Learning lessons for the future

Margaret Giugliano ponders on the realities of a green ramp.

With the US facing the largest environmental disaster in its history as a result of the explosion and collapse of the Deepwater Horizon drilling rig in the Gulf of Mexico, it is becoming increasingly apparent that plant, sea life, birds, water and shore habitats are intricately interrelated in sustaining each flora and species and, indeed, our quality of life. The good news is that technology and energy costs are the catalysts for change and so the community of airport, aeronautical and air service providers has embarked on steps to minimise the environmental impact of their operations. But what exactly have they done and what can they continue to do to protect the environment?

Airport operations involve the transfer, storage and handling of millions of gallons of fuel, not only for the aircraft that make up the worldwide air transportation system but for the fleets of vehicles and other motorised equipment that service them. Just as air carriers are looking to electrify gates, the motorised component of our industry can continue and enhance local environmental mitigation efforts by expanding their use of hybrid and low emission vehicles. Recent economic studies done by the United States Federal Aviation Administration puts the payback of switching to such vehicles at between 0 to 2 years.

The importance of knowledge

Industries are becoming more knowledgeable in the science-based understanding of their operations including, with respect to environmental problems, modelling emissions predictions.

A fleet of electric vehicles and electrified GSE recharging stations reduce noise, carbon emissions and, of course, fuel consumption. This allows industry to quantify the benefits of alternative and synthetic fuels and the use of hybrid and electric vehicles. Our industry should seek and, where it is not currently available, press for special low interest financing for these types of vehicles.

From how you train your employees to how you manage your operations, there are opportunities to go green. Analyse your operations critically to identify software or other technologies that can provide improved efficiency. For instance, automation can optimise your vehicle routing and personnel assignments. If you can incorporate new technology and software that improves gate-to-gate and surface operating procedures, you not only have a more efficient operation and better performance, but you save on manpower and equipment operating costs. Reduced fuel and operating costs result in less hazardous emissions to the environment.

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At many airport locations, ground service providers have taken the initial steps to ensure the quality of air and water remains clean for the future generations but the message is clear: more remains to be done.

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the project with the TSA, stepped in and picked up the baton and presented it to the aviation sector.

"Once the R&D stage was completed we took up the challenge," recalls Ken. "Our first customer for the product was American Eagle, which was last year. We aggressively marketed the application, knowing that it was being used elsewhere, and we persuaded the airline that it was a necessary tool for them. A nationwide corporate contract was duly signed and we started off by adapting 150 vehicles at Dallas Fort Worth. That number has since grown to 300 and we've moved on with the idea to Chicago O'Hare. The plan is that ultimately every vehicle in the carrier's fleet will benefit."

With tens of thousands of vehicles in different industries already fitted out with this technology, ID Systems was able to pick and choose elements from its vast experience when it came to tailoring something specifically for the aviation sector. Thus a combination of various requirements was put forward and of these, keyless driving was the main consideration. What we're talking about here is the proverbial black box technology, complete with display and keypad.

"The whole thing is badge-controlled," explains Ken. "This technology even tells the driver if he's not allowed to access to the vehicle – and why. There is also communication with the operator and he or she can receive text messages on the display unit. The technology will also allow vehicle inspections via the black box."

It's worth mentioning that the actual unit itself is only about 4 x 4 inches in compass so is very compact; installation requires it to be wired into the vehicle's ignition and power system and setting up can be completed in just a couple of hours. An advantage of the application, which is dubbed AvRamp, incidentally, is that the black box in question can, if required, be removed and attached to another vehicle at a later date with little effort.

Best of all, the bigger the fleet that is to be kitted out, the cheaper the unit cost becomes. Moreover, because the whole set-up doesn't depend upon cellular technology, it being wi-free, the cost of usage to the operator is minimal.

"At Dallas Fort Worth we had to install a number of antennae, about a dozen in all," says Ken. "These are plugged into the existing network and have something like a two mile operating radius. American Eagle has been most satisfied with the results for now they can regulate driving hours, locate vehicles and check up on who's on the ramp. They've realised greater productivity already and have seen significant savings."

Finally, what about the ideal fleet size for such an application?

"Really, if you've ten or more motorised vehicles on the ramp, then the AvRamp will be of interest," declares Ken. "Also, payback is very rapid once this solution is adopted."

The user's viewpoint

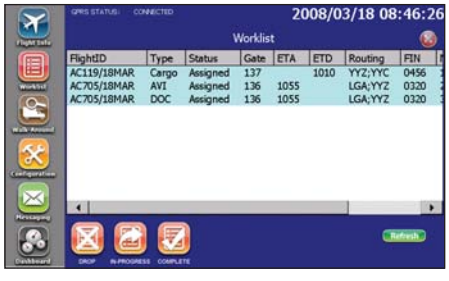
On to Larry Terrazas, who is VP Customer Service, at American Eagle. So impressed has he been with the AvRamp that he's taken the concept to Chicago, too.

