



Greener and more efficient airplane handling at Brussels Airport thanks to 'smart logistics'

Flightcare Belgium is first in Europe to use new 'track & trace' technology developed in Leuven

Focus points

- Passengers informed faster with accurate flight information thanks to improved information exchange
- Greener, more efficient and more economic airplane handling
- Flightcare partners with The Brussels Airport Company to reduce CO₂ emissions
- Potential for further optimization of ground activities
- Hybrid Vehicle Tracking System (VTS) developed in Leuven as a European first
- Airport LAN supports VTS technology
- Showcase for Flemish logistics knowledge and practice

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Brussels Airport, 18 June 2012 – Ground handling company Flightcare Belgium, along with Imec spin-off Essensium from Leuven, Belgium, has implemented a unique solution for real-time status management and exact position determination of its motorized handling fleet at Brussels Airport. The new technology provides important advantages for the airport and its stakeholders, including more efficient and environmentally-friendly aircraft handling and more accurate flight information for passengers. The project is part of the 'smart logistics' program managed by the Provincial Department of Development of Flemish Brabant (POM Vlaams-Brabant).

Flightcare Belgium: greener, more economical and more efficient services through technology

For the pilot project, which has just been completed, Flightcare Belgium equipped its full fleet of Nose Wheel Lifters with the new tracking system. Before departure, Nose Wheel Lifters tow an airplane from its standing place to the taxiway. By lifting the airplane's nose wheel, the machine is more quickly prepared to drive to the runway. "Our Nose Wheel Lifters use a considerable amount of energy, not only when towing airplanes, but also when they are on standby with their motors running, waiting for air traffic control's approval, or when they have to change position," says Flightcare Airport Infrastructure Manager Geert Roegiers. "Thanks to this new system, we know exactly where each machine is located and what it's doing. This information allows us to direct our fleet with precision and reduce waiting and driving times. At the same time, this efficient control will also result in a yearly decrease of 162 tons of CO₂ emissions for our fleet of Nose Wheel Lifters alone. We also save on the maintenance and prolong the lifecycle of the batteries." In the near future, Flightcare plans to extend the application to other vehicles in its fleet, such as the transport belts which are used when loading and unloading the airplanes.

For Geert Oliebos, Director Purchase & Support Services at Flightcare, the solution is crucial for improving service quality. "Essensium's VTS technology allows us to optimize our fleet – the number and types of vehicles as well as their use. On top of that, we can guarantee our services thanks to the dynamic and accurate dispatching of our vehicles."

Through sensors and CAN-bus interfaces, the system not only provides information on the position, but also on the operational status of the vehicles, which is an important added value. This real-time information – four position and status updates per second – about the ground equipment can immediately be processed by airport administration. As a result, passengers quickly receive accurate information about expected departure times. "As an airplane handler, this information also helps us to react more quickly to alterations of flight schedules or last minute changes of boarding gates," says Geert Oliebos.

Additionally, this transparent information on the status of ground equipment supports Flightcare Belgium's participation in the Airport Collaborative Decision Making project of Eurocontrol, IATA and ACI (Airports Council International). This project aims to achieve the most efficient use of airspace by means of a proactive and standardized information exchange about ground activities at participating airports.

Essensium LOST™: hybrid technology for maximum reach and accuracy

The Essensium LOST™ (LOcation for Sensor Tracking) technology uses a 'Wide-over-Narrowband' RF technology patented in Europe and the United States. The technology unites high precision with a large service area, and works both inside buildings and in the open air. The Vehicle Tracking System implementation is a hybrid technology combining GPS positioning with the LOST™ 2.4 GHz radio frequency signals in a single tag which is placed on the equipment. Other providers of VTS technology use either large bandwidth technology, which makes it possible to position accurately but the signal only has a limited range; or narrowband signal technology, which results in a wide range but reduced positioning accuracy; or a GPS solution, which offers limited functionality inside or close to buildings or next to large airplanes. The integrated GPS components in the Essensium solution assure the position determination within the large airport area, and the LOST™ wide-range tracking components are used for zones that require increased accuracy or where no adequate GPS range is possible.

"Even under the airplane's nose, indoor or underground, we can determine the exact location of an object, accurate to 50 centimeters," says Stephen Dunphy, Director Sales & Marketing of Essensium. "For example, this accuracy allows us to tag only the forklift in a warehouse setting, because you can determine exactly where it is when storing goods. You don't need to tag the goods themselves, which offers an enormous saving. We also have developed a microchip version of our technology, so we'll be able to install very small tags on all kinds of equipment for use in different environments, such as hospitals."

