with the "dynamic dispatching" for PSIAirport Solutions. Based on the available data and analysis of the entire database, the system determines in real-time the maximum value of a resource-optimized system and process control and initiates it, or suggests appropriate options to the dispatchers. The functional spectrum ranges from the analysis of performance data and archival data to energy-efficient and route-optimized deployment and utilization planning for

plants and personnel. "Time and energy savings are both success factors for sustainable digital transformation," explains Beck regarding the benefits for airport companies.

"In future development stages, the system will also be available as a web component from the cloud, which will provide access to the entire data material for numerous authorized users. This reduces energy consumption in the control center and at the same time shows the development direction of future-proof airport software."

PHOTOS: PSI LOGISTICS, HAMBURG AIRPORT



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# GATE Goes West: New Cooperation Will Be Set Up

CVG INTERNATIONAL AIRPORT BECOMES A NEW STRATEGIC PARTNER



1

The Cincinnati/Northern Kentucky International Airport (CVG) based in Kentucky and serving the Cincinnati region, throughout Ohio, Kentucky, Indiana and beyond, has grown as an airport, community partner, and business operation with a focus on innovation. The approach to innovation is to blend emerging talent and advancing technology to elevate and redefine the role of an airport.

CVG.ai goes beyond theory. They execute methodical proof-of-concept testing, find the right partners and pilot test with the ultimate goal to generate unique intellectual property (IP). The 7700-acre campus serves as a massive living laboratory, allowing the creation of venture-built products that are practical, affordable, and scalable.



2

“AS AN INTERNATIONAL AIRPORT, IT IS IMPORTANT FOR CVG TO RECOGNIZE STRATEGIC OPPORTUNITIES TO PARTNER WITH COMPANIES WORLDWIDE. OUR MISSION IS TO ELEVATE AND REDEFINE THE ROLE OF AN AIRPORT WHICH ALIGNS PERFECTLY WITH GATE’S INNOVATION PROGRAM CONNECTING US WITH OTHER LIKE-MINDED, FORWARD-LEANING COMPANIES TO ADVANCE TOGETHER WHILE ENCOURAGING MULTI-NATIONAL DEVELOPMENT AND ECONOMIC GROWTH. WE’RE LOOKING FORWARD TO THE MANY POSITIVE HEADLINES TO COME.”

BRIAN COBB, CHIEF INNOVATION OFFICER CVG AIRPORT

CVG.ai serves as a co-developer rather than a traditional customer sourcing a readily available product. This collaborative approach is the commitment to real product development, invaluable research in a complex environment, and growth. CVG and its partners are strategists, leaning into the future within aviation and other industry verticals. The lab is a showroom floor for millions of potential customers.

The four pillars around innovation are Clean, Connect, Secure and Transport. Each helps organize the strategies and tactics of CVG Airport. For example CVG has partnered with ThorDrive to develop the world's first autonomous retrofit baggage tug. The technology is being furthered developed and is now being deployed at airports across the world.

Another approach is the use of wearables to revolutionize

enterprise asset management, safety, and security. Alongside AWS, TaskWatch allows airport staff to stay on top of facility needs in real-time.

In times when cleanliness and disinfection began to be assumed, CVG furthermore partnered with Avidbots to deploy Neo: the first autonomous robotic cleaning equipment with advanced AI in the U.S.

- 1 Enhanced airport passenger experience with TaskWatch
- 2 Brian Cobb, Chief Innovation Officer - CVG Airport
- 3 Avidbots offer autonomous robotic cleaning equipment with advanced AI

PHOTOS: CVG AIRPORT



Learn more about innovation at CVG at [www.cvgairport.com/innovation](http://www.cvgairport.com/innovation)



3



# More Efficiency in Baggage Handling

LOGIDRIVE FROM NORD: THE SOLUTION SPACE FOR APPLICATIONS IN AIRPORT LOGISTICS

NORD DRIVESYSTEMS introduces further practice-oriented LogiDrive solutions for driving intralogistics and airport applications. As well as previous LogiDrive system solutions from the NORD modular system, such as an IE4 synchronous motor integrated into a two-stage helical bevel gear unit, products like the NORD DuoDrive, NORDAC ON (+) and IE5+ motors are now also available in the new LogiDrive solution space.

NORD distinguishes between the application areas for post & parcel and airport as well as warehouse. The former also includes, for example, drives for baggage handling systems. For each area, the company offers basic and

advanced versions that are optimized regarding different factors.

## Energy efficiency and version reduction

The LogiDrive advanced versions have been further developed, for example, in terms of energy efficiency, version reduction and Total Cost of Ownership (TCO). The IE5+ synchronous motors from NORD with a high power density and a maximum power of up to 3.7 kW are used. They are either combined with a two-stage helical bevel gear unit or with the DuoDrive gear unit/motor combination and a frequency inverter from the NORD portfolio. Thanks to the permanent magnet synchronous motor technology (PMSM), the drives have a

- 1 NORD's LogiDrive drive units for post&parcel and airport applications: a basic version (front) and two advanced versions (back)
- 2 The LogiDrive advanced version from NORD is used, among other things, in baggage handling systems at airports

relatively constant efficiency level over a wide speed and torque range and are characterized by very good energy consumption performance in partial load and partial speed ranges. This reduces the number of drive versions, which is an advantage for large baggage handling systems.

## The DuoDrive geared motor

As part of the patented DuoDrive geared motor, which covers powers of up to 3 kW, the IE5+ synchronous motor was integrated into a single-stage helical gear unit. Calculated across the system, the geared motor achieves up to 92 percent efficiency, one of the highest on the market in this power class. "The fewer interfaces, the higher the system efficiency," Jörg Niermann, Head of Marketing at NORD, explains. The integration of the drive into the gear unit housing significantly reduces the installation space, the number of wear-prone parts and thus also the maintenance effort.

PHOTOS: NORD DRIVESYSTEMS



NORD DRIVESYSTEMS Group  
www.nord.com



## Saving energy and reducing CO<sub>2</sub>

In a trade fair model, NORD has compared the power consumption of the DuoDrive (IE5+ synchronous motor and single-stage helical gear unit plus a NORDAC PRO SK 500E control cabinet frequency inverter) with the drive configuration of a customary IE3 asynchronous motor with bevel gear unit and decentralized frequency inverter. The result: The DuoDrive consumes up to 50 percent less energy.

"In times of rising energy costs and climate change, we help our customers to save energy where we can,"



Niermann continues. "Besides the development of increasingly efficient drive solutions, we also offer the NORD ECO service.

This means, that NORD checks the drives installed in a system with regard to energy efficiency, dimensioning and number of versions to reveal savings potential and provide tailor-made energy efficiency concepts.



You can find more about the energy efficient concepts from NORD DRIVESYSTEMS

# “Hamburg Offers a Unique Opportunity to Bundle Competencies”

INTERVIEW WITH SENATOR MICHAEL WESTHAGEMANN,  
MINISTRY FOR ECONOMY AND INNOVATION

**Hamburg is the third largest location for civil aviation worldwide and has enormous potential - with which partners and companies will you continue to maintain this position?**

**SENATOR WESTHAGEMANN:**

We founded Hamburg Aviation, a highly capable nonprofit agency, to support the cluster across the region and network between business, science and politics. With our cluster, we can quickly address the right players and receive feedback. It makes an important contribution to the promotion and networking of the approximately 300 players in the field of

aviation in Hamburg. While the focus is often on large companies such as Airbus, Lufthansa Technik or the airport, we try to promote small and medium-sized enterprises in particular. Medium-sized companies are an especially important part of the supply chain, ensuring close collaboration between players. The German Aerospace Centre (DLR), the ZAL Centre for Applied Aeronautical Research and the institutes of Hamburg's universities involved in aeronautics research also play an important role.

