

# Autonomous shuttle

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## 01 BASIC PROJECT INFORMATION

### Project name

Autonomous shuttle

### Partners involved

Brussels Airport Company, Ohmio

### Implementing airport / site

Brussels Airport

### Period tested

2024 - 2025

### Project lead / contact

Brussels Airport Company

## 02 OBJECTIVE

### What are we trying to solve or tackle with this project?

Assess whether electric autonomous shuttles can safely, reliably, and acceptably support staff mobility in airport operations without adapting the existing infrastructure.

The project evaluated vehicle behaviour, safety, operational integration, regulatory readiness, user acceptance and organisational readiness while exploring autonomous mobility solutions for future staff, passenger and logistics transport

### Success criteria:

Validate safe autonomous operations in both airside and landside environments, complete meaningful autonomous kilometres, collect stakeholder feedback, assess integration into airport operations and identify requirements, barriers and future deployment scenarios.

## 03 APPROACH (HOW WE TESTED)

### Test set-up & method

An electric OHMIO Lift autonomous shuttle operated on predefined airside and landside routes with a trained safety operator onboard at all times.

Deployment followed a staged approach including vehicle introduction, segregated testing, route validation, operational staff transport and remote operation trials.

A CONOPS, risk assessments, training, communication campaigns and stakeholder engagement supported safe deployment.



### Data & measurement

KPIs included autonomous kilometres, energy consumption, operational observations, safety performance and stakeholder acceptance. The demonstrations completed over 1900 autonomous kilometres combined. The airside user survey showed high awareness of the service among non-users (90%), with no respondents indicating a lack of trust in the technology.

### Risks & mitigations

Risks included emergency stops, interaction with mixed traffic, weather exposure, technical failures, ICT and cybersecurity issues, operational incidents and regulatory constraints.

Mitigation measures included phased deployment, safety operators, route and vehicle risk assessments, training, detailed operating procedures, stakeholder involvement and continuous monitoring

### Limitations

The pilots were designed as learning-focused proofs of concept rather than commercial transport services. Adoption depended strongly on route relevance, frequency, operational fit and staffing. Wider deployment remains constrained by regulatory requirements, operational maturity, liability considerations and business case viability.

# 04 RESULTS & IMPACT

## Key results

The autonomous shuttle completed more than 1,900 km in autonomous mode across airside and landside demonstrations, demonstrating that autonomous staff transport can operate safely in controlled airport environments when supported by a clear operational concept, staged validation and onboard safety supervision.

User feedback showed high awareness and no significant trust barrier towards the technology.

The main barriers identified were operational rather than technological, including route relevance, service frequency, integration with existing transport solutions and interaction with mixed traffic.

Environmental analysis indicated substantial greenhouse-gas reductions compared with an equivalent diesel shuttle. Future deployment will depend on service design, operational maturity, regulatory clarity and business case viability

|                                     | Airside  | Landside |
|-------------------------------------|----------|----------|
| Autonomous km                       | 1,455 km | 461 km   |
| CO <sub>2</sub> reduction vs diesel | 75.90%   | 82.50%   |



# 05 RATINGS (QUICK ASSESSMENT)

## Deployment Approach

How standardised is the solution: can it be deployed off the shelf, or does it require extensive customization?

Off The Shelf  Custom-Built

## Investment Magnitude

From low-cost deployment to major investment.

Low Investment (less than €10k)  High Investment (more than €15mio)

OPEX  CAPEX

## Sector Readiness

From non-existing or emerging standards, regulations, and certification pathways to fully established industry practices.

Emerging Framework  Established Framework

## Innovation Maturity

How does the solution score in terms of maturity, from low TRL experimental/pilot-stage to high TRL market-ready.

Experimental  Market-Ready

## Operational Impact

Does the innovation deliver targeted improvements or rather drastically transform processes and/or operations.

Incremental Improvement  Transformational Change

## Notes

For other airports, start with a clearly defined route, robust safety governance, a staged deployment approach and strong stakeholder involvement.

Acceptance depends not only on trust in autonomous technology, but also on service frequency, route coverage, operational fit and competitiveness with existing transport solutions.

While the demonstrations confirmed technical feasibility and positive stakeholder perceptions, wider deployment remains constrained by evolving regulations, liability requirements, supervision concepts and business-case considerations.

# 06 NEXT STEPS / RECOMMENDATION

## Recommendation:

Continue staged autonomous shuttle deployments while working with regulators to establish a clear approval pathway from onboard safety supervision to remote supervision and ultimately fully autonomous operations.

## Next steps:

- Continue pilots to generate operational and safety evidence.
- Collaborate with regulators to define certification and approval frameworks for autonomous operations.
- Demonstrate remote supervision as an intermediate step towards full autonomy.
- Validate business cases and operating models without onboard safety operators.
- Progress from supervised testing to scalable autonomous mobility services.

## Links:

<https://pressroom.brusselsairport.be/en-brussels-airport-tests-autonomous-shuttle>