

Mail and parcel deliveries in cities go green

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A prototype electric vehicle with a detachable cargo bay. Credit: URBANIZED

A new generation of commercial electric vehicles is emerging to reduce air pollution and congestion in urban areas.

At the end of January 2024, keen-eyed residents of the Belgian capital Brussels may have noticed something different about the familiar

national postal service: it began delivering some mail in an electric vehicle with a detachable cargo compartment.

The move by Bpost is part of a research project to improve city life across Europe by cleaning up road transport and reducing traffic bottlenecks. Called [URBANIZED](#), the project began in January 2021 and will run through June 2024.

New deliveries

Bringing together industry, research and university representatives from seven EU countries, URBANIZED has developed a fully electric vehicle for urban deliveries of postal, retail and other services.

Manufactured in the Italian city of Padua, the vehicle resembles a small lorry or moving van whose detachable cargo section has roll-up doors on three sides. The doors cover almost the whole sides, facilitating access to the bay.

Without the cargo compartment, the vehicle is 4.2 meters long, almost 1.4 meters wide and nearly 2 meters high. It has a range of 200 kilometers and an on-board charger that takes six hours to be replenished.

"The initial intention is to extensively test the prototype in real conditions," said Chris Deweirt, project manager at Bpost.

So-called last-mile deliveries by businesses such as Bpost are responsible for [30% of all city traffic](#). This share rises to 80% during peak hours.

A boom in online shopping has led to packages being transported from warehouses to front doors by trucks, vans and motorbikes. The result is more air pollution and traffic congestion in cities.

Modular matters

A key challenge is enabling a single vehicle to perform two services—something known as modularisation.

This means that, for example, a vehicle can be used as a postal service in the morning and then be disassembled and equipped with, say, a fridge for food delivery in the afternoon.

Modularisation would help offset the relatively high cost of batteries used in road transport, making electric-vehicle deliveries more commercially appealing.

"What is very expensive is the battery system," said Salvador Ruiz, who runs URBANIZED and is a project manager at automotive-engineering company Applus IDIADA in Spain.

He said that having one vehicle with interchangeable cabins can cut costs by half.

The project is championing electric light commercial vehicles that are adaptable and easily swappable.

The prototype being tested by Bpost is a step in that direction.

The overall goal of URBANIZED is to design a small, modular electric vehicle for urban freight transport, or UFT. These would be purpose-designed to improve operations compared with current vehicles of all kinds used for last-mile delivery.

Emission and cost cuts

Ruiz said modular electric UFT vehicles could reduce total [road-transport](#) emissions of carbon dioxide (CO₂) by at least 3%.

And URBANIZED's proposed solutions, when applied at fleet level, could make deliveries at least 51% more affordable than with a standard electric-vehicle fleet, according to the project.

The last mile accounts for 15% to 25% of all vehicle kilometers traveled, according to Ruiz. He said freight contributes between 20% and 40% of urban transport's emissions of CO₂, the main greenhouse gas responsible for climate change.

The EU is seeking to become climate-neutral by 2050 and, to help achieve that goal, has agreed to ban the sale beginning in 2035 of new cars and vans powered by petrol or diesel.

"Adoption of electric light commercial vehicles—and of the URBANIZED vehicle more specifically—would help Europe reduce its carbon emissions," said Ruiz.

Test runs

The Bpost trial is due to last for one month, centers on the company's Brussels mail hub and involves several daily postal rounds in various municipalities.

The vehicle, called ASTRID, is being used on seven of 182 rounds in central districts including Ixelles, Saint-Gilles and Uccle. Bpost said the test has encountered no significant troubles to date.

While the current focus is on logistics in Brussels, the company is weighing the eventual possibility of deploying the URBANIZED prototype more widely in Belgium.

"Bpost naturally also wants to check whether such a vehicle is a suitable long-term option for the delivery of mail and parcels," said Deweirt.

Cargo bikes

While Bpost tries out URBANIZED's prototype in Brussels, a German company called ONOMOTION is further developing an electric vehicle that combines the flexibility of a bicycle with the durability of a van.

Called the Pedal Assisted Transporter, it is a cross between a bike and a capsule-sized car. Narrow and streamlined, the electric cargo bike has a fully covered driver's cab as protection against bad weather.

It was tested in a research project run by ONOMOTION. Called [ONO](#), the project lasted for two years through July 2022 and highlights the EU's goal of supporting new businesses that green the economy and create jobs.

The cargo bike is meant to improve courier, express and parcel transport in city centers by providing an adaptable and environmentally friendly option for last-mile deliveries.

"We identified the last mile of logistics as a crucial area for improvement," said Beres Seelbach, co-founder of ONOMOTION. "It is often the most challenging and costly part of the delivery process."

While the cargo bike is market-ready, the company is working on lowering the cost and making maintenance and repair easier.

Chinese inspiration

Seelbach was inspired to tackle this challenge in 2004 when he was

studying in Chengdu in western China. There, in the fourth-biggest Chinese city, he saw the widespread use—and advantages—of electric-mobility options and wondered why relatively few existed in his native Germany.

After returning from China, Seelbach set up his own electric-vehicle company in 2009. He later founded ONOMOTION with two previous business partners.

ONOMOTION now has clients that include French luxury designer Hermes, global shipper UPS and Belgium-based international courier DPD, all of which use the Pedal Assisted Transporter.

The company recently introduced services in Paris and opened a state-of-the-art production facility in Berlin.

Seelbach said that ONOMOTION plans to enter other markets abroad including Austria and the UK. While the company stands to gain from these plans, he said city residents will too.

"Once our project reaches its full potential, consumers will benefit from cleaner air due to reduced emissions, less congested roads and more efficient delivery services," Seelbach said.

More information:

- [URBANIZED](#)
- [ONO](#)

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