

# GROUND SUPPORT WORLDWIDE

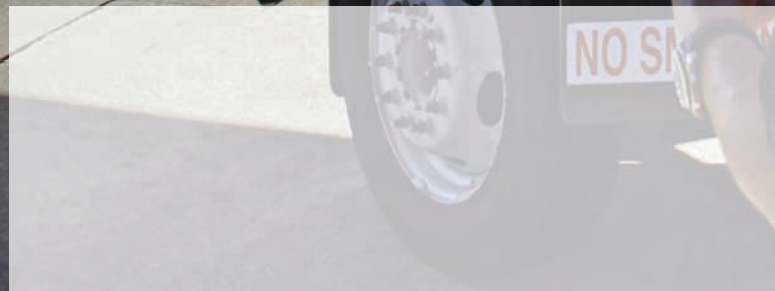
**Wireless Communication:**  
No more wire, shouting  
or hand signals.  
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# ZIPPP

## Zero Injury Philosophy + Process

Aircraft Service International Group's Zero Injury Philosophy + Process protects ramp workers with a comprehensive safety program, including daily on-the-job observations.

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# GROUND SUPPORT WORLDWIDE

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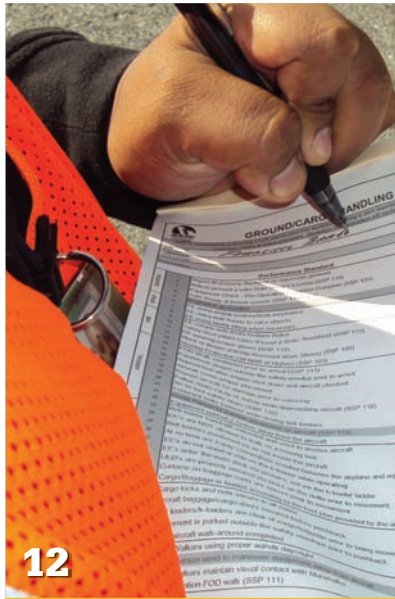
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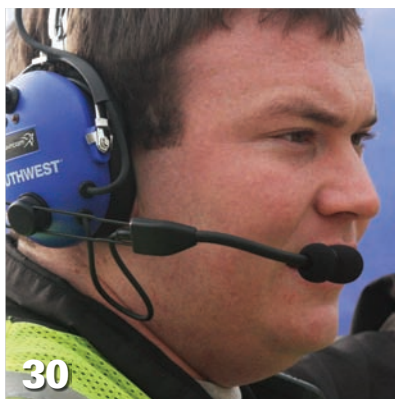
Automated docking systems can help ground operations recover from IROPS

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# Where's The 'LUV'?

Airport chief says 'ground service cost' was the main reason for AirTran's departure from SRQ.

**S**outhwest Airlines didn't show too much LUV to SRQ last month. "LUV" is Southwest's stock ticker symbol and "SRQ" is the designation for the Sunshine State's Sarasota-Bradenton International Airport.

Frederick J. Piccolo, SRQ president, picked up the phone on a Friday morning to hear a midlevel manager from Southwest Airlines tell him that AirTran service would fly away for good this August from his airport. That left a big hole in the airport's flight plan – AirTran flew about a third of its passengers last year and was its second-largest carrier after seven years of service.

By the way, Piccolo's no slouch in charge of some "small" airport. He's currently the vice chairman of the Airport Council International's World Governing Body.

Typically, you might expect that to be the end of it – at least for public consumption. But Piccolo was a "guest columnist" for the local paper, *The Sarasota Herald-Tribune* and wrote about the "real story" behind AirTran's departure for the paper's Jan. 26 edition.

Piccolo starts out diplomatically and says "no one can dispute the right of any private company, including Southwest, to make decisions that are in its best interest." (At our last count 15 other airports have lost their AirTran service as Southwest whittled away at AirTran's markets.)

Afterward, Piccolo starts taking the gloves off by reminding readers that the airline "leaves an airport serving two robust and growing communities – both of which, along with the federal government and SRQ – supported AirTran's initial service through the Air Service Development Program." He doesn't offer specifics about this federal program, but we've read elsewhere that the total incentive package was as much as \$4 million.

Piccolo then tallies up what a pretty good deal any airline receives by flying into SRQ:

- SRQ charges a landing fee 50 percent less than Tampa International Airport.
- Terminal rental rates are 40 percent less than Tampa.
- SRQ generated a \$1 million operating surplus in the 2011 fiscal year. That entire surplus is rebated to the airlines. Southwest/AirTran's take was \$250,000. That check was cut and ready to be given to the airline on the very day of the phone call.

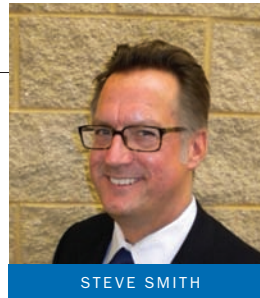
So why the bum's rush? Well, there was more to that Friday morning phone call. Piccolo writes that he was told "ground service cost" to operate Southwest is about 60 percent higher than it is for AirTran. Nearly 90 percent of Southwest's employees are members of a bargaining unit, and the labor agreements stipulate that ground support work be done by Southwest employees.

"Southwest was disingenuous to leave the impression that the community's size and patronage, along with fuel conditions, were the major culprits," Piccolo concludes in his column.

Piccolo did get an apology – over the phone – on Jan. 30 from Ron Ricks, Southwest's executive vice president and chief legal and regulatory officer.

But it didn't change the decision.

Meanwhile, airport officials are urging local passengers to use the other airlines at SRQ and tell Southwest that they won't drive to Tampa in order to take a Southwest flight. Piccolo is already talking to other airlines about picking up the slack. Since the phone call, he's talked to Delta, JetBlue Airways, US Airways, Continental and Spirit Airlines.



STEVE SMITH

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## Calendar of Events:

### March 1-20

**Overview of Aviation Safety Management Systems Workshop**  
Tampa, FL

<http://atcvantage.com/>

### March 6-7

**49th Annual Tennessee Mid-South Aviation Maintenance Conference**  
Nashville, TN

<http://www.tnmidssouthamc.com>

### March 27-29

**Asian Business Aviation Conference & Exhibition**  
Shanghai, China

<http://www.abace.aero/2012/>

## Rampmaster Executes Strategic Brand Repositioning

Rampmaster has executed a brand refinement strategy to clearly position the company as the driving force for innovative refueling solutions in both the commercial aircraft and general aviation markets. Rampmaster has long been recognized as the U.S. commercial airline refueling leader, successfully maintaining 80 percent market share in this segment for more than two decades, and is looking to extend its leadership into the FBO market with a unique set of refueling solutions aimed at general aviation facilities.

that it had chosen Chicago for its North American regional headquarters.

■ **Two ATS Workers Charged:** Two men who cleaned airplane cabins at Lambert-St. Louis International Airport have been charged with stealing items left on airplanes. In June, airport police received an anonymous tip that employees of Airport Terminal Services were

## Canada's First Electric-Powered Aircraft Refueling Truck Goes Into YVR

PLH Aviation Services begins refueling aircraft with a new electric-powered refueling truck at Vancouver International Airport. The truck chassis was developed by Canadian Electric Vehicles. This is the first one to be used in Canada.

The trucks use an Isuzu cab and chassis, have a payload of 6,000 pounds and have a speed of 40 kph. The vehicles are powered by a 96-volt AC motor and a 30 kw battery pack. The battery bank is charged from grid power and can be charged in off-peak times, taking between 4-6 hours.

## Business Buzz

### ■ **Air Cargo Handler Fined \$1 Million:**

OHL Solutions Inc., has agreed to pay a \$1 million fine after investigators found that some of its workers failed to perform explosives screenings on all cargo destined for passenger planes at Indianapolis' airport, federal prosecutors said. Investigators found that some of the company's workers put stickers on cargo indicating an item had been screened when in fact it had not been. Prosecutors said the workers also falsified records to cover their actions.

### ■ **HBD/Thermoid Wins Excellence**

**Award From Boeing:** HBD/Thermoid, Inc. received a 2011 Boeing Performance Excellence Award. The Boeing Company issues the award annually to recognize suppliers who have achieved superior performance. HBD/Thermoid, Inc. maintained a Silver composite performance rating for each month of the 12-month performance rating period from Oct. 1, 2010 to Sept. 30, 2011.

### ■ **ThyssenKrupp Picks Chicago:**

ThyssenKrupp announced in February

stealing items that had been left in airplane cabins by forgetful passengers. Airport police responded with a sting operation leading to the arrest of the two workers who were promptly fired.

## NATA Launches State Advocacy Network

The National Air Transportation Association has launched a new State Advocacy Network consisting of association members in every state who will serve as liaisons between member businesses, state legislatures, and the association.

NATA's SAN comprises volunteers who act as representatives to keep each other and the association informed of pressing issues in their states.

For more information on the State Advocacy Network and how you can get involved, please visit [www.nata.aero/SAN](http://www.nata.aero/SAN).

### ■ **Amsterdam Airport Schiphol Shows**

**Modest Cargo Growth:** Amsterdam Airport Schiphol ended 2011 with a growth of 0.8 percent in cargo handled compared to 2010. The total of all cargo processed through Schiphol was 1,523,806 metric tons – retaining its third place among Europe's cargo airports, and its 13.9 percent market share among the top 10.



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## Corvus Picks GTA Aviation To Distribute CorPower Lithium Ground Support Equipment Kits

Corvus Energy selected GTA Aviation, as its North American sales and marketing partner and has charged it with penetrating aviation, logistics and military segments with Corvus Energy's cutting-edge electric GSE products.

"GTA Aviation has been a highly respected leader in the GSE distribution industry for more than 10 years," said Sean Puchalski, vice president, business development for Corvus Energy. "The company's strengths are its operations within numerous ground handling markets. This makes them the ideal partner to distribute Corvus Energy electric GSE kits."

Corvus Energy CorPower GSE utilizes a robust and highly advanced battery system. Typical installations allow the lithium powered GSE to run full-shift operations on a single charge. The units can be topped up during an extra long shift, and are capable of being charged from empty to full charge in as fast as 1/2 hour. The batteries are very long lasting, with an 8 Year/20,000 hour battery warranty and require absolutely no maintenance during this time. CorPower GSE can be charged from traditional airport GSE charging infrastructure or EV standard SAE J1772 charging systems.

For more information on Corvus Energy electric GSE conversion kits, visit [www.CorPowerGSE.com](http://www.CorPowerGSE.com). For more information on GTA Aviation, visit [www.gtaaviation.org](http://www.gtaaviation.org).

### ■ **Velcon Completes Qualification**

**Test:** Velcon Filters, LLC, successfully completed a qualification test for EI 1581. The test was the first for Velcon's new "JF5" coalescers, and "VSN5" synthetic separators. The JF5 series coalescer cartridges and VSN5 series separators represent the next step up on the technology ladder with regards to increased solids holding capacity, efficient water removal, higher flow rates and extended service life.

### ■ **Emirates Faces \$1.1 Million Fine:**

Emirates is facing a fine of \$1.1 million after one its aircraft allegedly departed from Sydney after the airport's 11 p.m. curfew. Sydney Airport regulations stipulate flights are not allowed to land or take off between the hours of 11 p.m. and 6 a.m. The airline contends, however, that a delay due to fuel delivering caused the delay and that it did receive permission to depart.

### ■ **WestJet Plans Regional Airline:**

WestJet will launch a low-fare, no frills regional airline this year, intensifying competition in smaller domestic markets with rival Air Canada for business and leisure class travelers.

### ■ **Passenger Demand Up 6 Percent in 2011:**

The International Air Transport Association says passenger demand grew 5.9 percent last year, but lagged behind capacity increases. The group, which represents some 240 major airlines, says the airlines increased their available seats by 6.3 percent meaning average loads declined slightly in 2011.

### ■ **Frontier Cuts Flights To MKE:**

Frontier Airlines will eliminate five non-stop routes from Milwaukee, which will result in the loss of almost half of its daily departures from Mitchell International Airport.

## Partnerships/ Acquisitions/ Contracts

### ■ **JetStream Wins US Airways**

**Contracts:** JetStream Ground Services earned contracts for grand handling at Indianapolis International Airport and for aircraft appearance at Newark Liberty International for US Airways. Both contracts bring JetStream into new cities.

### ■ **ASIG Wins And Renews Contracts:**

ASIG was selected by British Airways as its new refueler at London Stansted Airport for the airline's cargo operations. Also, ASIG renewed its contract with British Airways to refuel its aircraft at Bangkok Survarnabumi Airport. ASIG has been servicing British Airways at BKK since the airport's opening in 2006. ASIG also renewed its agreement with Delta Air Lines to provide aircraft refueling at 24 U.S. airports, including some of Delta's busiest hub operations.

### ■ **Fortbrand Delivers:**

Fortbrand Services, Inc. delivered the first of nine Vammas PSB 5500 multi-function snow removal vehicles to the Kenton County Airport Board for use at Cincinnati/ Northern Kentucky International Airport, and also delivered the Vammas vehicles to the Halifax International Airport Authority for use at Halifax Stanfield International Airport. YHZ's snow removal fleet now consists of five of the Vammas vehicles.

### ■ **Continental Ramps Up**

**Partnership:** Continental Tire, LLC announced a strategic partnership to supply its tire products with all 109 ASIG and Signature Flight Support locations in the United States.

### ■ **LEKTRO Picks S.E. Asian Rep:**

LEKTRO has named IPS AGSE at its official representative of LEKTRO equipment in Southeast Asia. IPS AGSE has been providing aviation products and services since its formation in 1999.