The close and well-coordinated cooperation was most

recently demonstrated during the corona pandemic, which hit aviation particularly hard. The exchange with industry moderated by the cluster quickly enabled us to invest the necessary funds for long-term promotion of the location in a targeted manner in future topics such as

Hamburg is the largest German center of the civil aviation sector and also one of the most important in Europe. We spoke with Senator Michael Westhagemann about the Hanseatic city's successful cluster policy, which emphasizes sustainable solutions.



Senator Michael Westhagemann

digitization, urban air mobility and sustainability. To this end, we have launched a funding program worth 25 million euros to put Hamburg in a competitive position for the future.

In the area of sustainability, our cluster has responded to the EU's research agenda (Strategic Research and Innovation

Agenda, SRIA) - "Clean Aviation". Together with a total of 90 people from industry, universities, research institutions and associations, Hamburg Aviation developed a technological roadmap for the period to 2030. The requirements of the SRIA were

reflected in economic, technical and scientific boundary conditions set by Hamburg Aviation. The agenda currently serves as a guideline for the coordination of regional, national and European research projects. The main focus is on identifying synergies.

**Both Airbus and the Hamburg Aviation and Renewable Energy Hamburg clusters see hydrogen as the future of aviation - which projects and ideas are you most keen on?**

With the spatial combination of its seaport and with one of the largest industrial areas in Northern Europe, Hamburg offers a unique opportunity for bundling competencies. We especially see this across the value chain of the green hydrogen economy.

Hamburg has already developed into a national hot spot for the hydrogen economy with various initiatives and projects, but also with the new hydrogen segment in the Renewable Energy Hamburg cluster. This is great, makes us proud and spurs us on. Hamburg is planning a large-scale electrolysis plant at the site of the decommissioned Moorburg power plant. A feasibility study on the conversion of the power plant site published in March this year concludes that electrolysis for the production of green hydrogen at the Moorburg site with a capacity of up to 500 megawatts is economically and technically feasible. An expansion

to 800 megawatts is under consideration. The site offers excellent conditions for the realization of an electrolyzer. This lighthouse project is linked to other projects, including a hydrogen pipeline network and applications in metallurgy, port management and aviation. Airbus, for example, is also closely involved here. The city of Hamburg will financially support the joint project with a total of around 232 million euros, which corresponds to around 30 percent of the public funding. The decarbonization initiative 'North German Living Lab' will also test new possibilities for decarbonizing industry, the mobility sector and the heating for homes and businesses by using innovative sector coupling technologies. The 'North German Living Lab' is an alliance with 50 partners from industry, science and politics. All of this helps pave the way to climate neutrality.

The future Innovation and Technology Center "Hydrogen Technologies for Mobility Applications," or ITZ Nord for short, is also likely to be of great interest to those involved in the aviation sector. The project, which

is financially supported by the federal government, is being planned jointly at the Hamburg, Bremen and Stade sites. The services offered by the ITZ Nord are aimed not only at large industrial partners, but also at SMEs and start-ups. The ITZ for aviation will be located at ZAL in the immediate vicinity of Airbus.

**Digitization and new technologies in security and check-in areas can help manage passenger volumes more quickly - are there any plans to invest in innovations that will noticeably increase passenger comfort?**

Innovations are a very important topic and can make a decisive difference. Hamburg Airport plans to invest further in the automation of processes over the next few years. Among other things, this will include access to security screening, the expansion of passenger flow measurement, and intelligent display control software. The aim is to further improve passenger comfort and communication with passengers.

A lot has also happened in recent years. By the end of 2019, for example, 30 baggage machines and 16 so-called

check-in kiosks had been converted in the terminals at Hamburg Airport. At these, passengers have the opportunity to check in their luggage independently. In addition, Hamburg Airport, which is merely providing the infrastructure in this process, has equipped two access gates at the entrance to the security checkpoint with technology that enables StarAlliance passengers to be recognized via biometric facial recognition.

**It's not only in the air that a lot of innovative power is required to fly more sustainably; on the ground, at the airports themselves, there is also a lot of potential for optimization. How does the city ensure greater exchange between the aviation and airport industries?**

Hamburg Airport is extremely ambitious when it comes to its own innovation potential. At the beginning of the year, the airport was able to announce that it was the first major airport in Germany to be CO<sub>2</sub>-neutral.

This is a prime example of why we founded Hamburg Aviation to support the cluster, to enable faster cooperation between airframers and MRO businesses on one hand and the airport industry on the other. Hamburg Airport is a founding member of Hamburg Aviation and part of its super-

**“Hamburg has already developed into a national hot spot for the hydrogen economy with various initiatives and projects, but also with the new hydrogen segment in the Renewable Energy cluster”**

Michael Westhagemann,  
Senator for Economy and Innovation in Hamburg

visory board. Hamburg Aviation continually promotes networking around common topics and issues, innovative ideas and challenges. We think we're in good shape on that front.

**In order to strengthen Hamburg's position as an aviation location and hydrogen hub, it needs skilled workers. Are campaigns and initiatives planned in this regard?**

In recent years, Hamburg has grown to become a recognized innovation, science and business location. This also includes hydrogen technology. All this is no coincidence. In Hamburg, business, science, administration and politics work closely together and have a common goal: to make Hamburg better.

A key factor in this is qualification and further training. In this context, we naturally keep the skilled labor needs of Hamburg's companies firmly in mind in our considerations and activities. We see it as an

ongoing task to align and further develop our qualification initiatives with the three "D's": demographic change, digitalisation and decarbonisation.

In order to strengthen Hamburg's position as a centre for aviation and, in particular, as a hydrogen hub, we have launched a skilled labor campaign together with Hamburg Marketing. This is intended to recruit young talent, initially for our renewable energy and future technology sector. All this is being done in close cooperation with the cluster Renewable Energy Hamburg.

**How do you think the experience of flying could be improved in the future?**

Like many passengers, I would like to see faster security checks - while keeping processes thorough and reliable. With the emergence of new technologies, I am very confident that many things will be faster and more convenient in the future.

PHOTOS: DANIEL REINHARDT, AIRPORT HAMBURG



# Go Green with Smart GSE

## REDUCED WORKING TIMES AND MINIMIZED DOWNTIME

There's a common saying: data is the new gold. To gain the most from its high value, it must be treated similarly. Gold lies hidden in stone and must first be extracted and then processed until it radiates the right value. That's what INFORM does with ground support equipment (GSE) data. While equipment manufacturers provide a lot of data, it still needs to be processed and evaluated. INFORM especially focuses on three application areas: Smart GSE, Green Optimization and Autonomous GSE.

