Stargate
within EU Green Deal

Project Fact Sheet

Electric hydrant fuel dispenser

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement GA101037053

01 BASIC PROJECT INFORMATION

Project name	Electric hydrant fuel dispenser
Partners involved	Skytanking
Implementing airport / site	Brussels Airport
Period tested	2024
Project lead / contact	Skytanking

02 OBJECTIVE

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

Demonstrate whether a fully electric, factory-produced hydrant fuel dispenser truck can replace a diesel dispenser in aircraft refuelling.

The project targets lower diesel use, CO_2 emissions, local exhaust pollution and noise while maintaining safety and reliability around aircraft fuel operations.

Success criteria

Safely operate the electric dispenser in live refuelling, compare it with a Euro 6 diesel baseline, quantify diesel and CO_2 savings, and capture lessons on charging, battery capacity and seasonal performance.

03 APPROACH (HOW WE TESTED)

Test set-up & method

The electric dispenser was deployed in live hydrant refuelling operations.
Monitoring compared electric energy use of about 1.5 kWh per refuelling with a diesel baseline of 0.7 L per refuelling.
The test also assessed charging needs, operational reliability, safety, winter performance and working conditions.



Data & measurement

KPIs:

- Diesel saved (L) - baseline: 0.7L per refeulling
- CO_2 reduction (ton) - baseline: 14.9 ton CO2e emitted
- Noise reduction (dB(A))
- Working conditions

Risks & mitigations

- High-voltage battery safety near aircraft/fuel
- Need for fire-department/bodybuilder coordination
- Colder-weather energy use
- Charging availability
- Transferability to larger airports with longer routes or fewer charging windows

Limitations

Air quality and noise benefits were qualitative because no direct pollutant or comparable dB(A) measurements were taken.

Winter consumption can be >1.5x summer use, and BRU's 80 kWh battery fit may not suit all airports.

04 RESULTS & IMPACT

The following key findings can be mentioned:

The electric hydrant fuel dispenser truck proved that electric aircraft refuelling support can work in live airport operations. It completed more than 12,200 refuellings, avoiding about 8,400 L of diesel.

Compared with the diesel baseline, gross emissions would have been 22.7 ton CO_2e; electric operation caused about 2.41 ton CO_2e, giving a net reduction of 20.31 ton CO_2e.

Operators also benefit from no local diesel exhaust and lower engine noise.

Key lessons concern battery sizing, charging strategy, cold-weather consumption and safety governance for high-voltage equipment near aircraft.



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 airport operators, this is a strong electrification use case because duty cycles are predictable and refuelling is frequent. Replication should start with route distance, daily refuelling volume, charging windows, winter energy needs and emergency/safety procedures.

06 NEXT STEPS / RECOMMENDATION

Recommendation

Scale where operating profiles fit: electric dispensers are viable, but battery size and charging strategy must be airport-specific.

Next steps

- Analyse daily routes, refuelling volumes and charging windows before procurement.
- Include fire, safety and bodybuilder input early.
- Monitor winter/summer energy use.
- Add before/after air-quality and noise measurements in future rollouts.
- Optimise the winter consummation with good practises
- Increase the number of EV units
- Adapt the parkings and install one charger per EV