Siemens Enterprise Communications: high-performing communications infrastructure at Brussels Airport

Siemens Enterprise Communications installed the 10 radio stations that are located on lighting columns and buildings at the airport. The data captured via these stations goes to the LOST™ tracker server in Siemens Enterprise Communications' data center and is available to Flightcare through a web server application developed by Essensium. The existing data and IT infrastructure at Brussels Airport, developed and managed by Siemens Enterprise Communications as part of a multi-year contract, is open for all 'track & trace' applications to further optimize airport activities. The different companies at the airport are able to use these 'track & trace' services built on Siemens Enterprise Communications' joint infrastructure, without having to invest in their own infrastructure. Airplane caterers for instance could verify whether all foreseen provisioning containers are on board, or the fluid stocks in the de-icing vehicles could be checked from a distance, in a rapid and reliable way.

Because of the positive results of the project, as well as the high accuracy and the wide range of possibilities of the technology, Siemens Enterprise Communications now aims to implement the 'track & trace' solution in other airports and other environments as well, e.g. warehouses, where customers can realize similar optimization and cost savings.

The Brussels Airport Company: a leader in green initiatives

As an airport operator, ongoing optimization of airport operations is key for The Brussels Airport Company. In 2010, it opted to participate in the Collaborative Decision Making (CDM) project, which is aimed at improving transparency and enabling more efficient planning between air traffic control, handlers and airlines. Many airports have already followed Brussels Airport's example. Thanks to CDM, an annual reduction of 18,000 tons of CO₂ is obtained. Two years ago, the airport operator enrolled in the 'Airport Carbon Accreditation' program of ACI Europe (the European arm of the Airports Council International). A CO₂ management plan was launched and two accreditation levels have already been achieved. Brussels Airport was also the first airport to apply the ISO 50001 methodology concerning energy.

Brussels Airport increasingly seeks to find ways to realize joint environmental profit in close collaboration with its partners. The 'green approaches' project, undertaken with Belgocontrol and Brussels Airlines, is an example of this collaboration. The VTS project also supports these goals. Just like CDM, VTS not only enables higher-quality service, but also provides many ecological advantages, as overall fuel consumption is reduced.

POM Vlaams-Brabant: airplane handling offers a showcase for 'smart logistics'

The VTS project was a pilot project launched under the auspices of the Logistics Platform of the Belgian province of Flemish Brabant. Under this Platform, provincial and regional entities are working together to transform Flemish Brabant into a center of 'smart logistics', where knowledge and innovation play a major role in streamlining the different steps in logistics processes. "With the VTS project we were able to put this theory into practice, and it proved

the immediate and potential economic added value of the concept,” says Governor Lodewijk De Witte, Chairman of POM Vlaams-Brabant. “Our financial support will have a flywheel effect,” he continues. “A small spark sets a new movement in motion which is several times bigger. An example of that effect is an industrial partner such as Siemens Enterprise Communications spreading the Essensium technology worldwide.”

Deputy Jean-Pol Olbrechts recognizes the 'triple helix' innovation model in this approach, which combines academic knowledge through Essensium, entrepreneurship via Flightcare and government initiative thanks to POM Vlaams-Brabant. “In its policy, the province of Flemish Brabant chose to stimulate the expertise and innovation in Flemish Brabant for example in the field of logistics, which is a pioneering industry in our province. By supporting such 'triple helix' partnerships, the province of Flemish Brabant will expand its role as a driver for the knowledge-driven economy in Flanders.”

“Next to that, it’s important to note that the airport of Zaventem is the second-most important Economic Gate of Flanders, right after the port of Antwerp. The fact that we have been able to realize a logistic showcase there, offers particular advantages for the region.”