### Total integrated Solution for Smart GSE

A total integrated solution is essential to extract value from smart GSE devices' telemetry data. After collecting the data, it must be analyzed, evaluated, and used to turn the "gold nugget" data into a valuable product. This is exactly what INFORM does with its partner HiSERV. They combine data from smart GSE with other data such as flight, task, and employee information to, for example, determine the load detection of non-motorized

devices such as dollies. This proactive approach leads to reduced working times, more evenly used GSE, and minimized downtime.

To achieve this, an independent data source is essential. In the most basic case, there are many diverse GSE manufacturers providing different data based on different technologies. In the end, the complete airport data (i.e., from mobile and immobile resources, motorized and non-motorized GSE) can be evaluated. The results of the data analyses can be

made available to a wide range of users and external partners, taking into account diverse configurations.

### Green Optimization

Regarding Green Optimization, INFORM applies data differently. Nowadays, everyone strives for a more sustainable GSE fleet. Many manufacturers offer ground handling equipment based on sustainable energy. Viewing a single vehicle or vehicle type, you can easily assess its sustainability. However, no one would replace an entire GSE fleet with a sustainable one at the same time. Therefore, mixed fleets will remain over the next few years. This trend may continue due to new emerging hydrogen and electric energies.

By using telemetric data, it is easy to measure the sustainability of a single vehicle or determine an entire fleet's CO<sub>2</sub> footprint. INFORM's common Green Optimization approach with Cobus Industries, goes further by analyzing how to use the entire fleet as efficiently as possible. For example, charging times, availabilities and scheduling of charging points are considered. The company supports the analysis of the actual consumption by using Machine Learning (ML) algorithms to evaluate sustainability factors independently from manufacturer information, taking into account factors such as climate or battery age.

Since INFORM doesn't limit the analysis to the current operations only, but also to

planned operations, the GSE fleet is used and planned in an optimal, sustainable way.

### Autonomous GSE

Autonomous GSE is the most future-forward area. Here, too, INFORM works closely with partners who provide autonomous GSEs ranging from indoor devices such as our partner WHILL's autonomously driving seated mobility devices for traveling passengers, to multi-platform devices that can be used in different areas (e.g., cargo or baggage).

By effectively capturing and leveraging data, ground support operations can be optimized, made more sustainable and future-ready.

PHOTOS: ©STOCKBYTE/GETTYIMAGES, INFORM



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# “For Climate-neutral Aviation, the Production of Green Hydrogen Is Essential”

INTERVIEW WITH KIRSTEN SCHÜMER, RENEWABLE ENERGY HAMBURG,  
AND FRANCINE SCHULZ, HAMBURG AVIATION.



When it comes to hydrogen, Hamburg benefits from the strong commitment of the Renewable Energy and Aviation clusters. In an interview, Kirsten Schümer and Francine Schulz reveal which projects the Hanseatic city currently has in the pipeline.

## What role will hydrogen play in the future development of Hamburg as a business location?

**KIRSTEN SCHÜMER:** We hope that hydrogen will play a vital role. The Senate of the City of Hamburg has designated 223 million for the financing of eight IPCEI projects - this clearly shows the political support for hydrogen. We need hydrogen to defossilize the raw materials industry - especially south of the Elbe for steel production, aluminum and copper production, but also in the petroleum and chemical industries. Mobility, logistics and aviation will also probably not be able to operate without hydrogen, whether used in fuel cells or in electrofuels. According to the current state of the art, there is no alternative for the use of hydrogen in heavy-duty logistics and shipping in order to operate without locally emitting CO<sub>2</sub>.

**FRANCINE SCHULZ:** The production of green hydrogen is also essential for emission-free aviation. Hydrogen will have a significant impact on the future of flying, even though Sustainable Aviation Fuels (SAF) and battery-electric flying are also gaining in importance. We are proud that we are positioned like this in Hamburg.

Kirsten Schümer, Community Manager Hydrogen, and Francine Schulz, Manager International Affairs, in conversation with GATE

**Getting hydrogen from A to B in large quantities is a major challenge. What approaches are being pursued in Hamburg in this regard?**

**KS:** One big issue is the pipeline network from the local gas grid operator Gasnetz Hamburg, a major IPCEI project called HH-WIN. The hydrogen industry network will be built parallel to the existing gas network.

In the first stage, 60 km will be built in the port area, connecting the major gas consumers south of the Elbe. After the first stages of expansion, a connection will be made to the German and European hydrogen networks. For example, a connection through the Emsland region to the Netherlands is planned and a link to Denmark is also being intended, called HyPerLink III. These projects are a part of the study "European Hydrogen Backbone" and are colloquially called the hydrogen banana. In addition, we are still discussing the use of container transport, inland waterway vessels and tank cars - the last word has not yet been spoken. For some derivatives, like ammonia or methanol, it is also not yet 100 percent clear how they can be transported. For large-scale consumers, however, Hamburg is relying on a pipeline network.

**What is the concept for producing green hydrogen and what location factors play a role in the development of further production sites?**

**KS:** At the moment, a lot of focus in Hamburg is on the site in Moorburg, the decommissioned coal-fired power plant. As a city-state, we are somewhat limited when it comes to developing further production sites and areas.

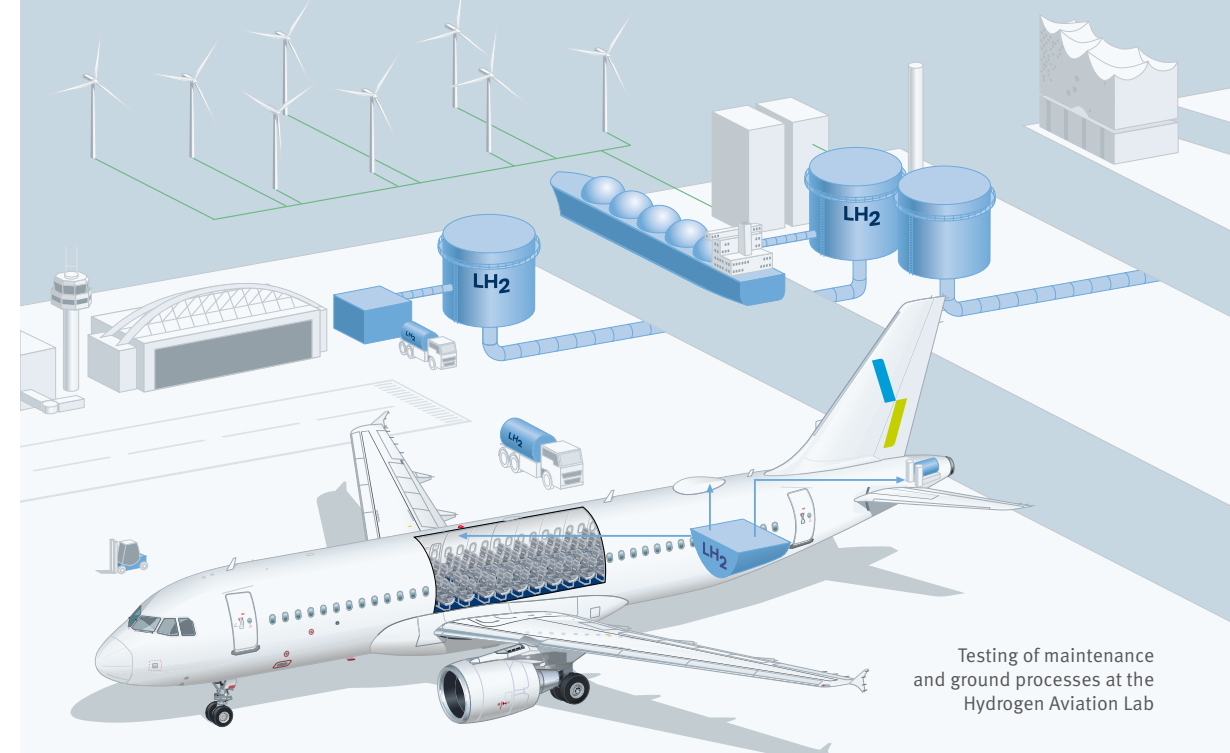
We will not be able to produce everything that is consumed locally. We will have to import between 40 and 70 percent of our prospected hydrogen consumption.

