

20<sup>th</sup> anniversary ✈️

# Ground Handling

I N T E R N A T I O N A L



**TWENTIETH ANNIVERSARY  
SUPPLEMENT**

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**PUBLISHER/EDITOR-IN-CHIEF**

Tim Ornellas  
tel: +44 1892 839209  
e-mail: tim@groundhandling.com

**EXECUTIVE EDITOR**

Alwyn Brice  
tel: +44 1892 839212  
e-mail: alwyn@groundhandling.com

**ASSISTANT EDITOR**

Felicity Stredder  
tel: +44 1892 839206  
e-mail: felicity@groundhandling.com

**DESIGN**

Jason Taylor  
e-mail: jason@liquorice-creative.co.uk  
www.liquorice-creative.co.uk

**INTERNATIONAL SALES DIRECTOR**

Alison Woolley  
tel: +44 1892 839208  
e-mail: alison@groundhandling.com

**CONFERENCE DIRECTOR**

Jean Ang  
tel: +44 1892 839203  
e-mail: jean@groundhandling.com

**CONFERENCE MANAGEMENT TEAM**

Alice Clarke  
tel: +44 1892 839207  
e-mail: alice@groundhandling.com

Ceri Osmand

tel: +44 1892 839213  
e-mail: ceri@groundhandling.com

Joanna Snell

tel: +44 1892 839215  
e-mail: joanna@groundhandling.com

**PRODUCTION MANAGER**

Sherilee Holliday  
tel: +44 1892 839214  
e-mail: sherilee@groundhandling.com

**ACCOUNTS**

Sandra Valencia  
tel: +44 1892 839211  
e-mail: sandra@groundhandling.com

Please note our contact details for all correspondence:

**Ground Handling International,  
The Stables, Willow Lane, Paddock Wood,  
Kent, TN12 6PF, United Kingdom.**

[www.groundhandling.com](http://www.groundhandling.com)



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# TWENTY YEARS OF GROUND HANDLING

Twenty years of publishing *Ground Handling International* has literally flown by and the industry has evolved from a teenager to a fully grown adult in this period. It is worth recalling that 20 years ago independent ground handling was not a huge, global business, with less than 20% of all handling operations being carried out by independent handlers. The airlines were still the dominant ground handling force, together with the airport handlers - but things were about to change.

It was Tom Peters, of the US McKinsey and Company, who famously said: “Do what you do best then outsource the rest.” This seemed to strike a chord within the airline community and they started to reconsider whether ground handling was a core business. At almost the same time in Europe, the European Union decided to interfere with the aviation business and set out to create a more even playing field within the ground handling industry by breaking down the airport handling monopolies that existed throughout Europe. Simultaneously, these two factors were a growth catalyst for the ground handling business.

Today, it is estimated that more than 50% of all handling is carried out by independents and this growing handling business is estimated to be worth annually US\$80bn, with more than 1,000 ground handling players worldwide.

We have witnessed many other significant changes during the last two decades but one notable change came about in April 2005, when the first Airbus A3XX took to the sky over Toulouse. The A380 became the world’s largest airliner – 40% larger than a Boeing 747 – and its arrival presented many new challenges to the handler because of its size and configuration.

Although there have been some technical advances to the traditional GSE in daily use, such as improved operational safety and greener fuels, the most significant change on the ramp has been the introduction of electric-powered vehicles. Today, more and more handlers are deploying green GSE, as advances in battery technology continue to widen the scope of electric vehicles on the ramp.

As for other milestones, you cannot overlook the huge impression which the introduction of IT has, and continues to have, on the ramp and the back office.

It has been a fascinating two decades and the adaptability of the international ground handling community to change, together with its ability to embrace new challenges, has been very apparent. As we enter our third decade, the new generation composite aircraft are arriving in numbers, and again new handling challenges are presented.

The one thing that has not changed is the fact that today, just as it was 20 years ago, handling is a people business.

We hope you enjoy the supplement – and here’s to the next 20 years!

**Tim Ornellas**  
**Publisher**

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# IT PROVIDERS

## INFORM

In the late 1980s INFORM, commissioned by several large manufacturing companies, developed the Transport Efficiency Support System, TESS. TESS was a real-time scheduling and allocation system for mobile resources which also ran, as a round-the-clock operational system, in over 120 companies such as Siemens' medical equipment plants, DaimlerChrysler's automotive plants, Thyssen's steel works and Bayer's chemical plants.

An airport version of TESS was developed and installed at Frankfurt airport in 1991. This first experience in the aviation industry opened the doors to many other aviation customers, who followed soon after and which finally resulted in the development of the GroundStar Airport Suite.

In 1991, Frankfurt airport implemented the first real-time deployment system in its passenger services department, followed by baggage and cargo transport, and towing divisions, as well as administrators in the operations management centres. This system, designed by INFORM, was a predecessor of today's GroundStar IT portfolio.

## SITA

SITA was founded in 1949 by 11 airlines to transmit manifest information between airports. In the first generation of what became the world's largest network, information was manually transmitted using perforated tape and teleprinters. The current network technology, the fifth generation, is based on Asynchronous Transfer Mode (ATM) technology, enabling the transport of mixed voice and data traffic. Over the years SITA widened its offering from communications to include IT solutions.

One of the first SITA applications to be used at airports was its Departure Control Service which offered a free-standing system for passenger check-in, boarding pass issue and weight and balance calculations. The first cutover was made on December 1 1978 at Budapest airport, Hungary. Cutover of a second system was completed in May 1979 in Sofia, Bulgaria and in Abidjan, Ivory Coast, in 1981. Today more than 134m passengers are checked in and boarded using SITA's Departure Control Services each year. In 1980, SITA introduced ►



# 20<sup>th</sup> Anniversary Ground Handling International

*Congratulations to Tim, Jean and the team for the 20 years of excellent publications and support to the ground handling industry.*



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a worldwide automated baggage tracing service called BaHaMaS (Baggage Handling Management System). The system was further developed with IATA and, now known as WorldTracer, is in use in at more than 2,800 airport locations around the world.

SITA's Common Use Terminal Equipment (CUTE) system was launched in 1984, enabling airlines to share check-in desks at airports and making more efficient use of the existing infrastructure. Airports in Frankfurt, Germany, and Los Angeles, became the first to use SITA CUTE. In Los Angeles it was used to meet the needs of increased traffic for the Olympic Games, beginning a trend of SITA providing solutions to facilitate increases in passenger movements during major global events. From Beijing to London and South Africa to Brazil, SITA has helped the airport community to manage the influx of sports fans.

SITA expanded its membership from just airlines in 1989 to "...any organisation whose primary business is related to the air transport industry", welcoming members from airports, ground handlers and other air transport-related organisations.

Today, SITA is the number one information and communications technology provider to airports around the world. Almost every airport and airline in the world does business with SITA and they are supported round the clock by SITA's global team of IT professionals, more than half of which are based on-site at airports. It is this unrivalled presence at more than 1,000 of the world's airports which makes SITA the ideal technology partner.

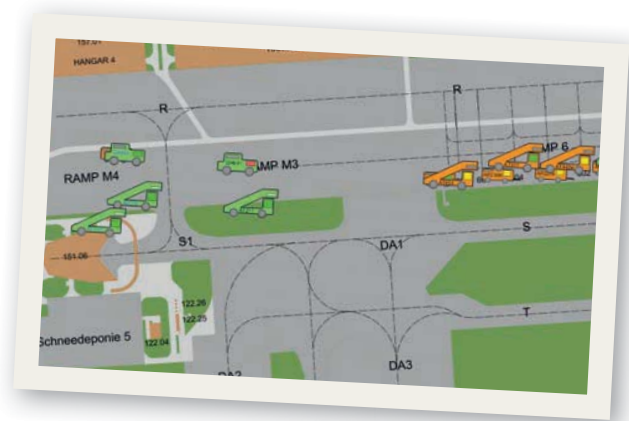
SITA is helping airports maximise passenger satisfaction, increase operational efficiency and improve financial performance, with new services delivered via the Air Transport Industry Cloud. Together with leading airports around the world, SITA is also investigating and embracing new technologies such as business intelligence, near field communications, beacons and wearable technology.

As part of its community services SITA conducts global research and provides airports with the authoritative annual industry benchmark study, the *Airport IT Trends Survey*.

## PROVEO

From the Age of Exploration to the Age of Globalisation: fleet management in ground handling.

In the early 2000s, telematics-based electronic fleet management systems were already as common as muck, says proveo's Anja Feudel: they were found in the logistics industry, cargo trucking and public road transport systems. In ground handling, however, suppliers like proveo entered a new world. There was no common understanding of what fleet management systems could do for ramp equipment, nor was their need always clear to the ground handling companies in the early years. It was merely an age of exploration. Proveo, and others, spent the first four or five years of their existence providing



trial installations, identifying needs and requirements for GSE tracking and management, analysing interfacing capabilities with other already-established systems like RMS or billing solutions and ultimately shaping a package for fleet management in ground handling that became what is today pretty much the basic roll-out scenario for all proveo customers worldwide. This is a real-time bird's-eye view of the airport with each and every item of equipment visible, including all relevant data, a comprehensive reporting suite that caters to any business unit within a ground handling organisation, a distinctive service and consulting model and a range of tailor-made hardware that is easy to install on any GSE.

In 2006/2007, the first major installations took shape: in a little less than two years, proveo entered the London Heathrow market and won Munich Airport Company as a customer. At that time this was the largest telematics roll-out in ground handling worldwide, and led to system implementations in Dubai, Abu Dhabi and Singapore. More and more ground handling companies knocked at proveo's door, convinced of the benefits they could gain, having visited existing proveo customers. The Age of Enlightenment had commenced.

Today, proveo is the leading provider in the industry and has a worldwide customer base with nearly all major third party network providers. These represent many of the largest and fastest growing airports and airlines in the world and the company has successfully entered other verticals in the logistics industry. Our customers value our expertise and the understanding of their needs and requirements in ground handling and our ability to transfer the knowledge gathered in earlier years on the ramp to other areas such as cargo warehousing and airport development. The Age of Globalisation has just begun!

## AMADEUS

Amadeus was founded by Air France, Iberia, Lufthansa and The Scandinavian Airlines Systems Group on October 21 1987. The founders envisioned an independent and neutral global distribution system that would become the preferred system for travel agents in Europe and around the world. As a result of the new technology, distribution

reach and channel efficiency grew dramatically, as agencies had increased access to air and non-air content around the world, and travel distribution became a large and profitable non-core business for airlines.

On January 18 1990, the Amadeus Data Processing Centre in Erding opened. At the time it was Europe's largest non-military data processing centre. Nearly two years later, on January 7 1992, the first Amadeus Passenger Name Record was created in the central system there. Airline sales offices began to successfully migrate to Amadeus, replacing their national systems for all reservation requirements. This marked the start of a new era within the travel industry; Amadeus has since continued to be a pioneer in the travel industry.

Throughout the 1990s, Amadeus continued to grow by developing innovative and user-friendly products, establishing a foothold around the world and creating an online presence. At the turn of the millennium, Amadeus reached a ground-breaking ten-year agreement with British Airways and Qantas to develop the next generation



of passenger management solutions for airlines: the Amadeus Altéa Customer Management Solution. This was the first new generation IT platform for the airline industry in 30 years, and formed the foundation of the current Airline IT line of business.

Over the next few years Amadeus gained an even larger foothold in travel technology as more airlines ►

## HIGH LOADERS FOR EVERY OPERATION



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embraced its solutions. In 2002, Amadeus completed its largest ever data migration - with no data loss - when British Airways' offices switched to Amadeus Altéa Reservation, and in 2004 Qantas cut over to Amadeus Altéa Inventory, becoming the first airline in the world to process its yield, pricing and inventory via this solution. In 2005, Star Alliance, together with member carriers Lufthansa and United, selected Amadeus to create a next generation technology platform for passenger service systems in the airline industry, with the common IT Platform replacing their own legacy IT systems.

