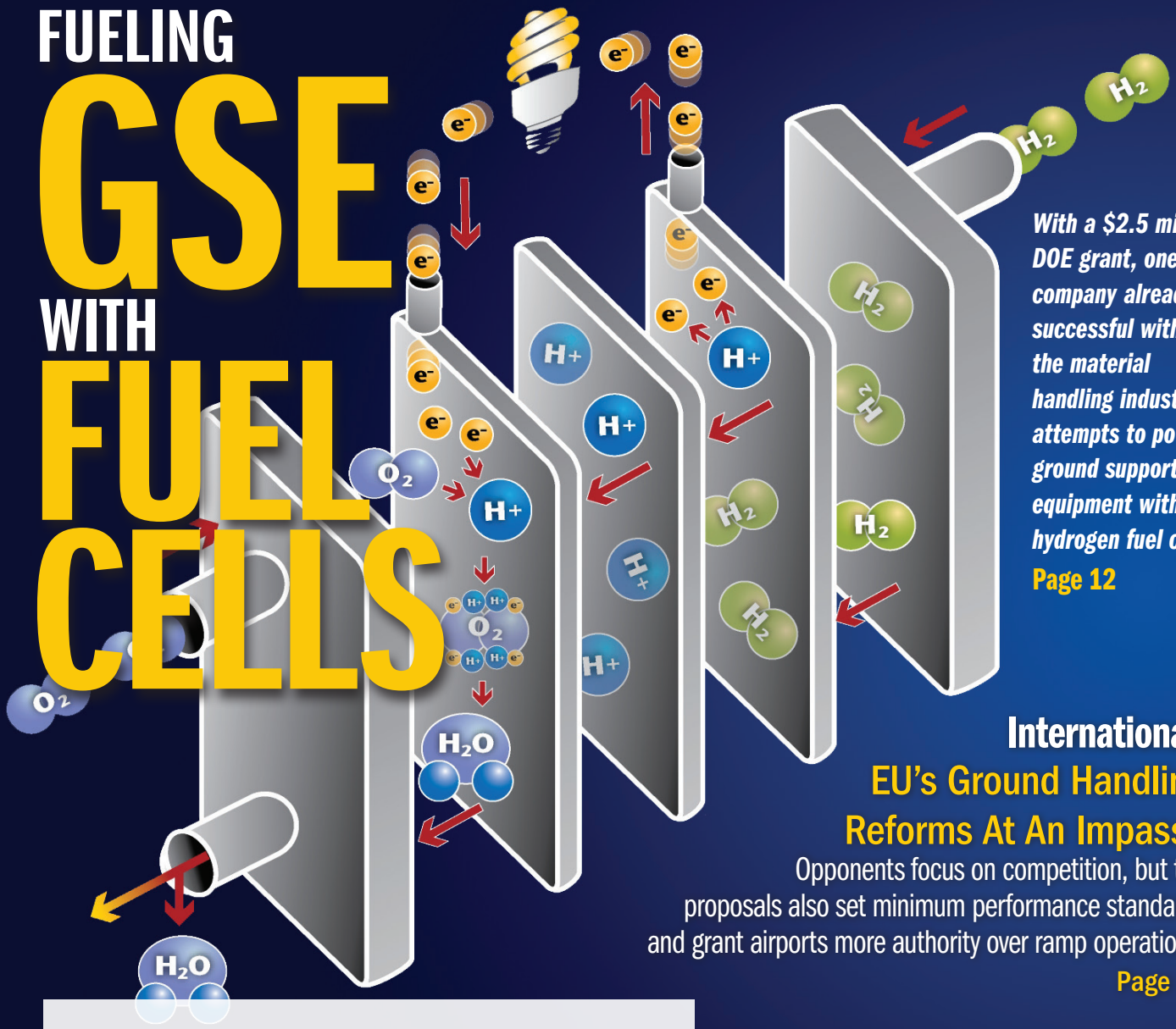
GROUND SUPPORT WORLDWIDE

December 2012/January 2013

FUELING GSE WITH FUEL CELLS



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International:

EU's Ground Handling Reforms At An Impasse

Opponents focus on competition, but the proposals also set minimum performance standards and grant airports more authority over ramp operations.

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Plug Power plans to use hydrogen-powered fuel cells in 15 Charlatte electric cargo tractors for FedEx.

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GROUND SUPPORT WORLDWIDE

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ON THE COVER: Plug Power plans to use hydrogen-powered fuel cells in 15 Charlatte electric cargo tractors for FedEx.

Photo credit: Charlatte of America.

STEVE SMITH

Fuel Cells Take To The Runway

Converting one form of energy into another takes time before it makes 'cents.' Just look at the ICE.

We didn't know much about hydrogen-powered fuel cells prior to writing this month's cover story on how one business, already successful in powering forklifts with fuel cells, sees a bright future in doing the same with ground support equipment.

Plus, it has a $2.5 million grant from the DOE and proven relationships with other related companies interested in this new source of fuel, such as a company that can supply hydrogen almost as matter-of-fact as we drive up to the gas pump for our cars.

In our research, we found a couple of other recent, noteworthy ways the aviation industry is trying out fuel cells to make air travel that much more efficient and safer to the environment.

Airbus, for example, is planning to test fly an A320 by 2015 using a 90-kilowatt hydrogen fuel cell to power most of the aircraft's nonpropulsive systems typically done by the engines during flight and by an APU on the ground.

One idea is to reduce the drain placed on the engines during flight. Aircraft, for example, are often designed with engines larger than needed to provide this extra juice. The other idea is to simply get rid of the APU. As a result of either idea, weight is reduced, but more importantly, power burns cleaner and more efficiently.

Not to be outdone, however, Japan's Ishikawajima-Harima Heavy Industries reported in October flying a 737 for five hours above Seattle with its fuel cell system.

When everything is said and done, hydrogen fuel cells are hardly the stuff of science fiction. Rather, their main advantage is the ability to directly convert chemical energy to electrical energy.

Those last two items are old chums, a part of everyday modern life. The trick, of course, is to integrate these two mature technologies and do it at a price that makes sense.

While we didn't see any pictures of the IHI fuel cells, we expect our two old friends no doubt needed extender belts during the flight, all the while happily wolfing down the fossil fuel equivalent of filet mignon.

The IHI news is part of an annual collaboration with Boeing, American Airlines and the FAA, which recently assembled an American 737-800 loaner to serve as a "flying test bed" to validate new technologies.

The IHI system won't be commercialized until sometime after 2020, and the company has already been working with Boeing for the past 13 years on this technology.

But it's a start, isn't it? An internal combustion engine basically converts chemical energy into mechanical energy. Simple thing really. However, it took about a half century to make the contraption the least bit commercially viable and another 20 years after that to put an engine into the first production automobiles for the landed gentry and still another 20 years passed until cars were affordable for the rest of us.

Advertiser's Index

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Las Vegas Convention Center
March 13-14, 2013

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Major Events in 2013:

March 13-14
AviationPros LIVE
Las Vegas, NV

April 24-26
GSE Buyers Conference
Lisbon, Portugal

May 5-8
IATA Ground Handling Conference
Vancouver, Canada

Oct. 8-11
inter airport Europe
Munich, Germany

Oct. 22-24
NBAA Convention
Las Vegas, NV

Business Buzz

SAS To Sell Ground Handling Unit: Scandinavian Airlines is looking for a buyer of its ground handling unit as it plans to cut 7,000 jobs and sell other assets. The airline, unprofitable since 2007, hopes the asset sales can raise $440 million.

Self-Service At WestJet: WestJet introduced self-serve baggage tagging for passengers flying to the United States from Vancouver, Edmonton, Winnipeg, Toronto and Montreal. WestJet is the first Canadian airline to introduce self-serve baggage tagging on nonstop transborder flights.

Menzies Makes Gains In The UK

Menzies Aviation handled its first United Airlines flight in Belfast International Airport in November. This is the first new United start up since the firm won a three-year contract with United for Belfast and Birmingham.

In other news, Menzies opened it sixth station in the UK at George Best Belfast City Airport for Aer Lingus on a new contract for three years. With currently six turns per day in the winter rising to 12 per day in the summer, Aer Lingus has further growth plans in Belfast City and Menzies will use the opportunity to strengthen its customer base at both Belfast airports.

Registration Opens For AviationPros LIVE

AviationPros LIVE, our annual conference and trade show that brings together the readers and advertisers of *Ground Support Worldwide*, and our sister publications Airport Business and AMT, will be held March 13-14 at the Las Vegas Convention Center.

The name of the show might be new, but as always attendees will have the chance to meet manufacturers and learn about the latest products and services on the exhibit floor, network during show events and take advantage of education seminars geared to ground support equipment.

This year, *Ground Support Worldwide* will host two seminars each on **March 13**:

Funding Options For Electric GSE, 11 a.m.-12 noon

Neal Wolfe, a senior consultant with LeighFisher, to discuss not VALE grants, but other state and local alternatives.