—  
**THE PRODUCTION OF GREEN HYDROGEN IS ALSO ESSENTIAL FOR CLIMATE-NEUTRAL AVIATION.**

FRANCINE SCHULZ,  
HAMBURG AVIATION  
—

**What topics/projects are being pursued around the airport and what are the short-term/long-term goals here?**

**FS:** We are proud that our airport has been emission-free since the beginning of 2022. We've achieved this through nature conservation projects, climate certificates and various hydrogen applications on the ground. Another important project is the Hydrogen Aviation Lab, a cooperation between German Aerospace Centre (DLR), ZAL Centre for Applied Aeronautical Research and the Hamburg Airport. A decommissioned A320 is being converted into a working laboratory to test ground applications and maintenance processes. DLR is developing a digital twin to map hydrogen applications, while ZAL is conducting intensive research on fuel cell applications. The airport itself is responsible for refueling, ground operations and the availability of land for further development. I would also like to mention the "North German Living Lab", involving 50 partners. Here, the airport is working on converting the baggage tugs



Testing of maintenance and ground processes at the Hydrogen Aviation Lab

to hydrogen and installing a hydrogen refueling station. Another exciting project is Kerosyn 100, where synthetic kerosene produced by a refinery in nearby Heide to be transported to Hamburg Airport by pipeline.

**Hamburg Aviation has joined the Alliance for Zero-Emission-Aviation. What does Hamburg Aviation's commitment look like?**

**FS:** We have joined the EU's voluntary initiative of private and public partners to present our technological roadmap in response to "The Clean Aviation Strategic Research and Innovation Agenda". The roadmap outlines a full array of approaches by researchers, industry and policymakers to zero-emission aviation. At the same time, it serves as a basis for our work under the "Hamburg Aviation Green" umbrella. We are focused on facilitating exchange of ideas and pushing forward the future development of joint programs within Europe towards sustainable aviation. We at Hamburg Aviation see ourselves as a mouthpiece for our partners.

**What contribution can hydrogen make to climate protection goals?**

**FS:** Hamburg aims to reduce CO<sub>2</sub> emissions by 55 percent by 2030 compared to 1990 levels. Since aviation accounts for 2 to 3 percent of global CO<sub>2</sub> emissions, we can achieve a lot by switching to hydrogen, SAF and battery-electric propulsion systems.

**Which projects do you personally find most exciting?**

**KS:** I consider the Hamburg Hydrogen Network particularly interesting because it tells a story - the entire value chain is represented there.  
**FS:** I'm thrilled by Airbus' courage in setting the goal of getting a hydrogen-powered aircraft into the air by 2035. I'm also excited about the Hydrogen Aviation Lab, and I'm looking forward to seeing the research results in the coming months.  
**KS:** It takes a lot of micro-work to transform the entire system. That's why many individual projects are exciting.



- ### BENEFITS
- + Detailed planning based on studies and simulations
  - + Overall project management from planning to commissioning
  - + Decades of experience as general contractor in large projects
  - + Numerous reference plants worldwide
  - + In-house automation
  - + In-house developed WMS with tested interfaces to all cargo-host systems established on the market
  - + Individual after-sales service
  - + Customized project financing plans

# Ready for Take-off

## EFFICIENT SOLUTIONS FOR AIR-CARGO TERMINALS

In order to cope with the steadily increasing freight volumes worldwide, airport operators are focusing on expanding their capacities by modernizing their facilities or building new, technically state-of-the-art cargo terminals.

As one of the global technology leaders in intralogistics, AMOVA is well aware of the high demands and challenges in the air cargo sector. Storage space in the terminal is limited and therefore expensive; transport and handling has to run highly efficiently and economically; automation and warehouse management need to meet the highest standards and be planned precisely and fail-safe.

AMOVA realizes complete air cargo terminals – and thus the "whole package" from one source. In close coordination with the customer, the company develops the optimal concept for his individual needs and ensures that the agreed planning is im-

- 1 General view of an AMOVA air-cargo warehouse
- 2 Storage of freight units in the warehouse compartment



plemented exactly. Thanks to more than 65 years of experience in intralogistics, AMOVA always finds the best solution – even for smaller air cargo terminals, where space is restricted or where there are special transport requirements in the warehouse itself or in the connected ramp area. The intralogistics expert develops future-oriented turnkey solutions – from the planning and engineering of a cargo terminal to high-bay warehouses, stacker cranes (ETVs), conveyor systems and workstations, including automation and warehouse management systems, right through to installation, commissioning and after-sales service. And AMOVA even offers a special extra: with the BOXBAY high-bay storage system for container terminals in seaports, the GATE member is able to cover the entire airfreight-sea freight logistics chain and develop customer-specific combined solutions.

PHOTOS: AMOVA GmbH



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## “We Need Many Smart Minds for the Technologies of Tomorrow”

INTERVIEW WITH NICOLE DREYER-LANGLLET, VICE-PRESIDENT RESEARCH & TECHNOLOGY GERMANY/ MEMBER OF THE BOARD, AIRBUS OPERATIONS GMBH

GATE member Airbus is working on various concepts to make climate-neutral flying a reality in the near future and is considered a pioneer for clean aviation. GATE had the opportunity to talk to Nicole Dreyer-Langlet about the current challenges and the future plans.



Nicole Dreyer-Langlet – Airbus

### What is Airbus' timeframe for developing the hydrogen aircraft?

**Nicole Dreyer-Langlet:** We have set ourselves the goal of bringing a hydrogen-based aircraft to market by 2035. We have developed several ZEROe concept aircraft with very different approaches - such as the turboprop, the turboprop and probably the most famous design, the blended wing body - the flat flying wing concept, but there are many more. So we already have concept aircraft that are feasible, but in the current phase we are concentrating on the technology elements that are part of the flying of the future - and that need to be changed and developed for hydrogen. Besides hydrogen combustion, we are of course intensively working on the topic of fuel cells for energy conversion.

Another focus is on the tanks, and we assume that there will probably be several individual tanks, as the requirements have changed completely compared to kerosene. Until now, this has always been placed in the wings, which will no longer be possible with liquid hydrogen, which is stored at -253 degrees Celsius and has four times the volume. Because of its completely different properties, we must work with much larger tanks.

These technology elements, amongst many others, are our priority at this point in time. We assume that we will reach their required maturity by 2026 and then finally determine what exactly the concept aircraft will look like as these technology elements will have a direct impact on the design of the aircraft. So for the time being the final design is still open, but will be decided at that point.

