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APRIL 2018

Ground Support

WORLDWIDE
EQUIPMENT – SERVICES – HANDLING

RICARDO CARAZO

2018 TEAM LEADER
OF THE YEAR

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GROUND SERVICE PROVIDERS
Use GSE to Keep Ground Handlers Safe
INTERNATIONAL
The Complexity of Serving China
INDUSTRY EXPERT COLUMN
The Possibilities Presented
by Autonomous GSE

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Vol. 26, No. 3

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Ground Support Worldwide (USPS 0015-386), (ISSN 1934-2861 print; ISSN 2150-4016 online) is published 10 times per year in February, March, April, May, June/July, August, September, October, November and December/January by SouthComm Business Media, LLC. 1233 Janesville Ave, Fort Atkinson, WI 53538. Periodicals postage paid at Fort Atkinson, WI 53538 and additional mailing offices. POSTMASTER: Send address changes to Ground Support Worldwide, PO Box 3257, Northbrook, IL 60065-3257. Canada Post PM40612608. Return undeliverable Canadian addresses to: Ground Support Worldwide PO Box 25542, London, ON N6C 6B2.

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Don't Wait, Act Now

The International Airport GSE Expo is six months away, but now is the time to make arrangements.

Six months! There are six months until the International Airport GSE Expo in October.

I know it may seem like we have an eternity until the expo arrives, but it will be here before you know it. So here are some things to do now to get prepared

Register. If you register early and are qualified, it is free. That's right, free. Don't wait to register on site, register now. Did I mention, it's free?

Book your hotel room. We have a block of rooms at the Rio All Suite Hotel and Casino. Nothing is more convenient than staying onsite at the Rio, and being able to simply walk down to the expo. Plus, our block rate is fantastic.

Also, if you are attending and you want to come early to play golf, we are holding the *Ground Support Worldwide/PAGE Industries* golf outing

again this year on Monday, Oct. 1. This is always a great time and a great networking event.

This year the show is going to be bigger and better than ever, and I am beyond excited to see the hard work and effort that everyone has put into the event continue to make it a great show.

See you in Vegas!

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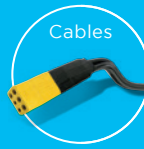
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► Upcoming Events

May 1-3

**NBAA Maintenance
Conference**
Albuquerque, NM

May 7-9

Airport Show
Diecec, Dubai

May 29-31

**European Business Aviation
Convention and Exhibition
(EBACE)**
Geneva, Switzerland

June 12-14

**NATA 2018 Annual Meeting &
Aviation Business Conference**
Washington, DC

June 12-14

**Canadian Business Aviation
Association Convention &
Exhibition**
Waterloo, ON, Canada

June 19-20

IATA Aviation Data Symposium
Berlin, Germany

July 23-29

EAA AirVenture
Oshkosh, WI



**OCTOBER 2-4, 2018
AND
OCTOBER 20-22, 2020**

**RIO ALL SUITES HOTEL
AND CASINO
LAS VEGAS, NEVADA**

BUSINESS BUZZ

► TOP NEWS

Aim for 1 Billion Passengers to Fly on Sustainable Aviation Fuel Flights by 2025

The International Air Transport Association (IATA) set out an aim for one billion passengers to fly on flights powered by a mix of jet fuel and sustainable aviation fuel (SAF) by 2025. A flight completely powered by sustainable fuel has the potential to reduce the carbon emissions of that flight by up to 80 percent.

"The momentum for sustainable aviation fuels is now unstoppable. From one flight in 2008, we passed the threshold of 100,000 flights in 2017, and we expect to hit one million flights during 2020. But that is still just a drop in the ocean compared to what we want to achieve," said Alexandre de Juniac, IATA's Director General and CEO. "We want 1 billion passengers to have flown on a SAF-blend flight by 2025. That won't be easy to achieve. We need governments to set a framework to incentivize production of SAF and ensure it is as attractive to produce as automotive biofuels."

The push to increase uptake of SAF is being driven by the airline industry's commitment to achieve carbon-neutral growth from 2020 and to cut net carbon emissions by 50 percent compared to 2005. A number of airlines, including Cathay Pacific, FedEx Express, JetBlue, Lufthansa, Qantas and United, have made significant investments by forward-purchasing 1.5 billion gallons of SAF. Airports in Oslo, Stockholm, Brisbane and Los Angeles are already mixing SAF with the general fuel supply.

ITW GSE Announces the Merging of their Global Brands Under One Name

ITW GSE, a leading supplier of ground power units, pre-conditioned air units, cables and hoses, has announced the merge of its brands of AXA Power, Hobart, Houchin, Military and J&B Aviation.

"From April 2018, we will simply be ITW GSE," said Poul Elvstrom, vice president of



global sales & marketing. "Moving from a local to a global supplier, a single brand strategy is the natural step in order to streamline our market approach and to reduce global customer's confusion."

Along with the merge, ITW GSE is organizing each of their product segments into four simple categories – power, air, cables and hoses.



dnata Opens DFW's First Perishable Cargo Facility

dnata officially opened a 37,000 sq. ft. cargo center that includes the only dedicated cool-chain perishable cargo facility at Dallas (DFW) airport. Developed as a part of its agreement with AirLogistix USA which it acquired last year, dnata has opened the facility – which is suitable for all perishable products, in cooperation with the Dallas Airport Authority.

"As a leader in the global air cargo industry, we are constantly looking to innovate and offer the highest level of service", said David Barker, CEO – dnata USA. "We realized that it was not only important for us to build a modern cool-chain facility to meet our long-term objectives, but to also go the extra mile and ensure the compliance of our operations against the highest international standards. There is a clear need to increase capacity and ensure our customers have the flexibility that meets their specific needs via our cool-chain solutions."

dnata has continued to significantly expand its global cargo offering, including the opening of 18 new cargo facilities in the past five years. dnata now handles over 2.8 million tons of cargo at 43 airports worldwide.



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THE ENGINE OF SUCCESS

NATA Seeks to Recognize FBOs in New Initiative

The National Air Transportation Association (NATA)



announced the “FBOs: Above and Beyond” initiative to highlight the extraordinary services provided by its Fixed Base Operator (FBO) members. NATA’s goal is to provide a well-rounded perspective on the FBO industry, directly from those with first-hand experience.

“NATA’s Fixed Base Operators are the gateway to communities nationwide and enter into public/private partnerships that generate billions of dollars of investments at general aviation and commercial airports throughout the United States and around the world. FBOs provide essential services to keep general aviation healthy, sustainable and successful – many going above the call. We would like to hear of these stories and share them with the public,” stated NATA President Martin H. Hiller.

“The goal of this effort is to work with our members and other industry stakeholders to inspire the general aviation community and the next generation of pilots, technicians and other aviation professionals,” added NATA Executive Vice President & General Counsel Timothy Obitts.



Emirates SkyCargo Awarded Cargo iQ Certification Through External Audit

Emirates SkyCargo, the freight division of Emirates, was presented with its Cargo iQ certification at the World Cargo Symposium in Dallas. SGS, Cargo iQ’s nom-

inated external audit company, audited Emirates SkyCargo’s internal processes including the measures taken by the carrier to minimize or eliminate shipment errors and provide customers with more visibility on the status of their shipments.

“With every Cargo iQ member that becomes accredited, we are another step towards a supply chain that is transparent and in control of its shipments,” said Ariaen Zimmerman, executive director, Cargo iQ. “The way Emirates SkyCargo has integrated the Cargo iQ Master Operating Plan with their internal procedures is a clear example of how implementing our standards offers so much more than a mere monthly report, and can actually lead to better process and shipment control.”

Emirates SkyCargo has invested in setting up and operating a dedicated Cargo Operations Control Centre (COCC) which monitors the status of shipments in real time.

“Over the last two years we have worked on integrating the vision of Cargo iQ into our processes and our ‘Delivered as Promised’ commitment to our customers,” said Nabil Sultan, Emirates Divisional Senior Vice President, Cargo. “Getting the Cargo iQ certification and the setting up of our 24/7 Cargo Operations Control Centre are the first steps in a journey where we can be more transparent and at the same time more proactively support our customer promises.”

eSage Introduces Online Parts Ordering

Sage Parts launched an online ordering system through eSage and its related app eSage Mobile.

eSage allows customers to order parts from anywhere in the world – 24 hours a day, seven days a week. There are multiple features of eSage such as access to the company’s on-hand inventory of GSE parts. The advanced search engine feature within eSage allows users to search by name, part number, description



or by where the part is used.

eSage Mobile makes use of the same advanced search engine built into the eSage website. One of the features of the eSage Mobile app is the use of the smart phone’s camera to scan a barcode of an item to do a part search. The app also allows for the user to view part images, customer catalogs, and the customer’s favorites. There are additional features, currently in development, that will be released later in 2018.