# Go Green

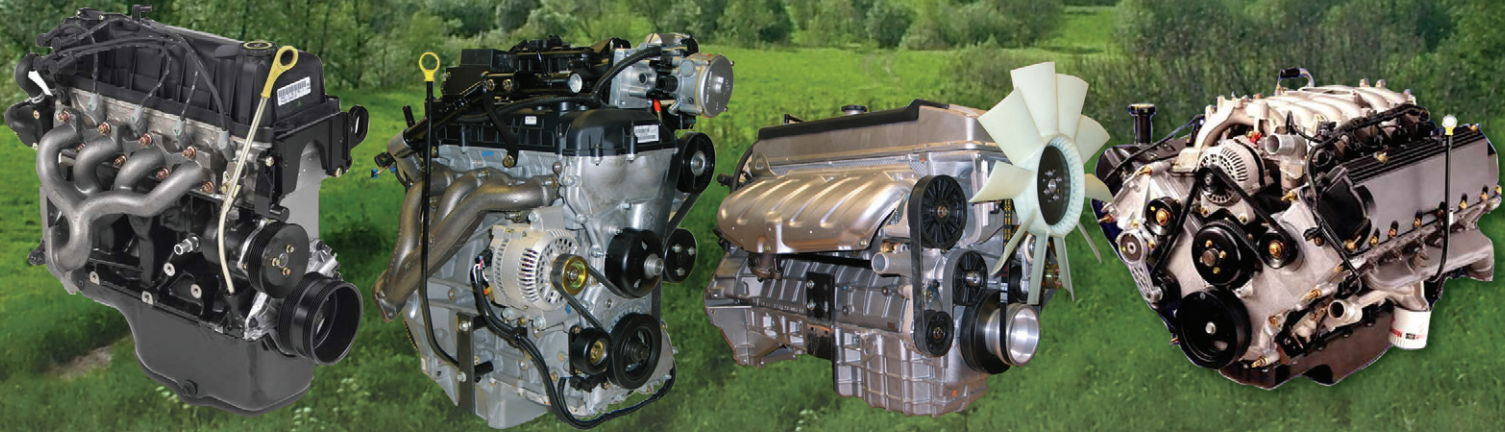
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■ **Luxair Contracts with KLM:** Luxair Airlines has opted for Air France Industries and KLM Engineering & Maintenance to support the APUs equipping its fleet of 737s.

■ **Swissport Extends Partnership With Brazil's GOL:** Swissport International signed a three-year contract extension with Brazilian airline GOL for aircraft services and ramp handling at six airports in Brazil.

■ **Toyota Lift Trucks Named Most Fuel Efficient:** Toyota Material Handling, U.S.A., Inc. announced its 8-Series I.C. cushion 5,000-pound capacity lift trucks ranked highest in performance, fuel efficiency and productivity compared to similarly equipped competitor models in third party testing by USAC Properties, Inc.

■ **COBUS Adds To Its Fleet:** COBUS Industries LP added one additional COBUS 3000 to its fleet of eight buses at the Philadelphia International Airport. Also, two COBUS 3000 buses are now in use at the Vancouver International Airport. A total of more than 130 COBUS busses are currently used at 25 airports in North America.

Greenbrier Airport and Summit Aviation Join Shell FBO: Eastern Aviation Fuels, Inc. recently announced the former Exxon FBOs, Greenbrier Valley Airport and Summit Aviation have joined the Shell FBO Network. There are currently more than 400 Shell-branded FBOs in the United States.

## People In The News

**Ketan Solanki** was appointed sales manager for iTow-bots. The company's remote-controlled TRACE TowBot allows a single operator to maneuver aircraft in close quarters.



Previously to joining the company, Solanki worked in publishing for Autopilot Magazine.

The National Air Transportation Association promoted Johanna O'Toole to comptroller. O'Toole previously served as director, administration and financial services.

**Jacques Leroux**, account executive for Dow Aircraft Deicing and Anti-Icing Fluids, was awarded the 2011 Henry Souther Standards Award by SAE International during the 2012 SAE Government/Industry Meeting.

The Henry Souther Standards Award, given by the Environmental Awards Selection Committee of SAE International, recognizes accomplishments in standards development in the disciplines of environment, safety, materials, testing and emissions.

Swissport International, the world's



leading aviation services group, has appointed **Joe Phelan** as its new senior vice president, cargo for the Americas. He brings more than 25 years of international logistics and transport industry experience to the role.

**Dr. Andreas Jahnke** has assumed the position of managing director of Lufthansa Consulting GmbH.



He succeeds Werner Schuessler, who retired at the end of 2011. Jahnke

brings to this position his expertise in logistics and consulting as well as extensive experience in international management and corporate development.

**Ton Dortmans** was appointed executive



vice president of KLM Engineering & Maintenance. In his new position he will be responsible for maintenance of the KLM fleet, part

of the Air France fleet and all third parties served by Air France and KLM. He will head a team of around 5,500 employees and will report to KLM President & CEO Peter Hartman.

Toyota Material Handling North America announced the retirement of its president and CEO James J. Malvaso, effective April 1. The company also announced the planned appointment of **Brett Wood** as its president and CEO.

## Somerset GSE Finance Opens Somerset Equipment Finance UK Limited

Somerset GSE Finance established Somerset Equipment Finance UK Limited. The company's UK subsidiary will serve as its European base to service clients' financing needs throughout most of Europe.

Somerset GSE Finance is an operating division of Somerset Capital Group, Ltd. and provides equipment financing and asset management services to the GSE market covering all GSE asset types including de-icing, loaders, belt loaders, towbar and towbarless tractors, fueling equipment, baggage tractors and AC/Heating/GPUs.

Establishing the UK subsidiary expands the company's global reach to include the United States, Canada, most of Europe and parts of Asia.

For additional information on Somerset GSE Finance, contact William R. Long, senior vice president at (973) 764-9960 or William.Long@somersetcapital.com

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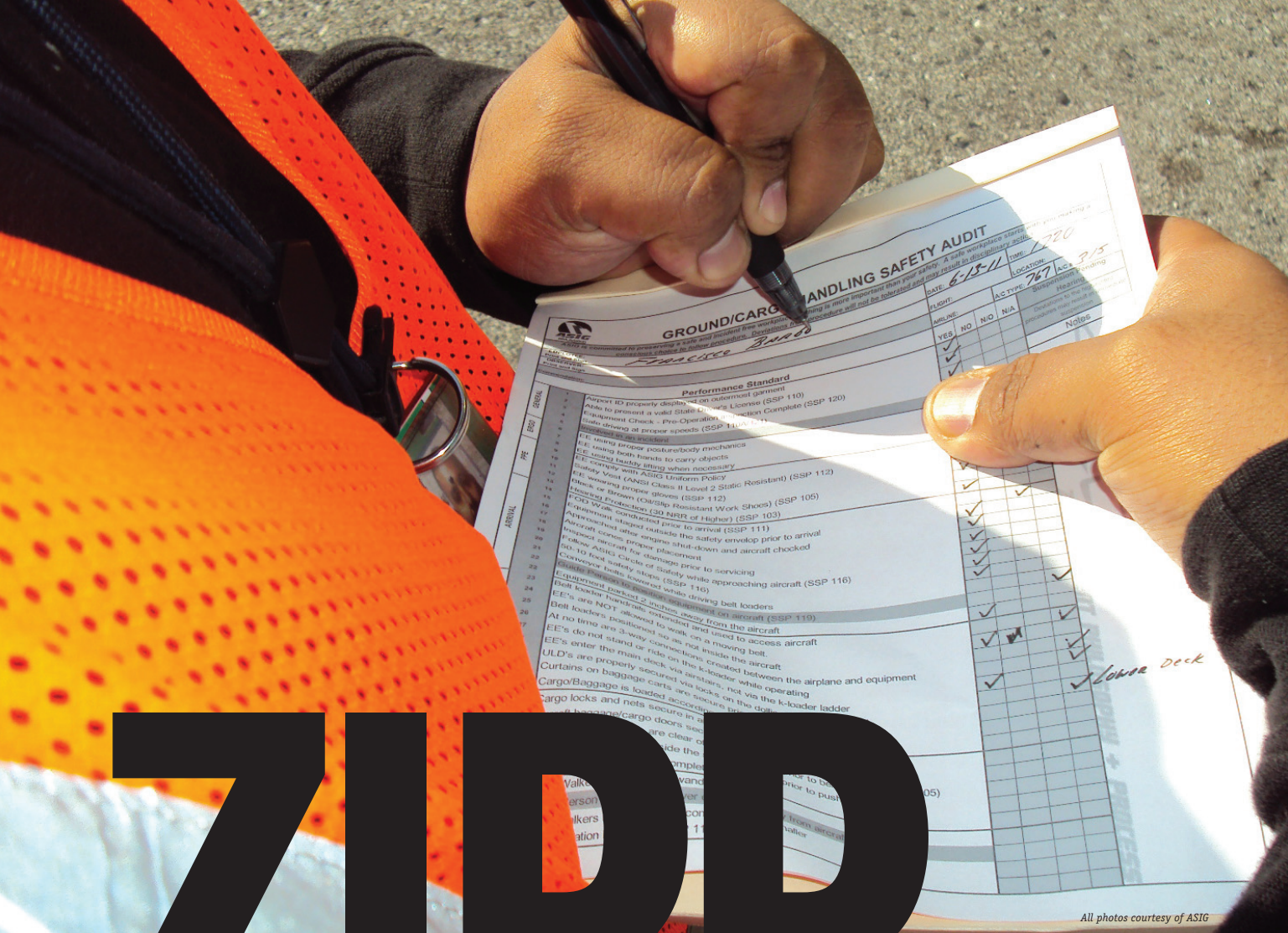
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All photos courtesy of ASIG

# ZIPP

## Zero Injury Philosophy + Process

Aircraft Service International Group's Zero Injury Philosophy + Process protects ramp workers with a comprehensive safety program, including daily on-the-job observations.

By Steve Smith

**A**ircraft Service International Group's corporate parent BBA Aviation plc rolled out its Zero Injury Philosophy + Process campaign in 2009 to all its global aviation units to create, as the name suggests, a safety culture that would communicate the company's commitment to health and safety for all its workers.

"Safety compliance and performance in aviation has always been an expectation and a real focus," explains D. Bradley Keith, ASIG's director of health, safety, environmental and training. "That's a mandate driven by regulations and our customers' expectations. But under ZIPP, safety became more of an orchestrated, company-wide common goal

with well-defined programs designed to ensure the safety and security of all employees."

Each of ASIG's facilities, for example, now uses the same measurement metrics and global reporting system to record all accidents and incidents to track performance. The reporting system enables continuous monitoring and analysis of practices in real time. In his

*An ASIG manager completes one of the company's standardized safety audit forms. These checklists track job-specific procedures and provide ramp employees with on-the-spot coaching.*

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capacity, Keith gets accident and incident reports literally within an hour after the episode was initially documented.

Keith also walked us through an array of what he termed "safety-enabling systems." ASIG, for example, launched its first module of computer-based training covering its fueling program in 2008 and has since used the CBT model to provide training needed in both job-specific skills, such as push-back operations, along with standard company-wide modules covering health and safety policy compliance.

"CBT reduces the seat time for classroom training," Keith adds, "and we can put that time to better use through on-the-job training. That's where people really learn the best – by doing."

Keith, by the way, comes to the ASIG safety job with an interesting take on the subject. A geologist by education, he held various positions within regulatory agencies associated

with health and safety matters before joining the aviation industry. "I think that experience makes me a good safety ambassador since I know that many safety regulations are implemented for good reasons," he adds.

#### SAFE

However, there is one element of the ZIPP campaign that ASIG with its ground handling, fueling and airport service sites in 70 cities throughout North America, Central America, Europe and Asia can claim as one of its own valuable additions. In fact, the ASIG program won a BBA Aviation Leadership Award for Health and Safety last year.

During 2010 ASIG piloted a supplementary program at



ASIG's SAFE - Safety Audit Feedback Engine - program won a BBA Aviation Leadership Award for Health and Safety last year.



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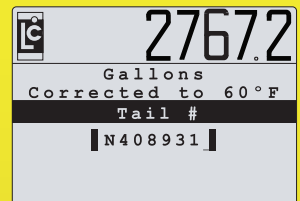


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several of its locations. The program's original purpose was two-fold:

- Assist the company to identify a method that would allow it to analyze deviations from standard ramp procedures.
- Provide immediate feedback to ramp employees.

Basically, a ramp manager was to spend a part of the day observing ramp workers going about their crucial chores. What was going right? What was going wrong? Afterward, the managers could offer on-the-spot feedback for a job well done or a job that could use improvement.

Using lessons learned from the initial testing, ASIG later merged the strengths of both programs to create

a single, user-friendly tool called SAFE – Safety Audit Feedback Engine. After further testing to prove its effectiveness, the SAFE program became a part of ASIG's operations in 2011.

Currently, SAFE combines a set of standardized business specific audit forms with the on-the-spot coaching and feedback element of ASIG's original observation program. Feedback is an essential part of the program – so much so that ASIG developed videos to help managers first observe and then provide the right kind of feedback.

Keith shared a few of these videos with us. In addition, we also received a copy of an "Into-Plane Fueling Safety Audit" form complete with 38 items managers would make

note of as they watched a refueler in action on the ramp.