In 2007, Qantas became the first airline in the world to roll out the Amadeus-developed next generation load control system: Altéa Departure Control-Flight Management. It increased efficiency and accuracy of flight departures managed by the airline's Sydney and Melbourne load control centres.

There are currently 132 airlines around the world that have contracted for both Altéa Reservation and Altéa Inventory, nearly 90% of which have contracted to use the full Altéa Suite. Based upon these contracts, Amadeus estimates that by 2017, 15 years after the first migration to Altéa, the number of annual contracted passengers boarded will be close to one billion.

## ROCKWELL COLLINS

Over 85 years ago, the United States Federal Radio Commission created Aeronautical Radio, Inc. (or ARINC as it became known) as an airline industry-owned communications company. At the time, the government formed the non-profit company to serve the fledgling aviation industry that developed shortly after the First World War.

The company's original charter states that it was formed...“to serve aircraft and all other vehicles propelled in air and space in transmitting... communications and messages of all kinds and descriptions...” From the very beginning through today, the company took that charter to heart, and since its inception, ARINC - now Rockwell Collins - has been a pioneer in development of products and services that support communications for the aviation industry.

The company has been responsible for numerous industry firsts, but one of its most significant was the development of the Aircraft Communications Addressing and Reporting System (ACARS). Used by airlines around the world, ACARS is the air-to-ground data communications infrastructure that allows aircraft to communicate with air traffic control, national aviation authorities and their own operations centres. ACARS revolutionised aviation communications, transforming the entire industry from legacy, voice-reliant systems to data link, enabling automated, real-time messaging between the flight crew and ATC.

The impact of ACARS on aviation has been tremendous. Enabling standard aircraft requests to be automated,

ACARS allows aircraft to fly safer, more efficient routes and eases congestion in major metropolitan areas.

Today, if a pilot needs a weather report to navigate a storm, at the touch of a button and within seconds, GLOBALink (Rockwell Collins' branded ACARS service) sends timely, accurate information that crew members can display or print.

Since the very beginning of the air transport industry, Rockwell Collins has been an innovator and a leader in aviation communications. Today, Rockwell Collins is a pioneer in the design, production and support of innovative solutions for our customers in aviation, aerospace and defence. Now and in the future, we are dedicated to keeping the spirit of innovation and service alive.

## DAMAREL

*Plus ça change!*

Damarel has delivered aviation IT systems for over 20 years and in that time we've seen plenty of changes. The most obvious is that air travel is much more accessible to people than ever before. The commodity approach may have eroded some of the glamour of flying, but the more egalitarian nature is good for airlines, passengers, service suppliers and airports.

The IT to support this rapid growth has delivered a whole host of innovations for passenger services, such as self-service, mobile and automated check-in solutions. This directly affects the passenger processing operations of the ground handling industry. Passengers rightly expect to be informed and in control of their journey, from reservation to destination, with limited landside interaction beyond a bag drop.

On the other side of the business, a look under the bonnet of IT for ramp operations can also be illuminating. Some 20 years ago Type B messages dominated aviation communication. Millions of standardised messages raced around the world, making sure that data was distributed quickly and accurately. These messages used proprietary networks and special protocols for efficient transmission and the industry was completely reliant on their delivery.

Just how manual the handling of these messages was can be illustrated by Damarel's first GHA system, deployed in the early 1990s. The brief was very ►





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simple - a large operator at London's Gatwick airport was employing shifts of people to tear off messages from a Type B document printer, interpret them and manually re-enter the data into airport systems. This was a manually intensive and expensive way to move digital information between systems. Damarel's solution was simple. By emulating a document printer in software we were able to automatically read and interpret the messages to extract all the relevant information. By simulating human operators keying data we could then upload the information to airport systems such as FIDS and apron control. And so FiND - predecessor of the current FiNDnet - was born.

Fast forward 20 years and that simple transcription service has evolved into a fully modular GHA business solution. Installed in over 100 airports, FiNDnet now covers everything from seasonal schedule maintenance through demand planning, turn management, service capture and automated billing. To fit the modern world the system supports a whole range of data exchange methods, including aviation specific protocols such as AIDX, open standards such as XML and even the ubiquitous e-mail, SMS and FTP. The range of options has never been bigger and continues to grow.

And the majority of aviation messages? Still Type B. *Plus ça change...*

### SABRE AIRLINE SOLUTIONS

Advances in airport self-service technologies have created a dramatic shift in how airlines and ground handlers manage resources. Gaining resource efficiencies through adoption of self-service technology places increased competitive pressure on airlines and ground handlers to optimise staffing which supports a self-service airport environment. The need to accurately match resource allocation with customer demand is higher than ever before, and minor changes can significantly impact the operating margin of an airline or ground handler. Sabre AirCentre Airport Management solutions continue to evolve to deliver optimal resourcing and support both operational and financial objectives of airlines and ground handlers.

### AVTURA

One of the major changes we have seen is the adoption and acceptance of mobile technology, not just in our sector, but across society as a whole. Being an early adopter, showing people mobile software solutions on touchscreens back in 2005, was an interesting experience: watching as people rather tentatively struggled to touch a screen with their finger, not sure if they should be doing so or not! Whereas now, with the change in mobile phone and tablet use across the wider society, the workforce across the airport is able to embrace handheld touchscreen devices, and that's not just the younger members of staff. The widespread adoption of



mobile devices and consumer driven operating systems such as Android, iOS and Windows 8 has made adoption and use of mobile software far more readily acceptable. Having said all of that, there are still many areas of our industry where paper and pen and Excel spreadsheets are used in abundance, and hence there are still plenty of opportunities for improvement, particularly in the operational environment alongside the more obvious passenger-focused applications. Aviation remains an exciting and evolving industry where there are still many opportunities for new, innovative developments.

### TOPSYSTEM

What struck me most when starting to work on this contribution for the GHI anniversary supplement (which I full-heartedly congratulate!) was how hard it is to actually remember facts from such a long time in the past and how time has blurred my memories. So when curiosity took the better of me and I decided to dig a bit deeper into our physical and electronic archives to access one of the legacy systems, the first thing that struck me was the unwieldiness and limitations of a mid-nineties computer itself. A CRT screen, seemingly with the weight of a sack of cement, and a server computer, hardly fitting under a standard desk. The first, with a 15" screen size (ever so much smaller than I remembered) and the second with a processing power ridiculously far below that of a modern standard smartphone.

Upon starting the system and waiting for Windows 95 to boot, memories started to trickle back. Hardly any standardisation for devices or even networking technology, the complex structure of mid-range computers between mainframe and workstation, dial-up procedures to achieve a fragile connection, transmitting data at a snail's pace... and so on. On the software side, things used to be similarly complicated. Starting with a multitude of operating systems, multiple programming languages and very limited possibilities for data exchange between individual applications, times were very effort-intensive for system administrators and working staff.

Nevertheless, at that time it was immense progress to have electronic data processing instead of mostly radio and paper-based communication. Already in the mid-1990s, topsystem's software for flight scheduling,

Congratulations on 20 years, **Ground Handling International.**

# We've enjoyed being part of your journey.

We've also come a long way since then. From operations in just one country, we've expanded to 38 across five continents. And from just one airline customer, we now have over 250 in 75 airports.

We can't wait to see what the next 20 years have in store for both of us.



**dnata**  
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handling contract management, service recording and billing was state-of-the art. The possibilities opened by having flight data, services and prices on a computer and being able to print out task sheets for handling staff as well as invoices was quite advanced at that time. Being used to technology nowadays, I firmly tried to keep that in mind when I opened our legacy software modules. Still, I was in for a shock when I saw the old-fashioned interfaces, each functional module having to be opened as a different software with a different look and feel. It struck me how few functions there were, how complicated data management was – and all this on a local machine, without even touching the additional complexity of working in a local area network, and not even mentioning an Internet connection to external partners like airports and airlines.

In 1995, all flight data had to be typed in manually or, for the most advanced systems, imported from spreadsheet applications. Nowadays, automated online import from any online sources is standard. Concerning the actual applications, a bunch of individual, locally-installed software modules was the rule back then. Again, nowadays sees an online installation on a central server with all software modules being available in a single, unified user interface, accessed and operated in a simple Web browser.

One of the most revolutionary developments is the advance in mobile computing. Handling instructions nowadays are transmitted online to tablets or smartphones used by apron staff; services are entered electronically and become immediately available for post processing in the back office. Even mobile invoicing, with the capture of an electronic customer signature and receipt generation on a wearable printer is possible.

Other important, formerly paper-based processes have also been simplified and sped up. Contract management from initial draft to final status can now be managed by an electronic document administration system, preliminary invoices can be made available to airline customers online for their approval and even the billing process is possible with e-invoicing. Management

has online access to all operational and commercial data from any number of handling stations worldwide. Again, no more print-outs, handwritten comments, re-typing or manual report composition - and all this so much quicker and more reliable.

To sum up, it can be said that all information flow around the actual handling activities has become much quicker as well as more comfortable and reliable. I cannot think of any planning, operational or commercial process that has not been significantly improved by IT innovations in these respects. In particular, Internet connectivity has changed the ground handling IT business, and it is not without a hint of pride that we can say topsystem was the first company to realise the potential and to switch completely to a Web-based software concept at the start of this century.

And this potential is far from being exhausted yet...

## XOPS

Resonate MP4, which develops XOPS, allies a telecom and video expertise with 20 years' background in the ground handling sector. During the past two decades, telematics and smartphones have brought new methodology and new technical uses. We witnessed the IT revolution and we can categorically state that while the airport sector is pretty innovative in the tools it shares with passengers, it still remains and very passive airside.

People are connected to their mobile phones in order to participate on a collaborative platform and they spend less and less time making calls. The technology is now embedded and it allows them to decide and to act in real time. Ten years ago we planned our road trips with a paper map: now we rely on our smartphone or embedded GPS.

We left a planned and scheduled organisation at the start of this century to enter a world of real time monitoring. Ground handling cannot escape this significant change. In an era of connected objects, we have to admit that no-one airside can properly identify an item of GSE. Our industry has just started to digest the new technologies like the collaborative platform, embedded telematics, video sensors and the like. Indeed, recent technology has allowed the ground handler to track movements and location to perform a task. Sadly, GSE producers remain reluctant to implement IT embedded technology on their vehicles: they leave that to the end user. Consequently, no standard has emerged.

To conclude, we have not seen a major evolution in IT airside during the last 15 years. The outlook is more positive, though: we are certainly moving towards a powerful IT collaborative platform, with some high levels of data security, delivering a number of accessible services. These services will not be limited to ground handlers but will also be available to maintenance and security operators - and Heathrow airport has been the first to innovate in this way.

# THE GLOBAL NAMES YOU KNOW, THE AFRICAN SUPPLIER YOU TRUST.



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# GROUND HANDLERS

## DNATA

dnata's operations have grown exponentially over the past 20 years – both financially and geographically. We are now a truly global business, with a presence on five continents, across 38 countries. Our ground handling teams put their expertise to use in some of the most adverse conditions in the world – from snowstorms to the desert heat.

Over the past five years, we have more than doubled our revenue and now employ more than 23,000 people. Last year, our teams handled over 275,000 aircraft, for

more than 250 airlines, and we are the world's largest handler of the A380 superjumbo.

Growth isn't the only marker of the past 20 years. We remain committed to being a partner of choice to airlines around the world and this means we constantly adapt to new standards and regulations. We work closely with our partners to ensure our operations align with industry standards, such as the IATA Ground Operations Manual (IGOM) and the IATA Safety Audit for Ground Operations (ISAGO). Initiatives such as these are necessary steps forward for the industry – ensuring safety, security, and efficiency.

