Hands-free operation

Back in November, history was made at Toulouse, writes the Editor.

Air France the beneficiary of Charlatte and Navya's combined expertise

It may have been a day that saw Toulose Blagnac airport perpetually shrouded in mist but that did not prevent the first live operation of a driverless baggage tractor on the ramp.

On the momentous occasion, Air France was the customer; Charlatte Autonom, along with TCR and autonomous specialist Navya, provided the driverless vehicle; and Groupe 3S contributed the ground handling expertise. For all the players involved in this historic moment, it was a fulfilling experience: the result of several years' investment and trial resulted in a faultless demonstration before a large number of interested stakeholders.

The rise of autonomous

Three or four years back autonomous vehicles were still the stuff of science fiction. True, tests were underway on public roads to gauge the practicality (and safety) of the driverless car, but the airport sector was merely a spectator. All that would change, though, as the day in Toulouse proved. Companies like Navya saw the potential for autonomous transport, primarily in the field of the bus, some time ago; the company wasn't alone in recognising that here was something that was admirably suited to a confined area of operation over a programmable route, such as that of the airport.

Charlatte, known for its electric vehicle output, was a perfect choice and its T135 tractor type was deemed suitable for the transformation work. When *GHI* visited the French headquarters in early 2019, this development was the talk of the workshop: almost a year on, the concept finally bore fruit on the ramp of Toulouse airport.

> "We are very proud of this world-first operation"
>
> Bastien Devaux, Charlatte Manutention

This particular airport is not without its historical importance, of course: chapters in its aviation history involve both Concorde and the A380, so it was fitting that this station should witness the first automated vehicle usage.

The key to the whole operation lies in the programming. Once a vehicle (Charlatte is currently running three such autonomous tractors) has electronically absorbed the details of the route (or routes) that it is to take, all that's required is touchscreen input within the cab to set the vehicle in motion. Equipped with an array of sensors (Lidar, GPS, camera and an odometer), the tractor is thus equipped to navigate its route, stopping at pre-established barriers (such as pedestrian crossings), and giving way to anything that it detects within its field of movement that might conflict with its course. An inbuilt 3D map of the local environment ensures that the vehicle knows where it is at any given moment.

On the day in question, the driverless tractor appeared from the baggage hall area towing two empty trailers. It drove around a roundabout before reaching the stand, where it stopped according to its computerised input. The trailers were loaded, a Groupe 3S driver then turned the assemblage through 180 degrees before stopping the tractor and alighting. A command on the dashboard touchscreen then set the whole train in motion again, the tractor and load reprising the route it had previously taken. (There is also a base controller facility to operate such a vehicle: someone can start up the tractor, or tractors, without the necessity of getting into the cab). The whole exercise was drama-free although one imagines that a few hearts were in mouths as the tractor encountered another vehicle on its journey: however, all the research had obviously paid off, because the AT135 (the A signifying autonomous) politely gave way, only continuing once it had detected its path was clear. For those watching, it was the ultimate endorsement of this interesting technology.

Ongoing trials

The tests at Toulouse actually got underway on November 15 and the airport was due to carry on utilising the AT135 until the end of 2019; thereafter, at least at the time of writing, the next steps were unknown, although rumour had it

that other stations were in negotiations for trialling the tractor. For those not won over by the concept, there is plenty of evidence to suggest that this technology has much to commend it.

According to Bob Belither, Manager UK & Ireland, and one who has been involved in the project, the advantages are that because the vehicle is driven as it should be, and is not subject to varying driving styles, maintenance and longevity are improved, so that the tractor does not require as much mechanical attention as might otherwise be the case: yearly maintenance instead of six-monthly periods was suggested as practicable.

The technology is also foolproof: and because of this, there is a distinct advantage in terms of safety on the ramp. This tractor is designed to stop and start near the aircraft, with the final leg, if required, being executed by the driver. There is also the matter of staffing: tests have shown that personnel can be reduced by anything up to two-thirds when operating a driverless tractor. Labour costs, as most readers will know, is an ongoing headache, so this technology presents an interesting alternative to an old problem.

En route: a slightly unnerving sight for some spectators at Toulouse, the driverless baggage tractor

Summing up

At Air France, the driverless vehicle concept is just one of several initiatives with which the carrier is involved. Vincent Euzeby, Head of IT & Tech Innovation at the carrier, was enthusiastic: "By facilitating the use of an autonomous baggage tractor and perfectly integrating it into its operational processes, Air France's ambition is to further optimise its operational performance and improve its customers' travel experience. This test is the first step to a more widespread roll-out of autonomous vehicles at our airports."

For Philippe Crébassa, Chairman of the Executive Board of Toulouse Blagnac airport, it was a special moment. "This test is a concrete step to designing the smart airport, more innovative, connected and more efficient for our customers. It was only natural that this world first took place at Toulouse airport, the pioneer city of aviation."

The final word goes to Charlatte's CEO, Bastien Devaux: "We are very proud of this world-first operation highlighting in real conditions the added value of our AT135 autonomous tractor, combining the expertise of Charlatte Manutention and Navya. The roll-out on a larger scale of autonomous vehicles should contribute to easing increasingly dense logistics flows." ***ghi***