During the 2-minute-42-second clip, we counted 25 individual movements the refueler made. From our untrained perspective, the refueler looked as if he'd covered all his bases correctly. Or did he?

- Under the "General" category, for example, did the refueler properly show his airport ID outside his clothes?
- Under the "Ergo" category, did the refueler use both hands to carry the hose?
- Under the "PPE" category, did the refueler put on his chemical-resistant gloves?
- Under the "Arrival" category, is the position of the refueler's vehicle appropriate for the aircraft?
- Under the "A/C Servicing" category, did the refueler inspect the fuel receptacle lugs prior to connecting his equipment?

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- Under the “Wrap-up” category, did the refueler observe the proper order for disconnecting his equipment?
- Finally, under the “Depart” category, did the refueler complete a post walk-around?

As it turned out the refueler did do a good job, but still missed a few items. Afterward, we watched two videos labeled “Positive Feedback” and “Negative Feedback.”

In the positive video, the ramp manager starts out by first noting what the refueler did right. Protective vest. Check. Ear protection. Check. Safety glasses. Check.

“I appreciate that,” the manager says, “However, I did notice a few things we should work on.”

For one, the refueler failed to chock his cart. And he wasn’t wearing safety gloves; he’d left them on the cart. Finally, while he had an ID hanging around his neck, it was not visible. The manager wraps it up by asking if the refueler has any questions. Both walk away looking pleased.

On the other hand, 3 seconds into the negative feedback video, the ramp manager says: “What’s the matter with you, man. You didn’t have your gloves on. You didn’t have your cart chocked. And where’s your ID at? You know better than that! I don’t want to talk to you again about this.” Both turn away clearly disgusted with each other. In all, it took 15 seconds to ruin a hard-working, well-meaning ramp worker’s day.

“The way we set up this exercise is to have the observer use the checklist when watching the first video and mark down the safe and at-risk behaviors,” Keith adds. “Then we make sure we all witnessed the same things before we show the positive vs. negative feedback videos. It’s the same message with a different delivery – it makes quite an impression!”

SAFE data are all carefully analyzed and thanks to the company’s extensive computer database capabilities, station managers can very easily



*D. Bradley Keith, ASIG’s director of health, safety, environmental and training.*

and very quickly see what’s going right and address what’s going wrong. More importantly, under ZIPP managers are strongly encouraged to ask for help right from the get-go.

“We’re not the safety police,” Keith says of his department. “I think of what we do as offering consulting services in safety. I work for the managers.”

#### **ELIMINATING THE ‘GOTCHA’**

Keith says one of the main lessons learned from the videos is “to eliminate the ‘gotcha.’” The SAFE’s direct observation and mentoring aspects should “focus less on discipline and more on direct mentoring and performance-improvement plans,” he says. “That’s the softer approach.”

That softer approach of SAFE may be doing its part in the overall ZIPP campaign. Each of BBA Aviation’s facilities uses the Recordable Incident Rate as a primary health and safety performance metric. RIR measures the number of full-time employees out of every 100 who sustain a recordable injury or illness.

A couple of years ago, BBA Aviation also added “near misses” to its list of reporting requirements. The near misses enabled ramp managers

*ASIG offers a full range of ground handling, fueling and airport facility services in 70 cities throughout the Americas, Europe and Asia.*

to focus on what “might” have happened and take a proactive approach to further improving safety.

According to BBA Aviation’s most recent Corporate and Social Responsibility Report, the group-wide RIR at the end of 2010 was 3.25, a reduction of 22 percent from 2009 – and the lowest rate since the corporate parent started monitoring progress under ZIPP.

What’s more, 124 out of 211 reporting locations achieved an RIR of zero in 2010, including a particularly large ASIG operation at McCarren International Airport in Las Vegas.

“The fact that more than half of our locations can get the RIR down to zero is proof that it can happen,” Keith says.

What might those “zero” locations be doing differently?

“In our business, it’s all about boots on the ground,” Keith explains. Management teams at these zero-RIR sites maintain a visible presence on the ramp.

And even when not on the ramp, Keith says managers lead by example, hold regular meetings, have open door policies for communications and fairly administrate discipline.

And the most critical difference might be the easiest of them all.

“What these guys do that’s different is that they pat ramp workers on the backs, shake their hands and tell them face to face that they’re doing great jobs,” Keith adds. “Employees hunger for that.” ■

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# A Tour Of The Munich International Airport's Deicing Recycling Plant

The airport saves millions in euros by recycling Type I fluid that's as good as new and promptly used again right at the airport.

By Steve Smith

**W**e had the opportunity to take a tour of the Munich International Airport's Deicing Recycling Plant while attending last October's *inter airport* Europe. Here's some of what we heard and saw:

"Recycling is a win-win-win for Munich International Airport," said Dr. Martin Westermaier, head of application aviation for Clariant during a press conference held prior to the tour. According to his data, the airport currently saves 2 million euros (\$2.6 million) each year with its recycling program:

- Recycling deicing fluid avoids the expensive costs normally involved in wastewater treatment of used deicer effluent.
- Using recycled deicing fluid means the airport foregoes the purchase of as much as 2 million

liters (528,000 gallons) of new deicing fluid.

In fact, the airport's use of recycled fluid cuts the airport's orders for new Type I fluid by as much as 70 percent.

Westermaier's third "win" comes for one more item the airport avoids, in this case, not contributing 15,000 metric tons (16,500 tons) of carbon emissions. "To put that in perspective," he added, "that's the equivalent of 64,000 round-trip flights between Munich and London."

## THE TOUR

After the press conference and a drive to the airport, Thomas Bergstrom, managing director, Aircraft De-icing Engineering, took us for the tour and explained the process. It'd be hard to find a better tour guide: Bergstrom's

been overseeing the recycling plant's operation since opening day.

A little history lesson may be in order to help explain how recycling deicer came to be in the first place. Munich International Airport opened in 1992, but the planning process for the new airport took 30 years. "Green Parties" in German politics influenced much of the planning, particularly in the 1980s. One big issue was that the airport was to be located in an area with high-level ground water. One legal condition placed on the airport dictated the following:

*"The deicing procedures must not affect ground water and any other water within the airport area. It must not harm the sewage treatment plant ... the approval of all deicing fluid has to be given by official authorities ... unless the deicing fluids and procedures are approved, only nonchemical deicing procedures are allowed or flight operation has to be ceased ..."*

"This meant that all glycol-contaminated storm water from the aprons, taxiways and runways had to be collected and treated," Bergstrom said.

Airport management deemed a large investment to increase the capacity of the sewage plant was too much. How else to handle it? A task force came back with a straightforward recommendation: "Recycle the used aircraft deicing fluid for re-use on the airport."

Recycling used deicing fluid was a relatively new idea at the time, but



Photo provided by FMG

*EFM, Munich Airport's deicing service, uses a fleet of Vestergaard vehicles to deice a total of 11,637 aircraft during the winter season of 2010/2011. More than 95 percent of the deicing was done at the airport's remote deicing pads.*

it was the obvious answer to these restrictions on the airport's operations.

As the idea for building the recycling plant progressed, officials wrestled with a number of operational issues. For one, thicker anti-icing fluids such as Type IV could not be handled; only Type I could be reclaimed and recycled. (Type IV, however, has been pumped into the recycling plant since 2000, but used Type IV gets recycled as Type I.) In order to minimize the use of thicker fluid, deicing needed to be done close to runway heads that assured short hold-over times. Finally, the airport had to minimize the areas used for deicing.

"The solution involved construction of designated deicing pads located close to the runway ends along with a collection system to capture the used fluid," Bergstrom explained.

The decision to build them, however, came late in the construction phase of the airport. The runways and taxiways, for example, were already in place. The locations of the pads made it impossible to connect them through a pipeline to the recycling plant.

To handle this situation each deicing pad is equipped with its own supply station, including storage tanks for Type I and Type IV fluids, refill taps for the deicing vehicles, ready room for staff, control system for pumps, tank-heating equipment and floodlights. The control of the collecting system is also performed from each station.

Eventually the airport built 12 of these deicing pads and supply stations. Approximately 95 percent of all aircraft flying out of the airport are deiced at these sites.

Each deicing pad is supplied with a fleet of Vestergaard deicing vehicles, namely, the Elephant Beta and the Elephant Beta-15. EFM, the airport's deicing company, nicknamed these vehicles, "polar bears." Each polar bear can hold approximately 6,000 liters (1,585 gallons) of Type I and 2,000 liters (528 gallons) of Type IV fluid. (EFM also uses the company's Elephant My

for the 5 percent of planes that are deiced on the apron.)

#### THE FIRST STEP

All remote deicing pads drain the used fluid into underground tanks. About 60 percent of the fluid is routinely recaptured in this way.

As you can imagine, the fluid is mixed with plenty of water from melted snow and ice.

"High dilution of the collected fluid creates a water logistics problem," Bergstrom added, "and the recycling costs rise dramatically.

To combat this, the collected fluid is first sent to small diversion tanks that measure the glycol concentration. Fluid with a 5 percent glycol concentration or more is pumped to another underground tank for transportation by tanker trucks to the recycling plant.



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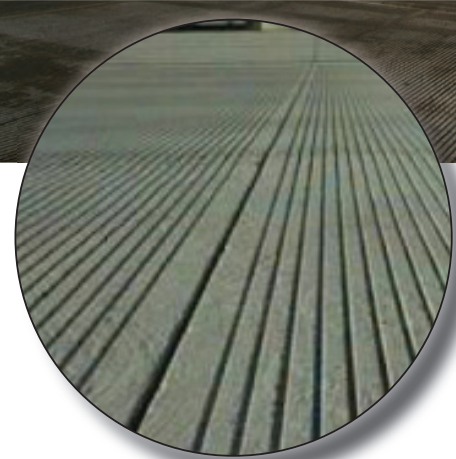


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Photo provided by EFM GmbH/Michael Pieroth



The recycling process starts at these remote deicing pads, which channel used deicing fluid through the “grates” seen in the foreground that drain into underground collecting systems.

Concentrations lower than 5 percent are pumped into the storm water retention basin where it is metered to the local sewage treatment plant.

Once at the plant, the reclaimed fluid is treated in four steps:

- A mechanical cleaning removes impurities such as sand, oil, aircraft fuel and other “dirt.”
- A chemical cleaning uses absorption and ion exchanger units to remove heavy metals and controls the pH of the fluid. This

step essentially results in a water and glycol mix, but which still contains too much water.

- An evaporation process vaporizes the excess water and, therefore, concentrates the glycol. An interesting side note to this process: The steam produced is fed back by a heat exchanger to the airport’s district heating system. About 90 percent of the energy consumed by the evaporation process is recovered for the heating system.

When enough water is evaporated and the glycol reaches the correct ratio, it’s pumped into a batch tank.

During the pumping, an additive package is dosed into the fluid. These additives are specially designed by Clariant for the process and returns to the fluid the “missing links” so that all specifications for Type I are met.

When one 43,000-liter (11,359-gallon) batch tank is filled, the process switches to the next batch tank. A quality control check on the produced batch is performed. All data is logged and a certificate is made for each batch. One liter from each batch tank is kept for one year at the plant and 0.1 liters is sent to Clariant for backup control.

What can go wrong? Normally, a monitoring system provides an alarm and corrects the process automatically before large volumes are incorrectly produced. However, disapproved fluid is pumped back to the original collecting tanks and processed from the start all over again.

One last quality check is performed when trucks are filled at the plant before transporting the recycled fluid to each of the deicing pad’s supply stations. A sample from each tanker is also kept for one year.

“All fluid movements and data are logged by the recycling personnel,” Bergstrom said. “Due to this system, it is possible to follow the fluid throughout the entire system.”

From start to finish, the recycled fluid can be put back into use in a matter of just a few days. ■

All photos provided by Clariant



The reclaimed deicing fluid first undergoes a mechanical cleaning. This ultrafiltration unit essentially removes such impurities as oil and aircraft fuel and other “dirt.”



After the mechanical cleaning, the reclaimed deicing fluid is chemically cleaned with absorption and ion exchanger units.



The reclaimed deicing fluid also goes through an evaporation unit to get rid of excess water and achieve the right concentration of glycol and, finally, an additive package is dosed into the fluid as its pumped into these batch tanks.



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# Pharmaceutical Hub To The World

Just four years after welcoming its first flight, Rajiv Gandhi International Airport is the world's pharmacy for temperature-sensitive shipments of crucial medicine.