We cannot downplay the *rôle* technology has played in the evolution of ground handling. In dnata, we are more effective now because we embrace technology. Through technology we are better able to deploy the right resources at the right times to ensure our customers are receiving the best services possible. Technology also enables us to deliver a more secure service, protecting our customers' interests.

In Dubai, milestones are a regular occurrence. Dubai International continues to grow at a record pace, and is now the world's busiest international airport. We worked very closely with Dubai Airports and Engineering Projects



to open what will be the world's largest airport, Al Maktoum International at Dubai World Central.

Internationally, our growth has been our most noteworthy achievement. In 1993, Gerry's dnata started operations. A joint venture, Gerry's dnata was the first overseas ground handling business for us and was the start of a period of continued international growth. dnata now has ground and cargo handling operations at 26 airports in nine countries, including the UAE, UK, Singapore, Switzerland, Australia, Pakistan, Iraq, China and the Philippines.

One of the most notable milestones for our business is the "One Safety" programme, which we believe is one of the most comprehensive and far-reaching safety programmes ever embarked upon by a ground handler. We want each of our operations around the world to be known for their safety record and commitment to safety. Through training, education, and communication, we believe dnata can be the safest ground and cargo operator in the world.

The "One Safety" programme's goal is to develop a culture across the organisation that creates and reinforces safe habits amongst our workforce.

The message is simple: safety is everyone's business and responsibility. By understanding and addressing human factors and individual behaviours, we can ensure that safety is a core value at the heart of our organisation.

Technology will continue to play an ever-growing rôle in our operations, but we must continue to focus on our people. Safety is a key part in this. As an industry, we work on extremely tight margins and every member of our team is integral to ensuring we operate to the highest safety standards possible. By investing in our teams, our people will emerge empowered, and more committed to our safety record than ever before. A strong safety and security record reaps multiple rewards: enhanced reputation among customers, improved employee engagement, and is a differentiator compared to our competitors.

We will continue to explore opportunities to ►

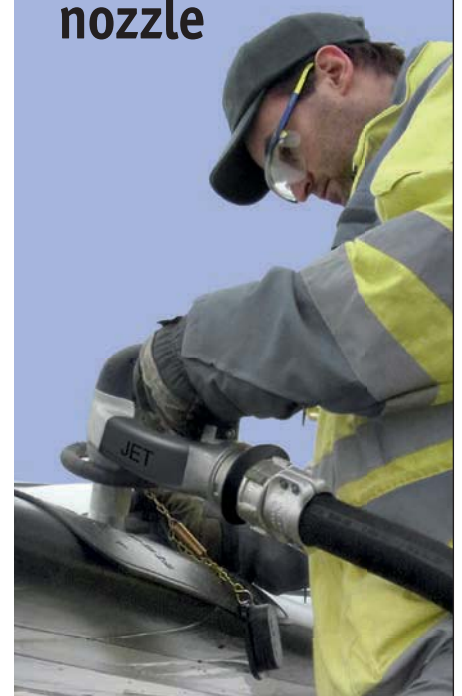
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- modular system, many options
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## Next Generation overwing nozzle



grow our businesses, and expand into new territories. As we have shown, our growth strategy, while ambitious, is very targeted and discerning and we will continue on this path. We only invest in businesses where we are confident we can deliver a high standard of service and add value to the company itself and to our shareholder.

### MENZIES

It's been a fascinating 20 years for Menzies Aviation. Twenty years ago John Menzies just owned a small cargo wholesale business and now we have 22,000 staff in 151 airports in 32 countries. Some of our biggest customers, the low cost carriers, didn't even exist 20 years ago. Just over 20 years ago our staff used telex machines and now we have instantaneous communications around the world via iPhones, iPads and e-mail, a Facebook page, a Twitter account and LinkedIn.

Some of the pricing is less than 20 years ago and the productivity improves every year, year on year. In 20 years we have made huge advances in safety and security; the airport ramp environment is a much safer place these days for our staff.

The one thing that is consistent over the 20 years: "it's all about the people'. Our success has all been thanks to the team's efforts over the last 20 years, and that will be the same for the next 20 years. Twenty years from now we hope Menzies Aviation will be operating at over 300 airports.



### MIASCOR AVIATION SERVICES

MIASCOR is celebrating its thirty-sixth year in providing premier services to five major airports in the Philippines. Being the pioneer and most experienced services provider,

it is a "one-stop-shop" with the largest inventory of ground support equipment and consistently high service level assessments from our clients. Over the years, we have achieved industry leadership by becoming the number one in passenger and ramp handling and in-flight catering.

In MIASCOR, we take professional pride in going the extra mile for, and delivering the highest service levels to, our clients and partners. As a member of the IATA Ground Handling Council, we are committed to maintaining the highest professional standards and to continuing improvements in meeting and exceeding the most demanding requirements of our clients.

From ground handling and maintaining commercial and private aircraft, providing logistics for all types of air cargo, catering for the most diverse meal requirements and operating airport lounges, to serving VIP clients in private aircraft and providing aircraft refuelling as well, MIASCOR has always set the highest standards in the airports in which we operate.

MIASCOR will always be "Your trusted partner on the ground."

### AIR DISPATCH CENTRALISED LOAD CONTROL

Congratulations to GHI from us all at Air Dispatch Centralised Load Control.

The development of digital communication has been the biggest development in aviation since the invention of the jet engine. Twenty years ago ground handling was almost entirely mainframe computers and green screen technology and the systems were siloed and did not communicate with each other. Load control was a station based process with variable standards of training, manuals and accuracy. Load controllers would complete loadsheets for multiple airlines in a single shift and would generally produce anything up to 20 loadsheets in a 12 hour shift.

Fast forward 20 years and whilst ramp and, to a lesser degree, passenger operations remain largely unchanged, load control has made a generational leap because of the advent of digital communications and satellite communications. The cargo and flight planning systems directly interact with the weight and balance system, doubling the productivity of the load controller. Data can be transmitted directly from a ramp agent on a HILO to the centralised load control unit, often thousands of miles away, via a dedicated airport wi-fi network and subsequently the loadsheet is transmitted directly to the aircraft flight deck via ACARS.

In 2007 Air Dispatch recognised that the Internet made it completely practical to centralise the key function of the load planning and load sheet production. The benefits to airlines are huge – improved safety through the use of highly skilled load controllers specialising in a single airline and maintaining their currency by producing ►



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up to 50 load sheets for their allocated airline in a single shift. This frequency means familiarity, familiarity means expert knowledge and ability to immediately identify and correct any errors in the information from the ground handler on station. The efficiency of trained load controllers managing such high production levels means lower unit cost and therefore cost savings for airlines.

The captains of our first customers were astonished when they realised that the load sheet for their flight was being produced and updated from a remote location, sometimes not even from the same continent. From humble beginnings in 2007 we now expect to produce approaching 750,000 load sheets this year – at the IGHC in Kuala Lumpur last year we produced our one millionth load sheet live at the event and we forecast to produce number 2m later this year. We provide load sheets for airlines literally all around the world, going west from our European facilities as far as Hawaii and east as far as Fiji.

We see this trend continuing as airlines look for smarter and less costly ways of operating. Where load control will be in 20 years' time is anyone's guess but Air Dispatch will continue to lead this highly specialised niche market.



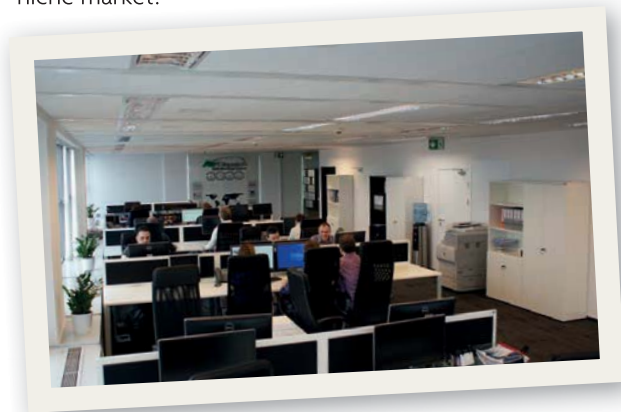
probably emerge but the pressure on prices will remain as well. Therefore, the handlers will need to rise to the occasion when it comes to being able to “Get the job done” without jeopardising safety and security and to achieve the necessary levels of profitability to stay in the business and protect their workforce. The investment in people training and qualifications will also be a must to grant high performance standards and to meet the requirements of such a demanding and highly qualified workforce business as ground handling.

### UNITED AVIATION SERVICES

The aviation industry has experienced unprecedented change over the course of the past two decades. The massive global leap in activity and demand, the times of financial crisis and recession, more regulations and the ever-changing needs and desires of the client, all mean that general aviation operators must be willing and able to continuously respond and adapt.

This forthcoming change in dynamics and the gap in the market it would bring was observed by two aviation enthusiasts and brothers, Omar Husari and Mohammed Husary who, with the help of Mike Mamoun Milli and Mohsen Felo, founded UAS International Trip Support in 2000. The change that has been experienced by the company since its inception almost 15 years ago – as well as plans for future developments – provides great insight into the changes that have and are taking place in all areas of business aviation as a whole.

Business jet activity has been growing with a steady momentum and looks set to continue as demand for private and secure executive travel increases. The number of international flights is increasing as the need to conduct business abroad accelerates. Traditionally, European and North American had always been regarded as the main global business aviation hubs. However, this was at a time when there was far less demand for these services on the Asian and African continents than there is now. Growth of general aviation in India is also predicted to grow dramatically in the years ahead. This means that business aviation interests have and will continue to focus more and more on emerging markets. All around the world, access to more airports for business aviation purposes is being gained and business flying activity will



### GROUNDFORCE PORTUGAL

The ground handling operation has significantly changed in the last 20 years, not only because of the deregulation of the ground handling market in Europe but also through the need to improve operational efficiency to cope with the low cost carriers' growth, their operational model and the overall impact of the LCCs in the aviation business.

The European Directive 96/67 EC was the first major step towards a deregulated ground handling market in Europe. It had a major impact on the industry, with the need for sustainable changes and developments in the involved companies, especially in those countries with former monopolistic ground handling market structures.

The handling companies operating in the EU will face tremendous challenges in the coming years. More and more airlines realise the financial benefits of outsourcing non-core activities, and consequently the ground handling business growth potential looks very interesting. New alliances between handlers will

likely continue to rise.

The world has been getting a lot smaller and this creates demand for a wider choice of route options and possible destinations for business aviation providers. The profile of customers has also changed dramatically, with more corporate and private individuals regularly chartering planes these days. Demand for private and secure executive travel has increased.