The State Of The Electric GSE Market, 2-3 p.m.

A panel discussion including GSE professionals from airlines and battery makers to talk about the results of a survey of Ground Support Worldwide readers on their buying trends for electric equipment.

Another draw for our readers is sure to be an expanded outdoor exhibit area, which will offer booths and plenty of room to demonstrate GSE.

Also, we'll be announcing the winners of our **Ground Support Leaders** at the **Opening Night Reception, 6 p.m., March 13.** (For information on nominating someone, see the ad on page 15.)

Finally, the magazine turns 20 next February and we will mark the occasion at the show with a display of important milestones in the development of ground support equipment, including tractors, pushbacks, GPUs and deicers. We're looking for any old images of equipment and stories to share. **Send any information to Steve Smith at steve.smith@aviationpros.com.**

This Tug with serial number "1" was delivered to Epps Airport Services at Peachtree-Dekalb Airport in 1973. Tug Technologies refurbished the tractor and donated it to the National Museum of Commercial Aviation in 2009.

National Museum of Commercial Aviation

To register and for complete information on the show, go to aviationproslive.com.

Flightcom Awarded Patent: Flightcom announced that the United States Patent and Trademark Office awarded the company a patent for its wireless ground support communication systems. The patent covers key features including connection to the aircraft, secure communication links among the flight and ground crew and Pilot Alert™ to ensure removal of the system before flight.

Continental's New Name: Continental renamed its Industrial Tires division to "Commercial Specialty Tires."

HACTL Wins Award: Hong Kong Air Cargo Terminals Limited was honored with the Enterprise Award at this year's DHL/*South China Morning Post* Hong Kong Business Awards.

Partnerships/Acquisitions/ Contracts

Five-Year Deal For Menzies: Menzies Aviation announced a new five-year contract for ground handling services at 14 airports across the United States and Mexico with Alaska Air Group. In other news, Menzies secured a five-year contract with Emirates Sky Cargo for warehouse operations in Amsterdam.

Renewal for SATS: SATS Ltd. announced the renewal of its ground handling and inflight catering contracts at Singapore Changi Airport with Singapore Airlines. In other news, Air India SATS Airport Services Private Ltd announced the extension of its ground handling services partnership with Cathay Pacific Airways with the launch of the airline's operations to Hyderabad International Airport.

Africa's First LCC: Swissport International has signed an agreement with Africa's first low-cost carrier Fastjet under which Swissport will provide ground services throughout the airline's network. In other news, Swissport Algeria was awarded a five-year ground handling license for Oran International Airport Ahmed Ben Bella.

Servisar Delivers To American: Servisair Fuel Services began delivering fueling services for American Airlines at Phoenix Sky Harbor International Airport. The PHX operation represents the sixth location where American Airlines has selected Servisair for its into-plane fueling needs and is the 13th city in North America where Servisair provides into-plane and GSE fueling services.

United Renews With JetStream: United Airlines renewed its cabin cleaning service contract at its Denver hub with JetStream Ground Services, a business partner that has worked with United Airlines for more than 15 years in various locations throughout the United States.

Aviator To Handle KLC: Aviator Norway's subsidiary Roros Flyservice has been awarded a ground handling contractor for KLM Cityhopper flights at Alesund Airport.

JBT To Supply Gate Equipment: JBT AeroTech has been awarded a contract to supply gate equipment for a new terminal project at the Heydar Aliyev International Airport in Azerbaijan. The contract includes the supply of 13 new Jetway passenger boarding bridges, 13 JetAire PCA units, 19 JetPower 400Hz GPUs and other ancillary equipment.

Cavotec To Power Hangar: Cavotec will supply a complete air and electrical power solution for a United Airlines wide-body aircraft hangar at Washington Dulles International Airport.

Palmer Johnson Service in AZ, CO: Palmer Johnson Power Systems announced agreements with two service dealers to provide service in Arizona and Colorado. Rocky Mountain Powertrain in Denver and Western Industrial Equipment Service LLC in Phoenix operate fully equipped service trucks and in-house testing equipment to provide field service,

on-site troubleshooting and diagnostics and unit testing to meet factory specifications.

Intentions For WheelTug: WheelTug plc announced a letter of intent with KLM Royal Dutch Airlines to explore possibilities to install the WheelTug aircraft electric drive system on its aircraft fleet in the future. In other news, WheelTug announced that it has entered into a Memorandum of Understanding with the Aircraft Wheel & Brake Division of Parker Aerospace, whereby Parker will be the exclusive supplier of wheels for the WheelTug system on the Airbus A320 and Boeing 737NG families of aircraft.

People in the News

Brian Piety joined Page Industries as senior vice president with responsibility for all sales and marketing activities along with new product development. In addition to Page's existing central system 400 Hz products, Piety will be adding other products to the company's mix, such as 400 Hz cables, PCA ducts and other ancillary GSE-related items. For the past 12 years Brian was Global Sales Manager for J&B Aviation after beginning his GSE career with Jetway Systems in 1991.

Joe Phelen was promoted to executive vice president and will be responsible for Swissport International's ground handling and cargo operations in North America and Asia. Phelan has managed the ground handling and cargo departments in North America since April 2012, after joining Swissport at the start of this year. With the expansion of his role, Phelan also becomes a formal member of Swissport's Group Executive Management board, bringing more than 25 years of international logistics and transport industry experience. In related news, **Juan José Andrés Alvez** will be responsible for ground handling in Europe and Africa, as well as for ground handling and cargo for Latin America and Brazil. Currently, Juan José's areas of responsibility are Europe, Middle East, Asia, Africa and Brazil. Additionally, Israel remains under his leadership. **John Batten**, executive vice President of global cargo, continues to be responsible for the cargo division on a global basis.

In other appointments, **Sabine Meinitz** joined the company in the newly created position of vice president of corporate communications and marketing. She will be responsible for Swissport's corporate communications and marketing strategy, development and execution, including public and investor relations.

Troy Butler joined Schwarze Industries as human resources manager. **Dale Glubrecht** also joined the company as design engineering manager.

Gary Sass was named U.S. market manager for Continental Industrial Tires. Sass is based at the Fort Mill, SC headquarters. Jason Stickley also joined the company as business development manager.

Ken Bernard joined Matheson Flight Extenders as its station manager in Reno, NV.

Power Systems International Limited promoted **Jon Hill** to the position of managing director. Joining Hill on the board of directors are **Ash Sharif** as a director and **Paul Berry** as operations director. As a result, company founder **Bernard Wallace** has taken the position of executive chairman.

Frederick Roe joined Safegate Airport Systems as vice president of sales.

Commission Approves WFS, Aviapartner Merger

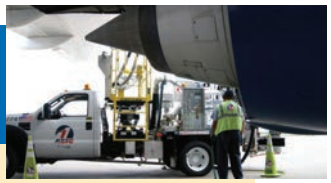
The European Commission cleared the way for the proposed acquisition of Aviapartner by WFS.

The commission's investigation showed that the merged company would continue to face strong competition from ground handlers in all affected markets, that barriers to entry were generally rather low, thus, allowing for possible new entrants and that customers wielded significant buyer power. Neither company's operations overlap for the provision of ramp, passenger and baggage handling services. As a result, the commission's competitive assessment focused on landside cargo handling, where the parties' activities overlap at five airports, Amsterdam-Schiphol, Basel-Mulhouse, Brussels National, Frankfurt/Main and Paris Roissy-Charles de Gaulle. However, with the exception of Brussels National and Frankfurt/Main, the commission concluded that increments in market shares are very limited. At Brussels National, in particular, the commission said competition from other ground handlers, such as Swissport/Flightcare, would sufficiently restrain the merged company. In addition, no substantial barriers to entry were found and new warehousing space will soon be built.

Roe has 10 years of experience selling aviation business intelligence solutions. He will be responsible for business development in North America.

Swiss WorldCargo announced the following changes to its air-freight division: **Lalin Sabuncuoglu-Janssen** will become vice president of operations to Europe and Africa. **Ashwin Bhat** assumes additional responsibilities as vice president of operations in the Americas, Middle East and Asia. **Jack Lampinski** remains a full member of the management team as senior director of the Americas. In related news, **Susanne Wellauer** was appointed manager, Swiss Mail.

ASIG Partners With American At Six U.S. Airports



ASIG handles nearly 19 billion gallons of fuel a year and provides into-plane fueling services for major airlines and oil companies at more than 50 airports worldwide.

American Airlines selected ASIG to provide a variety of aviation fuel and ground handling services at six U.S. airports. These agreements represent a major outsourcing of airside services by American.

ASIG is American's new aircraft refueling provider at five airports including one of its main hubs at Chicago O'Hare International, where ASIG is already fueling its regional flights. The other four airports are Nashville International, Detroit Metro, San Diego International and San Francisco International. Both BNA and DTW also include the refueling of American's regional flights.