### Hydrogen has long been used as an energy carrier for spaceflight. Airbus is also active in this field. To what extent does this expertise help in the development of hydrogen aircraft?

Spaceflight is very helpful because you can build on it. After all, we have many years of expertise and competence, especially in the north of Germany, in Bremen, with precisely these topics. However, there is a big difference between launching a rocket to the ISS in eight minutes and commuting 10 times a day between Hamburg and Munich over populated areas with a reliability of 99%. That is simply a completely different requirement. But spaceflight offers an ideal basis on which we can build - with this, we can get off to a fast start, so to speak. In commercial aviation, however, many aspects are more challenging, such as reliability, safety and materials. These need to be developed further - and we still have a lot of work ahead of us.

### Where will the gigantic quantities of hydrogen come from in the future ?

Hydrogen must be available worldwide and the infrastructure must also be available worldwide. You cannot start somewhere in Europe or possibly locally in Germany in 2035, it will have to be possible for airlines to operate such aircrafts worldwide. This is the precondition for us to be able to build and sell such aircraft. In the past, I got the impression that nobody really took responsibility for this. A lot of people talked about it, but nobody took ownership. In Northern Germany, however, a lot is happening right now within the framework of the IPCEI projects.

The Hydrogen Verbund Hamburg, for example, is a wonderful project that gets to the heart of the matter. Everyone has to make a contribution, from the producer over the distributor to the consumer. Politicians also have a role to play with subsidies and regulations. We really must get moving and pick up speed on the issue of infrastructure and hydrogen availability. 2035 is right around the corner.

**Hydrogen refueling is not yet possible at many airports, or only available for passenger cars.**

**What role does the infrastructure play in the concept and is there already an exchange with the airports?**

There has been some exchange for quite some time. We are engaging in cooperation projects to build up "Hydrogen Hubs at Airports" with partners worldwide. As mentioned, we need a global approach for this. But I see a lot going on at the airports. There is an increased interest in the use of hydrogen in other areas of transportation and this will of course help to accelerate the adaptation of the infrastructure. For example, here in Hamburg, we are once again taking on a pioneering role and can score a lot of points. We are having good exchanges with the airport and its management on the different needs of a hydrogen infrastructure for aircraft refueling but also ground handling and Hamburg airport has quite some history and experience with hydrogen. But for aforementioned reasons we are following a global approach.

**What is the role of the development of composite materials that can make the aircraft lighter?**

These already play a very important role today and we are very intensively developing new approaches, because weight is the be-all and end-all in aircraft construction. Our current investigations relate, for example, to the thermoplastic area for structural components, which we want to develop further. But we are also developing

new joining processes called friction-steer-welding that will allow optimizing aircraft assembly. Fiber-reinforced 3D components, which we also want to develop from composite materials, are also on the agenda. Weight will remain an essential issue in the future, as we have to work very hard on the efficiency of the hydrogen aircraft to balance inefficiencies, including the large tanks needed for hydrogen, as hydrogen volume is 4 times greater than kerosene. Cost also plays a role: for the time being hydrogen is more expensive than kerosene.

We also see great potential in bio-based plastics - after all, the ZEROe plane is all about the environment. Today, we recycle up to 92%, but we want to make even more progress in this area. We are doing pioneering work in this field, which is not commonly known, as most people focus on the hydrogen topics. However, we would like to take a leading role in the circular economy as well.

**Is hydrogen or SAF going to take over the greater importance in the future of aviation?**

It cannot be either or. SAF is for us, besides fleet renewal, an immediate solution that we are already using. New fleets, with a market penetration of 20%, are already 20-25% more efficient in terms of emissions than the old generation - that's the easiest step, so to speak. And the second easiest is with SAF. All of our aircraft in operation worldwide can be fueled with SAF up to 50% without any technical adaptation. The biogenic SAF that we currently see on the market is on average 80% more emission-optimized than kerosene. This means that we can have a big impact with one fell swoop. By 2030, we want to take the next step and achieve certification for 100% fueling. There will also be a coexistence of biogenic SAF and hydrogen-based SAF, the so called power-to-liquid. Airbus is highly engaged in this with cooperation agreements on the way. At the same time, we also have the problem of availability.

Only about 1% of the demand for these fuels is currently available. Much more needs to be generated - but it also needs a corresponding demand. We need regulations and incentives to encourage airlines to invest in SAF, because of course there is a significant price difference. Airlines often report that far too few passengers click when they have the personal choice to make this SAF compensation.

**What role do "digital twins" play in your development work?**

There are many things to revolutionize at the same time. If we want to advance new technologies more rapidly, we can do so only with new methods and ways of working - and for this we really do need the "digital twins" and data. We are using available data to generate simulations and develop our technologies in a model-based way. For example, we have the Virtual Product House, which is working very intensively on this topic, and in which we, together with the DLR and other partners, are very involved. We envisage that we can carry out verification through the "digital twin" and simulation. One day we even want to be able to map partial aspects of certification through modeling and simulation. I am convinced that this is possible. The new development work is so multi-layered and complex, in the best interest of the optimized product we can no longer develop aircraft the way we did 30 years ago. We really have to hit the optimum of the optimum and that only works with the support of digital data, modeling and simulation. This applies not only to design, but also to operations, such as optimized flight routes or predictive maintenance. For this, digital data is the be-all and end-all.

**What changes do travellers have to be prepared for when traveling with hydrogen-powered aircraft?**

The issue of safety will always have the highest priority in civil aviation, which is why it is also



ZEROe concept aircraft formation flight

backed by many regulations. And that will remain the case. We are currently building up a lot of new competencies, such as in fire safety, in order to research hydrogen even better. That's why passengers can be absolutely reassured about safety. Nothing should really change for the passenger. The challenge for airports and for us, is that the existing infrastructure continues to exist and shall not become more complex. Refueling, for example, must not take longer. The most important aspect, the environment, of course also concerns the passenger. The promise we make, is that flying will become more environmentally friendly. We want to be pioneers - and answer questions like "can I still fly on holiday with a clear conscience? Visit relatives? Or go on a business trip?" with a resounding "yes".

**What is your wish when you think about flying in the future?**

We need many smart minds working on precisely these solutions for tomorrow. I encourage the new generation, which is rightfully very critical on environmental aspects to become part of the solution and help realize emission-free flying. What could be more meaningful than helping to shape the technologies of tomorrow? That's why I like to encourage young people to become aeronautical engineers or to take up another profession at Airbus.

**More information about ZEROe:**  
[www.airbus.com/en/innovation/zero-emission/hydrogen/zeroe](http://www.airbus.com/en/innovation/zero-emission/hydrogen/zeroe)



# Optimized Trolley Management with Tracking System from Wanzl

SUITABLE FOR BOTH INDOOR AND OUTDOOR USE



With Wanzl's trolley tracking system, airport operators always know exactly where each individual trolley is located, both indoors and outdoors. This eliminates inefficient searches, improves customer satisfaction as passengers can always find sufficient trolleys in tidy staging areas and collection stations, and optimizes both staff allocation and required fleet levels for airport operators.

For reliable tracking, each trolley is equipped with an RFID tag and each trolley staging area or depot is equipped with an RFID reader. This technology requires minimal cabling infrastructure and can be retrofitted at any time. Defined zones in airports, trolley depots, and entrances and exits, are tracked.