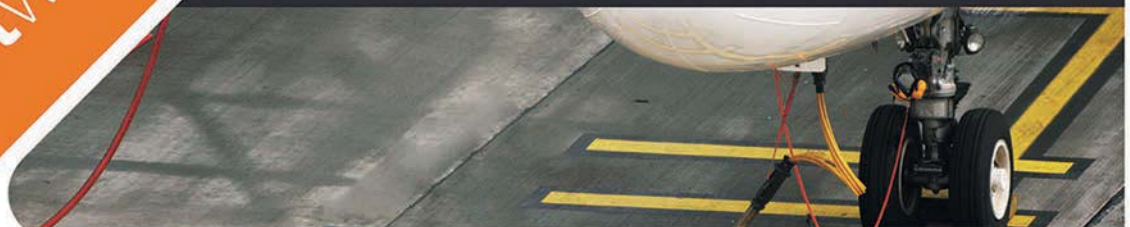
Many of these changing dynamics were anticipated well before their time and industry SMEs and multinationals had modified their business plans to suit. For example, in the case of UAS this can be seen in the rate of its expansion. In 2013, UAS began to spread its capabilities across the Atlantic, with the opening of its American Headquarters in Houston, Texas. Then, 2014 was a year of unprecedented expansion as UAS launched two more headquarters to complement Houston and Dubai. The Asia Pacific Headquarters opening in Hong Kong demonstrated UAS' commitment to the Asian market. The expected growth in the market required this also be



supported by a new Regional Office, located in Beijing. That year also saw UAS continue its massive expansion and investment to Africa. Headquarters were opened in Johannesburg, South Africa and regional offices were opened on the West of the continent in Lagos, Nigeria and on the East in Nairobi, Kenya. Purpose-built facilities were used to implement training programmes and develop sales and marketing initiatives. UAS also ►



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recruited a number of industry experts to provide flight and ground support in key countries on the continent: Cameroon, Cote D'Ivoire, Ethiopia, Gabon, Ghana and Mali. Heavy investment in these key areas means being prepared to meet this growing demand.

The advances of digital and mobile technology have also demanded more sophisticated communication techniques from business aviation operators in recent years. Communication has gone mobile and digital in the past two decades and information technology has become an area of significant investment for companies. In response to this, and clients' increasingly busy lifestyles and time pressures, UAS International Trip Support created the Web-based trip planning application UAS TMS to give their clients immediate access to mission critical information about their trip support request.

The issue of safety has become a greater concern for people in the past two decades because of a number of high profile international incidents. General aviation service providers are responding to the public's worries by prioritising health and safety for their staff and equipment. For example, UAS initiated an expansive training programme for its African staff to receive IATA training and intensive workshops on safety standards. The training included an IATA certification course on station ground handling management and in 2014 UAS was honoured to be named winner of the "Ground Support Services of the Year" accolade at the Aviation Business Awards 2014.

As the world nears a fuel crisis, the issue of global warming and the desire for a smaller carbon footprint are becoming more and more pressing. General aviation has responded by exploring and investigating reliable alternatives to conventional jet fuel in an effort to cut down on greenhouse gas emissions. Like in the vast majority of industries, the desire to become more eco-friendly and sustainable has become integral. Sustainable aviation biofuels would ease airlines' dependence on fossil fuel and thus help to meet the industry's goal of cutting down on carbon emissions. Certainly, in the past two decades, general aviation has become committed to cleaning up its act.

It is predicted that there will be massive global demand for qualified aviation professionals in the near future. This forecasted rise is thought to put a lot of pressure on human resources. It's crucial for business aviation interests to realise that getting creative and investing in the personnel and leadership of tomorrow will not only contribute to better professional standards, but also alleviate other concerns by honing the best and most innovative minds to the business of aviation. UAS International Trip Support has reacted by contributing to the education and development of the industry's future leaders. Participating in the Academic Global Immersion programme, UAS hosts undergraduate students and provides them with insight into the realities of doing

international business. UAS has also created an internship programme to allow high school and college students the opportunity to work in the service provider environment and obtain real-world experience in dispatch, flight operations, and customer service.

### AVIANCE GHANA

If we were to name the two biggest things that have happened to aviation in the last 20 years it would be safety and security. Twenty years ago we did not need to worry about unaccompanied bags or leaving passengers behind; a ramp agent/red cap was able to make that decision. Today we have a TRC (Turnaround Co-ordinator) and everything has to be compliant. While passenger services becomes more and more high tech, with self check-in, print your own boarding cards (and soon baggage tags), the ramp remains a manual job only supported by technology (BRS systems for AAA).

Health and safety are the key drivers on the ramp and that is in everyone's best interest. Twenty years ago the key word was fun; nowadays, it is a more serious and professional industry.

### ORBITAL GROUND SERVICES

Over the past decade we have expanded our range of activity and because of this increase, and the natural growth that Brazilian aviation has brought, many changes have followed. Our company started in 2002, providing security services; by 2009 we decided to start ramp, cargo and passenger services in order to attend all our customers' needs.

Our main goal is to continue the ongoing growth of the company, expanding to other

locations while maintaining the standard of personalised service to customers that has always been the trademark of Orbital. We also hope to start activities in airports we are not operating at currently; Brazil is a very big country and we have a lot of opportunities to explore.

We anticipate that the market will increasingly consolidate; therefore we must be prepared for more globalised movements, whether through mergers, acquisitions or even partnerships.

### IVYPORT

First we would like to congratulate GHI's editorial staff and personnel on their twentieth anniversary of providing key information and links in our aviation industry.

Developments in Puerto Rico in the commercial ►



  
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aviation and ground handling business have been positively affected by two key developments in the past two years. For one, the concession agreement between the Puerto Rico Ports Authority, a public corporation, and Aerostar Holdings for the 40 year operation of the Luis Muñoz International airport. This agreement, the first of its kind under US Law, will have a key impact on the development of the largest airport on the island, which has already shown increases in passenger movements.



The other major development is the opening of the Lufthansa Technik Maintenance and Repair operation in Aguadilla Puerto Rico. This major facility scheduled to open in July 2015 has already had an impact on certain ground handling services which will be needed to support the facility which has already landed contracts with Jet Blue and Spirit Airlines.

The contract to construct the facility was awarded to Haskell Engineers of Puerto Rico with MRO Facilities and Beer & Associates providing specialist MRO consultancy services for the duration of the project.

The new hangar in Puerto Rico will feature five overhaul lines across more than 215,000 square feet of space. Thanks to its state-of-the-art technologies, aircraft remain in a single line for painting following their overhauls.

As of 2016, up to 400 highly qualified employees will overhaul and maintain aircraft in the hangar's five lines. Training is also underway with a course for 18 structural mechanics, to be concluded in September, and trainees at Lufthansa Technik Budapest (Hungary) or Shannon Aerospace (Ireland). With the assistance of Lufthansa Technical Training and specially designed courses, the University of Puerto Rico and the FAA-certified Puerto Rico Aviation Maintenance Institute in Ceiba, Puerto Rico, trainees are currently studying metalworking in base maintenance as well as type training for the Airbus A320.

In addition, the Aviation Maintenance Institute will move to Aguadilla near the new Lufthansa Technik Puerto Rico operation. Here, under the roof of the newly founded Aerospace and Aviation Institute of Puerto Rico (AAIPR), it will play an important rôle in building up the Lufthansa Technik facility as well as other MRO

operations at Rafael Hernández Airport in Aguadilla.

Lufthansa's effort has been complemented by various other aerospace industry players such as Pratt & Whitney, which is performing engineering design and analysis for the jet turbine power plants of several aircraft from its Infotech Aerospace Service's division, and Lockheed Martin, with over 60 employees conducting software support services from Puerto Rico for its global operations. Honeywell Aerospace employs more than 400 in its shared services centre, Hamilton Sundstrand manufactures aircraft climate control and electronic systems and AXON Group and Pratt & Whitney established a world-class SAP services centre that will create 300 jobs. Both Florida Turbine and ESSIG Research both have major operations.

So, looking forward, Puerto Rico should continue to develop as the key hub for aviation in services and passenger traffic development in the Caribbean.

### LINK AERO TRADING AGENCY

Link Aero Trading Agency was created with a vision to provide full handling services with supreme quality, combining performance with value pricing, while establishing successful relationships with both customers and suppliers.

Since 1992, Link Agency has been gaining immense experience in the aviation market, serving more than 150 airlines. We have an understanding of the needs of the market and how Link Agency can invest its expertise to efficiently align to those needs and further contribute to accomplishing the company's goals.

Link Aero Trading Agency has been working to expand its market base by opening operational bases in many countries in the Middle East and Africa regions, including Morocco, Jordan, Egypt, UAE and Yemen. Our expansion strategy demonstrates that we are not only serious about our commitments, but we are capable of delivering on our returns.

The company has identified several key elements which were implemented during the past 22 years, ensuring the company's success and the efficient perception of the aviation market.

The company's real capital is in the employees and so Link Agency pays great attention to the human element, training and development. Our main focus is on utilising an experienced, well trained and highly professional team that combines vision with solid knowledge of the aviation handling business: familiarity with, and belief in, the importance of exceptional customer service.

Link Aero Trading Agency has been looking for ways to generate more revenue for airlines. Link Agency's experienced team in collecting excess luggage fees pumps high income for airlines. Our teams in different stations have won Best Station Awards for excess baggage collection from several airlines. Furthermore, Link Agency sales team is well trained to generate revenue over the



sales on the check-in counters.

Link Aero Trading Agency has established a high level of operational oversight and quality control through our dedicated quality and safety team, that ensures the company always lives up to its operational commitments and fulfils the promise of a high level of service, customer

satisfaction, convenience and safety, at reasonable and highly competitive prices.

We have maintained flexibility that has enabled the company to adapt to changing market conditions and opportunities, employing resources and staffing on a basis that is sufficient to get the job done properly, efficiently and at a high rate of return.

We have also looked for ways to combine the core aviation handling services with supplementary services, concepts and activities such as station management services, revenue management services, crew briefing, assistance and administration, flight operations and flight planning, VIP passenger handling, hotel bookings and transportation and other business pursuits which support and enhance the comprehensive array of services offered to meet and exceed customers' demands.

Link Agency believes that our product quality, excellent customer care, extensive staff training and diverse product selection will make us successful in accomplishing our expansion goals; above all, we ►

## Our Business is to Optimize Your Business



- Comprehensive and integrated software for handling operations and commercial processes
- Single central installation for company-wide use at any number of stations via Web access
- Increase of efficiency, control and revenues through integrated complete solution

- Information Broker
- Central Database
- Multi-Station Capability
- Reporting & Statistics
- Operations Planning
- Contract Management
- Air Cargo Handling
- Flight Scheduling
- Service Recording
- Quality Assurance
- Mobile Apps



believe in sharing successes with our partners and building business relationships that will increase all of our profits. We strongly believe that ground handlers and agents must work together in solidarity to face the current challenges of the aviation industry, generating more revenue for both companies as well as delivering higher service levels to airline partners.

### ASE EGYPT

Ever since ASE Egypt was established in 1989, there has been drastic innovation, evolution and progress in all aspects of the field. On the twentieth birthday of GHI, we recall the milestones we have passed and the changes we encountered throughout the past 20 years, to keep up with the ever-changing environment of aviation and specifically ground handling. We have changed, progressed and expanded amidst the challenging path of being the ground service provider we are today. We have grown in terms of partners, nationalities, aircraft types, volume and qualifications. After more than 25 years, ASE Egypt currently holds approximately 25% of the Egyptian market share.

In the course of our operations, we have managed to gain more trust throughout different nationalities across the globe. Starting with one partner in 1989, we have managed to provide our services to myriad airlines from different countries, expanding our scope of expertise in all aspects. We have stretched out our locations and are now available at all airports in Egypt. Today, ASE Egypt is the sole agent with Arab carriers. Our progress throughout the years is also visible in the types of aircraft we handle. With the development of aircraft, we at ASE Group train and qualify our teams whether in Egypt, Morocco, or UAE, to meet the evolving requirements and standards in the handling of different types of aircraft. Moreover, the diversity of airlines has enabled us to perform our passenger handling on a variety of departure control systems to meet the requirements of our partners as well as all potential ones.

The progress of our operations could not have been possible without the efforts made all through our path to advance the qualifications of our team. ASE has not only trained and qualified its teams to meet the standards of ground handling throughout the years, but also contributed in setting the standards and had input for programme advances such as the IGOM. ASE has proved through the years to be a pioneer in the ground handling industry and for the first time, a GSP was asked by ISAGO to promote and act as official speakers for the ISAGO. In 1992, ASE became an IGHC member and has been ever since. We have been certified with the IATA AHM 804 since 2002 and remained so until its suspension by IATA in 2012. However, even though it is no longer available as a certificate, ASE has continued to apply the AHM 804 in its operations for its belief in its importance.