In total, ASIG is providing aircraft refueling services to 250 flights per day at these airports. In addition, American has extended ASIG's current refueling contracts at 24 airports for an additional 5 years, through 2017.

In related news, ASIG was also awarded a contract from American for ground handling, cabin cleaning and ground equipment maintenance services at Denver International Airport. This marks the first ground handling contract award that ASIG has received from American Airlines.

In other news, US Airways renewed ASIG's aircraft deicing contracts at eight U.S. airports, including ORD, Indianapolis International, DTW and Bradley International airports. This is the fourth consecutive renewal of this contract.

Fueling GSE With FUEL CELLS

With a $2.5 million DOE grant, one company already successful within the material handling industry, attempts to power ground support equipment with hydrogen fuel cells.

By Steve Smith

As of New Year's Day, a company not widely known in the ground support equipment industry starts work to develop a promising alternative to power electric tractors.

That's the official start date that Plug Power Inc., Latham, NY, a fuel cell company started in 1997, begins a project funded with a $2.5 million grant from the Department of Energy to retrofit 15 Charlatte CTGE cargo tractors with its brand of hydrogen-powered fuel cells.

After some R&D, the tractors will be put to the test on the ramp by no less than FedEx at two airports, including its busy Memphis headquarters.

Plug Power may be a new name to *Ground Support Worldwide* readers, but it's no stranger to FedEx since the company brings along a proven track record with its fuel cells used for material handling applications.

Two years ago, the DOE awarded FedEx Freight a multimillion-dollar grant under the American Recovery and Reinvestment Act to deploy fuel cell forklifts at its Springfield, MO warehouse.

Could the hydrogen-powered fuel cell inside this lift also power electric ground support equipment?

Fuel Cell Forecast

According to a market study from Fuel Cell Today, a marketing firm in the United Kingdom, annual global fuel cell shipments are set to triple from 2011 to 2012. While the current market at least for material handling is small, the firm predicts rapid growth particularly in North America.

"The large fleets of hydrogen fuel cell MHV have proven their reliability; repeat orders are being placed without subsidies."

The report backs up the claims of improving operations.

"The economics of replacing battery technology with fuel cells has also been studied by the National Renewable Energy Laboratory, which reported that total cost of ownership comparisons between fuel cell and battery MHV indicated significant cost savings for refueling labor, power pack maintenance and infrastructure space."

Together with Plug Power and other partners in the funding, FedEx eventually installed 35 hydrogen fuel cell systems as lead battery replacements for a complete fleet of electric lift trucks at the Missouri service center. A permanent hydrogen fueling infrastructure was also built, including hydrogen storage and two indoor dispensing stations.

Although early sales were spurred by government money, Plug Power says its subsequent sales from the material handling industry have been earned without any financial incentives. To date, Plug Power says it has some 3,000 GenDrive fuel cells powering material handling equipment at 30 customer locations accumulating more than 8.5 million hours of runtime.

"There's no going back to batteries for these customers," says Reid Hislop, vice president of marketing and investor relations for Plug Power. "In cases where customers are planning to build new facilities, there are no allocations for charging stations and any extra room is used for additional business operations."

Water is about the only emission produced by hydrogen-powered fuel cell equipment so H_2 certainly qualifies as a bona-fide source of green energy. Plug Power, however, doesn't sell energy efficiency as much as good old-fashioned company efficiency.

"The story for us is about improving productivity," Hislop adds. "A company like FedEx is not going to invest in this type of energy technology unless its executives know they can improve performance and save money."

Or companies such as Walmart, Sysco, P&G and Mercedes to name a few of Plug Power's other customers that currently use its fuel cells in material handling vehicles (MHV) at warehouse locations around the country.

For Hislop, improvements can come down to minutes that quickly add up fast.

"If a rechargeable lead acid battery means a forklift is taken out of use for 20 minutes," Hislop explains, "added up over a 100-lift fleet, you end up with a significant amount of cost."

According to the company, refueling its fuel cells takes less than two minutes.

"It's very much like putting gas in your car," Hislop adds, "and that lift is ready to go at full speed for another shift."

Plug Power will retrofit 15 Charlatte CTGE cargo tractors with hydrogen-powered fuel cells as part of a Department of Energy grant project.
Charlatte of America

NEW MARKET

Moving into the GSE market seems an obvious choice to the company. At stake are not just cargo tractors, but all other electric GSE.

At this point, Plug Power's work with the FedEx GSE project remains in its very early stages. What it's developed as a simple drop in fuel cell to replace batteries inside MHV simply won't be dropped into the 15 Charlatte tow tractors.

"We know that we'll need to upsize our fuel cells to provide the proper amount of power and voltage to the equipment," says Jim Petrecky, director of business development for Plug Power.

Since forklifts are typically working inside, Plug Power also needs to factor in all types of weather for the FedEx tractors. However, Petrecky adds that some his company's customers operate MHV inside freezers all day long so there already is some freeze protection built into the current line of Plug Power fuel cells.

Temperatures, however, shouldn't be too much of a factor for the FedEx GSE project since 10 of the tractors will be stationed in Memphis, TN and the remaining five will be used in Oakland, CA. Still, Petrecky says the fuel cells will need to be "ruggedized" to take into account rain, wind and anything else Mother Nature might send out on the ramp in Tennessee and California.

The promise of using hydrogen fuel cells to power GSE has been told in these pages before, and such articles always start out, well, promising. The Plug Power initiative, however, has two advantages that could make this source of power play out.

READY SUPPLY

Hydrogen has about three times more "energy content" by weight than gasoline, which is a good thing. But hydrogen, at least liquid hydrogen, has four times less energy content than gasoline, which is a bad thing.

What that has typically meant is vast storage for hydrogen on site, which few want, or an expensive alternative that has even fewer takers at least for our on-the-go, 24/7 industry

"Half of the cost of hydrogen is typically in its transportation," Petrecky adds.

Enter another new name to most *Ground Support Worldwide* readers.

"The whole viability of converting

to hydrogen fuel cells hinges on the availability of hydrogen at a reasonable cost," says Gus Block, director of marketing and government affairs for Nuvera, based in Billerica, MA, and also a partner with Plug Power in the FedEx GSE project.

Nuvera has been focusing on that availability issue since its start in 2000, particularly at relatively low-use sites. The company's PowerTap, a reformer that turns natural gas and water into hydrogen will be installed at the two FedEx airports as part of the GSE project.

"Nuvera eliminates the transportation issue," Patrecky adds. "Natural gas is everywhere."

CHEAP SUPPLY

By packaging fuel cell replacements with Nuvera's small-scale, onsite production facilities that use natural gas as its primary feedstock for hydrogen production, the FedEx GSE project takes on a different appearance than other hydrogen power stories.

Rather than huge storage and expensive infrastructure that tags along, Nuvera's system already takes advantage of much of the natural gas pipelines that already exist.

Nuvera calls its PowerTap an "appliance," that takes up a very small footprint. The company also has an interesting business model in that users simply enter into a contract with Nuvera – which essentially sees itself as a hydrogen supplier.

Nuvera, a partner in the FedEx GSE project, makes this product, which "reforms" natural gas and water into hydrogen.

"We sell hydrogen by the molecule," Block adds, "so there is no capital outlay on the part of the end-user."

There's also an interesting energy story happening in the United States that Block says has "decoupled" the price of natural gas from the price of oil. Typically, natural gas reserves are found along with oil reserves. That type of natural gas is referred to as "wet gas." But shale gas, referred to as "dry gas," has turned the energy markets upside down with natural gas prices reaching lows while the oil prices remain high.

America might as well be known as the Saudi Arabia of dry gas. According to the Energy Information Administration, the United States has reserves on the order of 100 times annual consumption rates.

"That's created a window of opportunity for the increased use of natural gas as a transportation fuel," Block says.

In the new year ahead, we'll check in with Plug Power to see what progress they make.

EU's Ground Handling Reforms At An Impasse

Opponents focus on competition, but the proposals also set minimum performance standards and grant airports more authority over ramp operations.

By Eugene Gerden

The European Union's ground handling industry was on the verge of some big changes. One year ago, the European Commission proposed a package of reforms designed to improve airport services by increasing an airline's choice to three ground handlers from two at most major EU airports.

On Nov. 6, however, the European Parliament's Committee on Transport (TRAN) voted to reject the commission's ground handling proposals. The vote was close – 22 votes against; 20 in favor and two abstentions.

Many members feared that the proposal would lead to a deterioration of working conditions and safety, and said there was no evidence that the regulation would increase the overall efficiency of ground handling operations.

The vote against the measures isn't binding, and the full European Parliament is expected to vote on the proposals in December.

The TRAN vote came one day after some 2,000 demonstrators from 10 EU member states demonstrated outside the Parliament in Brussels. The demonstrations, organized by the European Transport Workers Federation, capped off an extensive campaign by trade unions across the EU against any changes to the current ground handling regulations.