► PEOPLE

Pop Joins Stertil-Koni as Business Development Manager

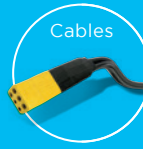
Stertil-Koni, a leader in heavy duty vehicle lifts, has announced that Radu Pop has joined the company as business development manager.



In his new position, Pop will work closely with the company’s regional sales managers as well as its top leadership at headquarters in Stevensville, Maryland, to further advance fleet sales and simultaneously support the efforts of Stertil-Koni’s national accounts team.

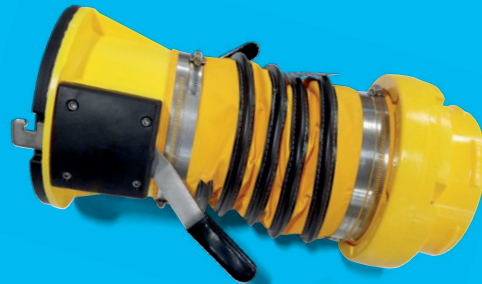
“Stertil-Koni continues to achieve strong growth in the industry and to support this level of business activity, we are pleased to welcome an experienced pro, like Radu, to join our team. Radu has an extensive background in vehicle lift sales and facility operations. What’s more, he has the drive, dedication and talent to further help boost Stertil-Koni sales and customer support,” said Dr. Jean DellAmore, president of Stertil-Koni.

With a decade of industry experience, Pop brings with him an extensive knowledge of maintenance facility operations, technician safety, and recommended practices across a wide variety of fleet types.



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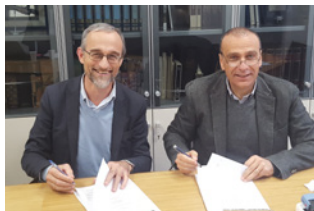


It's all about connections

► NEW DEALS

TCR Signs Full Service Rental Contract with GH Italia

TCR is proud to announce that it has signed a GSE full service rental contract with the largest privately held handling group in Italy, GH Italia, at Venice, Naples



and Bologna airports. The lease cooperation starts on May 1. The leasing concept proposed by TCR, enables GH Italia to invest massively in the new equipment in the three stations.

"GH Italia has chosen TCR as a trustworthy business partner able to supply a fleet of over 200 units of ground support equipment rapidly and reliably," says Paolo Zincone chairman/CEO of GH Italia. "This partnership is part of a renewal process which will make the equipment more environmentally friendly and safer for staff and customers alike."

"We are very pleased about this agreement as it is a very important step for TCR Italia, not simply for the size of the deal, but because it shows TCR's ability to deliver tailor made and complex solutions in today's Italian handling market," adds François Peeters, general manager at TCR Italia.

AirBridgeCargo Extends ULD Management Partnership with Unilode

AirBridgeCargo Airlines and Unilode Aviation Solutions have extended their Unit Load Device (ULD) management agreement until mid-2023.

AirBridgeCargo operates a fleet of 18 Boeing 747 freighters with more than 10,000 ULDs, which are being supplied from Unilode's global fleet of 120,000 ULDs. Unilode has supported AirBridge-



Cargo's growth with ULD management solutions since 2004 and their mutually beneficial

partnership has now been extended for another five-year term.

"AirBridgeCargo is pleased to continue its long-term partnership with Unilode that has developed an intimate understanding of our requirements during our 14 years of cooperation and has continuously invested in its ULD fleet to support our airline's growth since the beginning of our operations," said Sergey Lazarev, AirBridgeCargo general director.

"We are committed to expand our ULD repair and management network, and invest in relevant technology, equipment and digitalization, including ULD tracking solutions, to help AirBridgeCargo achieve its ambitious growth plans and continue to deliver excellent service to its customers," added Benoît Dumont, Unilode CEO.



dnata Joins Forces With IBS to Implement iCargo System

dnata has entered into a contract with IBS Software to implement the iCargo terminal operation suite across all its stations. The end-to-end solution will help manage dnata's air cargo movement worldwide seamlessly. dnata is the first ground handler to launch a global roll-out of iCargo and have all its operations on one united platform using unified processes.

"We are always in pursuit of delivering exceptional service and improving safety and efficiencies. With iCargo as our technology platform, we are confident that we can stay agile and adapt to the fast changing needs of our customers across the globe," said Bernd Struck, senior vice president UAE cargo and DWC airlines services, dnata.

"I am extremely pleased and excited to welcome dnata, one of the fastest growing ground handling companies in the world, as our latest customer for iCargo and look forward to a mutually beneficial long-term partnership" said Ashok Rajan, SVP and head of airline cargo services, IBS Software.

Through iCargo, dnata will automate key business and operational functions – including ULD management, quality monitoring and mail management with a single seamlessly integrated platform.

WFS Wins U.S. Contracts

Worldwide Flight Services' (WFS) North American operations have made a successful start to 2018 by winning and renewing cargo handling, ramp and passenger services contracts with airline customers at eight U.S. stations.

At Houston's George Bush Intercontinental Airport, WFS won the freighter handling contract for Turkish Airlines' new twice-weekly flights to Istanbul. New cargo handling contracts have also been awarded to WFS by Aer Lingus in Seattle, while, in Miami, Ethiopian Airlines has chosen to partner with WFS to support its new route from Addis Ababa. DHL Air has also renewed contracts with WFS in both Kansas City and St. Louis.

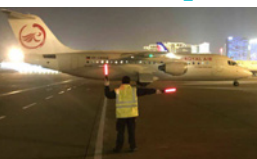
Three new ramp handling contracts have been awarded to WFS since the start of the year in Newark.



WFS is also seeing strong demand for its passenger services in the U.S. Starting in April, it will serve passengers traveling on LOT Polish Airlines' new weekly Warsaw-New York JFK-Warsaw flights as well as those flying onboard Allegiant Air's new six flights a week from Sarasota. In Canada, WFS has signed a three-year contract with Lufthansa to handle some 6,000 tons a year onboard its services from Frankfurt.

"Most of these latest contracts are extensions of working relationships we have with these airline customers at other points in our network, so we especially welcome their confidence in our ability to provide the same superior service, safety and security at more of the airports they serve across the U.S.," said Ray Jetha, WFS' SVP, sales and business development.

Menzies Welcomes New Asian Route, Extends Partnership with Czech Airline



Menzies Macau welcomed a new carrier, Royal Air Charter Service Inc., and their newly launched route

between Macau and Boracay, a small island in the Philippines.

Meanwhile, Travel Service, the largest Czech airline company, has extended their partnership with Menzies Aviation for a further five years. Travel Service flies to more than 400 airports on four continents, operating SmartWings passenger flights alongside their Business Jet charter and private flights.

They are among the first airlines in the world to incorporate the new Boeing 737 MAX 8 into their fleet, welcoming their

first new SmartWings-branded aircraft on Jan. 31 at Václav Havel Airport in Prague. They plan to acquire 39 further 737 MAXs in the next six years.

"We are delighted to maintain our long-term partnership with Travel Service, which we have maintained since 2012," said Miguel Gomez, Menzies Aviation's senior vice president continental Europe.

Swissport Concludes Aerocare Acquisition

With effect from March 7, Swissport International Ltd. has concluded the acquisition of Aerocare and its subsidiaries Skycare, Carbridge and EasyCart from Archer Capital and the Aerocare management. Swissport now holds 100 percent of Aerocare, a leading aviation services and airport infrastructure services provider in Australia and New Zealand. The acqui-

sition of Aerocare was announced in November 2017.

"The integration of Aerocare into Swissport is a key milestone in the execution of our growth strategy," said Eric Born, group president and CEO of Swissport. "Aerocare provides us with an entrance into Australia and New Zealand and it will serve as our platform to expand in the fast-growing Asia-Pacific markets."

Founded in 1992, Aerocare employs more than 3,000 staff and provides services to major domestic and international airlines across 36 airports in Australia and New Zealand. The management team of Aerocare will continue to run the business in Australia and in New Zealand from its Australian office.





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The Possibilities Presented by Autonomous GSE

Driverless vehicles may be the answer to ground handling challenges like recruiting and management issues, safety compliance and more.