Ever since ASE was established, the number of flights

handled has been consistently growing, adding to the skills and proficiency of our team. However, the Arab spring in 2011 negatively affected our volume for a significant period of time. By the end of 2012, ASE managed to get back on track. In 2014, ASE Egypt handled a total of 8,301 flights and 9,006,968 passengers overall.

With 25 years of experience, we believe that however much time we might have operated, there is always more room for improvement. We believe in continuously striving for the safety, security and quality for our partners for the next 20 years and for as long as we exist in the aviation field. ASE Egypt, and ASE Group as a whole, wishes GHI a prosperous twentieth anniversary and we look forward to your next flourishing 20 years when we will again share with you our evolution through the next stage of our existence.

### GERRY'S DNATA

Gerry's dnata was first established in 1993 as a joint venture between Gerry's Group and dnata International (Emirates Group). Market leader for over a decade, Gerry's dnata is the only international brand of ground handling in Pakistan, providing a wide range of aviation related services including complete ramp, cargo, passenger handling, refuelling, catering and special security services, and is active at eight major gateways in Pakistan.

We believe the aviation industry is always evolving and no matter the market, with time, top tier passenger airlines and cargo airlines in the world have found the fastest and most efficient way in history to connect people and trade with various countries worldwide. Consequently, this revolution has resulted in more passengers, more cargo and more aircraft in the past two decades, which has triggered a constant need for ground handling services for aircraft to cater for passengers and cargo in the best and most admirable way possible. In a nutshell, our operations have evolved towards integrating technology to cut costs and to have more visibility, precision and safer operations.

In Pakistan, after the start-up in 1993, we added three more stations in 1999, one more in 2010 and three more this year in 2015. We have grown from a company of 65 at one station to now over 1,400 employees at eight stations. Starting with a market share of 9% in 1993, we now hold a total of 49% of the market, which is fiercely competitive. Each year we have achieved a different milestone with the help of our management's vision and operation team's commitment. Whether it was having our own training



facility approved by PCAA and accredited by Emirates Aviation College, our first ISO certification, our records of most cargo uplifts for our customers, or our On Time Performance awards, our multi-million dollar investments in infrastructure and GSE, or our recent certification of being the first validated RA3 GHA in Pakistan, we have crossed milestones like steps on stairs and are moving higher with each milestone in service excellence.

Since it is an evolving industry, I foresee much more automation in the next decade. Although not good for employment rates in Europe and the US, those who can afford to will be flying to their destinations with enhanced comfort and service excellence. Airfreight is the future of aviation as it will be more lucrative for carriers to put 100kilogrammes of perishables than 100kilogrammes of human beings on their aircraft. That being said, the demand for passenger travelling will increase too in certain regions, but overall we expect to see a decline in comparison to cargo from the present to the future.

### HADID INTERNATIONAL SERVICES

HADID International Services, headquartered in Dubai, UAE, provides a diverse range of flight support services such as permits, handling, fuelling, charter, flight planning, and concierge services worldwide.

Starting up in 1981, HADID is the oldest company in the corporate flight planning industry in the MENA region, delivering locally developed knowledge and expertise with global impact.

Twenty years ago HADID was strengthening its rôle in the region and beyond as a trip planner and entering the arena as a mature and experienced global flight support expert after a decade of growth. In retrospect, significant changes in the last 20 years are linked to technology revolutionising the landscape of the online and aviation world and hence the way we work. Technology has touched every aspect of aviation, from the manufacturing of aircraft to communications. In our current digital age, engineers are making colossal leaps in advancing the aviation industry, which has adapted with agility to the new technologies that are under continual development.

Expansion, globalisation and deregulation are also all key factors influencing the way our operations have evolved. Distances travelled have increased as people take long-haul holidays and do business in countries, which now have more favourable political and social climates. In this way our branches and office locations have spread out further to better support our clients. These circumstances have given rise to a third important change - increased competition. The appearance of new flight support companies over the last 20 years, combined with the rapid expansion into new markets by many of the already established operators, has resulted in unprecedented competition in the general aviation industry.

In the early 1990s HADID expanded its supplier ►



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INTERAIRPORT, **OCTOBER - MUNICH**

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network by signing mutual contracts and affiliations with numerous significant international organisations. Having sought a centralised aviation hub in the region to serve our international clients, we moved our offices to the Dubai Airport Free Zone in 2003 and have been operating from its premises ever since. In 2004 HADID played a major rôle in providing charitable services to the Humanitarian Aid in assistance to the Tsunami affected countries and from 2005 we started dynamically spreading our reach by assigning sales representatives in Europe, Africa and the Far East. More recently we signed a partnership with Wallan Aviation in Saudi Arabia to launch Wallan Flight Support in Riyadh. Another milestone worth mentioning is the agreement between HADID and Satcom Direct, offering flight planning, aircraft datalink, flight-following and international trip support services.

As for what lies ahead, with smart decisions and good leadership, transitions can lay the groundwork for a stronger future. We intend to focus our business development efforts in China, Africa and the Americas. We also wish to partake in more humanitarian operations to assist the recovery from natural disasters globally.

General aviation provides the only global transportation network, which makes it essential for international business, aid and tourism. It is increasingly playing a vital rôle in facilitating economic growth. HADID continues to provide high quality flight support complemented by updated technological advances with continued focus on sustainable growth according to global general aviation requirements and trends.

### HACTL

Twenty years ago, the independent air cargo handling movement was in its infancy. The market was dominated by handling carriers for whom third party handling simply subsidised their costs. They were reluctant to invest in the new systems and infrastructure required to improve handling standards. Twenty years on, in most areas of the world, cargo handling has become the province of a new generation of handling independents like Hactl. The airlines benefit because we are skilled specialists and have taken over their heavy financial commitments in

premises, staff and systems.

Hactl's business has changed immeasurably in the past 20 years. In 1995 we were still based in the old, over-stretched Kai Tak airport, with no capacity for further flights, no space to expand our facilities, and challenged by an unfavourable location in a built-up area that made ground transportation slow and difficult. Hong Kong has now become the world's top cargo airport, and Hactl has played a fundamental part in that growth. We opened our US\$1bn SuperTerminal 1 base in 1998 when the new Chek Lap Kok airport opened, and ours remains the single largest cargo handling facility in the world. Constantly updated and meticulously maintained, it's a highly-sophisticated facility with fully-automated ETV systems serving 3,500 pallet positions, and a loose cargo system that uses 10,000 stillages. The vast scale of this operation would have been impossible within the previous location.

Volumes have grown immensely, too. Hong Kong has seen cargo growth of around 350% in the past 20 years, reaching 4.38m tonnes in 2014; Hactl's own share of that traffic was 41% in 2014. Hactl now handles for 100 airlines, and processes an average of 80 widebody freighters per day. Our record for daily throughput stands at 10,184 tonnes.

Throughout the past 20 years, Hactl has consistently applied for and achieved every new certification and standard relevant to ground handling, even where (as with ACC3, for which we were the first Hong Kong handler) these standards are not mandatory. For many of these standards, such as ISAGO, Hactl was the first in the world to achieve them. Setting standards in the industry through investment and innovation has become something of an obsession.

Hactl has also grown in terms of capabilities: in 1996 we launched Hacis, our added-value logistics subsidiary. Initially created to provide additional services to existing customers, it now works with its own customer base independently of Hactl. Hacis is a vitally important element of our future plans, geared up to take advantage of constantly-improving road connections such as will be created by the new Hong Kong-Zhuhai-Macau Bridge.

The future for handling will depend greatly on how well the air cargo industry responds to the need to integrate its information systems. Elements of the industry, including Hactl, are ready for the e-AWB as the first step in paperless airfreight supply chains. E-freight will also create total real-time shipment visibility, with enhancements for special commodities such as pharmaceuticals. But industry-wide e-AWB penetration (just the first step in e-freight) stands at only 20% currently, and progress is being slowed by arguments over who benefits, and who should pay. The industry can only go at the speed of its slowest link.

It is likely that we will see more and more cargo capacity provided by the larger new-generation passenger aircraft bellies. At many major airports like Hong Kong, any ►



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significant shift from freighters to passenger aircraft could force a total re-think of airport design, as cargo will need to be towed increasingly to passenger stands that are located far away from current cargo terminals; ramp traffic will increase substantially, putting pressure on roadways and safety.

Twenty years have seen huge change in cargo handling. Despite the considerable burden of additional compliance and security screening requirements, the industry's major achievement is in being at least as fast as ever, and in coping with the exacting additional requirements of pharmaceuticals and perishables traffic on an unprecedented scale. Airfreight continues to play a leading rôle in world trade, moving up to 40% of all goods by value. The next quantum step is for the industry to evolve with, and handle, the logistical aspect of the boom in e-commerce. The growth projections for online shipping are impressive, and how to position yourself in the ever-changing supply chain is the challenge all of us have to understand, to take commercial advantage of this rapidly-evolving new source of business.

### IBERIA

The airport handling sector has experienced many changes in the last 20 years, such as the globalisation in our industry, and within handling services liberalisation has played a key rôle. Technology has also completely changed the way we work, especially on the passenger service side, as it has changed the way people travel: with electronic tickets instead of paper flight tickets, online check-in and self-check-in kiosks at the airports and other places.

Trying to be environmentally friendly and sustainable by using resources in a more responsible way is now at the top of our agenda. We are looking for new and cleaner alternative energy sources and reducing CO<sub>2</sub> emissions as much as we can.

In the last 20 years, the level of competition in the Spanish ground handling business has increased to the point of full liberalisation, and we at Iberia Airport Services have been able to evolve and adapt to these new market conditions. In a very competitive environment, we have adapted to our customers' needs, trying to fulfil



service expectations. To achieve this, we have made a great effort to train our employees and motivate them properly, while strengthening our security and safety culture, which is another top priority of ours.

Thank you very much for the past 20 years of *Ground Handling International*. With the information that you have provided us and the organisation of international meetings, you have helped the airport handling industry to grow as a global business.

### BANGKOK FLIGHT SERVICES

For us, it's been all about IT.

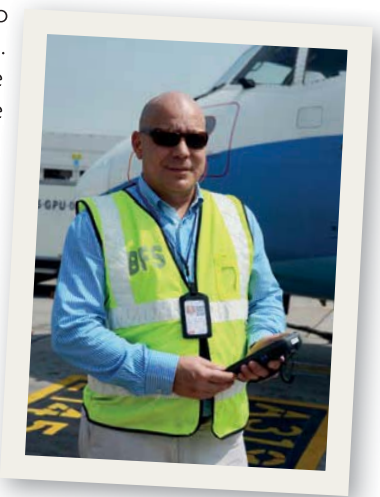
Twenty years ago in ground handling offices there was a combination of PCs and laptops with DOS applications and Windows 3.11. Internet and e-mail were only just beginning to become available in business. However, the mobile phone was unaffordable (and the size of a house brick) and it had no messaging service. There were trunk radios, too... Computers back then had less power and less functionality in their applications; user friendliness was not part of the scene and because of human factors, end users barely touched 10% of the functions within the applications. Do you remember when computers had hard disk space of 100MB, a processing speed of 386/33 MHZ and 2 MB of RAM?

Every computer connected to the network required an RJ 45 LAN connection, if there was a LAN and not a modem pinging in the background on a stand-alone machine. We were fairly restricted by hardware and software development because it was much less affordable for the handler, in particular within operations at smaller locations.