"Workers all over the world are under attack," said Enrique Carmona, chair of the union's civil aviation section, after the vote, "and globalization has turned into a threat instead of an opportunity. The decision can be seen as a victory for workers, but only a partial victory because the truth is that we need a new legal framework that protects workers' rights."

The unions' main contention was that the 1996 rules that broke ground handling monopolies and led to a choice of two ground handling firms, have eroded workers' rights and only served to save money for the airlines (To read about the current rules, go on line to read about sidebar "Directive 96/67/EC.")

An estimated 60,000 people are employed in the ground handling industry across the EU.

In the other corner, the Association of European Airlines stated after the vote that competition was still needed: "As a result of the decision, the ground handling market will remain limited to only two suppliers at some of the largest European airports, thereby protecting existing monopolies and depriving both passengers and airlines of more efficient and competitive ground handling services."

That leaves everyone involved still facing market pressures that motivated the European Commission to push for reforms in the first place.

The commission announced a comprehensive "Better Airports" package of measures to help increase the capacity of Europe's airports, reduce delays and improve the quality of service offered to passengers. In addition to the ground handling reforms, the package also included changes to regulations covering airport noise and airline slots.

"On present trends," said Siim Kallas, the EU's transport commissioner last year, "19 key European airports will be full to bursting by 2030. The resulting congestion could mean delays for half of all flights across the network. Faced with intense global competition, if we do not change the way we do business, we may not be doing business at all."

Some 2,000 ground handling workers protested against reforms to ground handling regulations outside the European Union Parliament in Brussels one day before a transport committee voted against the measures. The Associated Press

In the best of circumstances, European airports are congested with little opportunity to expand all the while operating within a tight airspace. Problems with one flight at one airport can quickly compound delays throughout the system.

On its Web site, the commission states flatly that its 1996 rules are no longer sufficient to make overall improvements to EU aviation and puts the blame squarely on ground handlers: "The overall quality of ground handling service has not kept up with evolving needs in terms of reliability, resilience, safety, security and environmental performance."

And if that's not enough, the commission goes on to say the "problems such as turning around aircraft are the source of 70 percent of the delays suffered by flights in Europe."

MORE THAN JUST CHOICE

There's more, however, to the ground handling proposals than a choice of service providers.

Here's a summary of the other reforms:

- Establish a new role for airport management as "ground coordinator." This would give airports more control over all ground handling services and, most importantly, allow management to establish minimum standards of performance for all ground handlers at the airport.
- Clarify the legal framework for training and transferring staff. This could mean compulsory training requirements and forcing a ground handler who previously held a contract to transfer its trained staff to the ground handler that wins the new contract.
- Recognize mutual national approvals. "Mutual recognition" across borders is one driving force behind the European Union. In other words, an approval issued by one member state would entitle the ground handler to provide service in a different member state.
- Introduce greater transparency. This would enable airlines and their handlers to better understand how fees are charged for such centralized systems as baggage.

The changes sought by the reforms affect only major European airports with annual passenger traffic of more than 5 million passengers. The choice of service providers at smaller airports will continue to be limited.

While labor looks to protect jobs and the airline industry looks to manage costs, other political factors play against the proposals.

Germany, the EU's biggest economy, has traditionally been against the presence of too much competition in ground handling services at its airports.

The German government has taken full advantage of the right to limit competition to just two companies. Not surprisingly, then, Germany, along with Austria and Poland, do not support the reforms.

Although the November vote was against the ground handling reforms, TRAN did approve the other reforms with some modifications.

Kallas tweeted that he would consider all options, "including possible withdrawal of the proposal" after the November vote.

As required under the EU's legislative process, the proposals were passed by the European Council, which represents the views of EU member state governments, and now will come before the European Parliament, which represents the views of the EU's citizens.

EUGENE GERDEN *is an international freelance writer, covering the global aviation and ground support industry. He writes for numerous industry publications and can be reached at gerden.eug@googlemail.com*

TLD Demos The Taxibot

Putting the pilot in charge of a tow from gate to runway may not only reap environmental benefits for the aviation industry, but eliminate half the incidents of FOD damage from ever occurring.

By Steve Smith

A different type of towbarless tractor promises to reduce fuel consumption, cut carbon emissions and protect aircraft from FOD damage while taxiing planes all the way to the runway.

Ground Support Worldwide had a first-hand look at the Taxibot towing system during a special demonstration put on for the media to show off the new vehicle that promises to take a plane from gate to runway with its engine's switched off.

"Someday you can say you were a passenger of the very first jet towed by a Taxibot," said Ran Braier, Taxibot project director for the Israel Aerospace Industries Ltd., as we sat inside an A320, waiting for a turn to walk into the cockpit.

To be sure, the concept has already passed a number of operational tests since Braier first walked into Lufthansa LEOS headquarters and purposed the idea some four years ago.

"I was skeptical at first," remembered Gerhard Baumgarten, director of sales and marketing, speaking at a press conference held at the airport. "We had tried to develop ideas like this before, but nothing had come of it."

What eluded Lufthansa engineers was that the pilot was used to being … the pilot. And if that meant the engines needed to run to power the plane as the pilot taxied to the runway, well so be it.

In essence, the crucial difference between standard towing procedures and "something else" meant that there would be essentially *no* difference to the pilot who wanted full control of the plane.

During his presentation, however, Braier showed Baumgarten a movie in which engineering students built a model to convey how his semi-robotic tractor concept could put the pilot in command by means of a mechanical interface that would be "transparent to the pilot."

Which is how we found ourselves sitting aboard a plane with no engines on the Monday before Thanksgiving, Nov. 19 at Chateauroux Airport, located several hours drive west of Paris.

"The Taxibot is more like a new aircraft in terms of its technology," said Antoine Maguin, chief operating officer of the TLD Group, which built the Taxibot prototype. As many as 100 engineers labored on this one vehicle since TLD agreed in 2009 to manufacture the production vehicles.

"Normally, when you have just five engineers working on a GSE project," Maguin joked, "you know it's going to be a very big project."

Although we were nominally the guests of TLD, the Taxibot concept has picked up quite an international pedigree during its R&D phase, including such well-recognized aviation industry names as Airbus and Lufthansa LEOS.

FIRST GLANCE

At first glance, the Taxibot doesn't look that much different than other towbarless tractors. Like those conventional tractors, the Taxibot lifts up the plane's nose landing gear before, say, pushing back the plane.

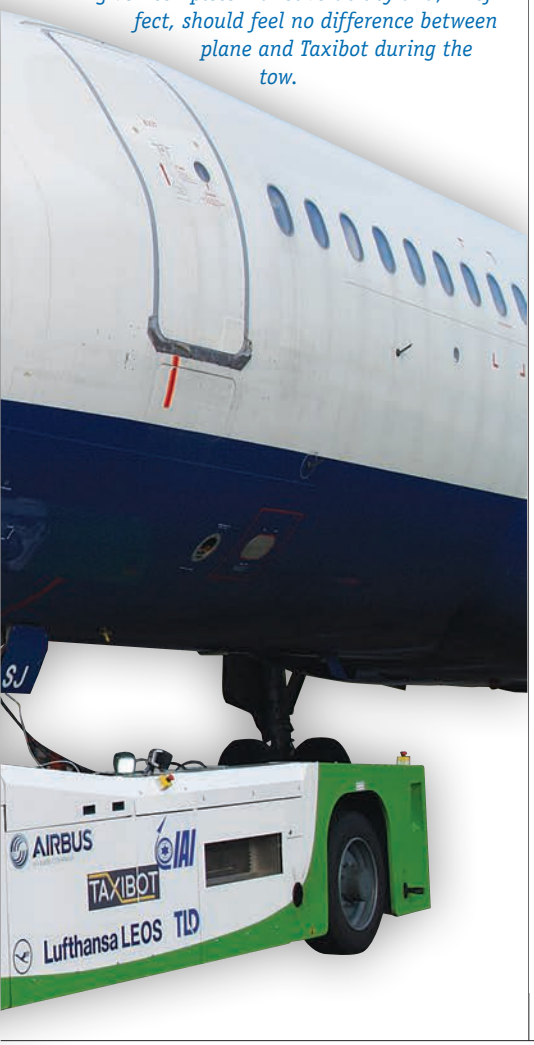
But a closer inspection reveals the "something else," in fact, two major components – an interface mechanism that clamps on the wheels, which is in turn mounted on what Braier calls a "rotating turret. Those two elements are what leave a conventional tow behind:

Pilot In Control: Yes, the Taxibot does have a driver at the wheel. The driver's main job, however, is chiefly dedicated to safe operations. And, of course, someone has to be on deck to drive the Taxibot back to its next rendezvous.

Once the plane is pushed back, the pilot is given complete maneuverability and, in effect, should feel no difference between plane and Taxibot during the tow.