Data recorded is displayed clearly via an airport-specific tracking dashboard: This shows which and how many trolleys are in operation, live trolley depot availability levels and where the trolleys are situated within the defined zones. Additionally, the system learns from historical data and interfaces to flight and baggage infor-



- 1 Luggage trolley with RFID tag
- 2 The tracking dashboard shows where and how many trolleys are in operation
- 3 The tracking system can easily be retrofitted into existing infrastructures

mation systems, thereby enabling proactive trolley management to ensure the right availability in each trolley depot for each flight on a just-in-time basis. As an optional extra, the tracking dashboard can also display upcoming trolley maintenance requirements or be used to push near-real-time information on employees' mobile devices.

Trolley tracking allows monitoring and verifying of service level agreements with third parties, enabling reduction of operative costs. Furthermore, it can be used to visualize passenger routes outside and inside the airport building, and to measure the dwell time of the trolleys. Hotspots and customer touchpoints can thus be identified and used to optimize revenue streams.

Together with its partner Naitec, a software specialist for airport IT systems, Wanzl has already successfully implemented its trolley tracking system at Venice Marco Polo Airport.



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# From East Hesse to Dubai: German System Supplier for Air Cargo Expands

## INNOVATION AWARD WINNER DIMOS ON COURSE FOR GROWTH

Petersberg near Fulda is home to DIMOS Maschinenbau GmbH, a manufacturer of warehouse and industrial trucks and a system supplier for the air cargo sector for more than 25 years. In 2022, the family-owned company opened a branch office in Dubai, United Arab Emirates. The first local success: winning the Transport & Logistics Middle East (TLME) Innovation Award in March.

DIMOS has been operating in Dubai since 1999, supplying Dubai International Airport with vehicles from its air cargo portfolio. Projects are initially coordinated by a Dubai-based partner. As a result of the long-standing partnership, DIMOS established its own branch office in Dubai at the beginning of 2022. Since then, the Projects

& Systems department of DIMOS has independently represented the business locally in the United Arab Emirates. "Projects & Systems is a department that focuses purely on the acquisition and handling of intelligent system solutions in the airport sector. It combines consulting, sales, design, production, delivery, commissioning and maintenance. The department enables us to act independently of other system suppliers and to use our know-how as a system provider in every step of the process," says Pascal Schütz, responsible for sales and development at DIMOS. "Our goal was to position DIMOS locally as a partner for the entire air cargo process."

In March 2022, DIMOS won the TLME Innova-

tion Award in Dubai in the category "Most Innovative Automation Solution Provider - Air Cargo" for the INTRAC Pallet Mover, a fully automated ULD handling transport system. The TLME Innovation Awards 2022 are among the most important logistics awards in the Middle East region. The award recognizes companies that develop automation solutions for the air cargo industry, ultimately helping to speed up operational processes and improving efficiency.



- 1 X-Way Mover: innovative ULD handling vehicle
- 2 Intrac: next generation of autonomous air cargo transport vehicles

PHOTOS: DIMOS



**DIMOS Maschinenbau GmbH**  
www.dimos-maschinenbau.de

For more than 25 years, DIMOS Maschinenbau GmbH, founded by Dieter Modrey and Alfred Schütz, has been improving the international market in the field of warehouse and industrial trucks.

Using the latest technology and innovative ideas, DIMOS is successively expanding their product range and is today able to develop individual solutions for almost all applications. With the company headquarters in Petersberg / Fulda, a good infrastructure and a highly motivated, strong team of 75 employees, DIMOS offers high flexibility in the development, design and manufacture of customer-oriented special solutions. Another DIMOS subsidiary with 15 employees was established in Dubai, United Arab Emirates, in 2022.

# NIA: Role Model for Sustainable Infrastructure



Noida Airport opens in 2024

INTERVIEW WITH CHRISTOPH SCHNELLMANN,  
CEO AT NOIDA INTERNATIONAL AIRPORT

The Noida Greenfield Airport will connect Greater Delhi and the western part of the Indian state of Uttar Pradesh with other cities in India and around the world. It is scheduled to open in 2024. GATE spoke with CEO Christoph Schnellmann about the new mega hub.

## What is special about the Indian aviation industry?

**Christoph Schnellmann:** India's aviation sector is growing tremendously. A rising proportion of middle-income households, healthy competition amongst airlines, infrastructure build up at leading airports, and a supportive policy framework have given a positive push to the aviation sector. In fact, as per a recent report by India Brand Equity Foundation (IBEF), India's aviation sector has become the third-largest domes-

tic aviation market in the world in terms of handling domestic traffic. Additionally, the Indian Civil Aviation MRO market, at present, stands at around \$900 mn and is anticipated to grow to \$4.33 bn by 2025. India's aviation industry is expected to witness Rs. 35,000 crores (US\$ 4.99 billion) investment in the next four years. The Indian Government is planning to invest US\$ 1.83 billion in the development of airport infrastructure along with aviation navigation services by 2026.



Christoph Schnellmann,  
CEO – Noida International Airport

## What understanding do especially European suppliers need when they want to be active in the Indian airport market?

One of the important aspects is to know your client (private or public) and understand the lo-

cal procurement processes and regulations. India is a rapidly growing market; therefore, it should be looked at as a long-term investment. India is a very price sensitive market.

## What can we expect from the subcontinent in terms of new developments and achievements?

We are anticipating interesting times when it comes to the new developments in the subcontinent with as many as 25 airport concessions being announced within the next 5 years. This will represent a mix of mainly brownfield and a few greenfield airports. We are also looking forward to some exciting times in terms of competition through new airlines entering the market such as Akasa Air, and former airlines like Jet Airways reentering the market.

## What can passengers expect when Noida Airport opens in 2024?

We are developing NIA as India's leading airport in terms of customer-service, operational efficiency, digital services, and commitment to minimal environmental impact. We are focused on developing a digital airport that supports contactless travel, ease of way-finding, and optimum dwell time for passengers. The digital airport will also provide a 'Plug & Play' environment for airlines with the objective to maximize passenger experience, minimize start-up costs for the airline, and provide overall cost efficiency and operational efficiency. Along with this, the design of the terminal will include architectural elements and materials from the rich cultural heritage of Uttar Pradesh, India.

## What particular achievements are worth highlighting in the area of sustainability?

NIA will be a leading greenfield

airport with plans to implement technologies and processes like zero-emission fuels & electricity, waste & waste-water management, and environmental management system to realize this goal. Zurich Airport has set the vision for Noida International Airport to become India's first "Net-Zero-Emission" Airport Operator. In the terminal, passive measures such as use of natural lighting, natural ventilation, and glare protection will help improve passenger experience and reduce CO2 footprint and energy costs.

Furthermore, investments are being considered in photovoltaic for solar production which will reduce CO2 footprint and lower energy costs in the long run. NIA will be a role model for sustainable infrastructure and operations in the country.

# Expertise in Fire Prevention Combined with Elegant Design

CASUAL SITTING IN BUSINESS LOUNGES EQUIPPED BY KUSCH+CO

Feeling good before take-off: Seating specialist Kusch+Co knows exactly what comfort passengers want. After all, the company from Hallenberg has already furnished numerous international airports and is connected to a global network of planners and architects. The high-quality and design-oriented lounge furniture is equipped with the 'Kusch+Co fire prevention concept'. The company's fire prevention expertise was decisive for this project.