Copper wire connections have given way to fibre optics now, and speed and accessibility is growing quicker and quicker all the time. An attachment back then took ages to view: now we have instantaneous images along with data and video streaming.

Back in 2004, some of us at WFS received our first laptops with built-in wi-fi. Networks duly grew, work became more efficient and in time the smartphone put in appearance, to be followed by the tablet. Messaging became the prime means of communication and data transmission has been enriched by the advent of wi-fi and 3G.

Twelve years ago we procured proprietary software offered to ground handlers for resource management and the result was simply that we had to pay a fortune to procure it, have a special team to run it - and wait ►



# A service tailored to our clients.

Every company is different and every operation is unique. That's why, for the last 87 years, we have been offering our clients a flexible service, adapting to their needs on the ground, and always guaranteeing the highest levels of quality and safety.

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months for locally needed modifications and interfaces to other systems to be made, all at huge expense.

When upgrade time came, based on our previous experience, we decided to buy the minimum amount of essential software as we wanted to be in control of our business tools. This would include Accounting and an HR employee database and payroll system as well as a Cargo Warehouse Management System. The next issue was again the cutover from paper to an electronic application, and the resistance was huge. We have achieved this by developing our own software in-house as a team effort, which is process and not IT driven. IT and Operations worked side by side to achieve this. We developed several of our systems by copying what staff did on paper and creating GUIs. The IT team then started to accumulate the data and create more and more features and business tools, including reports. We then began to link the systems together with interfaces.

Ahead, we are reviewing a common language system and integration to our system for Passenger Services to improve efficiency and reduce cost and staff turnover: we are also exploring mobile technology for them. In short, we will continue to develop software and use the latest technology to take us where we need to go in our business.

### **SKYWAY AVIATION HANDLING COMPANY**

Skyway Aviation Handling Company came out of the ashes of the Skypower Aviation Handling Company, which was a subsidiary of Nigerian Airways, when the Federal Government of Nigeria privatised it and hence transferred ownership to the SIFAX Group in December 2009.

Since this change of ownership, the fortunes of the



Skyway Aviation Handling Company (SAHCOL) have been changing for the better. Before 2009, it was difficult for SAHCOL to compete effortlessly in the ground handling business in Nigeria because of many factors: amongst these were dilapidated handling equipment, an under motivated staff and inadequate training, which made it virtually impossible to attract new contracts.

Since 2009 SAHCOL has grown to be a very strong contender in the ground handling business in Nigeria. First, SAHCOL acquired and started its own training facility (now licensed by IATA) as an IATA Accredited Training Centre. This has greatly improved the training needs of the company in line with international best practice. In other words, every staff member at SAHCOL is now adequately trained.

In this period SAHCOL passed the ISAGO audit for its Headquarters and Lagos stations. Within this same period there has been a revolution in the acquisition of state-of-the-art GSE. This can be deemed a revolution, because it has totally changed the face of ramp handling in the Nigerian aviation sector.

Finally, SAHCOL has just completed the construction of a fully automated cargo warehouse, which ranks with the best anywhere in the world.



The Ground Handling International team would like to thank all its contributors and advertisers who have been involved in the magazine since its launch two decades ago.

**Here's to the next 20 years!**

# The coolest thing about our aircraft heaters is that they do miracles for your business.

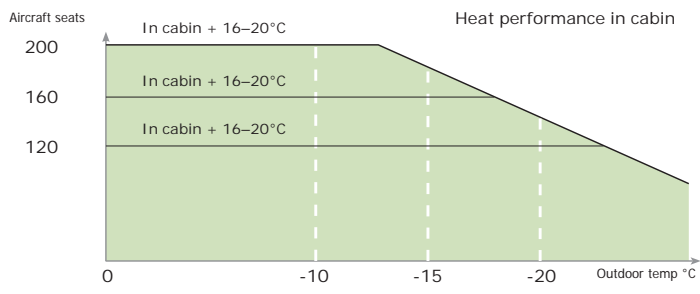
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26 years ago ERRI began to **keep warm** commuter aircraft with electricity for a sustainable future. ERRI aircraft heaters are durable, reliable and more cost efficient than any conventional fire place heater on the market. Let alone that our heaters are 100 percent emission free and are easy to handle.

As a matter of fact, ERRI heaters are equipped with industrial PLC that lets you control and monitor the heater via a web interface. With the ERRI Aircraft Heater you can eliminate condensation and enable the staff to clean the aircraft whenever it suits operations.

So why not plug and play?



- ERRI aircraft heaters features:
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  - = **Cost efficient and reliable**



Est. 1989 – more than 600 units sold.





# GROUND SUPPORT EQUIPMENT

## AERO SPECIALTIES

One of the most significant changes in the ground handling industry over the last 20 years has been the wider popularisation of equipment that satisfies the demand for compact, aesthetically pleasing and fuel-efficient products. Since the world of ground support equipment intersects with that of aviation, in which beautiful design and a lower carbon footprint are of immense importance, a few manufacturers of ground support equipment have chosen to re-think the often “cookie-cutter” designs of their products. Rising fuel costs and new emissions standards have also created a higher

demand for green products. This has led consumers to be increasingly influenced by efficiency, sustainability, ease of use and beautiful design.

Here at AERO Specialties, our focus over the last decade has been to set ourselves apart from the competition by offering equipment that satisfies the aforementioned demands of our customers. From our commitment to offering electric-powered equipment (such as tow tractors, ground power units and many of our lavatory and potable water service carts) to our small decisions to help the environment (such as our “bike to work” days), we embrace attitudes that promote ingenuity and sustainable efficiency.

Our line of JetGo diesel-hybrid ground power units is a perfect example of this attitude. The design of the JetGo started with a clean sheet of paper and no preconceptions of how the unit should look. We have drawn on over 25 years of GSE experience and consulted with leading corporate, FBO and regional operators to get a real understanding of the application of a GPU in a busy ramp environment. Benchmarks were established that included ease of operation, compact size and weight, low noise level, aircraft protection features, minimal fuel consumption, simple maintenance, and ►



# Founded in 1833, we know the value of history

We appreciate the pride a team can have in their record of achievement; that's why we're pleased to congratulate Ground Handling International on reaching a milestone 20 years of publication.

Our track record is one we take great pride in. We've built a network that stretches across 149 locations in 31 countries around the world; we've built a reputation for safety, consistency and time-critical performance; and we've built a market position as the leading choice ground-handler for low-cost carriers.

For the team at GHI, the measure of achievement is outstanding coverage of the ever-developing ground handling market. For Menzies Aviation, it's serving our airline customers the right way, every day. Long may both continue.

we are Menzies Aviation



proven dependability. We designed the unit to meet the increasing demand for a quieter yet powerful green ground power unit, meeting all global emission standards.

While much has changed in the past 20 years, a lot of things have stayed the same. A sense of fun and camaraderie has persisted in the world of aviation. Many of us who work here have developed friendships with aviation enthusiasts across the globe through trade shows, customer training, site visits and vacations.

All of us in the ground handling industry have had quite a ride in the past 20 years! We look forward to many more years of flying, and we welcome the many changes in aviation culture and design. Here at AERO, we've set our sights high for the future – no one has ever collided with the sky!

### TLD GROUP

Twenty years ago when *Ground Handling International* was born, TLD (at that time named Teleflex Lionel Dupont) was a diversified conglomerate that had just acquired several well-known companies in the aviation ground support equipment industry.

Twenty years ago TLD-TRACMA delivered its first towbarless aircraft tractor, the Model TPX-200, that still exists in the TLD product range, and TLD-ALBRET created the aircraft passenger stair Model ABS-580, that is still produced (modified from the 1995 version) and is present at hundreds of airports around the world. TLD-LANTIS was then manufacturing a very popular loader called the Model 818, a 7 tonne loader with only three wheels.

Then, in 2003, Teleflex Lionel Dupont became TLD and all the companies acquired were all consolidated under this new name. Twenty years ago, TLD only had a few sales and service offices around the globe. Today these office numbers are more than 30 and truly describe TLD's banner: local support, total commitment.

TLD's industrial footprint has also changed a lot within the last 20 years in order to cope with the growth and globalisation of the aviation industry. As the TLD Montlouis factory is now moving to the newly-built Sorigny site, only two factories still remain from the old days: Windsor in Connecticut, US, and Saint-Lin in France. Both of these sites have undergone change several times, enlarging to accommodate a growing industry and market

share. The TLD California factory moved to Sherbrooke, Canada, in 2002 and to grow with the development of the Asian market, TLD built the Shanghai factory in 1997 and the Wuxi site in 2012.

Product evolution has also been considerable these last 20 years. A few of the major changes include the birth and development of the towbarless aircraft tractors, and the eruption and huge development of electronic systems to pilot and control the equipment and the engines. PLCs and Canbus already existed 20 years ago, but these systems were far from having the reliability they have today!

The move towards greener components and technologies, for example the reduction of polluting emissions of diesel engines in the last 20 years, has been amazing and today's levels were simply unthinkable in 1995. Also contributing to the green trend is the emergence and fast development of electric ground support equipment like baggage tractors, as well as beltloaders, passenger stairs, and bigger GSE.

During the last 20 years, TLD has striven to bring a significant contribution to these evolutions that have so often been highlighted in the *GHI* columns. The recent adaptation of the whole TLD range to the Tier IV Final emission norms, the development of sophisticated and highly efficient electric equipment such as the new electric loader TXL-838-ReGen, and the eco-friendly TaxiBot project are very illustrative of this contribution.

Despite the tremendous changes in 20 years, TLD, like *GHI*, remains focused on the future, anticipating our customers' needs so we can meet and exceed their operational challenges.

### DENGE AIRPORT EQUIPMENT

The last two decades of GSE manufacturing faced a lot of changes. The main change was branding, where most of the brands had faced mergers or acquisitions. This is in some ways a reflection of the automotive industry, where the same thing happened.

In terms of customer needs, the electric usage in GSE increased drastically. However, there is still a lot to be invested in by the ground handlers: not only the need to buy the equipment, but also the ongoing maintenance and waste management. Safety requirements for the equipment also became significantly stricter, especially with the newly built aircraft; customers are keener now to focus on safety of equipment. This also led GSE manufacturers to develop the technical aspects and to research and develop to a greater extent.

By its nature, aviation growth has always had a tendency to accelerate, thus the GSE manufacturing companies also enjoyed rapid growth rates over the past 20 years. With this growth and with increasing safety requirement demands from customers, the market also pushed all types of GSE to consolidate in terms of technical specifications, which resulted in increased





quantities of GSE manufactured at lower cost because of the economies of scale. For DENGE, there has been drastic growth and expansion in the quantity of GSE manufactured as well as the number of handlers served over the last two decades, resulting in exponential growth in the company.

One other aspect of the GSE industry is a globalisation: the world is getting smaller every year

because of telecommunication industry growth, and so every handler can now find any manufacturer located anywhere in the world. This also resulted in an increase in competition and natural decline in the profits of the GSE manufacturers.

My final comment regarding the change in the GSE industry is the way handlers look to manufacturers. Now they make more long term calculations and consider TCO more than in the past, which has resulted in the elimination of the advantage of cheaper manufacturing. Now the industry more widely understands that the cheaper option rarely yields the maximum profit, thus the calculations are now based on the ratio of quality to price, unlike in the past.

### BRADSHAW ELECTRIC VEHICLES

In the last 20 years the business model has changed completely in regards to customer requirements. The company has become much more customer focused. Twenty years ago, we would sell a product and then ►

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## TO OUR CUSTOMERS

# THANK YOU

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wait for five years before trying to sell another. Now we provide a lifetime service on a product the customer has specified. Lifetime costs are now the key as opposed to upfront sales pricing. We had no aftermarket divisions, and no way of keeping in touch with a customer other than our sales team. We used to sell a product, now we provide customer solutions.