"The Taxibot's speed control is similar to a car with an automatic transmission put into drive," Braier explained. "When the pilot releases the plane's brakes, the Taxibot starts to move."

Meanwhile, the pilot steers using the tiller in the flight deck, which transfers the commands to the Taxibot's wheels by way of the interface that pivots on the turret. And not just a minor move to the left or right. The Taxibot's tires each independently move, keeping the Taxibot in perfect alignment with the plane even during wide turns, avoiding any disastrous jackknives. (Earlier tests



Once the plane is pushed back, the pilot is given complete maneuverability and, in effect, should feel no difference between plane and Taxibot during the tow.

at Lufthansa had the plane/Taxibot going in Figure 8s.)

About the only time the pilot is not in command is when an algorithm kicks in to keep the Taxibot at a safe, steady rate of movement without undue stopping and starting while waiting in line with other aircraft.

Longer Tows: The "rotating turret" description doesn't quite do justice to the Taxibot's engineering since it also acts like a pendulum protecting the plane's delicate nose landing gear during acceleration and stopping. And when the pilot does apply the brakes, the plane's own braking system absorbs the force rather than the nose gear.

"The plane brakes itself," said Fadi Anbouba, vice president of sales and service for TLD America, "which is exactly what those brakes were designed to do. By protecting the nose gear that allows us to tow the plane a much longer distance than with a conventional towbarless tractor."

BIG SAVINGS

And with that "dispatch towing" opportunity comes billions saved in fuel and emissions otherwise burned each year just to move aircraft to runways.

During a briefing, Braier outlined the economic and environmental benefits of the Taxibot system.

By the end of the decade, planes using their own power to taxi on the ground will cost airlines around $7.3 billion in annual fuel costs. That number could be cut, Braier said, to less than $3 billion using the Taxibot system.

With no assist from the aircraft's engines, the Taxibot uses hybrid diesel electric power to drive motors in its wheels and produces a negligible 132 pounds of emissions during a tow. To make the point perfectly clear during our demonstration, the A320 that took us for a ride had its engines removed (although added ballast on each wing equaled the weight of those missing engines).

Two major components of the Taxibot make it different from other towbarless tractors: An interface mechanism clamps on the nose landing gear, which is in turn mounted on a "rotating turret."

Braier also estimated the Taxibot has the potential to significantly reduce carbon emissions. Just the fuel saved alone by using the Taxibot represents 22 million tons of emissions.

In addition, an aircraft with engines running is particularly vulnerable to FOD damage. Braier said the Taxibot system could cut down on the $700 million in FOD damage projected by the end of the decade since half of that damage is done when the plane is either at the gate with engines on or taxiing under its own power.

The Taxibot is expected to come in the narrow-body aircraft model we saw demonstrated in France, and another model to handle wide-body aircraft.

The narrow-body model is expected to be priced at $1.5 million and $3 million for the larger model. IAI believes that each vehicle could handle about 20 aircraft daily. Simulation and studies conducted by IAI show that little or no modifications are required by airports, and that there is no overall impact on taxiing time when operating a mix of aircraft taxiing either with or without the Taxibot. There are no modifications that need to be done to aircraft to accommodate the Taxibot.

TLD plans to focus initially on making the narrow-body model and anticipates them to enter the market in 2013. Certainly, a prime candidate would be airlines operating from major European airports where tough environmental mandates, such as carbon taxes, are in place.

Later that same week our media demo took place, senior reps and test pilots from various airlines and ground companies including Lufthansa; KLM; British Airways; China Eastern Airlines; China South Airlines; Federal Express; Air France; United Airways; WestJet Aeroport de Paris; and Swissport International, traveled to the airport to evaluate the vehicle.

Taxibot Milestones

- **Taxibot has been a cooperative venture in one form or another since 2008 among IAS, Airbus, Lufthansa LEOS and TLD Group.**
- **TLD signs an exclusive contract to develop and produce the Taxibot in 2009.**
- **Airbus tests and validates the concept with a demonstrator model in 2010.**
- **Taxibot wins the Innovation Award at inter airport Europe 2011.**
- **TLD plans for serial production of a narrow-body version of the Taxibot by 2013.**
- **Lufthansa LEOS will test the Taxibot under daily operations of the airline's 737 fleet in 2013 at Frankfurt Airport.**
- **Boeing 737 certification is expected by mid-2013.**
- **Airbus A320 certification is expected by early-2014.**

A Misunderstood Risk From Constant Exposure To Aircraft Noise

Hearing loss is a commonly understood result of noisy environments, but tinnitus can also be a very debilitating condition.

By Jeff Carroll, PhD, founding director of the Tinnitus Treatment Center, UC-Irvine

For those working in noisy environments, hearing loss is a potentially serious problem. While hearing loss is perhaps a more common and better understood condition, tinnitus can also be very debilitating, leading to stress, anxiety or difficulty sleeping or concentrating.

Sufferers often complain of a "ringing in the ear." No matter if it's a ringing or buzzing or humming or roaring, the important distinction is that sufferers perceive sounds that are not actually present in the environment.

Many people have experienced this for a short time after exposure to loud sound – for example after attending a rock concert. Typically, this resolves on its own. But for those with chronic tinnitus, productivity and the overall quality of life can be diminished.

David Clark Co. Inc.

Every aviation headset maker offers protection against noises encountered on the ramp. Most, for example, make headsets that block out as much as 30 dB.

According to the Occupational Safety and Health Administration, about 30 million U.S. workers are exposed to occupational noise each year. OSHA requires hearing conservation programs for workers exposed to noise levels above 85 decibels – about the volume level of noisy traffic. Between 90 and 95 dB, hearing loss can occur, if noise exposure is sustained.

The aviation environment is rife with sources of high-volume noise. Jet engines, for example, register 160 dB.

OSHA sets legal limits on noise exposure in the workplace. These limits are based on a worker's time-weighted average over an eight-hour day. With noise, OSHA's permissible exposure limit (PEL) is 90 dB for all workers for an eight-hour day. The OSHA standard uses a 5 dB exchange rate. This means that when the noise level is increased by 5 dB, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half.

The aviation environment is rife with sources of high-volume noise, including aircraft equipment power plants, jet efflux, propellers, rotors, pressurization systems and the aerodynamic interaction between ambient air and aircraft surfaces. Jet engines, for example, may generate sounds as high as 160 dB.

Most cases of tinnitus are related to damage to a person's auditory system. This may or may not include subjective hearing loss. According to the American Tinnitus Association, many people commonly confuse tinnitus as being the cause or underlying condition. Hearing loss, however, is either conductive (problem with outer or middle ear) or sensorineural (problem with inner ear) and classified by different categories: mild, moderate, severe and profound.

COMPLEX PROCESS

Hearing loss is a complex process and due to the personal and unique nature of each tinnitus condition, proper evaluation and specialized treatment is necessary.

However, in many cases tinnitus accompanies hearing loss. Because hearing loss can be caused by noise damage to the ear, an individual can get both hearing loss and tinnitus from

Tinnitus Facts

- According to the Centers for Disease Control, an estimated 50 million people in the United States suffer from tinnitus.
- Not surprisingly, loud noise can make tinnitus worse. But aspirin, caffeine, nicotine, antibiotics and certain other medicines can also exacerbate the condition.

noise damage. However the two do not always occur together. There are many who have no measurable hearing loss, but have tinnitus.

The best way to prevent tinnitus is by protecting your hearing. Continuous exposure to loud noise or even intermittent exposure to excessively loud bursts of sound can cause many types of auditory damage.

Options for hearing protection include off-the-shelf foam ear plugs or custom-made silicone ear plugs. These can be standard ear protectors that block as much sound as possible or ear plugs that typically contain a filter and are designed to block out all frequencies equally to provide protection while maintaining sound quality. A high-end option would be an electronic earplug that passes soft sounds unaltered, and compresses louder sounds into the safe range without distortion.

In addition, every aviation headset maker offers protection against noises encountered on the ramp. Most, for example, make headsets that counter noise by blocking out as much 30 dB.

Wearing hearing protection will obviously not only protect your hearing, but offer protection from tinnitus as well.

VARIOUS TREATMENTS

Many tinnitus sufferers are not aware that there are various treatments that can provide relief.

Anyone who does experience tinnitus should see a qualified audiologist. While primary physicians may be the first point of contact for seeking treatment, audiologists are better equipped to test and prescribe more advanced treatments for tinnitus. These doctors can conduct both hearing and tinnitus evaluations and recommend the best course of action.

Treatments can range from biofeedback to cochlear implants and from drug therapy to treatment for TMJ.

The most effective treatments address both the neural component of tinnitus (the brain activity associated with how we process sound) as well as the perceptual component (how bothersome the tinnitus sound is perceived to be). Sound therapy addresses both conditions. Sound therapy devices deliver tones that are frequency pitch-matched and rapidly modulated to help tinnitus patients get relief.

While there is no definitive “cure” for tinnitus, research is ongoing and new treatments do occasionally become available.