By Valentin Schmitt

Automation systems once only moved within the science fiction world, populating the dreams of generations of Star Trek fans, but have now dramatically accelerated over the last few years to be a part of our daily life.

The development of available technologies to meet growing needs has influenced this acceleration but warp drive speeds were reached with the developments of TESLA or Google Cars (today known as WAYMO), forcing society to accept this reality and start to adapt to it. Star Trek fans now manage our R&D centers.

The result is that automated vehicles are getting a substantial amount of news coverage these days, and for good reason: once they are capable of driverless operation, they may create new efficiencies in our intense lives by carrying out many different tasks. And those opportunities are happening sooner rather than later, as the recent Winter Olympics in South Korea have demonstrated, showcasing many unmanned systems.

The Airport Opportunity

In that world of opportunity opening now, airports will experience an enjoyable position, as many factors currently still slowing down deployment on open roads are not existing on the ramp.

Airports are private environments, setting their own rules and regulations, and therefore able to adapt faster to new technologies or concepts. Airports are also controlled environments, where situations can be anticipated, and a reasonable level of complexity in automation will be sufficient.

Today, the set of operations required for an automatic handling process (as long as we exclude the aircraft operations) could be performed with a restricted level 5 automation, while the complete level 5 automation (full automation for open road driving) is still many years away.

Automated Vehicle: Who are You?

A driverless vehicle is the coordination of different technologies, developed in concert and optimizing their function and performance of each. None of

them is individually sufficient, but all are required to ensure the success of a program.

It starts with the vehicle itself. In the GSE world, we should keep in mind that many constraints and specificities have been driving the development of our machines over the past 70 years. From specific speeds, to specific loads via specific heights or frequencies, (almost) everything is specific on an airport.

Developing a driverless GSE product certainly requires to start with an existing GSE product to avoid the long and painful process of discovering problems unique to the ramp.

But, of course, a driverless vehicle is more than GSE. It includes the robotization of the unit, with a steer and drive by wire concept, redundant and failsafe brake systems and a powerful redundant ECU, all this together with a computer monitoring the unit and its environment.

The challenge here is that each piece of technology in all those dimensions are evolving at a very high pace. Each time the annual Las Vegas Consumer Electronic Show is held, for instance, it offers a new set of sensors, ECU or software.

A cooperative effort of industry leaders is an absolute must to keep track of these constant evolutions in technology. In our case, the strategic partnership between TLD and EasyMile, together with specialists in the electronic industry, is allowing our autonomous project to benefit from R&D of innovative leaders in their own respective segments.

The third level of a driverless vehicle program is the fleet management software. Much of the intelligence of the system will consist in the capacity of the machines to interact with their environment and to optimize it. The supervision system is the cornerstone of that interaction, collecting the operational needs, the fleet conditions and the constraints from the environment, turning them into the best possible solution for the operator, at each step of the process.

Finally, a driverless vehicle program is a lot more than a machine. It is about the implementation of the program. Gathering the different stakeholders, anticipating the roadblocks or the required changes, and managing and implementing the project to



ensure a smooth transition is maybe as important as the machine itself. Here, for TLD and EasyMile, the experiences of more than 100 driverless vehicles implemented in more than 20 countries is making a difference.

So, What Will Come Next?

Airport driverless shuttles already exist. The EZ-10 vehicle is currently moving crew around or transferring people from one terminal to another, avoiding the infrastructure impact of a train.

TLD's TractEasy, a driverless baggage tractor developed together between TLD and EasyMile, will start its operations by summer 2018. It will allow carrying baggage from the terminal to the aircraft area, but still excluding the aircraft final approach.

This last step, operating automatically up to the aircraft, will require further developments, and will likely bring only limited savings, as operators will be needed to load the aircraft – at least for the time being.

Now, Why Should I Do It?

Driverless vehicles are an obvious answer to many ground handling challenges; recruiting and management issues, significant productivity and efficiency improvements, not to mention the safety and process compliance.

They will become, without any doubt, an important factor (not to say the critical factor) of any future ground handler performance roadmap.

But if there is a reason today to launch a driverless vehicle program, it is probably to build your expertise. Those projects will develop fast, probably even faster than what we anticipate today, and your ability to build that critical expertise will be a major differentiation factor for the future in your race for leadership and operational excellence. **GSW**



► ABOUT THE AUTHOR:

Valentin Schmitt is Chief Operating Officer at TLD. He graduated from Ecole des Mines de Paris in 2000 and started his professional career as consultant at Oliver Wyman in Europe and South America. After having consolidated his experience at Faurecia, a leading tier 1 automotive industry, Valentin joined a French office furniture manufacturer under chapter 11 for a successful turn-around as Chief Operations Officer. In 2008, Valentin joined United Technology (Pratt & Whitney, Sikorsky...) in the Fire & Security division as Commercial Director World for the Oil & Gas activity. Schmitt became CEO of TLD Europe, Middle East & Africa in 2011, before becoming the Group Chief Operating Officer in 2017. TLD is a world leader for GSE with eight factories across three continents and 40 offices to support its customers all around the globe. As part of his role, Schmitt is supporting the TLD autonomous vehicle initiatives. He is a qualified pilot (PPLA) for land and seaplanes.

Ricardo





Ricardo Carazo

2018 TEAM LEADER OF THE YEAR

Using a consistent and fair management style, Carazo and his ground crew have achieved zero delays while working at one of the country's busiest airports.

By Josh Smith

Ricardo Carazo has always loved airplanes, which is why he enjoys living just five minutes away from Dallas/Fort Worth (DFW) International Airport, where he works as a crew chief for American Airlines.

He also says he loves the smell of jet fuel, which gets his adrenaline pumping and prepares him for another day of servicing aircraft at Gate D40.

Perhaps most importantly, Carazo cares deeply for the members of his crew – Glenn Fox, Bill Delinger, Shelly Trowbridge, Howard Vazquez, Chris Edwards, Sterling Scott and Dwain Pickney. He works side-by-side with his team members, and as a group, they have achieved zero delays.

Because of his accommodating managerial style and impeccable professional record, he has been named the *Ground Support Worldwide* 2018 Team Leader of the Year.

Building Experience

Carazo has been a crew chief for 19 of the 28 years he has worked for American Airlines.

He started with the airline in 1990 as a fleet service clerk at San Juan International (SJU) Airport in Puerto Rico.

As his career advanced, he became qualified as an acting crew chief, filling in when needed to cover for others on vacation. Then, he became a full crew chief in 1999. In 2008, he was transferred to DFW, where he has worked since.

While serving as a fleet service clerk, Carazo said he desired to take on more.

“I wanted the responsibility, the challenge,” he says. “So in ’99, that’s when I decided I was going to put in a bid for the position.”

Carazo’s passion for aviation started at a young age. Carazo spent a lot of time with his father, a pilot in the Air Force, watching planes take off and land at the airport and learning more about them. His interest in airplanes continued to rise. So when he

secured work for an airline, he says it was “dream come true.”

“Every time I would go to the airport and see them take off and land, I was super excited. I always said, I wanted to be in there with those airplanes,” Carazo recalls.

His aviation knowledge hasn’t stopped expanding thanks to decades of experience and ongoing training.

“We are training non-stop, year-round, day-in and day-out,” Carazo says.

Through American Airlines, alone, Carazo has attended the Crew Chief Workshop as well as the Leadership Summit for Crew Chiefs.

At the Leadership Summit for Crew Chiefs, recently held at company headquarters, he and his colleagues received information regarding tools that they’ll be receiving in the near future to make their jobs more productive.

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He says all training is critical to ensure his team's work is completed properly and safely.

"We deal with restricted articles, animals, mail, freight and bags. This has to be properly segregated and loaded in different compartments for the safety of our traveling animals in our planes' bellies, and of course the safety of our passengers and co-workers on that plane," he says.

Ramp Responsibilities

Carazo manages the second shift crew, which is comprised of six crew members. His crew is stationed at Gate D40 at DFW, where there has never been a delay caused

by his team of ground handlers.

"We as a crew have accomplished zero delays, which is hard in this fast-paced operation," he says, adding it's a feat his team takes tremendous pride in.



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"It's always been in and out proficiently, and planes are ready to depart 15-20 minutes before departure when they're still boarding passengers," Carazo continues. "In my whole career, I've never had a delay."

Carazo's former crew chief in San Juan once offered an important piece of advice. He told Carazo to learn to see in front of him, behind him and to the sides simultaneously to avoid dangerous situations.