By Manik Mehta

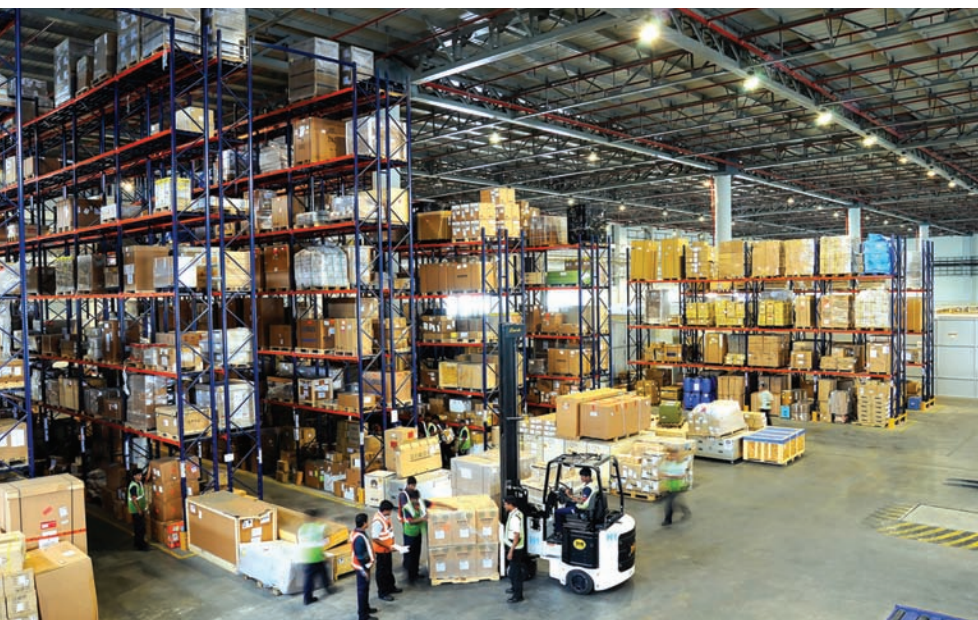
**H** yderabad is India's pharmaceutical capital. The city's so-called "Genome Valley" spreads out over more than 600 square kilometers ((232 square miles) and provides companies such as USP, Novartis, Dr. Reddy's Laboratories, Agilent, Biological E Limited, Shantha Biotechnics, Bharath Biotech, Matrix Laboratories and Krebs Biochemical with needed research, training, collaboration and manufacturing activities.

More than 100 companies operate out of the Genome Valley today.

The city's Rajiv Gandhi International Airport (HYD) further strengthens this growing, local enterprise with strong, global footprints. In just four years of operation, HYD created a strong pull for foreign cargo carriers as demand for capacity to transport



*The Pharma Zone is a dedicated temperature-controlled handling facility for exporting pharmaceuticals. The facility features two cooling chambers with different temperatures – one for storing pharmaceuticals at a range of 15 degrees Celsius (59 degrees F) and 25 degrees Celsius (77 degrees F) and another for storing even more sensitive products at between 2 degrees Celsius (35 degrees F) and 8 degrees Celsius (46 degrees F). GMR Group*



*The Rajiv Gandhi International Airport's Air Cargo Complex was built in 2008 and is operated jointly by Menzies Aviation Plc and HYD's management company, GMR Group*

the region's array of pharmaceutical products increases.

For one, Germany's Lufthansa Cargo, the world's largest cargo carrier, recently established a strong presence at HYD, particularly in the niche area of temperature-sensitive pharmaceutical shipments:

## STEP 1

Lufthansa Cargo and HYD management firm, GMR Hyderabad International Airport Ltd. (GHIAL), set the stage in December 2010 when the two companies inked a memorandum of understanding aimed at jointly developing the airport's existing cargo facility to handle temperature-sensitive pharmaceutical shipments.

"The transport of temperature-sensitive cargo places great require-

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*Lufthansa Cargo stations its own fleet of "Opticoolers" at HYD. The containers maintain a permanent temperature zone for up to 100 hours and are an essential component to ship pharmaceuticals around the world.*

ments on airlines as well as on airports," said Martin Schlingensiepen, Lufthansa Cargo's vice president of product management at the signing ceremony. "While outside temperatures at airports may range from minus 30 degrees Celsius (minus 22 degrees Fahrenheit) to 40 degrees Celsius (104 degrees Fahrenheit), the temperature inside the containers may only fluctuate minimally in order not to damage such sensitive freight."

The MoU served as a framework for both sides to set up modern infrastructure and consistent procedures at HYD to provide reliable, temperature-controlled transportation solutions.

Under the terms of the MoU, for example, Lufthansa Cargo agreed to station its own fleet of special cooling containers called "Opticoolers" at HYD.

Lufthansa's Opticoolers are able to maintain a permanent temperature as low as 2 Celsius (35 degrees Fahrenheit). What's new about the container is the compressor technology. All the Opticooler needs is electricity to charge the accumulators embedded in the device's floor. The charging process takes between five to eight hours. Once fully charged, the batteries can run for 100 hours.

The containers are controlled by external temperature sensors for recording the ambient temperature, several sensors for the freight compartment in order to maintain the required temperature range and one temperature sensor in the technical compartment of each unit.

In turn, GHIAL agreed to streamline customs and other regulatory procedures at HYD to guarantee less bureaucratic red tape and, more importantly, build a dedicated climate-controlled site within its existing cargo facility.

By January 2011 Hyderabad Menzies Air Cargo Pvt. Ltd. (HMACPL) had accomplished just that and officially opened the "Pharma Zone" within its existing Air Cargo Complex at HYD.

HMACPL, a joint venture between international ground handler Menzies Aviation and GHIAL, originally built the cargo facility in 2008 and has managed cargo operations ever

since. Since the first plane landed at HYD on March 14, 2008, overall cargo activity has increased by more than 40 percent.

The Pharma Zone is India's first such airport-based, temperature-controlled facility. It takes up 1,400 square meters (15,069 square feet) inside the 14,330-square-meter (154,246-square-foot) building and is designed to handle 30,000 metric tons (33,069 tons) of pharmaceutical shipments annually.

Dedicated truck docks for acceptance, floor level weighing provisions at acceptance and seamless cold chain facility during the entire handling process are some of the highlights.

In particular, the zone features two cooling chambers with different temperatures – one for storing pharmaceuticals at a range of 15 degrees Celsius (59 degrees Fahrenheit) and 25 degrees Celsius (77 degrees) and another for storing even more sensitive products such as vaccines at between 2 degrees Celsius (35 degrees Fahrenheit) and 8 degrees Celsius (46 degrees Fahrenheit). Data loggers are stationed throughout the zone's key areas and

## Pharma Zone Highlights

- Temperature-controlled customs inspection area with a holding capacity of 180 skids.
- Racking system in examination area with additional 126 slots for skids.
- Temperature recording with data loggers approved by the Food and Drug Administration.
- SMS and alarm alerts to track temperature excursions.
- Separate chambers in bonded area for storage of ULDs – one with a temperature range between 15-25 degrees Celsius and another with a temperature range between 2-8 degrees Celsius.
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can provide instant, up-to-date reports as needed for customers.

Sudeep Narayan, general manager for cargo at The GMR Group, which holds a majority stake in GHIAL, described the general procedures:

“What we call the nonsterile area is where the cargo is stored prior to build up and unitization in aircraft containers,” Narayan says. “And it’s also the area where cargo is stored prior to clearing customs.”

This is where the two cooling chambers come into play and both feature racking systems to make inspection an easier and faster process.

“The sterile area is where the cargo is stored after customs and regulatory clearance for export and also after unitization and build up in the ULDs, but prior to moving everything from the building to the aircraft,” he added.

The zone also features a ball-matting system for storing the ULDs.

“This is primarily to ease movement and avoid damage to the ULDs,” Narayan adds, “which could weigh between 800 kilograms (1,764 pounds) to 4,000 kilograms (8,818 pounds) once the freight is loaded and ready to move from the terminal to the dollies that transport these units to the aircraft.”

In the last few months of 2011, the airport and cargo managers saw such robust growth trends in use of the Pharma Zone that they’ve already started planning an expansion of the zone.

“The Indian pharmaceutical industry today ranks as the third largest in the world by volume,” says Hemanth DP, GHIAL chief operating officer, “and is expected to touch \$20 billion by 2015.”

Some statistics underscore the reasons for the Pharma Zone’s early and continued success:

- 70 percent of exports from HYD are pharmaceuticals.

- Around 1,600-1,800 metric tons (1,763- 1,984 tons) of pharmaceuticals are exported every month from HYD.

- Currently only 15 percent of the world’s total pharmaceutical cargo exports are moved under temperature-controlled handling. However, that percentage is bound to increase as international regulatory agencies introduce tighter controls that will encourage the use of such facilities as the HYD Pharma Zone.

“The effort is now on developing the hub-and-spoke model initiated by Lufthansa,” says Vikram R. Jaisinghani, GHIAL chief executive officer. “We are confident that pharmaceutical exports will gradually increase from Hyderabad with the drug manufacturers in other parts of the country using feeder routes to bring their products to Hyderabad for export.”

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# STEP 3

Finally, last May Lufthansa Cargo certified GHIAL to be one of its key cargo hubs in South Asia for the transport of temperature-sensitive pharmaceuticals. This was India's first airport to enjoy such status.

Lufthansa currently operates three freighters to the airport every week, with plans to increase the frequency at a later date.

"In the last three years, temperature-sensitive cargo reflected a 40 percent growth year-over-year in Asia while in India it was about 170 percent," said Christopher Dehio, senior manager for global key account for Lufthansa Cargo, during the certification ceremony. "For us, India is a focus market and a source for cargo. We will be using the facility to help consolidate air cargo from different destinations."

Lufthansa Cargo typically flies the freight to Frankfurt Airport, and from there the parcels join its global network that connects 300 destinations worldwide.

Paul Smith, chief executive officer of HMA CPL says HYD has generated an "impressive business volume" in its cargo business since the Lufthansa certification with almost all of the region's pharmaceutical companies consigning shipments through the Pharma Zone.

Smith says the United States is the most important market for India's pharmaceutical exports. Europe comes in second followed by Africa and Russia.

"The pharmaceutical industry has not been affected by the economic downturn," he adds. "After all, people tend to become sick and there will always be demand for pharmaceuticals."

Over the years, India has also emerged as one of the world's leading suppliers of generic drugs particularly for HIV treatment. These drugs are shipped to Africa by chartered flights.

"Without these generic drugs, HIV-affected people in many countries would suffer," Smith claims. "Thus, HYD's role is unique."

Smith does expect competition for the business. He said the Chhatrapati Shivaji International Airport in Mumbai and the Chennai International Airport in Chennai are both likely to follow HYD's example and set up similar pharmaceutical storage facilities.

About the Author: Manik Mehta is a New York-based journalist with extensive experience covering aviation, including ground support, airports, airlines, infrastructure and passenger/cargo traffic. From his New York base, Mehta travels frequently to Europe and Asia. ■



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# Soiled Hands

Unless a company's managers all have clean hands, they cannot control pilferage, outright theft and any other type of bad behavior.

By Tony Vasko

The soiled hands referred to in my headline are not the honest soil brought on by our honest toil. I was reminded of this by a recent *New York Times* article on theft and drug activity at JFK Airport, a location, unfortunately, that has known this before.

Disturbing things were going on at JFK. First was the pilfering of luggage. This is a problem, however, airlines have always struggled with. I was a maintenance manager at Newark back in the late-1970s, and my station manager announced at his daily briefing he was in the processing of discharging a significant number of baggage handlers due to theft. Long suspected, they were nailed by one of the earliest uses of spy cams planted in the bag makeup room.

The union's highest official eventually got involved since so many handlers were to be fired. He was treated to a performance of the videos showing some of his members expertly sorting the better bags from the common run, opening locks with master keys, popping bags ajar and doing a quick hand insertion and removal of valuables and locking them up again.

Although by any standard it was an open-and-shut case, the union official spoke of entrapment. That ceased, however, upon further viewing of the tapes when he saw an ardent handler extract a frilly pair of ladies undies and lift them up for all to see. That part was beyond his limits, and he agreed to their being fired.

Well, temptation is always present in airfreight and no more so than when gold bullion is shipped. One day a couple of guys from my crew went to the arrival's terminal to pick up an Avianca Super Connie to taxi it to the hangar for overnight maintenance.

They brought it over and were parked on the fence. While waiting for a ladder, one of them noticed a wooden crate under one of the seats in the crew and navigator's compartment. Through the open slats, he could see a gold brick.

They speculated as to its worth. A jeep came screeching up outside and an Avianca agent asked if they had left some freight onboard. Temptation removed.

Again at Newark some decades later, the FBI put a ring of airfreight people under arrest at my airline. The airfreight building was miles away from the terminals providing an opportunity to drop off selected boxes

**I was able to look people in the eye and reply that I did not, had not done and would not do what they had done.**

along the way. These were, of course, gold shipments that are more common than you might think.

The only amusing thing about it was the shop steward for the rampies who, not understanding that it was the FBI, burst into the airfreight building demanding that his boys stop being harassed.

He quickly became disabused of this notion after being put up against the wall, legs spread and saw handcuffs ready to be applied. The FBI agent inquired if he intended to continue interfering with a police function. He decided he did not and was allowed to leave.

## ONE IMPORTANT THING

One important thing: When you are in management, you have to meet the same standards that you are to enforce. The first year I was working, I heard my company was attempting to fire a mechanic for stealing gasoline from the hangar's automotive pump in five-gallon cans. He was caught red-handed, but, of course, still had to have a disciplinary hearing.

At the hearing the union rep mentioned that the base manager and several of his staff regularly gassed up their personal cars at the exact same pump. They thought the state would be very interested since the gas was intended for only airport vehicles and exempt from taxes. The company's case was suddenly very limp. The mechanic escaped with just a day off.

Later, a mechanic was under the gun for stealing an automotive battery. Once again, the union rep reached into the files and pointed out that the same mechanic had just been engaged in repairing the hull of a speedboat owned by the airline's president. It was on company time, used company materials and, basically, was as indefensible as stealing the battery.

A long time ago, my airline was flying military airlift charters to Europe. The closest company station would send mechanics down to the Air Force base to work the aircraft.

Three mechanics were caught having a few rounds of beer while on duty. Once again an open-and-shut case. But wait! What's this? Some high company officials had French Bordeaux and Champagne shipped in on the planes, too, and neglected to inform customs. Oh my!

Meanwhile, their maintenance manager who had nothing to do with the illicit shipments had to endure the snickers from the union.