The tailor-made interior design concept for the Tegel lounge and Tempelhof lounge, named after the former Berlin airports, was worked out in close cooperation with the architect's office Synarchitects. Guests can look forward to a pleasant stay in these business lounges, enjoying a stylish, comfortable and exclusive interior. Some features, geared towards the guests' safety and well-being, are invisibly incorporated, such as the fact that the seating variations all meet the stringent fire prevention standards and provide the best possible hygienic safety in these times dominated by a global pandemic. In total, the Tempelhof lounge provides round about 200

seats across an area of 910 m<sup>2</sup>, though currently limited to 130 seats. The somewhat smaller Tegel lounge, stretching over 600 m<sup>2</sup>, can accommodate up to 180 persons. The interior design concept of both lounges is based on the strict zoning of the different areas, e.g. reception, lounge, dining, resting and conference rooms, allocating a distinct set of materials and colors to each zone. The color schemes of the former Berlin airports Tempelhof and Tegel were updated to create a modern setting.

The furniture of Kusch+Co with its excellent quality and exceptional design is the perfect complement to the whole. The compact-sized and comfortable series Creva soft, available with a great variety of different variations, such as the possibility to choose between a low and a high backrest. On top of this, the optional extras for this series include power modules as well as storage tops. A special solution was developed for a design classic, the well-known lounge chair 'TV-relax'. This design from the 1960s by Prof. Luigi Colani for Kusch+Co was covered with a special fabric for the Tempelhof lounge with the aim of meeting the current fire prevention standards. From this vantage point, guests are able to enjoy the view in a relaxing posture through the floor-to-ceiling panoramic windows.



1

- 1 Tegel Lounge and Tempelhof Lounge at BER Airport have been furnished by Kusch+Co
- 2 Series Creva soft oozes in the Tempelhof lounge
- 3 The design classic: the lounge chair 9900 Colani Collection
- 4 Kusch+Co provides suitable solutions for every section of the Tegel Lounge
- 5 The relaxation and privacy areas feature the high-back armchairs



2

3



4



5

PHOTOS: KUSCH+CO

KUSCH+CO

Kusch+Co GmbH  
www.kusch.com

The Bavarian eVOTL start-up Lilium is another player that is co-shaping the emission-free flying of the future. GATE spoke with Dr. Saskia Horsch, Head of Global Regulatory & Public Affairs, not only about the next milestones in development, but also about Lilium's plans regarding landing site infrastructure.

# “Lilium is Accelerating the Decarbonization of Air Travel”

INTERVIEW WITH DR. SASKIA HORSCH,  
HEAD OF GLOBAL REGULATORY & PUBLIC AFFAIRS AT LILIUM



## What is the current technical concept of the Lilium Jet?

**Dr. Saskia Horsch:** Lilium is creating a sustainable and accessible mode of high speed, regional transportation for people and goods. Using the Lilium Jet, an all-electric vertical take-off and landing jet offering leading capacity, low noise, and high performance with zero operating emissions, Lilium is accelerating the decarbonization of air travel. The technology at the core of the Lilium Jet is Ducted Electric Vectored Thrust. Put simply, Lilium's design integrates 30 electric

jet engines into the wing and canard flaps, which rotate and enable the Lilium Jet to take-off and land vertically. This will provide advantages in payload, aerodynamic efficiency, and a lower noise profile, whilst also providing thrust vector control to maneuver the Lilium Jet through every phase of flight.

Acoustic liners will help capture and dissipate noise, which will enable inner city landings. As the Lilium Jet will fit on existing heliports, we do not envision any need to build large-scale infrastructure.



„The goal of Lilium has always been to make low emission high-speed regional air mobility accessible to everybody“

Head of Global Regulatory & Public Affairs – Lilium,  
Dr. Saskia Horsch



- 1 Dr. Saskia Horsch, Head of Global Regulatory & Public Affairs at Lilium
- 2 Lilium Jet
- 3 Acoustic testing at Lilium headquarters, Germany

**With the successful transition, is Lilium now entering a new phase? What does this milestone mean for the company?**

Phoenix 2, our 5th generation technology demonstrator, achieved full transition from hover to wing-borne flight on both the wings and canards in September 2022. The full transition flight behaved precisely as our models predicted, which represents a further validation of the flight physics computational models and technological approach that are the basis of our production aircraft, the Lilium Jet. That's why the full transition was an important milestone for us.

**When do you expect approval?**

Lilium is one of the only pioneers in eVTOL seeking dual certification with EASA and FAA. We are working towards type certification in 2025, having already received CRI-Ao1 certification basis from EASA, which is a significant milestone. Lilium is currently working closely with EASA towards the next major milestone on the Lilium Jet's projected path to certification.



**Which markets do you expect to serve first?**

The goal of Lilium has always been to make low emission high-speed regional air mobility accessible to everybody. That's why we have been working on the establishment of a network of scheduled shuttle routes. In a first phase, however, and with a view to cater to the strong interest Lilium has received from the private and business

segments, Lilium is addressing the general and business aviation markets, including charter operators, fractional ownership and private individuals. In a second phase, Lilium plans to roll out a six-passenger shuttle configuration to address demand for short regional scheduled services (for example, in Florida, as well as in several European regions like Southern France, Spain, Scandinavia, Benelux, Germany) for both the premium segment as well as scheduled shuttle routes

**When can the first manned test flight take place?**

We plan to start building our first handful of conforming aircraft in 2023 and to achieve first manned flight of a conforming aircraft in 2024. Once the aircraft build is completed, we will run our final test campaign with the aim of receiving our initial Type Certification in 2025, with scale production of our aircraft set to begin immediately upon certification.

**Are there already operator concepts for the jets?**

Commercially we have signed MoUs for the sale of over 480 jets so far. We have agreements with partners like Netjets, Azul, GlobeAir, Helity, ASL Group, AAP Aviation and Luxaviation. We are currently in contact with various charter operators, fractional ownership and private individuals for our first launch phase.

**Where and with whom are you planning the first vertiports? Are there any cooperative agreements with airports?**

One of the advantages of the Lilium Jet is the lack of need for large scale infrastructure. The aircraft is being designed to take off and land vertically at landing sites or vertiports, which can be built, for example, at airports or on roofs of parking garages. Lilium is working with leading infrastructure players -for example, in Florida, with Tavistock and Ferrovial - on vertiports in strategic locations across the state. In Florida we have announced plans to build a network of 14 ver-



- 1 The Lilium Jet can welcome six passengers to spacious window seats and a central aisle to stretch their legs
- 2 Engineering on the Lilium Jet technology demonstrator

tiports. We are also engaging with key infrastructure providers to build a European network, including in Germany where five of the ten largest German commercial airports are already committed to collaborating with Lilium to establish a network of regional connections—including Munich, Nuremberg, Stuttgart, Düsseldorf and Cologne/Bonn.

**How can GATE's airport equipment suppliers assist with these plans?**

Supplier partnerships are fundamental to establishing a dependable path towards certification and industrialization of the key subsystems of the aircraft, all of which need to meet rigorous aerospace quality standards. As GATE and its members are focusing on the passenger's comfortable and sustainable journey, we see a good ground base for possible partnerships and welcome interactions with GATE's members.