"At the end of each day, we need to go back to our families," he says. "There is no place for failure."

While he refers to his fleet service clerks as "the backbone" of the operation because they "do all the heavy lifting," it is Carazo's job to make sure the team is adequately prepared with the correct tools and equipment. He also ensures they are conducting their work safely.

"Just plan for the worst, and expect the

better," Carazo says. "I go out with enough time, so if equipment breaks down or anything does happen, we still have spare time to wiggle around and get those planes out on time. That's what we want."

For example, if Carazo and his crew know bad weather is coming, they begin the turnaround process sooner to ensure bags don't get wet and to make sure mail or even animals are stowed safely.

"We're not scared of water. We'll do whatever it takes to get those planes in and out," he says.

The crew consists of two "belly guys" who work inside the aircraft, loading and unloading, in addition to serving as wing walkers; two drivers, who separate bags as they come down from the belly and transfer them to connecting gates; a "local man" that is in charge of delivering all local bags to the local baggage system belt, in addition

"I get in there with them and **I get dirty**. My white shirt **doesn't mean** that I'm going to go home **clean**. It means that I probably go home with **my shirt all stained** like they do."

— Ricardo Carazo

to keeping the gate organized for the day's operations and pushing out aircraft for on-time departures; and a sixth man who assists everyone at the gate, handling tasks from servicing water to delivering bags.



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The ability to multitask is extremely important.

"We are seven of many moving parts of this finely tuned airline," Carazo explains.

Personally, when the plane comes into the gate, the first thing Carazo does is check for damages that may have occurred during flight or by any equipment or personnel at another station. If there are damages, he reports them, so they can be properly repaired.

He trusts his team to perform their duties, but Carazo is also willing to crawl in the belly to load or unload bags and service the aircraft's water in order to keep the process on time.

"I get in there with them and I get dirty," he says. "My white shirt doesn't mean that I'm going to go home clean. It means that I probably go home with my shirt all stained like they do."



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However, Carazo's willingness to help does not mean he micromanages his crew.

"I'm not on top of them telling them what to do," he notes. "We're all adults, we know we're all professionals."

Then, during the loading process, he is responsible for ensuring the plane is loaded properly. He pays close attention to weight and balance – the most important skill crew chiefs learn, according to Carazo.

"Not all aircraft types are the same when it comes to loading. Some are tail heavy, others are nose heavy – meaning that we need to know how to load each type of airplane," he explains.

"Every time a plane comes in, I go to the computer and I pull up the paperwork," Carazo continues, noting he receives pertinent weight information from the airline's load agents. "If we don't do it properly, then it's going to become a delay. We probably

have to reopen the bellies, move things around and create a lot of inconvenience for our passengers.

"So we're always thinking a step ahead."

During the loading process, he is also making sure his crew is working safely.

"When I'm loading, I'm always facing towards the traffic. That way, if somebody's coming in too fast or out of control, which has happened before, at least I can give them a heads up to move out of the way, so they don't get hurt," he explains.

Carazo says his team unloads 500–10,000 pounds of bags, mail and freight, and reloads the same airplane with another 3,000–10,000 pounds of the same.

"Depending on the destination and narrow-body airplane type, this is done in 40 to 50 minutes," he says, adding his crew is required to be ready 10 minutes before arrival and have the plane fully loaded with

the cargo doors closed and secure 10 minutes before departure in order to ensure an on-time pushback. "We work around four to five planes in an eight-hour shift."

He says every day on the ramp is different, and they regularly encounter unique scenarios.

Leading by Example

With so much work to accomplish during their shift, Carazo's job is to bring the many personalities on his team together so the crew is working as one unit.

"A happy employee is an efficient employee, and that translates to an efficient operation," Carazo says, noting he treats everyone with the respect they deserve as professionals. "I treat all my employees as my family."

"If you come into work today, and you're feeling a little bit sick, then I'm going to ask

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He has assured his team that if they're working in the rain, or working through extreme temperatures (many times in excess of 100 degrees F, or less than 10 degrees F), he will be there working alongside them.

you to stay in the gatehouse," he adds. "I will take care of your responsibility as far as I can to make sure that you get well, you're ready for the next flight or the next day of work."

Unlike some others, Carazo says he doesn't believe it's right to sit in the temperature-controlled gatehouse, while his team works outside. He has assured his team that if they're working in the rain, or working through extreme temperatures (many times in excess of 100 degrees F, or less than 10 degrees F), he will be there working alongside them.

"I will never forget that I was also a fleet service clerk when I started with American Airlines," he says.

Delinger, who has worked with Carazo for the majority of his five years of employment at DFW, credits his crew chief for having a consistent management style. He says consistency is vital to gaining a crew's respect.

"The idea of not asking somebody to do something that he wouldn't do himself is paramount in a good manager," Delinger says.

He points out that the ground handlers work hard for Carazo because their performance is a reflection of their crew chief.

"He appreciates it, and he returns it," Delinger says. "Each person has their own specific job, and if you see somebody that can't necessarily do what they're doing, you pick up the slack. When we work together

enough, you almost develop a quiet dance, so to speak."

Fox has worked alongside Carazo since 2014. He prefers to work with Carazo because everyone in the operation knows what is expected and does it without harm.

"I trust him to get me home safely," Fox says. "We do the job safely and get these planes out on time."

According to Fox, Carazo delegates work impartially and does a good job of getting the team prepared for the day's work.

"If something is going to change, if we are short a person or something like that, and he expects something else of us, he's going to let us know before the plane gets here," Fox says. "Our jobs are pretty straight forward, but whenever it comes to a crisis or something that's out of the norm, that's when we need a crew chief with the experience that Ricky has."

"We can rely on that he's going to know what to do next."

"Do you have freight coming off? Do you have mail coming off? Do you have animals?" Delinger adds. "It's just a preparation of placement of the equipment that you need."

Perhaps the best evidence that Carazo's leadership style is effective is the fact that most of his crew returns to his team bid after bid.

"We do three bids a year, that way it gives every employee the opportunity to change hours and days off, or work areas," Carazo explains. "Most of the time, I get the same people. They bid over and over with me."

"We are always looking out for each other," he continues. "This sounds like a simple task, but it takes years working together as a family." **GSW**



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The Complexity of Serving China

While the Chinese market represents a great opportunity for GSE manufacturers, relatively high import duties can, at times, make it difficult to access.

By Mario Pierobon

Aircraft ground handling, and with it the supply of ground support equipment (GSE), is a significantly growing market in China. Airports are growing in size pretty much everywhere. As the market is huge, there is also a lot of equipment being procured by ground handling service providers (GHSP) operating at Chinese airports.

Overall, while the Chinese market represents a great opportunity for GSE manufacturers, relatively high import duties can, at times, make it testing to penetrate.

"There is a challenge for international GSE manufacturers in that there is not a tradition for buying imported equipment, namely because of relatively high import duties on GSE," says Lars Barsoe, vice president of sales and marketing at Vestergaard Company. "From the one end, the Chinese market represents a huge opportunity, yet it can be difficult to penetrate, also because Chinese companies are not fully accustomed to paying the types of prices that leading high end international GSE manufacturers normally charge."

Compared with locally built equipment, there are duties on imported equipment ranging from 8 percent to 12 percent, in addition to overseas shipping costs that must be added.

"Obviously GHSPs at small airports with

less than 10 million annual passengers may not be able to afford such costs. However, major GHSPs, such as local airlines, are actually willing to pay such costs plus a small premium for international brands with high quality and features that meet their operational requirements," says Chris Tam, executive director of sales and service at TLD Asia.

"It is up to international GSE manufacturers to justify the premiums GHSPs need to pay by accepting the values that we are able bring while the locals are not," he continues. "TLD's business in China has been growing at 29 percent CAGR (compound annual growth rate) in the last nine years with over 60 percent of revenue on imported equipment. On the other hand, there must be a good supporting structure established to service the equipment on the ground. GHSPs would not tolerate a piece of imported equipment to be grounded for months due to lack of parts or service."

Equipment Requirements

Nevertheless, aircraft ground handling remains a significantly expanding industry and Chinese GHSPs also have increasingly sophisticated requirements in terms of GSE forward-fit and retro-fit. According to TLD's Tam, areas of particular interest for Chinese GHSPs are safety features, emis-



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sion standards enabling equipment to generate lower emissions and user friendliness, i.e. the equipment must be simple to use and account of ergonomic considerations for drivers.