I stored all these incidents away in my head and took heed. When I became a manager, I was able to look people in the eye when they said I would do what they had done, too. I was able to reply that I did not, had not and would not. And no one could reach into a file and say, "Yes you did," either. Unless a company's managers have clean hands, they cannot control pilferage and outright theft.

The *New York Times* article also talked about the really ugly sister – drugs. Here you're not just getting into criminal activities, but dangerous activities. Flying below the border or out to the islands presents a golden opportunity to some very bad people. They have the cash and, ultimately, the muscle to induce some to help them, too.

When my airline started flying to South America, we quickly found out how difficult it was to keep our aircraft drug-free.

It culminated for me when I had 5 kilos of white powder contained in plastic bags dumped on my desk. I was director of aircraft overhaul, and we had just inducted an L1011 into a major check.

While opening the rear baggage panels for inspection, a sharp-eyed mechanic noticed a string hanging from the beams supporting the cabin floor above. He pulled it and down tumbled the first sack of suspicious white powder. He called his foreman who collected the bags and brought them to my desk.

Our security notified the feds and we were swarmed for a short time. There was some difficulty about our "disturbing the evidence," but our good intentions were evident and it was dropped. Also found, stuffed between a seat and the sidewall were several thousands in poor-quality counterfeit money. Why the stuff had not been picked up, I do not know. Bad business all around. ■

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# Wireless Headsets For Team Communication Improve Ramp Safety

Ground support crews can do their jobs more efficiently and safely without the wire, the shouting or the hand signals.

By Michael Walsh, Director of Business Development, Flightcom Corporation

**T**he aviation industry has made great strides to improve passenger and employee safety over the past 50 years. Ground support communication, however, is still handled the same way it was a half-century ago - usually with hand signals ... or shouting ... or having one member of the team talk over a wired headset to the pilot while everyone else in the ground crew tries to figure out what the two are saying.

Relying on such traditional approaches is understandable, but dangerous. Shouting over background noise can cause dangerous misunderstandings. Hand signals are complex,

*Clear team communication is essential to create a safe, productive and effective work environment on the ramp.*

convey only part of the message and require line-of-sight visibility and often fail in darkness or bad weather. And neither option does anything to protect hearing. The stakes are high on the ramp with expensive equipment and people constantly in motion. Just one overlooked hand signal or misunderstood command can result in millions of dollars in damages, personal injury or even death.

Recent technological advancements, however, have made wireless headset systems the best practice for enabling team communication and addressing safety challenges on the ramp. Such systems are currently deployed at more than 50 U.S. airports. And that number will increase substantially in the first quarter of this year as

Southwest Airlines becomes the first major U.S. air carrier to outfit all of its gates with wireless headset systems for their pushback operations.

## SAFETY AND COST

Ramps are one of the most dangerous places to work. The Flight Safety Foundation, for example, estimates that nearly 250,000 people are injured in 27,000 ramp accidents around the world each year. This equates to one accident and nine injuries per 1,000 departures. A 2007 report from the U.S. Government Accountability Office identified 29 fatal ramp accidents between 2001 and 2006 that involved the death of 17 ramp workers, eight passengers and four pilots.

Beyond the human loss, ramp accidents also exact an immense financial toll. The direct costs of repair *alone* are estimated at \$5 billion annually. The estimated price tag jumps to a staggering \$10 billion when indirect costs are factored into the equation.

Moreover, airlines themselves write the checks not their insurance companies. An FSF study reviewed 274 ramp accidents and concluded only one resulted in direct costs that exceeded the airline's deductible limits.

FSF notes human factors are the primary culprit in ramp accidents; issues such as malfunctioning equipment and inclement weather play a lesser role. And of the 12 human factors typically cited in the occupational safety literature, poor (or nonexistent) communication routinely tops the list.



All photos provided by Flightcom Corporation

## Indirect Costs Of Ramp Accidents

- Lost revenue.
- Aircraft diversions.
- Flight cancellations.
- Passenger accommodations.
- Replacement labor and overtime.
- Damage to public image.
- Management time.
- Incident investigations.
- Victims' pain and suffering.
- Disruptions to operations.
- Employee relations and company morale.
- Regulatory agency reactions.

Source: Vandel 2004

The ramp also poses a threat of noise-induced hearing loss. U.S. OSHA regulations require hearing protection when the time-weighted average noise level exceeds 85 decibels (dB). During takeoff, a jet aircraft emits eardrum-rupturing noise levels of 150 dB, about 40 dB higher than the human pain threshold. In comparison, normal conversation is around 65 dB; a motorcycle, 100 dB; a jackhammer, 110 dB; and an emergency siren, 125 dB.

This extreme noise likely contributes to airline employees suffering four times as many lost workdays and nearly 12 times as many injuries from hearing loss as the industrial average.

Meanwhile, ground support crews don't have many good options to protect hearing.

Earplugs and earmuffs, for example, may protect hearing, but restrict communication.

Wired headsets can offer hearing protection and clear communication, but tether the individual to the aircraft intercom. In addition to restricting mobility, wires can also wear out or become entangled with equipment. Damaged cables have long been the most frequent reason wired headsets require repair, resulting in hefty service costs and equipment downtime.

Plus, that takes us back to where we started. A wired headset on one member of the crew does nothing to help the rest of the ramp workers hear or participate in a very important conversation.

### WIRELESS TEAMWORK

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## The Southwest Experience

Last December, Southwest Airlines announced an agreement with Flightcom Corporation, Portland, OR, to deploy the company's wireless ground support communication system at all of Southwest's gates across the United States.

Both companies worked for more than a year to test and enhance the wireless headsets, ensuring all components could withstand the harsh conditions and inclement weather encountered on the ramp. Flightcom's solution provides clear communication and comfortable hearing protection, allowing each team member to hear and be heard easily.

The standard Southwest push-back system consists of one or

two wing walker headsets, one tractor operator headset and a portable ComHub that wirelessly connects the headsets. During pushback, the ComHub is attached to the bottom of the aircraft where it connects with the Interphone, allowing communication between ground support and the flight deck. The ComHub is carried inside a bright yellow weather-resistant bag for high visibility. Flightcom's solution also includes a Pilot Alert (patent pending) system that signals the flight deck and ground crew if the bag is not removed from the aircraft after pushback.

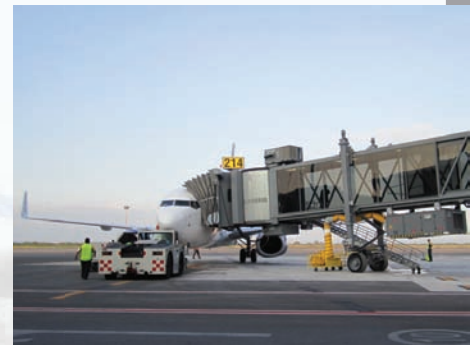
The entire system is housed in a weatherproof storm case that plugs into a standard AC

outlet for charging when not in use. The headsets fully charge in two hours, allowing 24 hours of continuous use before a recharge is needed.

Marc Stank, senior manager of safety, standards and regulatory compliance, ground operations at Southwest, expects the new systems will provide an even higher level of customer and employee safety. "We are the first major airline to widely deploy this type of wireless system," Stank said, "and we expect it will strengthen our team communications and operational efficiency." Stank also noted that the ability for hands-free, full-duplex communication in Flightcom's systems was particularly attractive.

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cation is obviously essential to create a safe, productive and effective work environment on the ramp. Tractor operators and wing walkers need to warn each other of impending dangers. The tractor operator needs to keep the flight deck informed of ground movement. And all ground personnel should at least be able to hear the flight deck and each other during a pushback.

Ramp workers can do much more without the wire, the shouting or the hand signals.

A typical wireless pushback and towing configuration uses a portable transceiver for continuous two-way communication among one or more wing walkers and the tractor operator during aircraft movement. The tractor operator is free to concentrate on correct maneuvering, and all crew members can warn others instantly of impending dangers.

To optimize the flow of communication and minimize chatter, the system is configured so that all team members can *hear* the pilot, but only the tractor operator can talk directly to the flight deck. Because wireless communication increases coordination and enables real-time verbal warnings, it decreases the risk of accidents, shortens turn-around times, and increases the likelihood of hitting flight slots.

In addition to pushbacks and towing, wireless team communication systems can also be used to improve safety and efficiency during deicing, cargo and maintenance operations. In a deicing configuration, a wireless system connects the driver and the basket, and the system itself can be connected to two-way radios enabling communication with remote users.

Communication between the driver and the basket takes place on open microphone over a 1.9GHz (1.8GHz in the EU) encrypted frequency while also allowing radio monitoring and transmitting with a push-to-talk button on the headsets. Systems can be configured to enable multiple deicing crews to commu-

nicate while working on the same aircraft - further improving efficiency. Additional configurations are available for maintenance teams and are scalable to almost any size.

### CHOOSING A WIRELESS COMMUNICATION SYSTEM

Wireless headset systems are available in a wide variety of configura-

tions and price ranges. To ensure a system meets the diverse needs of ground support, consider the following factors carefully:

#### Is the system *truly* wireless? A

number of so-called "wireless" systems actually require a wire from the headset to a radio or belt pack. While these systems allow freedom of movement, a belt pack or radio wire creates many of

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the same problems inherent in hardwire systems, particularly tangled cords. Moreover, belt packs generally have less than half the transmission range of self-contained systems worn on the head.

**Does the system use DECT or Bluetooth technology?** Transmission technology can dramatically affect how well wireless systems perform in the field. Systems that employ Bluetooth technology generally have a limited

*The portable ComHub (yellow bag) wirelessly connects the tractor operator, wing walkers and flight deck, allowing continuous, hands-free, full-duplex communication during pushback and towing.*

range and are subject to radio frequency interference from nearby devices.

Look for systems that use Digital Enhanced Cordless Telecommunications technology. DECT units generally offer up to 30 times more coverage and are less subject

to interference than Bluetooth. DECT transmissions also have multipath capability, meaning the signal will bounce up, over and around objects in order to establish the best possible connection. DECT signals are also digitally encoded to ensure privacy.

**Is the system full-duplex or half-duplex?** Half-duplex systems allow communication in both directions, but only one direction at a time. That's a walkie-talkie. On the other hand, full-duplex systems allow communication in both directions simultaneously. Full-duplex capabilities are an important safety consideration because they allow the parties to speak and hear others at the same time.

**Is the system radio-compatible?** Communication during pushback and towing is generally confined to the flight deck, wing walkers and tractor operator; however, other ground support functions may benefit from the ability to communicate with remote users over a

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two-way radio. Look for a system with maximum radio-interface flexibility.

**Can the duplex capabilities be configured to your specific needs?** The system should allow you to establish a hierarchy of who can talk to whom — especially who is allowed to talk to the flight deck or broadcast over the radio.

**Is the system comfortable to wear and easy to use?** Before purchasing, try on a headset. It should fit snugly, but comfortably over the ears. The controls should be easy to access and operate.

**What is the Ingress Protection Rating?** The Ingress Protection Rating measures protection against the intrusion of solids and liquids into an electrical unit. A headset should have a minimum rating of IP 65 when worn.

**What is the range of the system?** The greater the range, the more effective the system will be since obstacles and vehicles may reduce range. Look for a minimum 1,500-foot line-of-sight

transmission capability, bearing in mind that system performance may deteriorate at the outer limits of the range.

**What is the Noise Reduction Rating?** Noise Reduction Rating or NRR is the decibel measurement indicating how well a hearing protector reduces noise. Look for an NRR of at least 24.

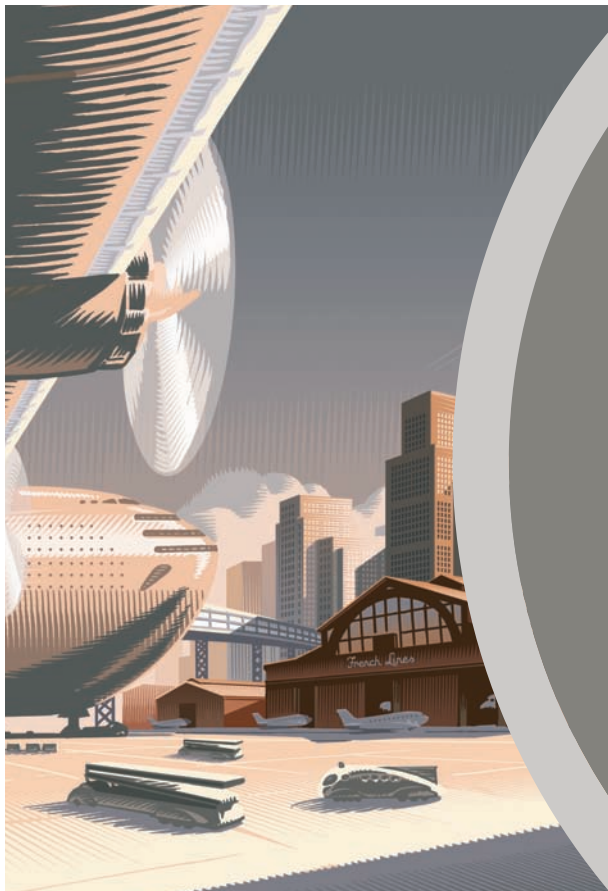
**What is the temperature range?** A system should operate within a temperature range of minus 40 degrees Fahrenheit to 130 degrees Fahrenheit.

**What about warranty and service?** Not all wireless headset systems are equally reliable and durable over the long run. Make sure the system is designed for your operating environment. Ask about warranty, repair and replacement policies, and try out the manufacturer's technical support. A limited warranty of one or two years is standard; some manufacturers offer plans of up to five years.

