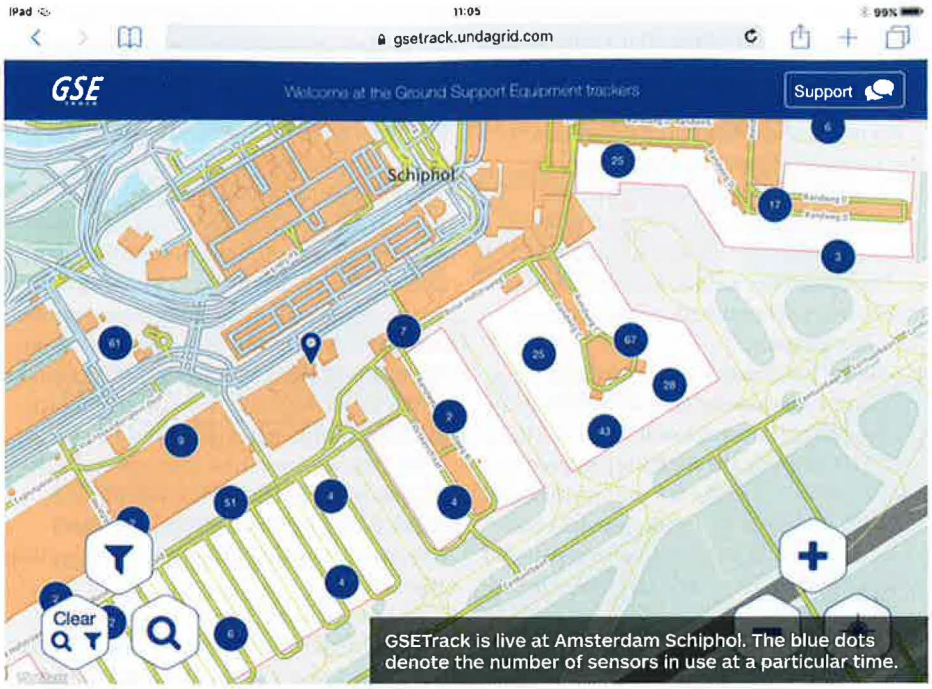

GSETrack is live at Amsterdam Schiphol. The blue dots denote the number of sensors in use at a particular time.

Undagrid: 164426

Technology keeps tabs on airside equipment

Affordable asset tracking delivers efficiency gains

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The complex airside environment includes a variety of mobile and fixed, powered and non-powered ground support equipment (GSE). This array of equipment is often operated and managed by different organisations at large airports, where dozens of handling agents may operate. Hence, management of airside assets can be quite a complex and inefficient undertaking. Valuable time can be lost in locating essential equipment within large hangars or on large airfield areas.

It is therefore important for airport operators, airlines, and ground handlers to track employees and equipment as they seek to boost efficiency and cut costs without compromising safety.

There are two main methods to track airside assets at an airport: mobile phone or satellite. The former relies on local signal availability, while satellite transponders allow moving assets to be tracked if no mobile phone signal is available.

UK-based Global Telesat Communications (GTC), a supplier of mobile voice and data communications services, employs both types of asset tracking technology.

With a GSM tracker, even if an asset goes beyond mobile phone coverage, movements related to that asset will still be saved and uploaded once it moves back into coverage. So its position can still be tracked, albeit outside real time.

The GTC satellite trackers make use of the Inmarsat, Iridium, or Globalstar networks, giving near-global coverage all the time.

"Either of these two systems allows GPS co-ordinates to be tracked and the speed of an asset to be known at any given time or date," explained James Phipps, GTC account manager. "Our tracking devices then send this information, in real time, back to our central GTCTrack portal, which an airport or ground handling company can log into to see where various tracked assets are at a given time."

Phipps explained virtual perimeters can be established using geo-fencing, allowing asset operators to ensure that none of their vehicles stray outside a given area. Should they do so, the portal has been designed to issue warning messages across a variety of selectable mediums, using texts or email, for example.

"This is useful for a sensitive area, such as a fuel dump, where unauthorised vehicles should not go. If they do cross a virtual barrier, the operator wants to know as soon as possible," said Phipps.

Asset tracking also helps optimise fleet deployment. Rather than putting out a general request for a particular unit to go to a certain part of the airport, by tracking everything it becomes easy to identify and assign the closest vehicle, thereby saving time. By tracking assets over time, reports can be generated by portal tools suggesting where over or under use of assets might be located.

"This type of fleet optimisation is where ROI [a return on investment] is made, since redundant assets soon become apparent and can be disposed of," said Phipps.

Some trackers offered by the company have an IP 65 rating, which means they function quite happily on the outside of an asset and can operate across a broad temperature range. Batteries last for several months prior to recharging.