Measuring the VTS project

Essensium – LOST™ VTS

- GPS technology for outdoor positioning
- 2.4 GHz radio frequency signals for accurate positioning, both indoor and outdoor
- Four position and status updates per second
- Monitors vehicles' position and status
- Idle running information for energy savings
- Automatic indication of the nearest gate for each vehicle
- Logs document the service level delivered
- Notification in case of risks regarding prohibited zones or excessive speed

Flightcare

- 12 Goldhofer Nose Wheel Lifters (NWL) equipped with mobile nodes (tags)
- Reduced fuel consumption: decrease of engine running hours by 40%
- Decreased maintenance costs
- Reduced CO₂ emissions: 162 tons/year less for NWL fleet
- More efficient dispatching: decrease of NWL transfer times by 35%
- Fleet optimization: reduction of standstills and waiting times by 50%
- Faster flight information to passengers in case of changes

Siemens Enterprise Communications

- 10 RF base stations on the airport premises
- Connection to LAN and Siemens Enterprise Communications' data center
- Application accessible after identification via Internet

The partners

Flightcare Belgium

Flightcare Belgium is a ground handling company at Brussels Airport and employs more than 1,500 people. The company is also active at the airports of Ostend and Liege.

Customers – airlines and passengers – are offered a wide range of services, including check-in, ticketing and boarding of passengers, baggage handling, lost baggage tracking, cabin dressing and cleaning, airfreight and airmail handling, airplane towing, weight and trim calculation, ramp supervision and de-icing of airplanes.

Flightcare Belgium guarantees these services for more than 30 airlines, which means two-thirds of all flights at Brussels Airport, representing more than 10 million passengers and 180,000 tons of cargo per year.

Flightcare Belgium is a subsidiary of FCC, a Spanish international construction and services group listed on the stock exchange of Madrid. In May 2012, Flightcare Belgium was taken over by Swissport, the world leader in ground handling. Swissport is active at 177 airports on five continents and employs 35,000 people.

More information about Flightcare and Swissport on <http://www.flightcare.be> and <http://www.swissport.com>.

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The Brussels Airport Company

The Brussels Airport Company is the limited company to which the Belgian State has granted the licence to operate Brussels Airport. 75% of the company's shares are held by a consortium of private investors. The Belgian State has an interest of 25% of the shares.

Brussels Airport is one of the largest airports in Europe, handling 18.8 million passengers and 475,000 tons of freight annually. Brussels Airport links the European capital with 231 destinations worldwide that are served by 88 different airlines: 74 passenger airlines and 14 full-freighter airlines (figures of 2011).

Brussels Airport is dedicated to become the most European, most efficient and most welcoming airport in Europe. Brussels Airport caters to the specific needs of business travellers, but also has the largest low-fare offer in Belgium.

More information about Brussels Airport on <http://www.brusselsairport.be>.

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Essensium NV

Essensium is an Imec spin-off specializing in wireless and embedded software and hardware solutions. It started as a fabless semiconductor company, and combines expertise in custom silicon design for portable, wireless, and low power applications, along with a strong embedded software division. Essensium provides System-On-Chip products and design services to original equipment manufacturers, design houses, and ASSP suppliers.

Essensium has also developed its own patented Real Time Location System (RTL5) platform that is unique for its high accuracy, long range and extreme low power. This platform targets various logistics applications as well as people tracking in hospitals and secured environments.

More information about Essensium on <http://www.essensium.com>.

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Siemens Enterprise Communications

Siemens Enterprise Communications is a premier provider of end-to-end enterprise communications solutions that use open, standards-based architectures to unify communications and business applications for a seamless collaboration experience. This award-winning 'Open Communications' approach enables organizations to improve productivity and reduce costs through easy-to-deploy solutions that work within existing IT environments, delivering operational efficiencies. It is the foundation for the company's OpenPath commitment that enables customers to mitigate risk and cost-effectively adopt unified communications. This promise is underwritten through Siemens Enterprise Communications' OpenScale service portfolio, which includes international, managed and outsource capability.

Siemens Enterprise Communications is owned by a joint venture of The Gores Group and Siemens AG. The joint venture also encompasses Enterasys Networks, which provides network infrastructure and security systems, delivering a perfect basis for joint communications solutions.

More information about Siemens Enterprise Communications on <http://www.siemens-enterprise.com>.

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POM Vlaams-Brabant

POM Vlaams-Brabant is the Provincial Department of Development of the Flemish Brabant province in the Flanders region of Belgium. The task of the Department is to assist the province in the development of a socio-economic policy by implementing and supporting projects with regards to industrial infrastructure and regional economic enhancement. One of its responsibilities is promote projects that will enable Flanders and especially the province of Flemish Brabant to become a center of 'smart logistics'.

More information about POM Vlaams-Brabant on <http://www.vlaamsbrabant.be>.

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