Full-duplex wireless headsets leave the wearer's hands free, provide freedom of movement and eliminate the wires that previously tethered ground personnel to an aircraft or belt pack.

Wireless communication systems are affordable. A single ramp accident can cost many times more than full deployment of wireless headset systems. Such systems could easily pay for themselves in less than a few weeks; the safety benefits are incalculable. As these systems become more widely deployed, they will likely reduce injuries and save lives every year.

About the Author: Michael Walsh is the director of business development for Flightcom Corporation and oversees wireless ground support communication systems worldwide. He works closely with major airlines, ground handlers and airports to provide customized solutions. ■



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# Compressor Efficiency And Modern Deicers

A primer on forced air deicing technology, various system designs and a look at the future of ultra-efficient equipment.

By Robert B. Anderson, Senior Technologist, Vortech Engineering – Vortron Industrial

**T**he industry standard for virtually all major deicing vehicle manufacturers worldwide is forced air deicing. This article attempts to provide an introduction to blowers or compressors used on current state-of-the-art products and various system design variables that influence overall performance.

## SYSTEM BACKGROUND

Various types of compressor component technologies are available as possible candidates to provide the typical 12-13 psig air pressure required. A universal specification is 100 pounds-per-minute air flow at this pressure. The design of the discharge nozzle at the business end accomplishes this – more on that in a bit. To reveal what may make a sensible compressor technology choice, you need to understand a little more

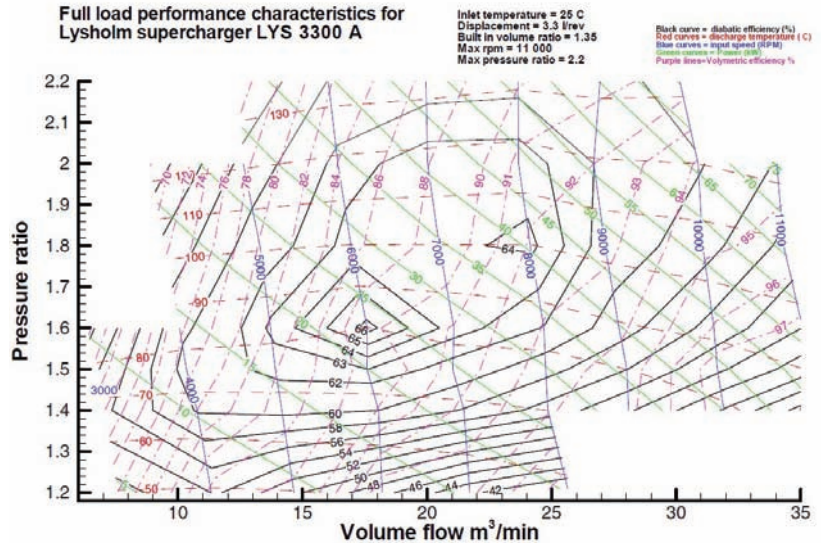


Figure 1: Compressor map of twin screw positive displacement blower. Blower attains 1.9 PR at 100 PPM (36.8m3/min) flow at 54 percent overall efficiency.

about this high performance blow-off system's design.

Typically, air velocities at the nozzle should discharge at close to unity mach,

say M=0.97, while also maintaining subsonic operation. Such a velocity equals about 67,000 feet per minute or 761 miles per hour. Various vehicle

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manufacturers typically advertise the latter number, and it's widely accepted as the best possible operating condition to attain the most effective "blow-off."

At standard sea-level conditions, this velocity dictates a nozzle operating pressure ratio of approximately 1.83:1; meaning, the absolute discharge pressure divided by the absolute inlet pressure equals 1.83.

We've limited our discussion to nozzle operating pressures. Required compressor discharge pressures will be somewhat higher due to the minor losses experienced between the compressor discharge and the nozzle, owing to the required piping, fittings and other apparatus in between. These losses must be added to the required nozzle pressure. In other words, any given compressor unit must provide additional pressure margin – up to even 2.0 pressure ratio performance depending on the overall system's execution.

The last major system operating variable focuses on the nozzle design itself – the key to regulating the entire system's operation. Modern forced air deicers employ a patented nozzle design that is essentially isentropic or "loss-less" in operation.

Nonetheless, the isentropic operating assumption allows for convenience in system design by allowing direct use of polytropic process equations. Do this and you'll discover that the throat diameter of the converging nozzle is the single parameter that controls the system's overall flow rate! Given this, the nozzle operating pressure ratio is the knob for determining discharge velocity.

We now have at hand, as the overall system's requirements dictate, two highly relevant compressor operating parameters:

- Pressure
- Flow

**COMPRESSOR TECHNOLOGIES**

Clearly, the typical deicer pressure and flow requirements will require robust compressor technology operating at considerable power levels – on the order of 100 horsepower or more.

Choices include various types of positive displacement devices such as roots and twin-screw designs and the more commonly seen turbomachinery-based centrifugal designs.

Although both basic types can produce the required pressure and air flow, their differences could not be more dramatic. Positive displacement devices are generally found to be considerably larger, heavier packages operating at

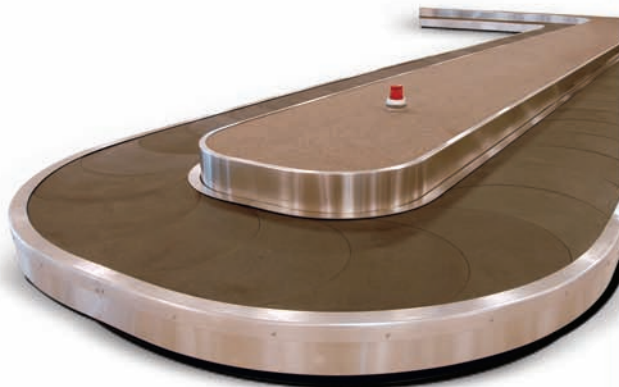
relatively slow shaft speeds. On the other hand, the turbomachinery-based counterpart technology is generally small, lighter in weight and fast. In some cases, very fast as impeller shaft speeds of 50,000 RPM or more are often required to attain the desired pressures.

Factors for selecting any of these technologies include package size and weight, operating efficiency or power

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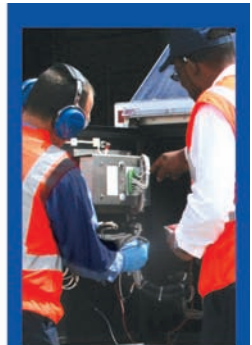
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consumption at a particular operating point, noise, durability and cost. Other more subtle factors include the general performance characteristic and stability at a given operating point.

This latter characteristic can be better explained by reviewing test data or performance maps of typical centrifugal and positive displacement-type machines. Figure 1 depicts performance mapping of an

available positive displacement-type machine, in this instance, a rotary screw compressor. Figure 2 shows performance mapping of a centrifugal-type compressor.

Although multivariate data are displayed in these maps – and they may appear quite complicated at first blush – the mapped performance differs substantially between these two technologies.

For the screw compressor, constant speed operating lines appear almost vertical. Very small changes in flow rate result in large changes in pressure while operating at constant speed. Maintaining appropriate discharge pressure and, hence, nozzle velocity relies on precisely defined downstream flow geometry.

As a result, variable speed control becomes necessary to “trim” operation to the precisely correct discharge pressure.

For the centrifugal machine, the characteristic is the exact opposite. (See Figure 2.) Constant speed operating lines are seen as nearly horizontal. Very large changes in flow have little affect on discharge pressure. So a single compressor can accommodate a wide range of flow with relative stability of discharge pressure while operating at constant speed. Impeller speed is the knob for controlling discharge pressure alone, and there is little concern over precisely matching the downstream flow geometry. Also, a system can be enhanced to attain higher flow operation as long as sufficient power is available without the need to change the compressor component.

**POWER GAME**

Other differences can be seen when comparing overall package size and weight and power consumption. The latter is directly influenced by compression efficiency, a by-product of compressor design and technology choice. The performance maps of Figures 1 and 2 depict efficiency performance of the screw and centrifugal units respectively. Although these data are peculiar to specific products, they may be taken as representative for our purposes.

Clearly, the centrifugal unit exhibits generally higher operating efficiency – 79 percent peak vs. 65 percent peak for the screw product. But does a 15-point efficiency difference really matter? What impact does this have on overall system requirements and operating costs? Moreover, at what efficiency is the com-



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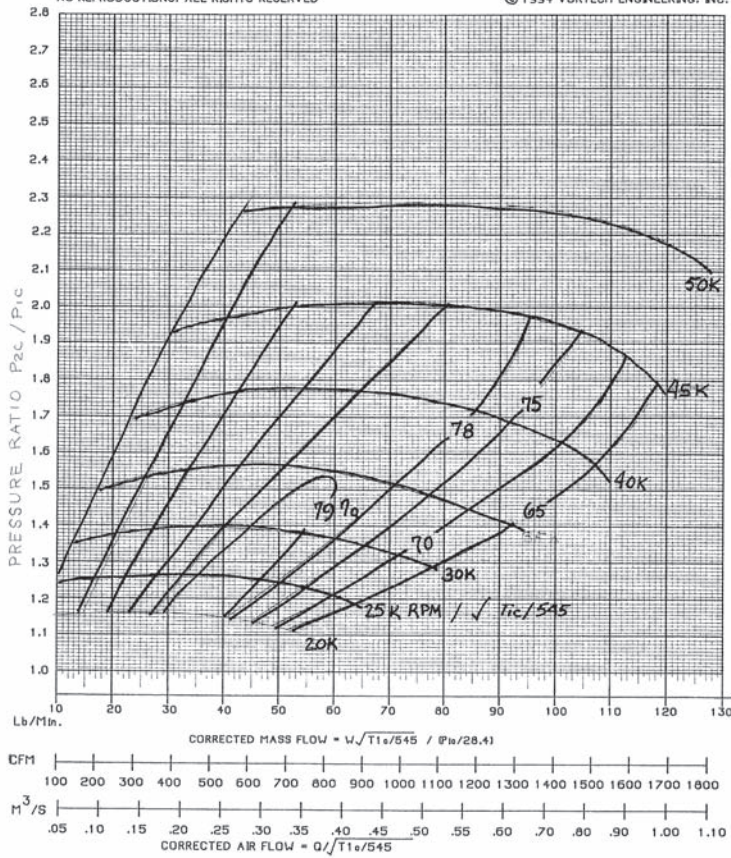


Figure 2: Compressor map of centrifugal compressor. Compressor attains 1.9 PR and 100 PPM flow at 76 percent overall efficiency.

pressor operating at the particular flow and pressure point of interest?

Fortunately, efficiency differences and their overall affect on power and, hence, operating costs can be readily evaluated via the polytropic compression equations. Table 1 summarizes such a study with performance taken at the 1.9 PR and 100 PPM air flow operating conditions. For these calculations, inlet air is taken at 20 degrees F and 14.50 psia, typical of conditions during deicing operations.

Contrasted are three compressor technologies including the Figure 1 and Figure 2 screw and centrifugal devices, and a third representing a rotary lobe roots device typically found in a wide variety of industrial applications. Also, even though a given device or technology may perform at a certain peak efficiency level, what is more important is the efficiency at the specific pressure and air flow operating point of interest.

For example, the Figure 1 twin-screw device attains a peak 65 percent efficiency, but is only 54 percent efficient at the 1.9 PR – 100 PPM flow point of interest. The Figure 2 compressor is closer – 76 percent operating efficiency against a best of 79 percent.

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This reveals the importance of close scrutiny of mapped performance of any given compressor technology or device, and whether it is truly optimum for the specific air supply needs. This raises the challenge to develop compressor stages that are actually tuned so that peak efficiency performance is attained specifically at the desired pressure and flow operating condition. This assures the absolute minimum power and, hence, the lowest operating cost condition for the forced air deicing equipment.

From the Table 1 summary, compressor operating efficiency considerably impacts overall power requirements; power is directly related to fuel consumption and, hence, operating costs. Further, power generators on board the deicing vehicle must be upsized to accommodate a more power hungry, inefficient compressor. Since most modern deicing vehicles favor a hydraulically driven compressor drive

Compressor Type	Efficiency, Typ.	Power (HP)	Power Difference
Centrifugal	76%	72.4	0
Twin Screw	54%	101.9	+40%
Roots	47%	117.0	+61%

Table 1: Power comparison of various compressor technologies. Taken at 1.9 PR, 100 PPM air flow, 14.5 psia@20 degrees F at the inlet.

arrangement, this implies the use of a larger, more costly power source, pump and hydraulic motor. Clearly, compressor efficiency must be at the top of the list for choosing a potential air source solution, if overall system downsizing, operating cost and emissions reductions are at all relevant.

**MODERN DEICERS**

For the reasons discussed, the mechanically driven centrifugal compressor technology has been the choice of deicing vehicle manufacturers for several years now.

With what appears to be a growing trend and global initiative

toward energy footprint, emissions and operating cost reductions, GSE manufacturers have also adopted a trend to develop equipment that can accomplish more with less, i.e., do a better job while reducing cost burden to their customers, all while maintaining an edge in a very competitive global market.

For forced air deicers, increased airflow is desired since this enables improved blow-off performance at greater distances due to the increased jet core to surface area ratio. Such performance is desired to better accommodate deicing needs of large aircraft such as the Airbus A380.