In the future we will move further into providing customised customer solutions with increased internal engineering capability and more aftermarket support so that the customer has all the support and solutions they require.



### DOLL

DOLL has been constructing airport ground equipment for more than 20 years. As one of the leading manufacturers of GSE, DOLL is familiar with the requirements for modern scissor lift vehicles. The product range covers catering and cleaning trucks as well as medical and maintenance lifts adapted for the needs of daily operations of ground support companies. GSE made by DOLL stands for reliability, technical and constructional longevity, easy handling and attractive prices. Over the past years, DOLL has continuously been optimising its product range and has achieved some significant milestones regarding safety features and environmental protection as well as market development. During that time, *Ground Handling International* has always been a great partner on DOLL's side. The company takes their twentieth birthday as an opportunity to illustrate the most important highlights and looks very much forward to the next 20 years of co-operative partnership:

In 1995, DOLL exhibited its first catering truck at InterAirport Europe and in the same year integrated medical and maintenance lifts into the production process. By 2007, following the changeover from individual



manufacture to serial production, DOLL's five hundredth unit of GSE had been delivered. Just one year later, in 2010, this number had doubled to 1,000 units of GSE delivered, which all conformed to the new, stricter MRL 2006/42/EG safety standards. By 2013, SKD kits had been delivered to South Africa, the US, Brazil and Uzbekistan and by the end of last year DOLL's one thousand five hundredth GSE unit had been delivered. From 2014 to 2015, implementation of new EN 12312-2/-14, MRL-2006/42/EG and ISO 6966-2 standards has taken place, ensuring necessary modifications of bodies are made to meet these requirements and provide enhanced safety for individuals and aircraft.

### COBUS INDUSTRIES

It was 25 years ago that Cobus secured its first order in the aviation market: this was with Olympic Airlines, which took ten of the manufacturer's units. Today, says the company's Andreas Funk, some 3,000 examples are scattered around the globe. Amazing to relate, Cobus numbers 2, 3 and 4 are still in operation.

Has there been much change and development? Not much, says Andreas. Retro-fitting is becoming more and more common, with customers buying two or three buses then retro-fitting a power plant. The Mercedes Benz underpinnings have not changed, and neither has the aluminium bodywork, although engines have moved on from Euro O.

Cobus set out, all those years ago, with the intention of manufacturing a premium bus, one that would last a lifetime. In fact, a 15 year operating life is not uncommon and since handler contracts are often of quite short duration, there is a buoyant secondhand market for these vehicles. Andreas stresses the importance of the infrastructure in his operation and feels that offering both large and small buses from the beginning was a useful marketing tool. There have been only four design changes in the last two or so decades; however, customer demands have changed much more dramatically. In the early days, a lead time of 5-7 months was not unknown whereas today, a wait of 5-7 weeks is too long for some clients. Because of this short turnaround, Cobus keeps in stock some partially assembled examples.



As Andreas observes, the company has to offer a lot more than just the buses themselves these days: maintenance packages, leasing arrangements and even advertising on the buses are all factors that have to be borne in mind.

### CANADIAN ELECTRIC VEHICLES

In 2000 Canadian Electric Vehicles was approached by PLH aviation services to design and build an electric powered aircraft refuelling truck for its Los Angeles airport operations. The first two units were built on a custom chassis, which proved too expensive and because of the unique chassis, harder to service. The next 12 trucks produced were built on the common Isuzu NPR chassis, which reduced the cost and made them much more serviceable. The Isuzu chassis is also one of the more popular for GSE use, so back end builders were familiar with the layout. Currently, over 60 of these three-tonne trucks have been converted and are in use at airports in North America, Europe, Middle East and Australia, mostly as hydrant carts but also lavatory and small tankers.

The first 50 trucks were powered with a DC motor system which worked well and was common in GSE equipment. In 2011 we changed to an AC drive system which greatly reduced maintenance because of the lack of motor brushes and reversing contactors which were common replacement parts on the DC systems. This new system has been very reliable and more user friendly, with the addition of reGen braking and better control of speed when manoeuvring around aircraft.

We have seen an increased demand for all our products, including the small Might-E Trucks which are more of a service and maintenance truck, down to our walk behind Might-E Tugs which are mostly used inside terminals for moving trains of baggage carts.

As the industry greens its fleets, the choice to go electric has never been so clear.

### DOKASCH

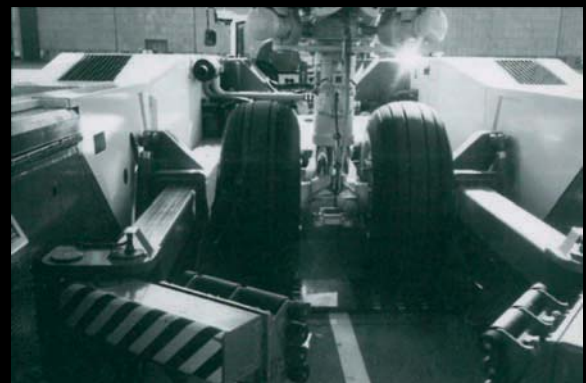
What was ground handling like when you were 20? Breathe in. Smell the kerosene. Feel the summer sun burning the tarmac. The adrenaline rush as you hurry to check the temperature of the latest test shipment, papers firmly tucked under your arm.

Hang on. Paper? The forbidden word? Check temperature by hand? Not anymore. Remember when touch screens were for people who thought they were Tom Cruise in *Minority Report* and tablets were for pre-schoolers? They were. I tried to present using a digital pen and an EliteBook 2740p – with a revolving screen – and was back to the flipchart in seconds.

But that was then and now everything is different. And in just about the same time our music went from vinyl to iPhone, air cargo cooling containers went from grand insulated picnic baskets to electrically powered, high-tech superboxes. ▶



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It seems like one minute, you discuss dry ice bills, and the next minute you take electric power for long range flights for granted. One minute, you feel the urge to check the weather at the destination for every shipment, and the next anything between -30 to +50 °C is fine. The built-in touchscreens make adjusting the temperature as simple as setting your home lighting to candlelight. And at the slightest suspicion of temperature dropping or illicit door-opening, an army of sensors provides you with so much data, it's mind-boggling even for the tech-savvy.

Some things, you may say, have been the same since you were 20. Air cargo still happens on the ground. Aircraft still are aluminium tubes with engines. Money still is the biggest reason to shy away from innovation: top of the line cooling containers are expensive. But transition periods between technologies dwindle. Miniaturisation and digitalisation reshape our world. And that shifts our attention from dealing with advances in technology to dealing with its pace.

But technology is just half the picture. The other half is the adopting ecosystem of competitors, suppliers, and users. A recent study investigates the forces that control the pace of technology substitution in the semiconductor industry (*Adner and Kapoor, 2015*). What they find is puzzling: despite each new generation being superior on absolute and price-adjusted performance, and the new technology preserving the predecessors' core competencies, the pace of substitution varies dramatically.

The study concludes that three forces bog down technology substitution. First, there is a last gasp effort of firms trying to maximise value from the old technology. Second, R&D in the new technology create spillbacks that improved the old technology. Third, the entire ecosystem undertakes collective last resort actions to extend the old technology if significant challenges in new technology adoption arise.

For the highly interdependent world of ground handling, this means the realised potential of new technology cannot take off before all actors are ready. But as the pace of change around us speeds up, none of us (airlines, airports, ground handlers, GSE and IT companies) are going to sit around chewing on a pencil.

Take DoKaSch's Opticooler container: that wasn't even around in 2009 and now it's bookable with several airlines, such as Cathay, Emirates, Swiss, and Lufthansa. With that in mind, imagine what technology will enable ground handling to be like in five years! Embrace the pace.

Happy twentieth birthday, *GHI*.

## SCHRADER

During the past 20 years, toilet service vehicles have undergone significant technical changes. From a barrel on wheels, they have evolved to a high-tech group of vehicles at airports.

When Schrader discovered this line of business for itself at the beginning of the 1990s, the vehicles designed and sold were mostly gravity models.

However, because of the constantly increasing traffic volume, the handling times for the aircraft had to be sped up during the course of time. Consequently, nobody could take the liberty of waiting until gravity dealt with "business".

The age of vacuum emptying has started and since then Schrader has focused on one of the most powerful vacuum techniques in this area.

A further change was the use of disinfectants (DEO) as a disinfectant model fed into the aircraft toilet. At the beginning, the expensive DEO was directly pre-mixed in the vehicle's flushing water tank and flushing and disinfecting were not distinguished during aircraft servicing. The options available today enable precise flushing down to the litre and precise percentage dosage of disinfectants. This saves on DEO usage and, furthermore, on subsequent costs because the entire vehicle system is not burdened with the blue fluid.

In terms of automatic aircraft type pre-selection, modern vehicles are equipped with a complex PLC controller. This makes it possible for the operator to automatically empty, clean and disinfect the aircraft toilet. When the aircraft type is selected, an automatic process is triggered which achieves the best possible result under the assumption of economical and ecological factors.

So if we compare vehicles in the past to today, the technical developments are huge; one service can be carried out some 50-70% faster.

The standard of care and hygiene when handling the



water used for tea and coffee has been focused on very precisely by the airlines and ground handlers during the past 20 years, too. The quality has increased considerably as a result of constantly increasing checks by the airlines and seamless documentation by the water vehicle operators.

Schrader drinking water vehicles are now developed to meet these requirements. The high requirements of the water and the demanded hygienic standard can be met with a multitude of options, such as patented on-board electrolysis, chlorine measurement systems, chlorine dosage systems and spray systems. With chlorine quantity pre-selection and monitoring using a specially developed system, modern water vehicles are mobile laboratories. A precise protocol of the water quantities and share of disinfectants can be provided to the airlines after servicing.

The only thing which hasn't really changed for Schrader during this 20-year period is the fact that further developments are still possible, but only if constant dialogue with users all over the world is maintained.

**VESTERGAARD**

Vestergaard Company designs, produces and services airport equipment based on advanced technology. The Vestergaard product line sets the standard for quality, functionality and durability within the GSE industry. Our main product is the Elephant de-icer, but Vestergaard also produces and delivers water and toilet service trucks as well as aircraft washers that work in airports all over the world.

In the last 20 years Vestergaard has expanded considerably to meet market demands and now employs more than 250 people to support customer needs worldwide. The Vestergaard production site in Denmark occupies more than 13,000 square metres to manufacture the Elephant family of de-icers, vacuum toilet service units and potable water units. More than 1,000 de-icers and 400 toilet/water service units have been produced in Denmark over the past 53 years.

In 1997 – 18 years ago – Vestergaard established its first subsidiary, Vestergaard Company Inc., as a ►



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representation in the US and Canada. Apart from the sales efforts, the company, which now employs eight people, is engaged in service tasks with customers in the North American market. In 2015 Vestergaard Company Inc. also took over service for the Kalmar Motor customers in the North American market.

In 2014 CJSC EuroTech took over the Vestergaard agency in the CIS market, attending to both sales and service activities.

Back in 1997 Vestergaard Company introduced the Forced Air system, which has proven to be an excellent supplement to ADF de-icing with customers who operate under certain climatic conditions. Following this, in the 1980s Vestergaard developed the proportional mix system which has become widely used over the last 20 years.

In 2011 Vestergaard engaged Movincar to act as its agent in Italy and in that capacity assist in sales as well as service activities. Vestergaard set up subsidiaries in both France and Thailand in 2012. In Thailand facilities are established for the manufacture of GSE especially for the Asian market and in the spring of 2015 Vestergaard Company Asia introduced the new and redesigned Asian VTS unit remade to meet the specific needs of warmer climates.

Over the past 20 years Vestergaard Company has developed more and more into being an international company, gaining a worldwide market share.