"Typically, Chinese ground handlers require their equipment to be outfitted from the start (forward-fit), but there are instances when a new option becomes available, and then retro-fits become desirable," adds Vestergaard's Barsoe. "However, it is a difficult budget process to get anything retro-fitted and, therefore, they prefer forward-fit."

GSE safety features, like sensors, are now required on all equipment coming anywhere near the aircraft, as the Civil Aviation Authority of China (CAAC) has taken the approach that since these features are available, then all equipment should be fitted with them.

"With regard to equipping GSE with sensors, Chinese GHSPs are further ahead than in many other parts of the world. They are actually expecting sensors to be installed as part of the standard equipment configuration; essentially, all new pieces of equipment being delivered or next to deliver are by default equipped with sensors," says Barsoe. "From the other hand, when dealing with Chinese buyers it can be difficult to make the case for the premium on price that necessarily comes with more sophisticated equipment."

Tam points out, however, that only a few Chinese GHSPs are really looking into GSE equipped with highly sophisticated features such as TLD's aircraft safe docking (ASD) system, which is equipped with diesel engines meeting the latest emission standards or electrically powered GSE.

"Nevertheless, awareness on the future of

For overseas GSE manufacturers doing business in China, it is an **absolute must** to have some degree of local **after-sale support** that is at **easy reach** of the Chinese customers.

GSE is surely increasing by means of promotion by suppliers like ourselves," he says.

Operational Challenges

Like in many other parts of the world, aircraft ground handling in China faces some operational challenges which GSE manufacturers can help to address. The challenges include the safe docking of GSE; increasingly stringent emission standards at Chinese airports; battery charging infrastructure which are not installed and prevent GHSPs from using electric GSE; the hiring and training of qualified drivers for GSE due to explosive growth; and implementing IATA ground handling standards, according to TLD's Tam.

"The challenges are more or less the same as in the rest of the world," agrees Vestergaard's Barsoe. "One important consideration is that most operators speak Chinese only, so equipment has to be developed so that it can be understood by the operators. Moreover, GHSPs are not keen to deal with the inconvenience of service, so there has to be a service back-up."

Unlike in Europe, North America and Japan where there have been several exchanges of views and best practices across borders and across multiple GHSPs, airlines, airframe manufacturers, and authorities for defining international standards like SAE, Chinese authorities insist on creating their own standards – albeit with a consideration to IATA' standards. But it creates a challenge for international manufacturers in that there are different standards.

"There would be a benefit to derive from



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common international industry standards, but in China the situation is not fully mature to adopt internationally accepted GSE standards,” notes Barsoe.

After-Sale Services

The after-sale network in China, according to TLD's Tam, is loosely organized in terms of maintenance support infrastructure.

Most airports have one or two small players set up to do the service jobs.

One key local GSE manufacturer sets up a maintenance company focussed on providing after-sale service to various airports in China and trying to leverage this for future sales on new equipment. Service becomes a key factor for GHSP's to select suppliers, Tam notes.

For overseas GSE manufacturers doing business in China, it is an absolute must to have some degree of local after-sale support that is at easy reach of the Chinese customers.

“Our anti-icing and deicing equipment, for example, is rather crucial or critical to operational continuity and requires 24/7 support. As a foreign manufacturer, we have setup a facility with a local partner that enables us to support our customers with very short response times. Warranty periods are long, and GHSPs expect 24/7



service in the entire warranty period,” says Barsoe of Vestergaard.

While the aircraft ground handling industry is booming in China and it offers good opportunities for international GSE manufacturers, it is also difficult to pene-

trate for international GSE manufacturers.

Key to conducting successful business in China is the provision of equipment that includes safety features, considers the operational challenges in China and can rely on solid local after-sale support. **GSW**



▶ ABOUT THE AUTHOR:

Mario Pierobon is a safety management consultant and content producer. He currently is working on a research project investigating aircraft ground handling safety. You may reach him at marioprnb@gmail.com.



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Use GSE to Keep Ground Handlers Safe

From lifting bags to positioning planes, safety measures can be found in many areas.

By Jen Bradley

“Airside are very busy environments where lots of various ground support equipment is operating often under time pressure to service aircrafts on time,” says Altay Fellah, INFORM GmbH’s, vice president of business development for its aviation division. “In such a busy and time critical operational environment, there is always a safety risk.”

He recognizes ground support equipment (GSE) pieces are high-value assets, and together form one of the most important parts of ground service operations.

“Incidents can be very costly to any service provider and other parties impacted by them,” Fellah adds.

He says safety concerns range from operating over the speed limit, to breach of safety from entering prohibited areas, unqualified equipment operators and malfunctioning equipment.

Kurt Ladd, Estex Manufacturing Company’s national sales manager – aviation products, agrees about the high-value of equipment assets, and says his company’s story is a bit different. Estex’s textile products are built to withstand weather



Photo courtesy of Mototok

and prevent foreign objects from landing on the airfield.

"Anything left out on the ramp at an unintentional spot can become FOD (foreign object debris)," he says. "A lot of people have some really creative ideas on ways to help improve safety while saving their company money."

Justin Akinley, director of business development for NMC-Wollard, adds another level to the safety story and explains that the person in the cargo hold is very "out of sight, out of mind" but this is also a place a human body can't express itself naturally.

"You often have to be either on your knees, or bent over, moving back and forth," he says.

The airlines want to minimize damage to bags, but he adds they also must look to prevent injuries due to improper ergonomics for workers.

"This is a hustle job, long hours, and you run down on energy, run down on focus, and people get injured," Akinley notes.

German manufacturer Mototok International focuses solely on the development and production of purely electrical, wireless remote-controlled aircraft tugs.

"With our machines, many MROs and also nearly all aircraft manufacturers move aircrafts of all sizes precisely or automatically guide them in and out of hangars and

production lines," says Thilo Wiers-Keiser, head of sales and marketing for Mototok.

Regardless of their product angle, these GSE experts agree safety comes first and are proud to offer innovative tools to keep ground service providers out of harm's way.

Safely Position Equipment

INFORM's GroundStar flagship software solution helps service providers optimize equipment fleet utilization, as well as prevent/minimize equipment incidents, says Fellah.

He explains that ground support operators are able to locate the position of both motorized and non-motorized equipment, which is visualized on an electronic airport map. The software generates warnings and alerts when the equipment is being operated over the speed limit or entering prohibited geographical areas around the airport.

"At large airports, locating where the required equipment is can be a challenge," Fellah adds.

Because of this software solution, fleets are reducing in size, he says, and showing substantial savings in operational costs. The equipment is also being utilized more efficiently and safely.

"Immediate transparency on the location of the equipment helps to find out if it is close to where it's needed, and suitable for

the task," Fellah explains.

The software implements incident prevention measures through access control, as well as monitoring the operative state of the equipment. Fellah says INFORM's software watches oil level, water temperature and battery level of GSE, preventing defect incidents and reducing maintenance costs.

"Thanks to accurate telematics data, GS Ground-Fleet is a way of the fleet's maintenance schedule," he says. "Operators can plan ahead and keep operations running smoothly as equipment is taken care of."

Safely Handle Cargo

Akinley says NMC-Wollard provides a variety of solutions for helping those working in the cargo hold like a mobile belt loader with a roller conveyor extender.

"This is a really efficient

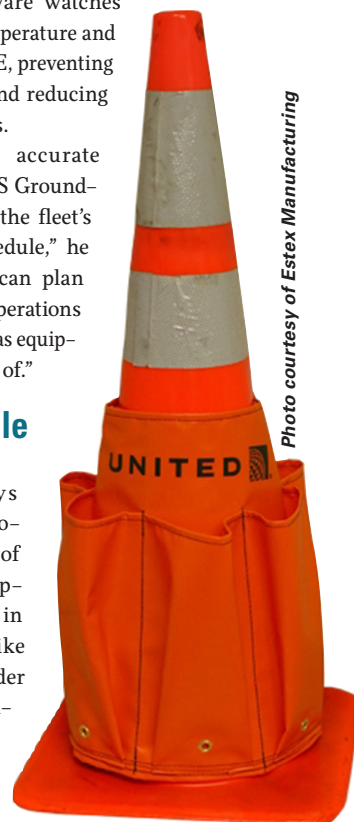


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way to get a bag from the ground to the belt loader and then to the point of loading," he says. "That takes a tremendous amount of

stress off human bodies."

The variables which can create a challenging situation are numerous, Akinley says. It depends on the airline and their cargo hold areas, but he says a 50-pound suitcase is pretty large to move repeatedly and solely by twisting the body and lifting into the designated spot.