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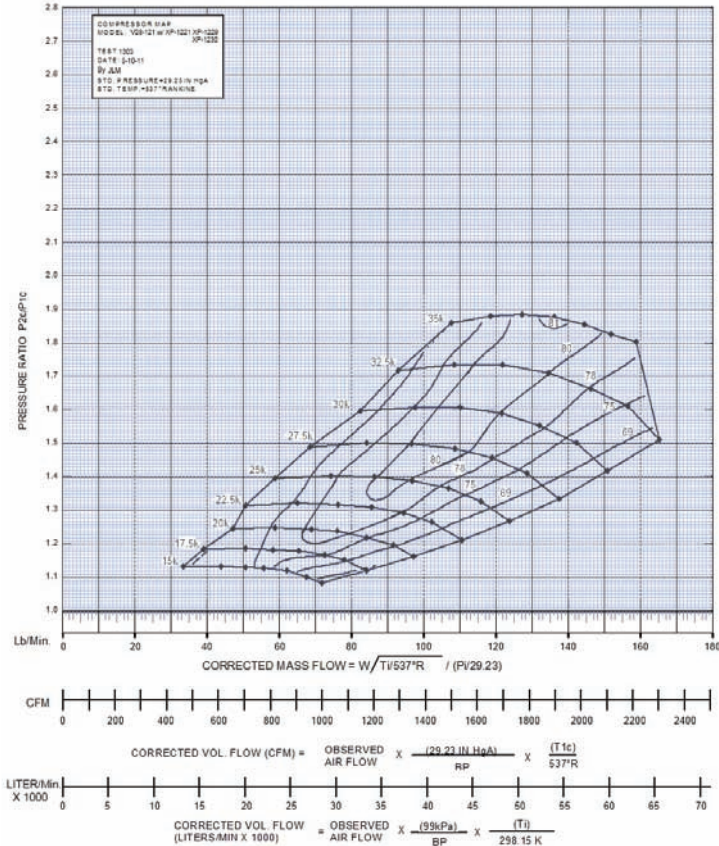


Figure 3: Performance map for ultra-efficient compressor stage for new generation, 140 PPM high performance deice applications. Stage attains 81 percent overall efficiency at 1.9 PR, 140 PPM airflow. Moreover, peak efficiency is attained at the exact operating point of interest.

As a result of these challenging objectives, new compressor designs promise to move the forced air deicer performance and efficiency state-of-the-art forward. These next generation products offer increased air flow of 140 PPM (1,830 CFM) courtesy of new generation, ultra-efficient compressor stages.

Such a system with this level of efficiency performance incurs only modest power increases; the 1.9 PR at 140 PPM flow operating point is attained at 81 percent overall efficiency, resulting in 96 horsepower of compressor power at the typical 20 degrees F @ 14.5 psia inlet conditions. (See Figure 3.)

As many deicing vehicles in service today are already equipped with this level of compressor power rating, upgrading to these newer high performance compressors can be accomplished with little other modification to the existing vehicle system. The peak efficiency of this device is attained at the exact operating point of interest!

About the Author: Robert B. Anderson, MSME, is senior technologist at the AirPower® Group of companies, which includes the Vortech Engineering and Vortron product brands, where he has worked since 2001. ■

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# Navigating The Maze Of SMS Jargon

Safety management terminology is actually straightforward and already aligned with existing data-gathering programs.

By Dr. William Johnson, Chief Scientific & Technical Advisor - Human Factors, FAA

**A** recent story in the national press and television laughed about the family of four who became lost at dusk in a corn maze. They called 911 and the local fire department and television camera crews came to everyone's rescue. Yes, the story ended well but for the embarrassment of the parents.

Do you sometimes find yourself lost in the maze of jargon that surrounds safety management systems (SMS)? Let's try to clarify a few terms that can be confusing. Also, let's show that SMS is often a matter of formalizing your current safety program.

The International Civil Aviation Organization (ICAO) guides the direction of required safety programs. Its Safety Management Manual (Google the term "ICAO SMM") describes the multitude of suggested requirements for a safety management system. The requirements apply to airlines, charter companies, MROs, airports, air traffic organizations and others.

Each organization must have a formal means to collect, analyze and apply results from three different types of data:

- Reactive
- Proactive
- Predictive

FAA aligns guidance with ICAO. Different data need different methods to collect, analyze and use the information to promote safety. Let's look at the three data types in more detail:

## REACTIVE DATA

The event has already occurred. The damage is done. Depending on the severity of an event, you hear about

it on the news. However, many other events, such as a runway incursion, high value ramp damage or worker injury, may remain known only to the airline or company personnel involved.

Companies usually have accident/event procedures in place. They are prepared to launch an investigation team and establish fact-based contributing factors. There are very good processes to interview those involved or witnesses to an event. Companies usually have the means to determine the cause and take actions to ensure that the event never happens again.

Afterward, the FAA and any number of industry organizations and publications help disseminate accident/event data. This helps reduce the chance that the event may be repeated at another carrier. We learn from one another.

The event investigation process, the data collected and the final report is merely a reaction to the event – hence, the term "reactive" data. There is high value in learning from the reactive data from big events. The industry has relied on such information for a long time in the successful effort to ensure continuing safety.

## PROACTIVE DATA

Collecting, analyzing and applying proactive data is not new. Only the emphasis on the term "proactive" is new. Aviation organizations have auditing, quality and safety departments that apply a multitude of operational measures to assess current performance and safety. The FAA Continuing Analysis and Surveillance System (CASS) exemplifies a robust data system. For CASS, the company is responsible for collect-

ing data and assessing the opportunities for improvement. Traditional audits with the International Air Transport Association (IATA), the Coordinating Agency for Supplier Evaluation (C.A.S.E.) and the National Aviation Authority are nothing new. In SMS language, these audits represent your proactive data.

## PREDICTIVE DATA

We are a very safe industry. The positive data from 2011 broke all safety records. The United States has gone nearly three years without an airliner accident fatality and the accident rate is considerably down worldwide. Today's aviation news is more likely to describe a long wait in a TSA line than an airliner safety issue. We must continue on that increasing safety path.

SMS regulations encourage us to take our data collection to the next level. Predictive data systems are a means to use daily/normal operations to help identify a company's strengths and weaknesses.

Sometimes there is confusion between the terms used in "system safety" vs. the language used in "threat and error management." Using the language of system safety, predictive data helps identify the small hazards in advance of assigning a risk level. Using the language of threat and error management, predictive data helps identify the threats so that they can be managed before they become errors.

In any language, it is a matter of identifying and addressing challenges as early as possible. How can you establish systems to gather and apply predictive data?

## NATA Safety Standard for Ground Handling

NATA recently established the NATA Safety 1st Ground Audit Standard to promote industry best practices and safety management systems (SMS) development among ground handling providers in response to member requests for a safety standard and rating for FBOs. This audit standard is the first published audit for FBOs.

### Objectives of the NATA Safety 1st Ground Audit Standard:

- Achieve a standardized and consistent audit product acceptable to on-demand air charter operators, business aircraft operators and other ground handling facility users.
- Develop a program similar in concept to that currently utilized by airline ground handling facilities.
- Follow an ISO-compliant format.
- Create one audit standard to satisfy operators, customers and others by including:
  - Safety Management Systems (FAA and ICAO standards).
  - Regulatory compliance (TSA, EPA, and OSHA).
  - Eliminate the need for multiple audits from numerous aircraft operators by providing consistent audits.
  - Maintain online registry to confirm successful completion.
- Best practices.

To find out more about NATA's Safety 1st Ground Audit visit [www.nata.aero/groundaudit](http://www.nata.aero/groundaudit).

Most likely, frontline employees see the hazards before management does. Predictive data, therefore, must be worker-centered. Companies must make it easy for employees to speak up. Voluntary reporting systems are likely the best means to achieve this goal.

FAA cooperates with the industry through programs such as the Aviation Safety Action Program (ASAP). It protects workers from FAA action when they report mistakes early. Progressive companies use ASAP as a means to report not only

events but also to report the conditions that may lead to events.

Another new program created by FAA with the Airlines for America (A4A) (formerly Air Transport Association), is the Maintenance and Ramp Line Operations Safety Assessment system (MRLOSA). MRLOSA is a formal means for workers to conduct peer-to-peer assessments during normal operations. Such data may be the very best means to gather and use predictive data.

The bottom line, the SMS maze is not that complex. This article has

shown that the SMS requirement for reactive, proactive, and predictive data is straightforward. It is already aligned with many of your existing data systems. The SMS guidance makes good logical safety sense.

About the Author: Dr. William Johnson has spent more than 30 years as senior executive and scientist for engineering companies specializing in technical training and human factors before joining FAA in 2004. He is also an aviation maintenance technician and a pilot, and has been for more than 45 years. ■

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# HOW TO Recover From IROPS

Automated docking systems identify available gates, allow pilots to self-park planes and keep ground support operations on track.

By Tammi Phippen, Marketing Communications Manager, Safegate Airport Systems Inc.

**W**hen regular operations turn into irregular operations (IROPS), airports and airlines must communicate, share responsibility and work together to create a plan that offers real solutions – not just for the unlucky passengers, but also the ground support crews.

A recent DOT/FAA Diversion Forum, for example, initiated an industry-wide effort among airports, airlines and air traffic control systems to share real-time information on ground conditions, available gates and ramp closures to better prepare and respond to severe weather events.

An Advanced Visual Docking Guidance System (A-VDGS) can link gates and integrate with other airport and airline systems to generate and share just such real-time information. Even during IROPS, the system can bring more aircraft to the gates. That means passengers can get on their



All photos provided by Safegate Airport Systems Inc.

*When severe weather and the threat of lightning send ground crews indoors, an automated docking system continues to identify available gates and allows pilots to self-park at the gate.*

way and pilots can head to their next destinations.

Also, an A-VDGS helps ramp operations stay on track by keeping things moving. Even when severe weather sends ground crews indoors, the equipment's automated docking system identifies available gates and

lets pilots self-park their planes at those gates. Any aircraft type from any airline can be parked at compatible gates equipped with the system even in hazardous conditions.

For example, when lightning strikes within an established range a "RAMP CLOSED" warning message can be con-



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## Regular Operations, Too

When airlines delay, cancel or divert flights, much of the challenge shifts to airports. Tarmac delays, ramp congestion and closed gates then put the burden on the ground support crews.

And that burden is likely to increase regardless of the reasons. The NextGen Air Transportation System, for example, is expected to reduce delays and provide greater flexibility to get around weather problems in the air.

Improved capacity in the air, however, will strike a delicate balance on the ground between surface and gate capacity. As a result, ground crews will have to perform their work consistently in all types of weather.

The most advanced gate operating system manages the entire arrival and departure process and provides a link between the movement and non-movement areas. As a result, the A-VDGS becomes the natural connection point to integrate all airport and airline systems as well as all equipment on the ramp.

Such a system collects and distributes real-time gate intelligence and accurate flight information to airport, airline and air traffic control systems. This means planes get to the gates quickly and ramp workers can perform their jobs safely and efficiently during IROPS and regular operating conditions.

veyed to ramp workers on the A-VDGS display. This message can either be automatically triggered via an interface to a lighting detection system or manually done at the gate operating system console that immediately sends the message to all displays. Airlines can develop procedures to ensure gate areas are clear of obstacles as personnel vacate the ramp.



The screen on the left is the gate operating system that provides operations with a real-time view of all gate activity.

When an aircraft arrives, the information is sent to the A-VDGS at the assigned gate and the "RAMP CLOSED" message is replaced with the standard docking guidance information. If the assigned gate is unavailable, the gate operating system provides real-time information on alternate gates. Only preprogrammed, compatible aircraft types are allowed into these gates.

When the ramp reopens, ground crews can get back to work quicker thanks to aircraft already parked at the gates. Taxiways are clear and ramp personnel can focus on pushing back aircraft waiting to depart.

### HOW AN A-VDGS WORKS

The most commonly used A-VDGS employs three-dimensional laser scanning to identify an approaching aircraft and provide active azimuth and stop guidance to the pilots via a high-intensity LED display.

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*Safedock A-VDGS uses a multicolor, high-intensity LED display and azimuth guidance to direct pilots to the exact STOP position at the gate in all weather conditions with or without ground crew present.*

An A-VDGS can identify the position of a passenger boarding bridge to verify that the bridge is safely stowed prior to docking. The system also ensures the gate area is ready and prevents incompatible aircraft from parking at adjacent gates.

These systems are installed on nearly 5,000 gates around the world, including more than 500 at North American airports.

When delays can't be avoided, the equipment's gate operating system manages them by networking all gates and integrating with other airport and airline information systems to communicate real-time gate availability, accurate in/out times



and ramp closure information that are all key to mitigating extended delays.

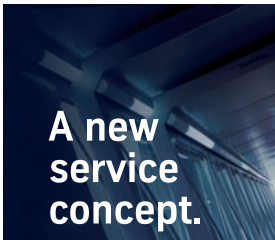
An extensive network of A-VDGS users could share real-time conditions and available gate information between any number of airports and airlines as more airports add these systems, either airport-wide or on gates designated for use during IROPS. This network will greatly improve communication and help avoid diverting flights to airports that do not have the resources to accommodate them.

The ability to effectively manage available gates and bring more aircraft in even during severe weather events,

*A collaboration with Dallas/Fort Worth International Airport and American Airlines helped save the airline an estimated \$11 million by avoiding costs related to docking in severe weather and an additional \$3.5 million annually in reduced fuel consumption during normal operating conditions.*

especially during ramp closures, can significantly improve performance during IROPS.

