



Case Study 2023

# DHL Express Estonia and Clevon Deliver the Future of Last Mile Delivery Today

CLEVON



## Overview

DHL is the leading global brand in the logistics industry. DHL divisions offer an unrivalled portfolio of logistics services ranging from national and international parcel delivery, e-commerce shipping and fulfillment solutions, international express, road, air and ocean transport to industrial supply chain management. With about 380,000 employees in more than 220 countries and territories worldwide, DHL connects people and businesses securely and reliably, enabling global sustainable trade flows. With specialized solutions for growth markets and industries including technology, life sciences and healthcare, engineering, manufacturing & energy, auto-mobility and retail, DHL is decisively positioned as “The logistics company for the world”. DHL is part of Deutsche Post DHL Group. The Group generated revenues of more than 81 billion euros in 2021. With sustainable business practices and a commitment to society and the environment, the Group makes a positive contribution to the world. Deutsche Post DHL Group aims to achieve zero-emissions logistics by 2050.

In 2022, Clevon introduced the next-generation autonomous robot carrier (ARC), the CLEVON 1, as the first ARC in Europe to offer driverless delivery services on public roads. Since then, on-demand delivery industries like grocery retailers, food and beverage businesses, and logistics providers partner with Clevon worldwide for safe, reliable, and customizable delivery solutions that are environmentally focused – all backed by a proven track record of 15 years of experience in robotics and automation technologies.

## The Challenge

DHL Express Estonia is committed to minimizing its carbon footprint while ensuring efficiency and improving the customer experience in last-mile operations. Acknowledging the challenges of finding sufficient drivers, the company recognizes the strategic importance of embracing innovation in the autonomous delivery industry. Therefore, DHL Express Estonia has been exploring the deployment of autonomous vehicles on a significant scale to substantially reduce the operational costs associated with last-mile delivery.

Furthermore, DHL Express Estonia has been actively seeking to balance cost, energy efficiency, and weight considerations. By adopting lighter transportation solutions, the company can significantly reduce the energy consumption required for self-transportation. Clevon’s ARC weighs only 1170 lbs (530 kg), and its energy consumption in ideal situations is 42 W/h. It was also critical for DHL Express to find solutions that would help the company fulfill its mission to achieve zero emission logistics by 2050.

Besides Estonia being the home country for Clevon, Estonia has been active in implementing innovative transport solutions and creating a framework for autonomous vehicles – so it was logical also for the global group of DHL to start with driverless last-mile deliveries in Estonia.





## The Solution

After evaluating the offerings presented by Clevon, DHL Express Estonia decided to appoint Clevon as its chosen partner for the implementation of commercial last-mile deliveries on the public roads in Tallinn, the capital city of Estonia. In the first phase of the initiative in August 2022, the Clevon ARC, with CargoBox top application, conducted public road tests delivering DHL Express Estonia's internal packages between the company's three offices in Tallinn.

In continuation of the program, 18 commercial customers all over Tallinn volunteered to receive their deliveries with the robot. Clevon also cooperated with the City of Tallinn to deliver DHL packages in the historic Old Town, a UNESCO heritage site with strict entry regulations for regular vans and cars. The

all-electric zero-emission delivery solution Clevon ARC navigated the urban environments and old town narrow streets and pedestrian areas easily, helping to reduce emissions and noise pollution in the area.

In the next phases of the collaboration between Clevon and DHL Express Estonia, the ARC was seen as the regular part of DHL's fleet carrying packages to all customers (B2B and B2C) in the Tallinn region, including private houses, apartment buildings, and business offices. Using the new MultiBox top application enabled DHL to deliver multiple packages with one delivery route. In each phase, the carrier worked from Monday to Friday from morning until evening, charging between the deliveries when needed.





## Unlocking the Full Potential

DHL and Clevon recognized the need to evaluate different service models to optimize last-mile services with robot carriers. At first, Clevon ARC conducted long-distance deliveries. The teams found this inefficient, as the robot drove a large portion of the route without parcels. This is a known problem for today's van and man operations.

Driven by a commitment to enhancing efficiency, the partners tested a new middle-mile/last-mile service model that keeps the last-mile delivery route distances within suitable ranges for fast and efficient last-mile deliveries. (Figure 1).

The regular DHL van did the middle-mile and transported packages from the depot to the designated meeting point. At the meeting point, the courier seamlessly transferred the packages to Clevon's robots, who then delivered the last-mile. This dynamic collaboration reduced the kilometers traveled with empty cargo, minimizing wasted resources and increasing overall operational efficiency. The testing continues, and the shared lessons help partners achieve the most efficient model for optimizing costs in last-mile delivery carrier utilization and enhancing service quality and user experience.



Figure 1. New middle-mile/last-mile service model



## The Results

The outcomes of more than 12 months long service have been outstanding, and the ARC has achieved a lot of benefits for DHL Express Estonia.