"Nobody sees that," he continues. "They only see the baggage cart while looking out the window."

The belt loaders also minimize scratches and potential damage to the aircraft, though he says the greatest benefits are the stress minimization and increased safety to the baggage loaders.

"I'm a strength and conditioning coach, but they don't have a coach in there telling them to not round their shoulders or that they lost their lumbar spine and to lift with their legs," he adds.

Akinley says other items NMC-Wollard provides are passenger stairs and tractors. Regardless of the model, size or abilities, he wants ground handling companies to know what they need and why. This is Safety 101 for Akinley. The company builds special safety and protection points into the equipment as a standard, and then he says each purchase quote is line-itemed to suggest others.

"It's not the most exciting thing to talk about," he acknowledges. "It's just having the conscious thought of what it's like for the person on the ramp."

He offers the simple example of gapping the gas pedal to make room for winter boots, so drivers don't slip off the brake.

"I think if you boil everything down to a simple element, it's that there can be a breakdown in communication from the person saying they need a tool to the person buying it and the company building it," he says. "We're all interpreting that request very differently and people don't necessarily know what they should be selecting."

To solve that, he says working with safety professionals is key, and learning what the various options are in equipment safety features.

Safety in Textiles

Estex provides loading bridge and baggage cart curtains, ramp bags and various FOD-related supplies for the ramp, including cargo container doors, PCA hoses and more.

Ladd says the Estex product line is all durable cloth-based and sewn together, and many times, bought in a reactionary moment of a ground service provider's career.

"If an incident on the ramp caused aircraft damage or injured ramp personnel, then the thought turns to, 'What can we do for corrective action to prevent this from happening in the future?'" he explains.

That's where Estex excels, Ladd says, and can customize safety products for the customer's need, even to a certain color, pockets and dimensions. The company's original ramp bag was simple with pockets used to house headsets, wands and documents. Then, Ladd explains, a customer wanted it slightly different with magnets on the bottom to affix to a pushback, eliminating the chance of it blowing over.

Photo courtesy of Estex Manufacturing



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Photo courtesy of Estex Manufacturing

He has seen more of this customization in recent years and says Estex is happy it can provide these unique safety solutions. A ground power unit (GPU) towbar sock reminds individuals before they move the GPU to disengage any wiring from the aircraft. Reflective products have also been increasing on the ramp to prevent incidents, increasing safety.

Ladd says there may not be a lot of technology in what Estex does, apart from the advancements in durable and weather-withstanding material, but the impact on safety is just as vital and important.

"The joy is taking an idea from somebody and bringing it to life, working with them, and coming up with something that works well

for the individual, but also the airlines and service providers," he concludes.

Safely Move Aircraft

Mototok's Wiers-Keiser says automated movement of airplanes is helping avoid human error and keeping the ground handling community safer at London's Heathrow Airport (LHR), but also at many MRO and FBO hangars and military aircraft carriers.

He says pushback operations are safe and easy for single-man operation thanks to the remote-control feature of the Mototok products.

"For example, at London Heathrow, there are 25 machines and they perform more than 1,000 pushbacks per week," Wiers-Keiser says.

He notes the tugs are emission free and they can be operated with a zero-degree turn inside the hangar and docked in a matter of seconds. Mototok units also optimize limited space up to 40 percent and are not weather dependent to operate effectively.

Wiers-Keiser says that the Mototok machines are like robots, that acceleration

and deceleration isn't depending on the feel of the operators.

"It's programmed according to the needs of the pushed/moved aircraft type," he says. "They drive very, very slow (max 6 km/hour) and precisely if needed."

Another safety aspect is that the operator does not need to stay near the aircraft's nosegear for operation.

"He can walk and stay where he wants to get the best overview," Wiers-Keiser adds, and says that the remote control works at a distance of up to 30 meters.

He and his safety-conscious peers in the ground support industry agree that this is an important topic to continue refreshing for all providers, and a goal for their companies to continue meeting.

NMC-Wollard's Akinley says this mindset mitigates unwanted litigation, and erring on the side of caution saves a ton of money in the long run.

"A company that embraces safety, has a culture of embracing safety from the top down, builds a safer product," says Akinley. **GSW**



▶ ABOUT THE AUTHOR:

Jen Bradley, owner of Bradley Bylines, is an aviation writer based in Wisconsin. She may be reached via her website at www.bradleybylines.com.



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More Efficiency, Less Damage

The Boom Air Hose Management System, from Twist Inc., reduces operating costs by effectively delivering required air to the aircraft, thereby limiting APU fuel burn.

By Josh Smith

Preconditioned air (PCA) units provide comfort to passengers while an aircraft is at the gate. However, a PCA cannot do its job effectively if the hose connecting the unit to the plane is damaged, kinked or not used properly.

The Boom Air Hose Management System, patented and manufactured by Twist Inc., reduces damage to PCA hoses by delivering the amount of hose necessary to reach the aircraft – without excess hose lying on the ramp.

“Twist was approached by a Delta pilot,

attempting to solve the persistent problems with traditional hoses that deliver preconditioned air to the aircraft,” Twist’s Kali Ables explains, noting excess hose lying on the tarmac may have restricted airflow, prompting pilots to run the APU and burn fuel unnecessarily.

To combat the problem, Twist created the Boom Air in 2007.

The Boom Air unit is a stand-alone product, which can easily connect to existing PCAs via insulated ducting. It can be mounted on the bridge or on a mobile PCA unit. It can also be stand mounted.

Three models are available, accommodating hose lengths from 40 feet up to 135 feet.

The BAH135 is the largest model, consisting of a 16-foot cabinet that holds 135 feet of hose. The BAH080 offers a 13-foot cabinet with a capacity for 80 feet of hose, and the BAH040 has an 8-foot cabinet to hold 40 feet of hose.

“The 135-foot PCA hose is completely contained within the Boom Air cabinet,” Ables says. “When ready to connect to the aircraft, the operator simply selects the ‘deploy’ button on the remote control, walks the connector out to the aircraft, makes the connection and selects ‘PCA mode’ on the remote to begin air delivery.

“When finished, the hose is disconnected and the operator selects ‘retract’ on the remote control,” she continues. “The hose is then pulled back into the Boom Air cabinet, unassisted.”

Enclosed gears and a single-drive belt system provide synchronized hose deployment and retraction.

Because the Boom Air allows the hose to make a straight connection to the aircraft, it eliminates hose kinks and restriction.

“The Boom Air services the correct airflow and temperature to the aircraft, properly utilizing preconditioned air equipment,” says Ables.

What’s more, the stainless steel cabinet is heated for optimal hose temperature in cold climates.

The remote controlled hose deployment and



All photos courtesy of Twist Inc.



retraction reduces stress placed on ground handlers, who otherwise may have to manually roll out hose sections weighing more than 100 pounds.

Additional features of the unit include PLC (programmable logic controllers) operation and minimal maintenance. Optional features include a hose configuration to include a zipper section; building management system integration; and installation of equipment.

“One of the best Boom Air selling features is that a single unit can service any aircraft manufactured to date,” Ables points out, adding Twist is currently the only hose management system that can achieve this.

A number of Boom Air units were put into service by American Airlines at Dallas/Fort Worth Airport and the Montreal Airport Authority, providing the company with operational feedback.

“The feedback from our customers led to



numerous updates to accommodate airport ramp conditions and improve product reliability,” Ables says.

The Boom Air, which is a fully UL listed product, provides safety benefits through a number of built in features like hose position recognition; door interlocks and bridge interlocks. There are also environmental benefits.

“Through the FAA, the Boom Air qualifies for VALE (Voluntary Airport Low Emissions) funding when purchased with a new PCA unit,” Ables notes. “We have worked on many successful VALE projects,

supplying Boom Air and PCAs.”

Currently, more than 300 units are in service, operating in the United States, Canada and Europe.

“American Airlines did a study that proved the ROI (return on investment) for the Boom Air (due to jet fuel savings) is approximately nine months,” Ables says. “Air Canada has recognized the need for Boom Air on all gates due to PCA utilization, worker’s safety and ease of snow removal around the gate.” **GSW**

MODEL 3324QC-105 AMP GPU

Start Pac/Rotorcraft Enterprises LLC



The Model 3324QC-105 amp GPU is designed for ground use to perform both engine starting and maintenance functions. This model can be used on the ramp to conduct engine starting and will provide 28.5V of continuous clean no duty cycle power when plugged into 220V AC wall power. To recharge the unit, simply plug it into an AC wall power outlet and leave it plugged in when not in use. The high tech proprietary chargers will maintain 100 percent battery charge without over charging the batteries.