About the Author: Tammi Phippen is the marketing communications manager for Safegate Airport Systems Inc., a subsidiary of the Safegate Group. She joined the company in 2010 and has worked in the aviation industry for more than 20 years. ■



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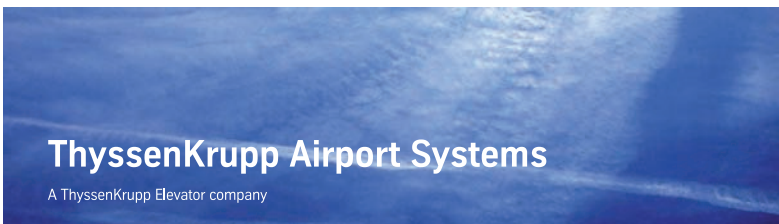
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# Ground Support Worldwide Events At Cygnus Aviation Expo

Green GSE seminars, an outdoor demo area big enough for test drives and our Leaders of the Year Awards are a few events tailored just for *Ground Support Worldwide* readers.

By Steve Smith

**T**he Cygnus Aviation Expo, March 7-9, at the Las Vegas Convention Center, features plenty for all aviation pros. *Ground Support Worldwide*, however, has created special events just for our readers:

## EDUCATION

We'll be presenting three Green GSE Seminars on the Expo's day two:

### Going Green

#### At US Airways Express

1:30-2:30 p.m., March 8  
Exhibit Hall Theater

US Airways Express/Piedmont Airlines has used electric GSE at many of its locations for years, in particular at the Charlotte Douglas International Airport and the Philadelphia International Airport. In fact, electricity powers a major portion of its baggage tractors and belt loaders at these busy airports.

The seminar promises to share cost savings using electric GSE and candidly discuss important daily performance issues. While VALE grants are a popular way to purchase electric GSE, the speakers will share other sources of funding that you may not have considered.

Brian Wemple, Manager, Customer Service Support, Piedmont Airlines, started working with Piedmont Airlines in Tallahassee, FL, as a ground handling agent in 1999. Wemple has worked in various capaci-

ties with Piedmont and currently oversees the development and implementation of capital projects, including the procurement of new and replacement ground equipment.

Fred Maslow, GSE Allocation Analyst, US Airways Express, has spent nine years in the airline GSE world. Maslow also knows conventional GSE since he spent 20 years

in the industrial engine and related equipment markets.

### Taking A Different Road To Green GSE

2:30-3:30 p.m., March 8  
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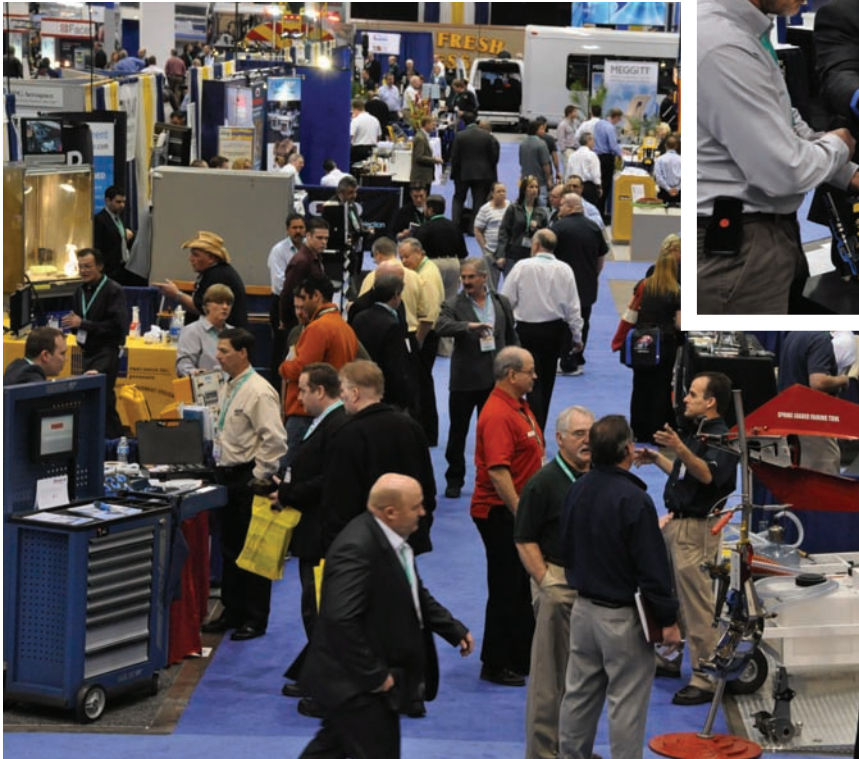


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This year's Cygnus Aviation Expo expects to attract more than 200 exhibitors and more than 3,200 attendees.

cut down on emissions. Two companies are using power sources that aren't necessarily new, but can be considered unconventional ways to go green.

According to Corvus Energy's CEO Brent Perry, lithium power has displaced all other forms of energy storage in every market it has been introduced into. The advantages, disadvantages, current trends and market needs will be discussed, as well as a vision of the future of electric GSE.

Meanwhile, Can-Am Modev H2 R&D Inc. has successfully completed the conversion of three gasoline-powered baggage tractors to hydrogen power. Extensive tests by Air Canada at airports in Montreal and Vancouver during the first half of 2011 showed that hydrogen power performed just as well as gasoline. Emissions with hydrogen are virtually zero.

Brent Perry is CEO, President and one of the founders of Corvus Energy, a company with many years of experience in developing total product solutions utilizing chemistry energy products. Perry has successfully led Corvus into the Industrial Marine Sector, Commercial Trucking Sector, UPS and Telecom Sector, Port Machinery and Ground Service Equipment while building one of the best high-performance teams and leading sophisticated manufacturing and service organizations in North America. Perry has a clear vision for the expansion of the lithium-ion battery industry and a proven history in lean manufacturing, sales, product

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distribution and customer service leadership.

Claude Pepin, President of Can-Am Modev H2 R&D Inc., first became involved with green propulsion 15 years ago, when his company developed electrically propelled boats as a green alternative to gasoline and diesel for such notable places as theme parks in Florida. In business for 45 years, he founded Can-Am Modev, a Canadian-American motor development firm, which has close ties to hydrogen-fueled engine developments at Université du Québec à Trois-Rivières.

### Making The Switch From Diesel GSE To Electric GSE

3:30-4:30 p.m., March 8  
Exhibit Hall Theater

Certainly plenty of airlines and ground support operators are incorporating electric GSE into their traditional fossil-fueled lines of equipment. The switch isn't always as easy as most of us would think. What do you say to personnel used to the tried-and-true versions of GSE? What can go wrong along the way to getting it right? How can you ensure the best outcome? Learn the first-hand lessons one OEM has learned from many of his aviation customers. Also, the presentation will take a look at what's next for rechargeable batteries and charger technology.

Todd Allen, President, Allen Energy, has a BS in Engineering from Penn State and an MBA from UCLA Anderson. He started his career with Eaton Corporation and held multiple positions in engineering and marketing, and finally as a plant manager. Now with Allen Energy, he brings unique battery and charger solutions to the domestic and international GSE market

### LEADERS OF THE YEAR

This year, we've decided to announce the winners in advance

for our *Ground Support Worldwide Leaders of the Year Awards*. But still plan on celebrating the award-winners during the popular Attendee and Networking Party, 5-6:30 p.m., March 8, Exhibit Hall.

#### Lifetime Achievement Award:

William "Bill" Jacob with the United Parcel Service Inc. This award goes to a person who has demonstrated commitment to the industry through numerous years of dedicated service.

#### Team Leader Award:

Gregory McDermott with the United States Coast Guard. This award goes to an individual who has taken a leadership role with personnel.

#### Product/Service Award:


Flightcom for its development of a hands-free wireless system for ground support communication. New this year, this award celebrates the products, services and manufacturers making a difference in the industry.

The Networking Party will also feature our popular truck giveaway. Find out if you're the lucky winner of a 2012 Ford F-150.

### OUTDOOR DEMO AREA

We've expanded our outdoor demo area to be large enough so you can actually drive and test equipment. You'll also be able to stop by "garages" for the companies that demo equipment. Finally, we've also included outdoor booths so you can really come and kick the tires and see the equipment in action. Here are the exhibitors you can expect to see outside:

- AERO Specialties with Eagle Tugs
- Corvus Energy Ltd.
- Genie
- Harlan Global Manufacturing
- JLG Industries Inc.

See you there! 

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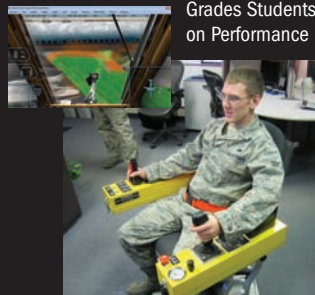
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## RAMP MANAGEMENT SOLUTIONS

### Safegate Airport Systems Inc.

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FCX Systems ground support air conditioning (GSAC) units are available in a range of 20- to 150-ton capacity. The FCX PC air units provide cool or heated air for a wide variety of aircraft from regional aircraft to jumbo jets for applications that include bridge, mobile, and fixed position mounting. Both point-of-use and central systems are available to service any airport/airline needs.

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**SCHOPF Maschinenbau GmbH**

SCHOPF PS 560 A/B is based on a specially developed airport vehicle chassis to service aircraft with door sill heights between 1.9 meters and 5.8 meters, powered by a diesel engine with hydrostatic drive. Also available as VVIP/VIP version. Options include all-weather-canopy, sun roof, auto-levelling system, etc. SCHOPF stairs are in service at civil airports worldwide and with military forces in various countries.

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**TOWABLE PASSENGER STAIR**  
**Clyde Machines Inc.**

The Model 15F2820 Towable Passenger Stair has a platform range of 88 feet by 161 feet. Upper platform size is a large 76 feet by 50 feet to allow the aircraft door to fully open when stair is in position. Other features: LED lighting with timer, onboard battery charger, battery level indicator. Optional solar-charging kit.

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**JLG Industries Inc.**

The new Model 19AMI-DC manually propelled, battery-powered vertical lift from JLG Industries, Inc. can lift up to 350 pounds to a working height of 25 feet 4 inches without the need for outriggers. Workers can make full use of the platform height in confined areas because the lift is only 34-inches wide. Standard features include nonmarking tires and a low maintenance anodized aluminum mast. Batteries can be recharged using the automatic built-in charger, and there is a battery discharge indicator to warn operators when the charge is low.

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**TRUCK-MOUNTED PASSENGER STAIR**  
**Phoenix Metal Products**

Phoenix Metal Products, Inc. has added a new passenger stair to complete their full line of stairs. Available now is the model PNX-PAS228 Truck-Mounted Passenger Stair with a door sill height from 96 inches down to 228 inches up. The chassis is a Ford F450 SD with six stabilizers.

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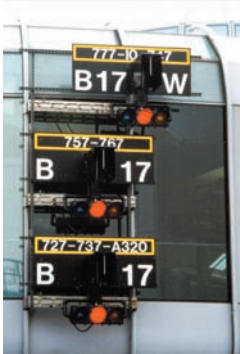


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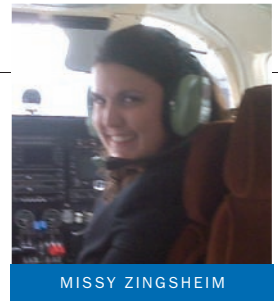
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# Ground Support Leaders of the Year

We won't keep you in suspense this year. Here are our three Ground Support Leaders of the Year. But plan on coming to the Cygnus Aviation Expo's Attendee and Exhibitor Networking Party to celebrate with the winners.

**I**t is my pleasure to announce the winners of the Ground Support Leaders of the Year:

- **Lifetime Achievement:** William "Bill" Jacob with the United Parcel Service Inc. This award recognizes a person who has demonstrated commitment to the industry through numerous years of dedicated service. Jacob has more than 40 years of GSE experience with Eastern Airlines and UPS. Jacob, Vice President of the UPS Ground Support Division, is directly responsible for almost 32,000 pieces of powered and nonpowered GSE.



- **Team Leader:** Gregory McDermott with the United States Coast Guard. This award recognizes an individual who has taken a leadership role with personnel. McDermott, Chief Warrant Officer – Four, leads an aviation ground support team with a \$12 million budget at the Coast Guard's only Aviation Logistics Center. McDermott's work supports 26 Coast Guard air stations located in the United States and Puerto Rico.
- **Product/Service Leader:** Flightcom for its development of a hands-free wireless system for ground support communication. (For more on the system, look on page 30.) New this year, this

award celebrates the products, services and manufacturers making a difference in the industry.

The awards will be presented at the Attendee and Networking Party, Thursday, March 8, from 5-6:30 p.m. Please come and celebrate and congratulate the winners for the 2012 Awards.

If you have questions about the awards or are interested in nominating someone for 2013 please contact me: Missy@AviationPros.com or (920) 563-1665.

In other news, it's been more than three months since we launched www.AviationPros.com. I hope you have had a chance to visit this new aviation portal, explore the pages and maybe even participate in the social media conversations taking place throughout the site.

Please do let us know what you think about the new website. Feel free to drop a note on our Facebook page at [www.facebook.com/AviationPros](http://www.facebook.com/AviationPros). AviationPros.com is your one-stop shop for aviation news and products.



*Be sure to take the time to register at [www.AviationPros.com](http://www.AviationPros.com) in order to gain access to special, premium content. And also be sure to join Ground Support Worldwide's LinkedIn Group. In the past six months, we've grown membership by almost 60 percent.*

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