The industry has experienced extensive digitisation, and amongst other things this has strongly contributed to a growing demand for the Vestergaard Data Transmission System (DTS) that makes it possible to record, document and process information on performed de-/anti-icing operations.

### ERRI

Ever wondered how an aircraft is kept dry inside?

The task of finding a more cost-effective and efficient way to avoid the build-up of water condensate in aircraft overnight or during longer parking periods started, from ERRI's perspective, some 28 years ago. It was basically a technical problem: condensation not only corrodes an aircraft's body, but also makes the cabin more uncomfortable for the initial morning flight. Financially, it was an expensive process, that of heating up an aircraft by burning diesel for one or two hours. The environmental cost was high and even after such a procedure there was

not always a dry cabin as a result. The hunt was on to find a heater that could keep the aircraft free from condensate, in the aircraft fuselage as well as in the cabin, with no toilet or kitchen drainage; in addition, there was a need to keep cockpit instrumentation active. A one man operation was desirable and the solution had to be cost-effective.

From the way it was to the way it is now: ERRI decided to make a heater that was fully electric and which would operate as a warming unit. The unit was designed to be fully automatic and only required an on/off button for activation. In 1988 the first heater was designed for testing and in 1989 ERRI was founded.

A lot of technical problems were faced and overcome. There had to be a temperature regulation at the AC inlet to keep the cabin temperature within the range of 16–20°C, no matter what the outdoor temperature. Different aircraft ventilation designs had to be accommodated and ERRI spent at least two years finding a fan impeller with a flat air pressure curve over the full range of different airflows. Another decision taken was to change to PLC controls, since EU mains quality regulations made it impossible to continue with transistor controlled units.

As can be seen, this change in aircraft heating did not occur overnight. ERRI also faced marketing problems: there were suspicions over running the unit for extended periods, with potential customers believing that the net cost would be higher. However, a simple calculation proved that it was five to seven times cheaper to warm up an aircraft with electricity.

As ERRI concludes, for the future, handling companies will look to become more efficient, employ fewer people and have lower operational costs. Heating units therefore have to be smart, more automated and equipped with a PLC and a modem that can be remotely controlled and monitored from an operational centre.



### TREPEL

In 1946, during the post-war restoration of Germany, Mr Ingo Trepel established a business in refurbished machinery in Wiesbaden, named TREPEL. Within the first ten years, TREPEL had branched out into automation engineering; flake boards, vessel platforms and scissor



lifts, adding catering vehicles and cargo high loaders to the company repertoire by the 1970s. Despite various developments, scissor systems remained TREPEL's principal occupation and high demand for its products and growth in the sector led to the relocation of the company's GSE manufacturing to a 70,000 square metre facility in Tauberbischofsheim in 1991.

In 1996, almost 20 years ago, TREPEL Airport Equipment

was bought by NDW Holding – a family owned group not on the stock exchange and therefore not subject to the pressures of a fluctuating financial market. This has permitted the company to take a more long term, strategic approach to operations, making substantial investments in factory equipment, which has continued to facilitate its growing business. In the last 20 years production has expanded exponentially, manufacture soaring from around 30 cargo loaders a year to approximately 200. In this last year, in fact, TREPEL has seen a record high in sales, receiving the most orders on its books since 2007, with figures reaching the 300 mark. To date, the company has manufactured in excess of 200,000 scissor lifts and is yet to be bested in this achievement.

This is just one of several achievements over the past two decades. In 2003 TREPEL Airport Equipment achieved world leadership in terms of the sale of cargo high loaders for civil usage. In 2007, TREPEL launched the second leg of its operation, with the prototype of its first pushback tractor, the CHALLENGER 700, capable of ►



**威海广泰**  
WEIHAI GUANGTAI

**WEIHAI GUANGTAI AIRPORT EQUIPMENT CO., LTD.**  
Tel: 0086-631-3953518 / 3953930 Fax: 0086-631-3953103  
Email: overseas-sales@guangtai.com.cn





[WWW.GUANGTAI.COM.CN](http://WWW.GUANGTAI.COM.CN)

Happy *20*<sup>th</sup> anniversary to **ground handling**  
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towing a fully loaded A380, and by 2009 the product had entered the market. The first model was sold to Australia at the InterAirport Europe Exhibition in Munich and sales of TREPEL's pushbacks are progressing consistently every year, with over 100 models already having been sold. It is hoped that in as little as three to five years this vein of the business will be as profitable as the cargo loaders that have earned the company its celebrity in the GSE field. With the tractor's adjustable hydro-pneumatic suspension and enhanced cabin, the CHALLENGER 700 is a valuable innovation in the GSE arena and one of TREPEL's greatest milestones in the last 20 years.

And this is far from the only example of commercial growth. As well as the introduction of pushbacks to its catalogue, the company has expanded its range of loaders, too. Initially producing only two or three models of loader, TREPEL now manufactures six or seven varieties, and in far greater quantities than ever before. These products are sold to customers all over the world, from the US to New Zealand and Greenland to South Africa. If business continues to boom at the rate it has since its 1996 expansion to the new factory, TREPEL will surely continue to see improvements to its operation. In terms of the future, while there are no concrete plans to launch a new product, the success of its previous projects is a good indication of its ability to embark upon future business ventures. TREPEL closely follows the cargo market in order to remain up-to-date with industry trends and projections. According to Philippe de Soyres, there is a lucrative future in GSE leasing companies and he expects a great deal of its business to involve sales to such groups. GSE rental is a fast-growing business and a promising enterprise for all involved. Far be it from TREPEL to underestimate the industry...

### GOLDHOFER

Goldhofer started developing its range of towbarless aircraft tractors back in January 1987. The idea was to make use of its 40 plus years of experience in designing heavy haulage vehicles, together with an aptitude for building heavy steel frames of high tensile steel in other domains.

Trials for the Goldhofer AST-Prototype (which was 200 tonnes) began in March 1989, with launch customer Swissair in Zurich airport. In September 1989, after finishing the trial period, the AST-Prototype was presented at the InterAirport show, where the first Goldhofer 400 tonne towbarless aircraft tractor was ordered by Swissair. This tractor was finished and delivered in 1991. Despite good results in Zurich and the experience gained at other airports, the potential of towbarless towing was still the subject of much discussion. Only a small number of orders were received in the first ten years, but nearly every customer was satisfied with their improved operations – and they ordered more towbarless tractors.

Beginning in 1996, nearly ten years after starting the initial development, orders had increased and towbarless



towing was becoming more common at the bigger airports. In 1999 the first two Goldhofer AST-2s were delivered to Delta Air Lines in Atlanta. The AST-2 standard version had a 400 hp V6 diesel engine, but the Delta tractors had 500 hp V8 engines as they were intended to be used for high speed, long distance maintenance towing. These first two tractors performed a total of more than 5,000 working hours within their first year at Atlanta.

Following the September 11 attacks in New York, there was nearly a complete stop to investment in the airport business. In 2002 production dropped to less than 50% of 2001 figures. But nevertheless the towbarless towing concept settled down and a few years later, production was buoyant again.

With the development of the Airbus A380, a new class of tractor had to be developed: not for a 400 tonne aircraft, but for one now reaching nearly 600 tonnes. The story continues...

### TCR

Before TCR launched its first rental operations in 1999, rental of ground support equipment was not even an option. Ownership was more a question of tradition: historically ground handlers owned their equipment. Through the years, complexity of ramp operations, the need for more flexibility through increased competitiveness and increased service quality expectations, have motivated ground handlers to consider operating leases as a valuable solution.

TCR's full service offer, which includes sourcing of the equipment, repair and maintenance and fleet management through to disposal, allows ground handlers to concentrate on their core business while having the guarantee of available equipment at all times. The rental concept works: in Europe, TCR rented 6,000 units of GSE in 2005 and 20,000 units in 2015. The customer retention rate equals 95% and four out of five independent handlers are TCR's customers.

More and more airlines and airports are adopting the solution. Today, the Brussels headquartered company is



active in 12 European countries, 80 airports and employs 600 people. “This development is a consequence of an overall acceptance of the GSE rental concept by the market and the continued investment by TCR in absolute customer satisfaction all along,” comments Tom Bellekens, Chief Operating Officer of TCR Group.

More recently, TCR expanded very positively in Scandinavia following the start of its Norwegian operations in 2011. Presence in Scandinavia has spread today to 20 airports and over one fifth of TCR Group’s fleet is allocated to this region. TCR is negotiating other important Scandinavian contracts which should materialise in 2015. The rental company estimates that the Scandinavian region will continue to grow whilst getting more and more competitive. This generates a need for greater flexibility in order to quickly respond to a changing demand. Furthermore, TCR is reinforcing its presence in Italy and Germany.

Through the size of its GSE inventory (20,000 units) and workshops (more than 40), TCR now has the capability to manage huge customer fleets. This has generated the competence for large handling contract start-ups of several hundred units of GSE at very short notice, as well as the know-how to execute sale and rent-backs of fleets of several thousands of assets, including workshop and staff take-overs.

As a GSE rental services trendsetter, TCR has been able to retain a leading position through the years.

## WEIHAI GUANGTAI

Weihai Guangtai and *GHI* are about the same age and have observed each other’s progress as the industry has changed. Today, *GHI* is recognised as the voice of the ground handling industry and while we make some of the changes that directly or indirectly improve airport operations, *GHI* serves the industry by making these changes known.

In two decades, Weihai Guangtai has grown from a maker of GPUs to a major supplier for the handling industry. With 27 categories, including more than 200 models, Weihai Guangtai provides its customers with a complete range of GSE products, covering aircraft service, ground handling, air cargo, runway maintenance, aircraft refuelling and passenger cabin service.

As a leading supplier in the global GSE market, Weihai Guangtai has been committed to developing ever more innovative and environmentally friendly ground support equipment to meet increasingly personalised needs of customers and consumers. In line with changing customer

wishes, Weihai Guangtai has identified three important areas that it will pursue. These are multi-functionality, where two or more operations can be combined in a single product; electrification (the environmental aspect of GSE taking centre stage); and miniaturisation, where more customised products will be launched to meet the demand of the forthcoming rapid growth of the general aviation market outside North America.

## CAVOTEC

Two of the key changes for Cavotec’s Airports market unit in the past 20 years have been our successful transition to being a supplier of fully integrated systems and our continued development of innovative technologies that meet today’s more demanding industry requirements in terms of capacity, performance and the environment.



Over the past two decades, Cavotec has evolved from being a manufacturer of individual systems to being a recognised contractor for the design, manufacture and installation of fully integrated ground support equipment. As projects have become more complex – and more holistic – so, too, have customers increasingly looked for a single supplier to manage projects effectively from the design phase, through manufacturing and delivery, all the way through to completion.

This is a function that Cavotec is now widely recognised for, especially in the rapidly growing Middle East region. Demands on airports in terms of minimising environmental impact, passenger comfort, capacity and technical performance have grown considerably in the past 20 years – a trend that seems likely to continue in the years ahead.

At Cavotec, working closely with airports, airlines and the industry as a whole, we continue to develop our GSE technologies to meet these demands: to cool aircraft quickly and efficiently – including larger aircraft in warmer ambient conditions; to reduce the use of diesel driven equipment; to reduce equipment clutter on the apron and to improve aircraft turnaround times.

Together, through expanding co-operation and embracing technological innovation, we can achieve the improvements in operational efficiency and environmental performance that will be critical to the success of air travel for the next 20 years and beyond.



# *Our power on the ground rises to the sky!*

We have merged our power with our superior operation quality and experience. We have hosted more than 80 million very satisfied passengers by providing services to 600,000 flights a year. We are always at your service so you can soar into the sky with the power of perfect harmony we provide.