"We aim to have this rolled out at all our hubs," he explains, "which means airports like JFK, La Guardia, Miami, Los Angeles and Boston. These are the sort of places where this kind of technology will really work well.

"The Dallas installation was carried out in October 2009 although there were a few delays, mainly connected with the necessary FAA permits. There's more concern over airport and perimeter security compared to the ramp. We had the system fitted initially to 101 tractors and we've since broadened that to over-the-road vehicles. Tractors, we feel, are the main focus for us at the moment, since they are very active. We've considered beltloaders and other vehicles but they cover less distance in an average day. Also, we can't see a cost-effective way of adding this technology to non-mechanised vehicles at present, but that's something for ID Systems to look at.

"ID Systems give you the option of self-installation or they will do it for you: we chose to have the devices fitted by them. Throughout the process they've been very responsive and helpful, and easy to work with."

Larry relates that the pre-use safety checklist has proved to be a boon, with staff quickly reporting any maintenance requirements, which has accelerated response time. Being able to lock a vehicle through the special badge has meant that a tractor, once parked, stays put until someone authorised to drive it climbs into the seat. Moreover, with the automatic ignition cut-off facility, which kicks in after a pre-determined time period, there are useful fuel savings to be made. Preventative maintenance schedules have also benefited:



Keeping track with the Katlyn application, in real time

because tractors are tracked, the fleet managers will know the exact time when servicing is due, thereby removing the guesswork from the equation. Data capture thus becomes a key characteristic of the whole concept.

Finally, how about user acceptance? Had that gone smoothly?

"That's been very good, actually," admits Larry. "We gave the staff a briefing before the changeover and they've been supportive of the technology ever since. Where new staff have come in, they too have been happy with the device. Ultimately, the staff know that this technology will enhance their output and efficiency, which is imperative when dealing with large carrier contracts. Safety and productivity have benefited – so overall it's been a good, all-round decision, in every sense."

Cargo at the root

Another supplier of this technology is that of Katlyn and the company's Angelos Kotzambasis, who is Vice President, Sales & Marketing, says that he has sold this type of fleet tracking solution to Air Canada Cargo in Toronto, Wellington County in Ontario and is currently involved in two more pilot projects that he is looking to sign later this year.

"Our experience comes from developing air cargo IT systems for the last 18 years. We have worked on some very large systems, like that for HACTL in Hong Kong, JAL in New York, British Airways in Heathrow and TNT in Liège. We noticed that there was a big gap and a need to know about the resources on the ramp side. We were not satisfied with just showing where the vehicles were by using GPS alone, so we decided to create a system that has multiple functions. In this way more departments than just cargo could use it and, in consequence, create a better return on investment.

"Our approach has always been that you can't manage what you don't measure. So iRamp is built with this philosophy in mind. Collecting data in real time enables managers to streamline their operations and improve the utilisation of their assets. To do that, we addressed three main areas, namely operations, security and maintenance.

"On the operations side, we have created applications such as In vehicle FIDS, automated dispatching, work order management, deliverables logging and two-way messaging. In terms of security we have made sure that only authorised drivers operate the company vehicles: a multi-level security approach is used.

"As for maintenance, we have devised a method for the collection of vital statistics ➤

➤ and parameters from the vehicles that we turn around. This allows us to create statistical analysis reports to tell us how to perform better maintenance, reduce abuse, reduce idling (which causes pollution), cut waste in terms of fuel expenditure and generally increase vehicle utilisation. We have applications suitable for GSE personnel that enable them to track any repairs, log any breakdown calls, check daily inspection records and so on."

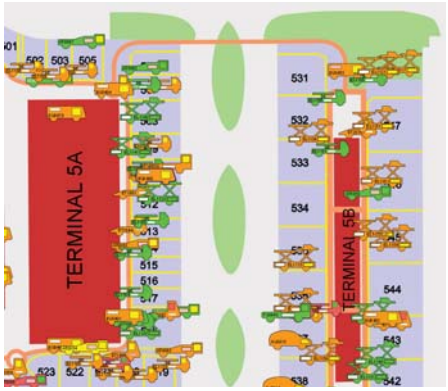
When it comes to installation, on the vehicle side Katlyn provides a small weatherproof box that contains all the electronics. A local technician can easily install the system in any kind of vehicle within an hour or two, even if he has never done this sort of job before.