Tinnitus is experienced differently from person to person. So no one type of treatment is likely to be equally effective for all. The best way to find relief is to see a professional, get an evaluation, and persist in finding a solution that works. And remember to always protect your hearing when in a noisy environment to prevent future auditory damage. The American Tinnitus Association (www.ata.org) is an excellent source of information as well.

Jeff Carroll, Ph.D. is director of clinical services and engineering for Sound Cure, Inc., a sound therapy system. He was the founding director of the Tinnitus Treatment Center at the University of California, Irvine, and has worked with hundreds of tinnitus patients over the past decade. Dr. Carroll holds a doctoral degree in Biomedical Engineering from UC-Irvine.

Fuel Farms Control Aviation's Largest Cost

Effective management and efficient distribution are keys to business model's success.

By Grant Smith, director, aviation services, Burns & McDonnell Engineering

Fuel costs represent up to 30 percent of airline operating expenses. That has made effective management and efficient distribution of fuel supplies at large airports an industry priority for decades.

In the late-1970s, airlines at several major airports began looking at a consortium model to lower costs and increase efficiencies.

Up to this time, major oil companies typically controlled fuel storage and distribution at major airports. In many cases, each oil company had its own distribution system to supply specific concourses. The San Francisco and Los Angeles airports, for example, operated in this manner. These structures limited competition and the opportunity for airlines to introduce new supply sources to the airport, and resulted in higher fuel costs for the airlines. The oil companies' costs associated with these facilities were passed on to the airlines as part of their fuel cost.

Competing airlines came together in a revolutionary response, collectively seeking a free market for fuel pricing and fuel system operations at major airports. The first airports to establish such fuel farms were in Chicago, Honolulu and Anchorage.

By the mid-1980s, many airline consortia were formed to manage facilities in Las Vegas, Phoenix, Seattle and Los Angeles.

The LAXFUEL Corp. fuel operation at the Los Angeles International Airport (LAX), however, represented a major breakthrough because it included off-airport storage and access to ports, which enabled airlines to import jet fuel to the West Coast for the first time. It also let airlines take advantage of bonded fuel, which eliminated the import duty on international flights out of LAX. United Airlines led this effort, with significant support from American, Delta, Pan Am, Western, Flying Tigers, KLM and Lufthansa.

ASIG's LAXFUEL Operations

By Steve Smith

Since the inception of LAXFUEL, ASIG has been the sole contractor to maintain and operate LAX's airport jet fuel facility.

***Ground Support Worldwide* paid a visit to the site in April 2011 ("LAXFUEL Operates On Precision").**

For an update, we called Larry McMahon, ASIG's vice president of fuel consortiums, who told us of two modifications made to the facility last May:

- **Installation of another transfer pipeline between off-airport facilities with the capacity to deliver 3,500 barrels of fuel per hour.**
- **Shell Oil's rate of delivery was increased from 2,000 barrels to 2,500 barrels of fuel per hour.**

"The airlines want to control the fuel receipt and distribution infrastructure,"

COMING TOGETHER

Oil companies, including Chevron, Shell, Unocal, ARCO, Mobil and GATX, owned and operated several large fuel storage and hydrant systems at LAX. Some larger airlines, including American, Pacific Southwest Airlines and Trans World Airlines owned their own fuel storage and/or hydrant systems, but the airlines were still at the mercy of the oil companies serving the airport for two reasons:

Each oil company pipeline into the airport connected directly to local refineries.

No common carrier pipelines existed.

In 1985, airlines formed a California Mutual Benefit Corporation to purchase the oil company facilities on the airport, lease the property and rights-of-way from the airport authority, finance the acquisitions and improvements, and manage the fuel infrastructure and operations. LAXFUEL was designed to create an open market and enable the sharing of one fuel storage facility on airport property for all member airlines' use.

The cooperation of the LAX Airport Authority was essential to facilitate the creation of this integrated fuel storage and distribution system. LAXFUEL leases additional off-site storage facilities to better position the airlines to purchase and store fuel near the airport. Each airline purchases its own fuel as needed and uses the common facilities. The fuel is commingled and accounting of fuel usage and inventory is handled by the fuel system operator.

Burns & McDonnell worked with LAXFUEL to design and build a 600,000-barrel fuel storage facility that integrates the oil company facilities and new storage capacity with existing fuel hydrant systems. Consortium members share the infrastructure, operation and maintenance costs for the facilities based on each carrier's consumption as a percentage of total airport volume.

THE MODEL SPREADS

Fuel farms have become a common operational model at major airports in the United States and around the world with airlines operating at midsize to smaller airports adopting the model of shared facilities to reduce costs. Such business models offer an opportunity for airlines to work together with airport management to manage collective activities more efficiently and cost-effectively.

Typically, the fuel farm will integrate several parts of a fuel system at an airport into one more efficient system. This has been the case in Honolulu, Los Angeles, San Francisco and other large airports where multiple oil companies operated several independent fuel farms at one airport.

Airports benefit from the airlines forming fuel farms since it is easier for an airport to work on lease terms and master planning with airlines instead of oil companies. There is a familiarity with the companies operating multiple facilities at the airport rather than large oil companies that are only interested in the fuel facility.

In situations where the airport has owned and operated the fueling facili-

McMahon says, "which essentially controls fuel supply."

The facility currently serves approximately 75-80 airlines at the airport. It features 15 large storage tanks and a state-of-the-art filtration system as well as 18 pumps that dispense fuel at a rate of 1,200 gallons per minute. It has an on-airport capacity of more than 600,000 barrels of fuel fed by five pipelines from a variety of fuel supply sources. Three off-airport storage locations provide a capacity of 1.5 million barrels. Full storage provides about 20 days of fuel demands.

The facility disperses an average of more than 4 million gallons of fuel a day.

Fueling Developments At NBAA

By Steve Smith

Here are a few highlights we saw on display at NBAA 2012 held in October in Orlando, FL.

GARSITE

Garsite: Paul Sundby, recently promoted to vice president, sales and marketing for Garsite, spent the last five years as senior sales manager for Garsite's above ground tanks. Not surprisingly, Sundby told us about the company's new refueler test facility, located at the company's Kansas City manufacturing plant that includes an 18,000-gallon fuel storage installation connected to a computer-controlled, digital monitoring office. The test facility duplicates the in-the-field fueling functions of each unit, from Jet-A hydrant carts to 15,000-gallon refuelers. Upon completion of each refueler Garsite manufactures, a complete series of tests are applied to verify the performance and safety of each unit. The company's certified techs will also flow product through the fueling system to set the pressure and flow rates to each customer's specification.

RAMPMASTER

CHAMPION OF EXCELLENCE

Rampmaster: The company announced its Engine Management System at last year's NBAA show. The system features engine-contolled pump modules that reduce engine rpm, which saves fuel and cuts carbon emissions. According to the company, users could expect to save up 40 percent on fuel use and reduced engine wear by 46 percent. Since the 2011 show, an independent study by the well-regarded West Virginia University's Center for Alternative Fuels, Engines and Emissions confirmed that the system consumes up to 78 percent less diesel while pumping its jet fuel.

Earlier this year, CAFEE traveled on-site to evaluate fuel consumption rates and emissions from three aircraft refueling vehicles at varying refueling rates: a 2005 5,000-gallon competitor truck, a 2011 5,000-gallon Freightliner with a Rampmaster EMS, and a 2011 10,000-gallon Crane Carrier Company (CCC) vehicle, evaluated with and without the ties, there is a reduced need for staff expertise in fueling design, construction and operations when the airlines take on those responsibilities.

Other services could be managed by an airline consortium and range from the procurement of common needs, such as skycap services, to maintenance of collectively used equipment, such as baggage handling systems or passenger boarding bridges. Going

In 1985, airlines formed the California Mutual Benefit Corporation to purchase the oil company facilities on LAX, lease the property and rights-of-way from the airport authority, finance the acquisitions and improvements, and manage the fuel infrastructure and operations.

Burns & McDonnell Engineering

Rampmaster EMS. All tests were conducted to 40 CFR Part 1065 requirements.

The Rampmaster EMS, when employed on the 2011 CCC chassis, resulted in significant reductions in fuel consumption – from 45 percent up to 78 percent – per 10,000 gallons delivered at all refueling rates.

A comparison of fuel consumption rates between the competitor's truck and the 2011 Freightliner chassis equipped with the Rampmaster EMS also showed up to 43 percent reduction in fuel consumption per 10,000 gallons delivered at all refueling rates. In addition, according to the CAFEE report, "since carbon dioxide emissions are directly correlated to fuel consumption, any reduction in fuel consumption or increase in fuel economy will result in a corresponding decrease in greenhouse gas emissions."

At this year's show, the company highlighted telemetry equipment that can communicate sales and other inventory data from truck to accounting, which has the added benefit of featuring a Cloud platform.