### Reliable ARC Deliveries:

# 200+

days of operation

# 1200+

parcels delivered

# 4400+

miles (7000+ kilometers) driven  
in all weather conditions



# 0

safety incidents

# ∞

smiles created :)



### Customizable

CLEVON 1 carrier was covered with DHL branding. A yellow color brought much attention and was noticed while traveling on public roads.

### Insights

Gathered valuable practical insight into the topics related to the implementation of ARCs – regulative as well as business process tweaks, customers' reactions and expectations, etc. Also, many ways for further improvement and optimization were mapped through the pilot.

### The Future Cooperation

The cooperation has grown from a Proof of Concept to a partnership with growing ambitions.



### Customer Testimonials

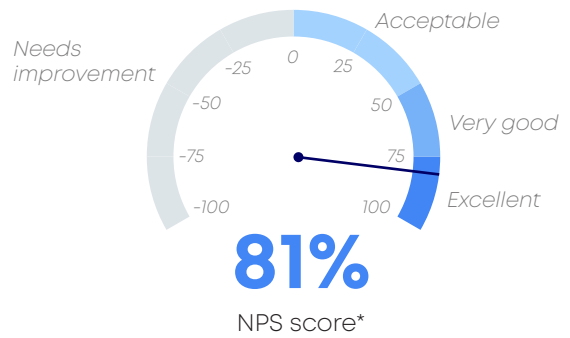
*"Everything went well, and my daughter and I managed to handle the receipt of the shipment from the robotic courier excellently."*  
Sergei

*"I really enjoyed receiving the shipment with the robotic courier; everything was easy and understandable, and fast."*  
Aleksandra

*"The DHL robotic courier was quite cute, and I really liked your service offering. I'm also willing to receive shipments with the robotic courier in the future."*  
Keit

*"Receiving a shipment with a parcel robot is interesting and different, and I definitely would like to have this experience again in the future."*  
Oliver

*"The service worked very smoothly, and certainly, the robotic courier could continue delivering shipments in the future."*  
Kaie-Liisi

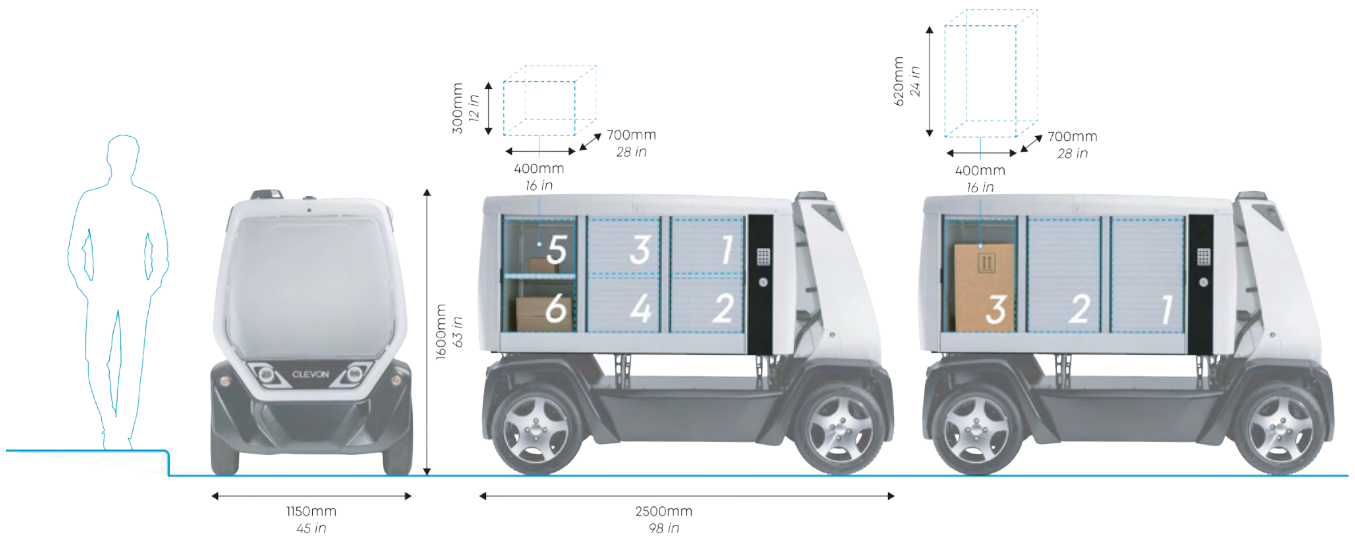


\*Net Promoter Score (NPS) is calculated on a scale of 0 to 10 by subtracting the percentage of detractors (below 7) from the percentage of promoters (9 or 10) based on responses to the question of recommending a product or service, resulting in a score that ranges from -100 to +100.





## CLEVON 1 Technical Specs



Length	2470 mm (97 in)
Width	1150 mm (45 in)
Height	1550 mm (61 in)
Net weight	320 kg (700 lbs)
Gross weight	530 kg (1170 lbs)
Speed	50 km/h (31 mph)
Payload	60 kg (133 lbs)