

Brussels Airport is trialling an autonomous electric vehicle for its cargo operations

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Brussels Airport is currently trialling an autonomous electric tow tractor for transporting cargo trailers within its cargo zone. This pilot project is being carried out as part of the European Stargate programme and is being implemented in collaboration with WFS Cargo and Charlotte Autonom, a partnership between Charlotte Manutention and Navya Mobility. Its aim is to assess how autonomous technologies can help make certain cargo operations more efficient and more sustainable. Safety remains the absolute priority throughout the project, thanks to a strictly controlled framework and the permanent presence of a trained operator on board the vehicle.

In 2024, Brussels Airport explored the potential of a self-driving shuttle for transporting staff at the airport. As part of this pilot project, an autonomous electric tow tractor is being trialled on predefined routes in the cargo zone between warehouses and aprons. Here, the vehicle drives, among other things, from the tarmac to a cargo warehouse.

The objective of the project is to validate the integration of the technology into airport cargo operations, further tailor it to the specific characteristics of this environment and identify the conditions required for larger-scale deployment.

In particular, it will make it possible to study how autonomous technologies can optimise the transport of cargo trailers between cargo warehouses and the airport's operational zones in order to make these operations more efficient, safer and more sustainable, while supporting teams in their daily work.

*"At Brussels Airport, we continue to explore innovative and sustainable solutions that can tangibly strengthen cargo operations," says **Arnaud Feist, CEO of Brussels Airport**. "The aviation and logistics sectors are evolving rapidly. Thanks to this project, we can gain valuable insights into the potential of autonomous technologies, and into what they can deliver in terms of efficiency and sustainability, while people remain key to operations and the highest safety standards are maintained."*

The autonomous tow tractor combines satellite navigation systems and laser sensors, enabling it to perceive its surroundings and identify any obstacles. Its autonomous driving software developed by Navya Mobility maintains its trajectory and navigation in busy, mixed-traffic environment. The vehicle bears the CE marking in compliance with the Machinery Directive, certifying that it meets the safety requirements applicable to its operation.

During this phase of the project, the autonomous tow tractor operates exclusively on

predefined routes, four in total during this test phase. Throughout the project, a trained operator remains on board the vehicle in order to supervise operations and intervene immediately if necessary. The vehicle's speed is limited to 12 km/h when operating in autonomous mode.

The trials are taking place under strictly controlled conditions and during off-peak hours. One of the scenarios tests cargo transports between warehouses and aprons, to assess the vehicle's operation in real life situations. During the trials, the vehicle can tow up to four cargo trailers.

“This project with Brussels Airport once again illustrates the expertise of Charlatte Manutention and Navya Mobility in deploying autonomous mobility solutions within complex and demanding airport environments. Safety and reliability are paramount in the design of our products, whose technology enables fully autonomous operation, without an operator on board, when regulatory conditions allow. Through this project, we are demonstrating our ability to provide concrete, safe and reliable autonomous solutions, tailored to the realities of cargo operations,” says **Jean-Claude BAILLY, CEO of Navya Mobility**.

The vehicle combines a logistics platform developed by Charlatte Manutention and Navya Mobility’s autonomous driving system. Two areas of expertise brought together within their joint venture, Charlatte Autonom, which specialises in autonomous mobility for industrial and airport environments. The trials are being carried out in collaboration with WFS Cargo, one of the cargo operators at Brussels Airport. Several WFS operators are currently being trained to work safely with the autonomous tow tractor.

Together, the partners aim to demonstrate how smart technologies can help make airport operations more efficient while maintaining the highest safety standards.

The autonomous tow tractor trials are part of the Stargate programme, an ambitious project selected by the European Commission to develop and test solutions for more sustainable aviation. Brussels Airport is leading the programme and is working with a diverse consortium of 22 partners, including three European airports and several airlines. Like the other projects developed as part of Stargate, the lessons learned from this pilot project will provide insights for the European consortium and help it develop innovative and sustainable solutions for the aviation industry.

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