Bosserman Aviation Equipment: Bosserman's refueler control system, called the BAE-RCS, features a touch-screen display and interface. The interface is a 5.7-inch, 256-color back-lit screen. The system can require a fueler to log-in with a user name and pass code to gain access to the truck's pumping system, as well as enter a tail number or flight number. During normal operation, the fueler can display the fueling pressure, differential pressure, flow rate and quantity dispensed (if meter is equipped with a pulse generator), or a "diagnostic" screen that will show an overview of the operating parameters of the truck such as interlock status and various system pressures.

In the event of a slop fuel tank over-fill situation, a high level float shuts the pumping system down and displays a warning message to inform the fueler that they need to drain the slop fuel tank. The system will also shut the pumping system down during a high differential pressure situation, and again display a warning message to inform the fueler. In either event, the fueler can acknowledge the event and continue fueling.

forward, it may be possible to translate the benefits of airline consortia management to other activities, including ground support equipment maintenance and aircraft deicing.

Moving further into the 21st century, efficiency in operations is the goal of all parties. Airlines are faced with higher fuel and operating costs, and they continue to look for ways to be more competitive. Delta Airlines buying a refinery in the Northeast last April is one more example of building out tighter control of the supply chain.

Perhaps we may soon see airlines buying leases in the Gulf of Mexico or purchasing fuel tanker ships or pipelines to move jet fuel to major airports.

Grant A. Smith is the director of aviation service at Burns & McDonnell Engineering. Smith's primary focus includes commercial aviation fueling systems. He can be reached at gsmith@burnsmcd.com.

Fueling Equipment & Accessories

GLOBAL LEADER
Liquip International Pty. Ltd.

Liquip International is the global leader in aviation fueling equipment, including hydrant dispenser trucks, narrow-body and wide-body hydrant carts and refuelers from 1,000 gallons to 10,000 gallons.

AviationPros.com/company/10017544

AUTOMATED FUELING
Liquid Controls Group

FlightConnect is an automated, easy-to-use data management system. FlightConnect collects fueling details at the gate or at the plane and delivers them, wirelessly, to the doorstep of the back office software. FlightConnect accelerates into-plane fueling operations on the tarmac and in the office.

AviationPros.com/company/10017539

FUEL/SOLVENT SPILL VACUUM
Tiger-Vac Inc.

Tiger-Vac, a leading manufacturer of industrial vacuum cleaners, carries a complete line of systems designed to recover highly flammable liquids and solvents. These units are ideal for defueling and depuddling fuel tanks and wings on military or civilian aircraft and for recovering fuel and solvent.

AviationPros.com/company/10018433

STAINLESS STEEL REELS
Hannay Reels Inc.

Hannay Reels static grounding cable reels are now available in 304-grade stainless steel construction for its HGR Series. Stainless steel protects reels against rust, corrosion and eliminates paint maintenance, making it ideal for harsh work environments or outdoor installation.

AviationPros.com/company/10017395

LED DIGITAL FUEL DISPLAY
Tekinno Corporation Inc.

The Eagleview is a ruggedized LED digital fuel display that simplifies the fueling operator's life by indicating useful values from the fuel truck or above-ground storage. The display features high-visibility digits (4 inches tall) that can be viewed from far distances and even in poor visibility conditions. Eagleview is compatible with major electronic registers brand and mechanical pulsers.

AviationPros.com/company/10018507

GARSITE SERVICE DEPARTMENT
Garsite

Garsite has now expanded into a fully-staffed service department including regional technicians. With the creation of the parts/service department, Garsite has become the largest aviation fueling equipment service provider in the country. The company offers fleet management and equipment maintenance programs as well as compliance inspections (ATA 103, NFPA, etc.), equipment repairs and modifications for all makes and models.

AviationPros.com/company/10017318

MOBILE SYSTEM
Semmco Limited

The Semmco "Tank Safe" provides a unique mobile fuel tank entry system. The system is designed to be towed to the location and provide on-site support for fuel tank entry with aircraft-type fuel drain connections and pumps for removal of any residual fuel, followed by an air/venture system providing fuel tank ventilation with periodic tank sampling before tank entry can commence.

AviationPros.com/company/10017764

ACCESSIBILITY AIRSTAIRS
Accessair Systems Inc.

Accessair's equivalent-accessibilty airstairs with integrated wheelchair platforms facilitate the dignified boarding and disembarking of travelers with reduced mobility. Remote and stationary controls on each truck-mounted, non-motorized or fixed-height model, make it possible to start/stop the platform at any elevation thereby assuring that units are both passenger and operator friendly.

AviationPros.com/company/10016896

SELF-PRIMING PUMP

The Gorman-Rupp Company

Self-priming centrifugal pump with hydraulic motor capable of handling the same rates of fuel as the Gorman-Rupp 03H1-GR/GL power take-off models, the 03H1-HYD provides an alternation to PTO power requirements. Close coupled to a hydraulic motor, this pump provides an efficient compact until ideal for handling aircraft fuels.

AviationPros.com/company/10208885

FUEL CABINETS

Sparling Corporation

Sparling designs/installs custom above- and underground aviation fuel storage systems with stainless or fiberglass cabinets or skids. Complete on-site one-year warranty. Defueling trailers and equipment sales.

AviationPros.com/company/10132436

DEICING NOZZLES

U.S. Airmotive GSE

U.S. Airmotive GSE is proud to be a distributor of deicing nozzles manufactured by Task Force Tips. A single nozzle can be used in two steps to both deice and anti-ice aircraft. The operator simply selects the desired fluid delivery system pressure, and the nozzle responds automatically. TFT backs its nozzles with a five-year warranty.

AviationPros.com/company/10017906

SELF-PROPELLED HYDRANT CART

Bosserman Aviation Equipment Inc.

800 GPM (3,000 LPM) hydrostatic drive, self-propelled hydrant cart with lift platform capable of servicing up to an Airbus A380.

AviationPros.com/company/10017063

ENGINE MANAGEMENT SYSTEM

Rampmaster

Rampmaster, the premier manufacturer of aircraft refuelers for the worldwide aviation market, has received the final testing report from West Virginia University's Center for Alternative Fuels, Engines and Emissions (CAFEE) confirming that an aircraft refueling vehicle outfitted with the company's patented Engine Management System (EMS) consumes up to 78 percent less diesel fuel while pumping its jet fuel, a worldwide first in diesel fuel savings and greenhouse gas emissions.

AviationPros.com/company/10017697

FUEL SERVICE CART

Par-Kan Company

Par-Kan company is a leading manufacturer of GSE. Products include open and closed bag carts, lavatory carts, potable water carts, dollies, slave pallets and other specialty carts. The FSC-550 Fuel Service Cart Par-Kan offers a convenient way to fuel ramp equipment. The cart features solid steel construction, a 550-gallon fuel tank, containment tank, fuel meter, rotary hand pump, static ground reel and fire extinguisher.

AviationPros.com/company/10017637

HIGH-CAPACITY CASTERS

RWM Casters

RWM Casters announces heavy-duty dual wheel pneumatic casters custom designed for the GSE industry. Our 2-125 Series Pneumatic Casters offer up to 7,260 pounds. These high-capacity casters are for the heaviest of applications, provide a cushioned ride across the tarmac and are made in the USA.

AviationPros.com/company/10132368

FUEL TANK MAINTENANCE

Rhine Air Inc.

Portable aircraft fuel tank ventilation systems and supply air respiratory protection equipment for fuel tank inspection and maintenance operations. Reduce maintenance turn times while creating a safer working environment.

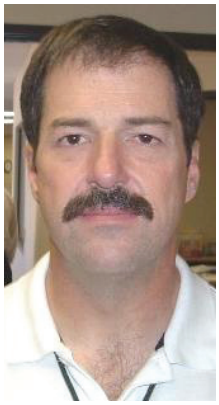
AviationPros.com/company/10017711

HYDRANT COUPLERS

Eaton Corporation

Eaton's Carter® product line of hydrant couplers offers an ergonomic lifting handle that allows the operator to release and lift the coupler off the hydrant valve with one smooth motion from a standing position. No bending, squatting or kneeling required.

AviationPros.com/company/10743374



What's The Difference Between Rebuilt And Refurbished?

A rebuilt vehicle is a more reliable and more esthetic-looking unit that enhances the company's image.

By Brett Barrett, Station Manager, Matheson Flight Extenders

When I first joined Matheson a little more than 10 years ago, the United States Postal Service outsourced what it defined as "Terminal Handling Services" across the United States. These companies functioned as an intermediary between the USPS and its aviation supplier FedEx by building up originating mail and breaking down and sorting mail at its destination city.

Matheson bid on this terminal handling services work and was successful in winning several contracts across the western United States. With a very limited amount of time to start up operations, however, we needed to purchase a large amount of GSE to help us launch Matheson into the ground support business.

Once the company began looking at the cost of the new equipment, however, it quickly became obvious we needed to look at used, refurbished or rebuilt equipment to defer the cost of capital in purchasing new.