**What technology partners would you like to see for the Advanced Air Mobility concept?**

We are collaborating with established industry leaders, technology and infrastructure partners as well as local governments to bring our shared vision of sustainable air travel to life. We are always looking for a collaboration with very proven and experienced aerospace suppliers

and technology partners to make sure that we achieve the highest aerospace quality standard. Regarding our technology partners, we are, for example, working with Palantir who are building a digital twin of our aircraft that contains information about design, supply chain, manufacturing and later flight service. We are also engaged with Honeywell, a world-leading manufacturer of electronics, engines, and mechanical systems for aircraft, who is developing the Lilium Jet's avionics and flight control systems. Astronics, a leading provider of advanced technologies for global aerospace, is designing, developing, and building the Lilium Jet's electrical power distribution system.

**What are the latest plans in terms of air infrastructure?**

Lilium has announced several German regions as markets in which it intends to commence operations, including Bavaria, Baden-Württemberg and North Rhine-Westphalia. Additionally, the plan is to develop other European markets, particularly France, Spain, Italy, Benelux and Norway as operating regions, prioritizing prime locations with high and proven demand in each. In these regions, we have found strong commercial partners who want to be innovative and for whom sustainability is a stated priority.

PHOTOS: LILIAM



# Focusing the Passenger Journey

## GATE START-UPS: LOST & FOUND, AIRSIDERS AND DUTY FREAK

GATE drives progress in the airport industry. But it is not only established companies and industry leaders such as Siemens, T-Systems or Airbus that have the potential to optimize processes inside and outside the terminal and move the industry forward.

Within the association, it is also the start-ups that are bringing completely new approaches to the airport world. For example, the software "Lost & Found", the app "Duty Freak" and the travel-tech start-up Airsiders, a Beumer company, have set themselves the goal of improving the passenger's travel experience above all.

### Virtual interlining with innovative solution for transfer baggage

Düsseldorf Airport and Airsiders are cooperating on a new type of virtual interlining solution.

A seamless combination of flights, even without interline or code-sharing agreements, is intended to enable passengers to make completely new transfers and connections via DUS. The highlight: an innovative handling technology that automates the sorting and handling of luggage. Passengers of multi-carrier flights will be able to check their baggage in to the final destination, even if they fly with airlines that don't have an interline agreement.

Düsseldorf Airport sees great potential in Airsiders technology. "We want to integrate the solutions of our new cooperation partner into the infrastructure of our airport and thus offer new added value to our airline partners as well as to our retail partners in the terminal and, last but not least, to our passengers," explains Andreas Kraus, Senior Vice President Corporate Development at Flughafen Düsseldorf GmbH. "Airlines can increase their capacity utilization

and sell additional seats via new connections, passengers have a wider choice of routes with a consistent travel experience and they gain time because they do not have to



check in their luggage again. Our store and catering trade partners can then benefit from this." Besides Düsseldorf Airport as one of the first airport partners, Airsiders is collaborating with airlines and major aviation partners. The new virtual interlining offer is scheduled to launch in DUS by summer schedule 2023.



PHOTOS: ISTOCK, LOST & FOUND, DUTY FREAK, AIRSIDERS



- 1 The Airsiders team is collaborating with Düsseldorf Airport
- 2 Duty free items available in one app
- 3 Things that are easily forgotten at the airport
- 4 Digital Lost & Found office

### Win-win for passengers and store operators

It's not uncommon for us to rely on the duty-free area of the airport to quickly buy a souvenir or a present to take home. But often the stores in the departure terminal are limited in selection, not stocked with favorite brands or items, or the preferred store is located in an entirely different area of the airport.

Once you've found what you're looking for, it's all the more annoying for customers and store operators when only the wrong color or size is in stock. Currently, there is no way to find out about the offers and

products available beforehand, nor can customers be inspired by current offers and sales.

DutyFreak's vision is that within the next five years, all airport products and services will be available centrally in the DutyFreak app. This will make it possible to pre-order products before arriving at the airport, to pay contactless (pre-paid) and to pick them up easily and conveniently at the given travel time.

Win-win for passengers and store operators, because this experience increases customer satisfaction and thus revenue potential.

GATE is a place for new start-ups who want to share their knowledge and improve the world of airports. **Get in touch with us if you have a promising concept.**

# Meet GATE at Exhibitions and Conferences



Informal exchange between politicians and industry in follow-up to GATE Future

## inter airport South East Asia, Singapore March 1 – 3, 2023

- ▣ The must-attend airport exhibition in ASEAN region

## Passenger Terminal EXPO, Amsterdam March 14 – 16, 2023

- ▣ The international conference and exhibition for passenger terminal design, management, security and technology

## GATE FUTURE Conference, Berlin March 30, 2023

- ▣ The innovation forum for the airport industry

## airport show, Dubai May 9 – 11, 2023

- ▣ Leading event for airport construction, operation, technology and services in the MENA region and the Indian subcontinent

## ACI-NA Annual Conference & Exhibition, Long Beach October 1 - 3, 2023

- ▣ Premier event that offers unparalleled education and networking opportunities for the leadership of North America's airports.

## inter airport Europe, Munich October 10 - 13, 2023

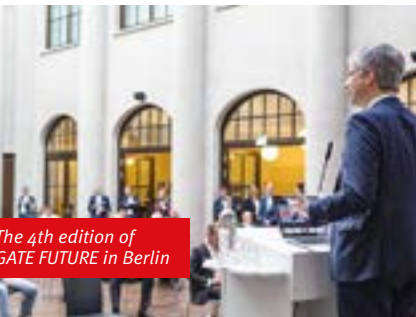
- ▣ International trade fair for airport equipment, technology, design & service

## Saudi Airport Exhibition, Riyadh November 06 - 07, 2023

- ▣ The largest dedicated event for airport development in Saudi Arabia

## IndiAirport, Noida November 2023

- ▣ The show presents solutions and technologies for airport construction and equipment



The 4th edition of GATE FUTURE in Berlin



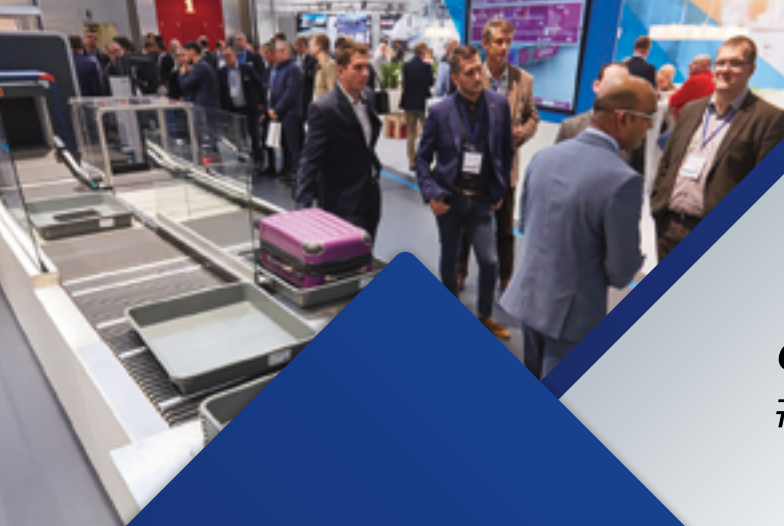
The GATE booth at the inter airport in Munich – members benefit from the networking venue

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