AviationPros.com/12378741



28.5V GROUND POWER UNIT

Tronair Inc.

Tronair's 28.5V ground power unit incorporates an award-winning Doosan Tier 4 final with electronic engine controls to provide excellent performance. A large Digital Display and Diagnostics module (DDD) allows a user to monitor engine parameters in addition to fault codes. A powerful 38kw six phase alternator, rectifier and ripple filter combine for ultra-low DC output ripple. A cable head voltage sensing and output voltage drop compensation system ensures full power is provided to the aircraft. A large 35-gallon fuel tank allows for 26 or more hours of run time at the rated load.

AviationPros.com/12276402



JETGO 550MTi 28V DC HYBRID GPU

AERO Specialties

The AERO Specialties JetGo 550Mti 28.5V DC diesel-electric hybrid aircraft ground power unit (GPU) provides continuous and peak power in addition to offering advanced aircraft protection systems. JetGo GPUs have been specifically designed to meet the increasing demand in the aviation industry for a quieter, yet powerful, "green" ground power unit. With an EPA Tier 4 rating for low-emission non-road diesel engines, JetGo GPUs meet all current air quality emission standards.

AviationPros.com/12111438



7400 GPU

ITW GSE

The ITW GSE 7400 GPU is battery-powered and suited for gates without fixed 400 Hz. The 2400 solid-state converter is powered by Nissan Leaf battery packs, and the 7400's modular design allows it to be equipped with 2-5 battery packs, enabling the GPU to fit a user's actual power requirements. The unit's on-board charger allows recharging from the nearest 50/60Hz socket. The zero-emissions unit, provides flexibility, requires no maintenance and comes with a five-year warranty.

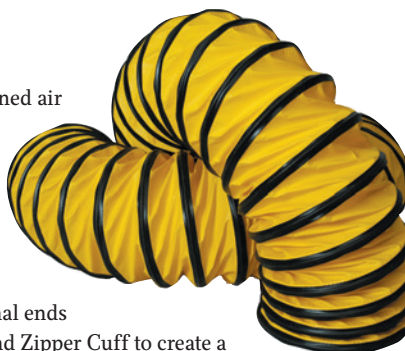
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RAMPTECH PCA DUCTING

Sage Parts

When it comes to ducting for pre-conditioned air applications, strength is imperative. Sage Parts' Ramptech PCA Ducting products feature exceptional engineering and materials, assuring a high level of performance for demanding applications. There are six different types of ducting available in a variety of lengths with optional ends such as Fold Over Velcro Cuff, Soft Cuff and Zipper Cuff to create a secure connection to the PCA adaptors.

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JETLINKSYS

Unitron Power Systems

Unitron Power Systems offers the JetLinkSys, a self-contained cable management system with a 400Hz, 28VDC, 270VDC or combination Solid State Frequency Converter. The System is available in an overhead or fixed configuration.

AviationPros.com/12375050



PRE-CONDITIONED AIR DUCT REELS

Reelcraft Industries Inc.

Reelcraft's PCA reels handle 75' of 14" I.D. preconditioned air ducting and are designed for ergonomic handling of air ducting in ground support applications. When properly installed, Reelcraft's PCA reels supply continuous clean preconditioned air to stationed aircraft. Aluminum construction provides corrosion resistance at a fraction of the weight.

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CRUSH PROOF LAVATORY DUMP HOSE

US Airmotive GSE

The Crush Proof Lavatory Dump Hose from U.S. Airmotive GSE offers a 100-percent urethane hose wall with urethane tubular helix to protect hose (no wire). Additional features include one continuous piece of urethane hose and cuff; triple urethane on cuffs for added wear; UV resistance; bending radius of 4"; and temperature resistance -40F to +195F. Standard lengths are 8', 10', 12', 15' and 20' while other diameters and lengths are available on special request.

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GROUND POWER UNITS

Textron GSE - TUG Technologies Corporation

Ground Power Units are available with AC kVA ratings of 60, 90, 100, 120, 140 and 180. Simplicity, ease of service and maintenance, durability, and performance were the primary design objectives. With the 28.5 VDC rectifier option, the unit can also provide power to aircraft requiring 28VDC at 600 A continuous and 2000 A peak.

AviationPros.com/12235188

DIESEL 400 HZ GROUND POWER UNIT

JBT AeroTech, Jetway Systems

The D-180, a diesel-powered, trailer-mounted, 180kVA ground power unit from JBT AeroTech can continuously supply the 180 kiloWatt service. 400 Hz power is produced from a diesel engine-generator combination available in either Tier 3 or Tier 4 configurations that meet the most stringent environmental requirements. The unit is designed for ease of access for all preventive and intermediate maintenance operations. The frame and shell are made of heavy duty materials, and controls feature a HMI console able to provide critical operational and diagnostic information to operators and maintenance personnel. HMI digital displays record engine performance data, relevant maintenance and diagnostic data, as well as key operational metrics such as fuel status, voltages, amperages, frequencies, kiloWatts, run times and unit status

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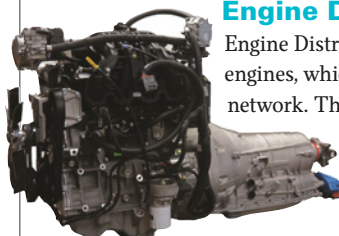


ADVANCED TECHNOLOGY ENGINES

Engine Distributors Inc.

Engine Distributors Inc. offers a line of LSI industrialized Ford engines, which are available and serviced through a global dealer network. The line of EPA- and CARB-certified 1.6-, 2.5-, 3.7- and 6.8-liter engines range from 20 to 200 horsepower. They are available in gasoline, LPG, CNG, natural gas and dual fuel. The company offers a five-year, 5,000-hour warranty for the GSE market.

AviationPros.com/12275602



TD 500 IDF HEATER

Therm Dynamics Inc.

Following the success of the TD500 GSE Cabin Heater, Therm Dynamics has introduced the TD500 IDF. This portable standalone heater is designed to preheat engines and thaw frozen hydraulics or doors. The company designed the IDF to function as a portable maintenance station with High Spot Heat and a 6.0KW generator to run tools and lights. This heater can meet all needs in extreme and demanding conditions.

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WG2503 SPARK IGNITED ENGINES

Kubota Engine America Corp

The WG2503 is one of Kubota's spark ignited engines. The gasoline model is offered at an output of 61 HP at 2700 RPM, the LPG model output is 61.7 HP at 2700 RPM and the natural gas model output is 56.9 HP at 2700 RPM.

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AMPJET GROUND POWER UNIT

Advance GSE Corp

The Advance GSE Ampjet ground power unit is designed with Synergic Engine Generator Control – one controller designed to monitor both the engine and the generator simultaneously and adjust outputs and inputs accordingly. The GPU is optionally equipped with telematics that allow for remote monitoring of the GPU to track maintenance needs and physical location of the equipment.

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HIGH PERFORMANCE SINGLE JACKET 400 HZ CABLE ASSEMBLIES

Page Industries

Page's 400 Hz single jacket high performance six around one cable assemblies with the replaceable HARDHEAD provide exceptional features. The robust design ensures long life on the ramp and the built-in safety features provide an extra level of protection to operators and the aircraft.



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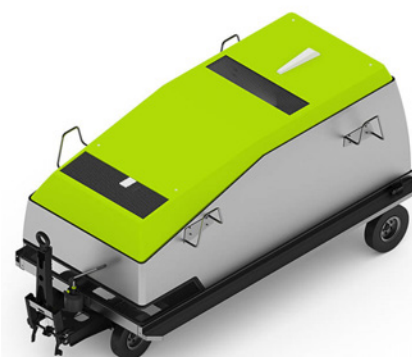
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HYDRO HYDRAULIC GROUND POWER UNITS (HGPU)

HYDRO Systems KG

HYDRO offers the Hydraulic Ground Power Unit (HGPU) from TEST-FUCHS in a wide range of regional, narrow or wide body aircraft. It is designed for all aircraft types with 3000psi or 5000psi hydraulic systems and a flow rate of up to 12 or 60USgpm. Users can select between a single system or dual independent systems with two motors and two pumps. A wide range of options and accessories complement the HGPU.