The lessons we learned in the search for equipment were instrumental in how we handle our equipment needs today and a true understanding of what is a rebuilt vs. refurbished piece of equipment can make a significant difference to the quality of the unit.

What do we consider the difference between rebuilt and refurbished?

The most simplistic way to define either term is to say rebuilt is like a "frame off restoration." The unit is taken down to its bare bones and new parts, engines, transmissions, wiring, tires and associated parts are installed and the unit is painted and ready for market.

Comparatively, a refurbished unit is best described as "flipping the unit." Any major repairs needed are addressed. The unit is given a heavy PMI (preventative maintenance inspection) and a new coat of paint and then made ready for market. The difference is a like new unit versus a used unit.

Our Matheson standards are very high for our equipment as a result of our experience in operating over-the-road trucks where reliability is critical to providing service. Matheson has been in the business of transporting mail for more than 45 years and we operate more than 400 trucks that run in excess of 40 million miles per year with an outstanding safety record.

Our long history of tractor and trailer maintenance provided the foundation for establishing our own internal GSE program. We created a metric for our baggage tractors to categorize what we would rebuild and what we would refurbish. If the unit is more than 75 percent worn out, we rebuild. If the equipment is less than 75 percent worn out, we refurbish.

We complete the following work to rebuild a unit:

- Remove and replace all unit wiring.
- Remove and replace engine and transmission mounts.
- Replace the engine and transmission.
- Remove and replace steering linkage.
- Remove and replace the exhaust system.
- Remove and replace seal/bearings in rear end.
- Replace all bolts with grade 8v111 bolts and nuts.
- Replace all gauges and switch panels.
- Boil out the radiator or replace as necessary.
- Prime and paint the shell.
- Replace door hinges, latches and windows.
- Replace the entire brake system.
- Replace lights with LEDs for more efficiency.
- Install new bumper guards.
- Install new seats and rails.

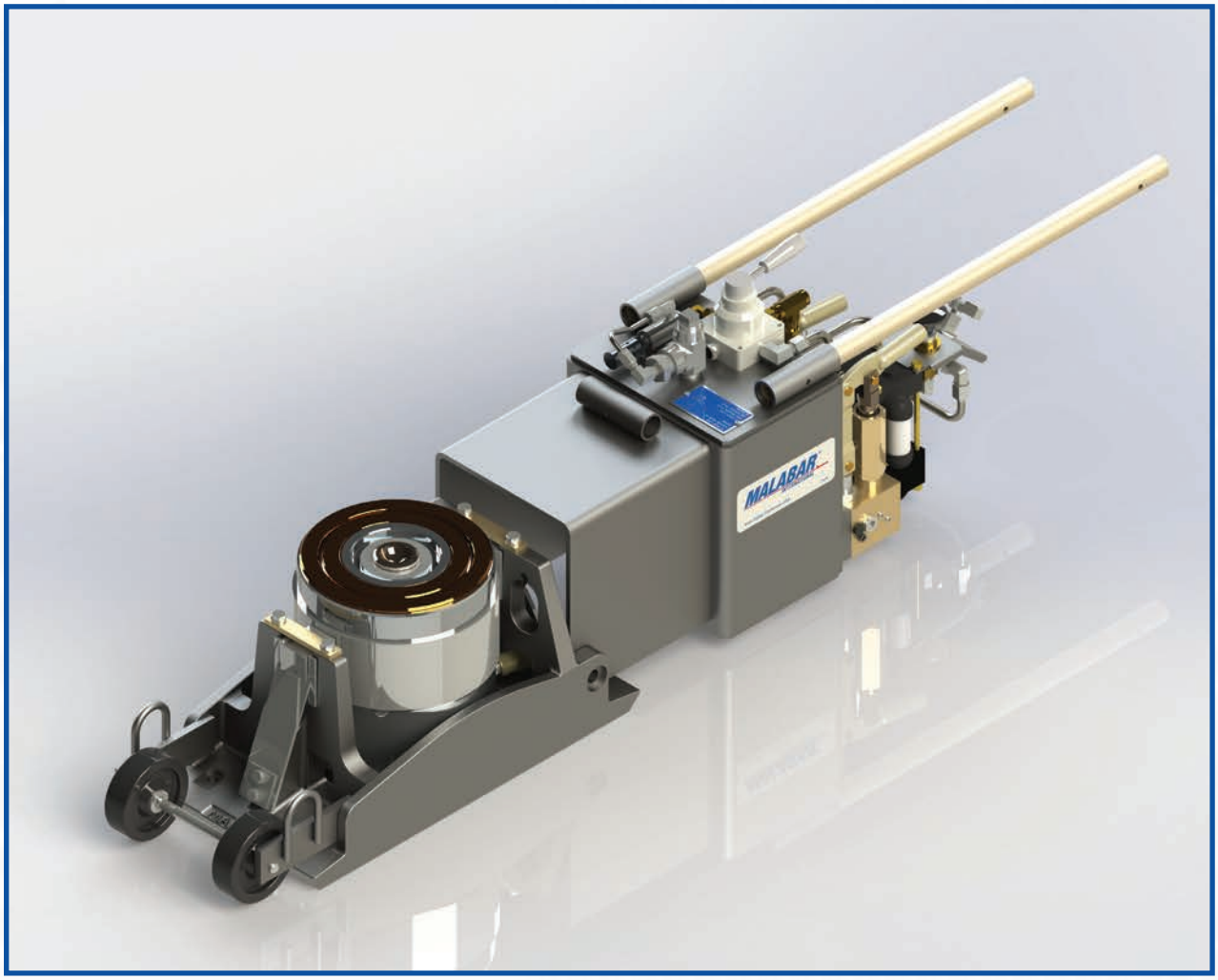
By contrast, we complete the following work to refurbish a unit:

- Complete a heavy preventative maintenance inspection.
- Repair any major or minor defect found.
- Inspect and adjust brakes.
- Inspect and tighten tow hitch.
- Inspect tire tread depth, replace if less than 2/32.
- Repaint or touch up paint on the unit.

The cost of the rebuilt vehicle can be depreciated over its now new, longer life cycle. In the end, a rebuilt piece of equipment is a more reliable and more esthetic-looking unit that enhances the company's image.

BRETT BARRETT *has 28 years of experience in aviation starting with Evergreen Eagle where he ultimately oversaw 21 mechanics and a rebuild program for more than 200 pieces of GSE. As a station agent for Matheson, he oversees GSE purchases and the GSE rebuild/refurbish facility.*

“Fly-Away” Jacks From Malabar



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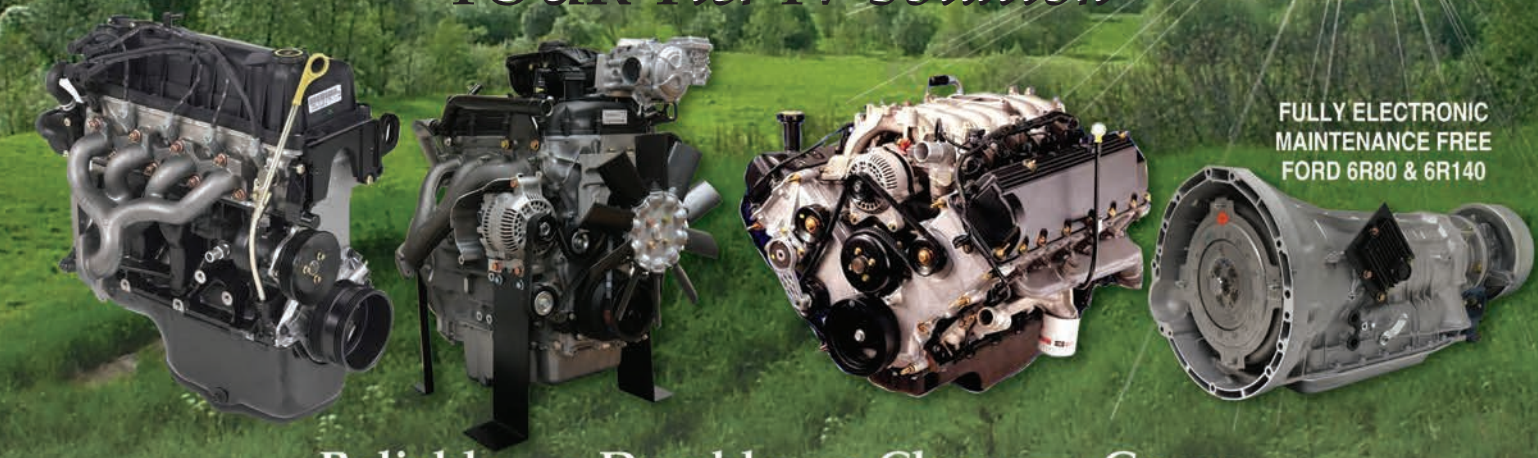

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