"If the customer has chosen to transmit via GPRS (cell modem technology) then that's it. The units come pre-programmed and configured. If the customer prefers to use wi-fi to avoid monthly transmissions to a service provider, then we survey the airport and arrange for a wi-fi system to be installed to cover the areas we monitor. The great thing about iRamp is that it has so many specialised applications that even a very small fleet can take advantage of it. For example, a ground handler that operates in multiple airports can use iRamp to collect data from every station, even if it is just five or six vehicles. We have applications such as dispatching tow truck call monitoring, daily inspection for equipment, idle monitoring and the like."

Angelos adds that some benefits quickly become apparent. There is usually a noticeable cutting back in idling, for example. "At the price of petrol today, every litre of it counts. For example, we have seen some cases of eight or nine hours of vehicle idling per day. It is also possible to cut back on paper use, for we have the electronic means for collecting data to make reporting that much easier."

Reducing the fleet by better utilisation of the equipment means that the operator will be working leaner and he should therefore be able to offer more competitive SLA conditions. Aside from all these factors is the likelihood of a reduction in accidents and maintenance bills, thanks to there being less GSE on the ramp.

According to Angelos, payback for such a system can range from just six months to a year: after that, he says that there would be an annual saving of at least US$1,500 per vehicle. The level of investment works out about US$2,500 per unit for the top-of-the-range version that would include a full user interface. Katlyn has also supplied smaller versions for applications where the user interface was not required.



Vivid display of GSE courtesy of Zebra

Across the Atlantic

Germany-based Zebra Enterprise Solutions has successfully sold and implemented its Equipment Fleet Management System (or EFM) across Europe, the Middle East and Asia and has emerged as the leader in this context. In terms of its EFM customers, stations have included Munich, Heathrow, Amsterdam and Brussels, but it has also been implemented by Dnata in Dubai, Abu Dhabi Airport Services and Singapore Airport Terminal Services.

The EFM solution was actually developed by proveo, before being acquired by Zebra Technologies, the largest provider of asset location solutions in the world. In a nutshell, this system offers airport staff the Web-based realities of monitoring and tracking vehicles around the ramp (and further), being able to plan and assign and re-assign in real-time where GSE can be best deployed. EFM also supports longer term strategic decisions such as optimisation of maintenance budgets and the capital budget associated with fleet renewal and new purchase. These decisions become fact-based.

Running in real-time has become a straightforward practice and process to optimise GSE movements and hone an operation accordingly. The net result should be a leaner and better-performing fleet.

According to Patrick Fotheringham, the company's Sales Manager EMEA, ZES works with each of its clients to develop an implementation strategy around each customer's particular business objectives. "This can range from wanting to install quickly to address a specific business goal (for example, reduce GSE maintenance spend), to working over a longer period with the engineering department to assist them in playing a fuller *rôle* in the implementation.

"The ZES implementation approach is based on re-using our experience gained from thousands of installations and by providing installation packages, pre-configured kits for specific GSE families such as high-loaders and pushbacks, which reduces the time to value."

Helpfully, the EFM solution splits up into a series of modules which can be adopted as a whole or as individual components or even installed at a later stage in a phased project approach. There are elements appertaining to safety and maintenance, for example, that a handler might like to incorporate with the basic package. With the Infoman device fitted, any vehicle can be monitored and an office-based co-ordinator can check up on engine status, fluid levels, speed and other data, all of which is available in real-time. Moreover, the Infoman can communicate via wi-fi or GPRS, or a combination of the two, as the choice suits.

Arguably one of the company's most interesting projects has been that at Munich airport. Faced with a congested ramp and a desire to limit any unnecessary additional equipment as it grew, the airport began to look at the possible ways and means of achieving this goal. Zebra's solution appeared interesting, especially since the airport authority's fleet managers realised the benefits deriving from monitoring all vehicles on the ramp as well as being able to keep a check on their status, regulate refuelling procedures and chart their maintenance requirements.

By virtue of such an enhanced level of communication, coupled to a detailed knowledge of the GSE's status, the airport was able to make some impressive savings once the system was installed and running. Munich reported that it had benefited to the tune of several million Euros in direct capital and operational savings since this facility was integrated, not to mention the many indirect and unquantifiable areas having an additional positive financial impact. These included, for example, the reduced times required in the location of equipment for the workshop and maintenance department; and the reduction in refuelling tasks for ground handling staff. Moreover, the optimisation of the maintenance processes has been welcomed, as indeed has the optimisation of billing for value-added ground services.

More recently, Abu Dhabi Airport Services benefited from Zebra's EFM solution. Here, the daily triple peak in traffic meant that optimal utilisation of assets was critical in meeting airline SLAs. The lack of ready data on asset use was a challenge to the company, which decided that a fleet management solution was desirable. Richard Backhouse, Assistant General Manager, Strategic Planning, was keen to address the situation and turned to Zebra.

During a pilot project, a total of 43 loaders of both low and high deck variety were