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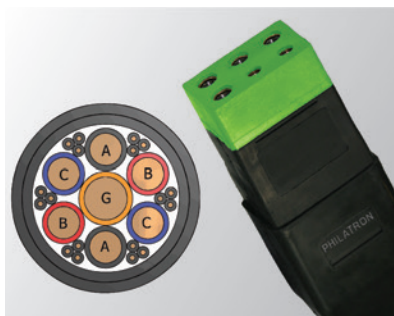


MILITARY HPC PRE-CONDITIONED AIR UNITS

Verde GSE

Verde GSE's line of high-pressure pre-conditioned air (HPCA) units can support any military aircraft: delivering pressures from 1-9 psi, grains of moisture per pound of dry air from 18-55 grains of moisture, and airflows from 34-140 pounds per minute (ppm) for fighter aircraft and up to 400 ppm for other military aircraft.

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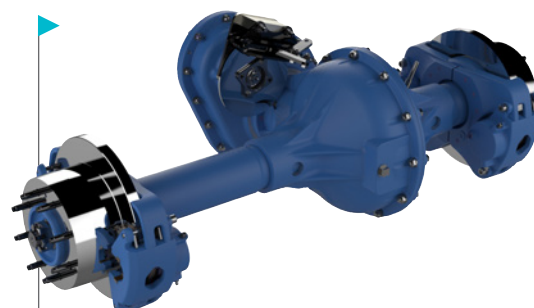


BULK CABLES AND 400 HZ CABLES ASSEMBLIES

Philatron Wire & Cable

Philatron offers Bulk Cables and Advanced 400 Hz Single Jacket Cable Assemblies. The company manufactures 100 percent of all components – cable, connectors and contacts. From copper rod to finished molded connectors under rigid ISO/TS 16949 certified quality programs.

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TA277 AXLE

AxleTech International

AxleTech's TA277 is a rigid axle for baggage and cargo tractors with short wheel bases, intended to replace the company's TA267 with a modern design to increase axle life and serviceability. It features a quieter and stronger differential, full-floating axle shafts, and an all-new wheel-end design.

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ENGINE POWERED UNITS

BatesField GPU

BatesField GPU's Engine Powered Units have the ability to power from the hangar without running the engine, thus eliminating dangerous fumes and noise when in, or near, a building. Power outlets are also provided for vacuum cleaners, lights, air compressors, air conditioning, etc., or to open hangar doors during a power outage.

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AVIATION GROUND POWER CABLE ASSEMBLIES

Eaton Corporation

Eaton's 400Hz aviation ground power cable assemblies are AS7974 qualified and feature optional "nose piece" adapters that facilitate field replacement of plug contacts to provide cost savings of 50 percent when compared to cable refurbishments. Standard cables from 20 to 100 feet and custom-length cables are available. Specialized solutions include jumpers and single-point refueling configurations. Eaton also offers 28 and 270v DC receptacles, plugs, and cable assemblies.

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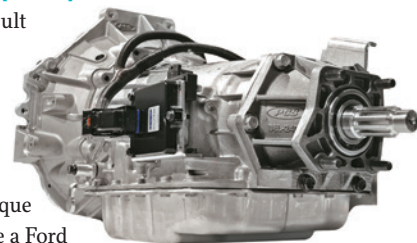


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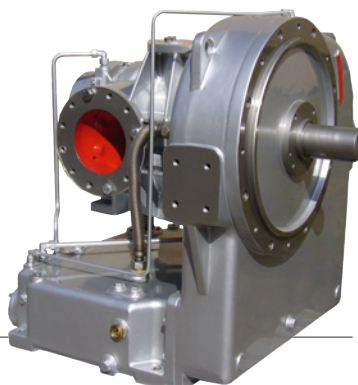
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▶ 400HZ AIRCRAFT POWER SOURCE ANALYZER

MCM Engineering Inc.

MCM's Power Source Analyzer is used for testing the phase rotation, E & F circuit continuity and the supply voltage at the end of the aircraft cable (connector). The flat bottom design and top mounted receptacle of the power analyzer allows for the device to be placed on the ramp for ease of connector insertion. The handles are used as foot treads to secure the analyzer while extracting the connector. Lights and test points are recessed for protection and increased visibility. An E & F feedback circuit is utilized allowing the gate box or converter contactor to close. The test points are used to check the phase voltage, phase rotation and total supply voltage.

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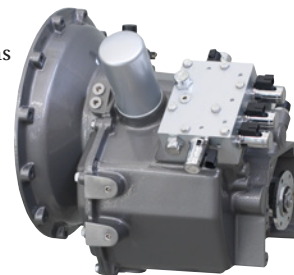


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Transfluid power shift transmissions are available in one, two or three speeds forward and one or two speeds reverse. Designed for heavy duty applications, it provides quick and smooth reversing and easy gear selection on the go. Consisting of a double gear train, actuated by integral hydraulic clutches, it connects to the engine through a wide range of torque converters. Torque converters are selected to optimize the driven machine performances. The hydraulic clutches are operated by a hydraulic selector, electrically actuated, with built-in a patented "soft shift" device.

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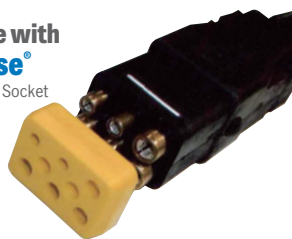
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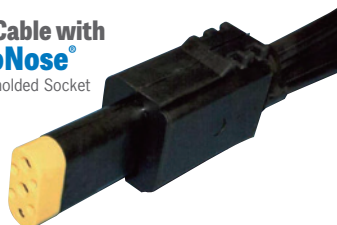
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ELECTRICAL CABIN HEATER

Sky-Teq

The aircraft cabin heater from Avia provides electrical heating of the cabin of regional, narrow body and wide body aircrafts even at ambient temperature down to -50 degrees C. Features of the cabin heater include construction made in stainless or galvanized steel; safe integrated storage compartment for the hose and connector when not in use; operator friendly touchscreen for easy handling of the heater; fan speed selection for more economical use; ventilation mode for usage during summer period; and more.

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COLDBUSTER CALISTA AUTOMATED GROUND SUPPORT HEATER

Spencer Manufacturing

With a push of one button on an LCD screen, this 900,000 BTU flameless heater, will automatically heat up and then maintain desired output air temperature and air pressure. It is Ford powered for easy parts and service support.

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BAGGAGE CART TIRE

GTC North America

The GTCNA Baggage Cart Tire is sold with a two-piece split rim assembly and now is active at many commercial airports in the United States. The tire is available in black, grey, and non-marking compounds. Additional features and benefits include: 5-bolt pattern steel wheel with 3.375" pilot hole; temperature and wear resistance; and low-rolling resistance for increased equipment efficiency.

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Safety Through Collaboration

The industry's dedication to safety was on display at the second annual Aviation Fuel Handling Training Symposium.

Following the success of last year's event in Miami, the Aviation Fuel Handling Training Symposium was reprised at the Sheraton Gateway Hotel at LAX this past March.

The event, organized by Gammon Technical Products and supported by dozens of fueling equipment companies and related organizations through sponsorships, serves an important role in the industry by bringing together key people to share critical information in order to keep fueling equipment and practices as safe as possible.

"In this industry, we have something unique. The public doesn't know what we do. We're, for the most part, unregulated by government," Jim Gammon, president of Gammon Technical Products, said during the opening remarks of the 2018 symposium.

While few regulations may exist, many organizations are working to set standards so fueling and fuel equipment companies can assist the aviation industry safely.

Referring to aviation fueling as an unrecognized and unsung industry, Gammon credited volunteers at American Society for Testing Materials (ASTM), Air Transport Association (ATA), Airlines for America (A4A), International Air Transport Association (IATA) and its Fuel Quality Pool (IFQP), Joint Inspection Group (JIG), SAE International, National Fire Protection Association (NFPA),

Energy Institute (EI) and many more for their efforts to keep aviation fueling as safe as possible.

"No one has ever been paid for this. No one has ever been recognized for it. So it's been a labor of love to bring this symposium together and provide a means for people to communicate and share information and learn from each other," Gammon said.

A large contingent of fueling professionals attended and participated in two and half days of fuel-related discussions from differential pressure, to hydrant cart and refueling vehicle maintenance, to meters and filter advancements.

Gammon discussed the symposium potentially becoming a biennial event, and maybe moving to another part of the country in an effort to attract even more attendees.

No matter what decisions are made regarding future dates and locations for the Aviation Fuel Handling Training Symposium, the high level of interest makes it clear an event like this serves the industry well.

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