Go Walk Talk has developed a similar system for tracking employees and mobile assets. It makes use of mobile phone coverage but switches to satellite if that is not available.

Tony McIntyre, founder and CEO, explained that employees access the system through an application on their mobile phones. Not only does this allow them to be tracked, but also makes time and worksheets available online to staff, thereby eliminating the need to undertake costly and offline reporting once their shift has finished.

"When an airport employee goes to a particular area, not only are they able to start their shift by checking in over their mobile phones, but they are also immediately able to access their work sheet on screen for the day. Using this and other tools, they can compile instant reports, incorporating where appropriate video or a written text message, which their manager can review later," said McIntyre.

Since everything is done digitally, he added, there is no paper form filling of any kind.

"Every security guard nowadays is familiar with mobile phone technology, with SMS often the preferred method for keeping in contact. So using online forms is a simple extension of this, allowing employees to easily make incident reports. In the past, after attending an incident, the security guard might have had to return to the office to write up a report; now, that can be easily done in the field, leaving the guard to

then continue their shift, which might well involve moving on to a new location."

Efficiency of individual workers can also be remotely monitored. By linking a GPS signal to a work sheet, for example, it is possible to confirm that a member of staff did indeed go to a location mandated by their work sheet. Furthermore, through the portal, senior managers can see the location of all their workers in real time and redeploy them if necessary.

"If a worker is in an incorrect area, the mobile phone could also be programmed to alert the supervisor, who would receive an automated message. So, somebody that should not be near the ramp would trigger an immediate alert should they wander into that area," said McIntyre.

He added that Go Walk Talk charges GBP0.20 (USD0.29) per data ping every 30 minutes, making its solution eminently affordable.

Case studies

KLM Equipment Services (KES) put a vehicle asset tracking and employee identification solution into service at Amsterdam Schiphol in 2015.

The telematics system was developed by Ctrack - a subsidiary of South Africa-based Digi-Core Holdings - following a competitive tender. It was delivered by Novatel Wireless.

KES intends to use the system to monitor employees using its fleet of motorised airport ground support equipment (GSE).

"This has the potential to save many hours of administrative work, while providing the basis for making fleet operations more flexible," explained Hilger van Dam, managing director of Ctrack Benelux.

The Ctrack platform manages access to KES equipment for 5,000 of the 60,000 airport staff cardholders at Schiphol, using registration to the identification software and Ctrack units.

For resource optimisation, KES will now be able to use a desktop computer, smartphone, or tablet to view where specific equipment is located, particularly ground power units (GPUs). In the future, the battery voltage for electric equipment will also be displayed on a dashboard, enabling users to select a charged piece of equipment.

Schiphol has already implemented a similar solution for non-powered GSE, with funding support from the Mainport Innovation Fund (MIF).

Called GSETrack, the system is produced by a joint venture between Dutch start-up Undagrid and S-P-S International. It is designed to enable swift, energy-efficient tracking of non-powered GSE or airside equipment that is not connected to the power grid.

GSETrack for Schiphol went live in late 2015, and a second-generation solution (with a longer range of about 1 km between nodes, compared with 300 m for the first variant) is in use at Paris Charles de Gaulle with Air France.

In the United Kingdom, Cambridge-based RedBite developed a cloud-based asset tracking and inventory management tool called RedStore for Aviation, which assigns a unique identity to each asset.

RedStore for Aviation has been deployed at Manchester and one other undisclosed UK airport. Operator Manchester Airports Group (MAG) sought a solution for managing supplier-owned vehicles and equipment at the airport, with all asset information and history records to be accessible by the various relevant organisations. MAG also wanted a full asset register to be visible in one place, as having access to an historic record of past maintenance activities for each asset or vehicle is crucial for assessing safety and reliability.

With RedStore for Aviation, every chosen vehicle and item of GSE is uniquely identified and any member of the airport staff can see its access rights and service history immediately by scanning a QR code on its windscreen. A prominent red or green colour is displayed on the profile, indicating whether an asset's maintenance certificate has expired or whether that vehicle has the authorisation to go airside.

The solution is available in a mobile, cloud-synced application that can be run without Wi-Fi or a phone signal. RedStore also has a web application that enables users to view their assets online.

Rick Mernock, airfield network and performance manager at Manchester Airport, said RedStore for Aviation is "particularly effective with equipment on the airfield; it has enabled us to create a profile for each item which consequently has greatly increased the amount of control we have monitoring the maintenance schedules".

RedBite also provided Manchester Airport with RFID tags for a trial connecting RedStore with the company's RedEdge product, to fully automate airside entry authorisation. RedEdge enables RFID and sensor devices to connect directly to the cloud with no need for onsite middleware or hardware at all. According to RedBite, this reduces the complexity of large-scale network deployments and reduces costs of maintaining existing RFID networks by 85%. ■