Interreg Baltic Sea Region Programme project

"BSR Hydrogen Air Transport – Preparation of Baltic Sea Region Airports for Green Hydrogen" ("BSR HyAirport")

Group of Activities 2.3

RIX Riga Airport

Report on hydrogen powered apron snow removal HYZON fuelcell truck and VAMMAS towable sweeper-blower testing at RIX Riga Airport on February - March 2026



2026 March

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Introduction

This test report provides an overview of the testing process for hydrogen powered truck and sweeper-blower used in ground operations. The purpose of this report is to evaluate the overall performance, hydrogen consumption, and operational reliability of the vehicle under real working conditions. Particular attention is given to system behaviour during extreme weather conditions and the interaction between the battery and hydrogen fuel system. The report also aims to assess the effectiveness of the equipment during test drives while performing standard ground support tasks.

Device Information

Field	Value
Device Name:	Fuel cell truck in combination with sweeper-blower
Manufacturer:	Hyzon Motors Inc. Vammas – Vitera Oy
Model:	Hyzon 250 SB3600

General testing data

Preparatory phase for testing: 01.12.2026-16.02.2026

Preparatory phase description: Arranging the delivery of equipment, dealing with administrative questions, including safety management system risk assessment, harmonisation and signing of user contract between Lessor (Zerobus OU) and the testing organisation (SJSC “Riga International Airport”).

Test Dates: 16.02.2026-06.03.2026

Location: Latvia, Mārupe municipality, RIX Riga Airport airside and engineering-technical zone

Test Conducted by: SJSC “Riga International Airport” (RIX Riga Airport)

Involved personnel:

- Mārtiņš Grels - project coordinator
- Dmitrijs Bondars – project coordinator deputy

- Mārtiņš Misjūns – project testing controller
- Aivars Bukarts – equipment testing operator
- Oļegs Bulgakovs - equipment testing operator
- Dzintars Rumpis - equipment testing operator
- Andris Krieviņš - equipment testing operator
- Juris Kurmaļevs - equipment testing operator
- Rainers Māliņš - equipment testing operator
- Ilze Salna – Media coordinator
- Pāvels Ždanovs – reporter – Head of Technical Unit

Testing supported by:

Zerobus OU which provided Hyzon Truck for testing at RIX Riga Airport. The truck was rebuilt attaching the snow plow and necessary technical parts and electronics to connect with the sweeper-blower.

Latvian Hydrogen Association which provided consultations and support in transporting the equipment.

Finnavia Corporation provided VAMMAS sweeper-blower for testing attaching it to the Hyzon truck. This VAMMAS sweeper-blower was refurbished before tests by Vytera Oy.

The refuelling service provided by:

SIA “AI Cooperation” according to procurement contract No. D-26-20.

Delivery of refuelling equipment on 18.02.2026. All equipment taken back to service provider on 10.03.2026.

Objective

The hydrogen powered Hyzon Truck in combination with VAMMAS sweeper-blower tested in extreme weather conditions, heavy snowfall and low temperatures, clearing the road surface of snow and ice on the apron, aircraft manoeuvring area and runway. The equipment was operated in low temperatures under and above 0 degrees and detected one technical issue.

Testing Conditions

Ambient Temperature:

Test day	Temp. range C
19.02.2026 10:50 – 11:40	(-7.5) – (-6.7)
20.02.2026 13:00 – 21:45	(-3.5) – (-3.0)

21.02.2026 09:00 – 09:30	(-5.8) – (-5.2)
24.02.2026 09:00 – 11:00	(-0.5) – (-0.8)
25.02.2026 16:00 – 17:40	(-1.8) – (-3.7)
26.02.2026 20:20 – 21:20	(-0.4) – (-0.2)
27.02.2026 14:00 – 15:00	3.7 – 3.6
28.02.2026 10:00 – 11:00	3.6 – 4.1
01.03.2026 14:45 – 15:30	6.4 – 7.5
02.03.2026 11:00 – 12:00	2.2 – 3.0
03.03.2026 10:00 – 21:30	0.1 – 3.4
04.03.2026 19:30 – 21:00	2.9 – 3.4
05.03.2026 12:20 – 21:30	5.0 – 1.9

Data source: Latvijas vides, ģeoloģijas un meteoroloģisjas centrs, VSIA

Weather Conditions:

Snow cover thickness

Test day	Snow cover (cm)
19.02.2026 10:50 – 11:40	25.00
20.02.2026 13:00 – 21:45	24.00
21.02.2026 09:00 – 09:30	24.00
24.02.2026 09:00 – 11:00	25.00
25.02.2026 16:00 – 17:40	26.00
26.02.2026 20:20 – 21:20	24.00
27.02.2026 14:00 – 15:00	23.00 – 22.00
28.02.2026 10:00 – 11:00	16.00
01.03.2026 14:45 – 15:30	9.00
02.03.2026 11:00 – 12:00	5.00
03.03.2026 10:00 – 21:30	4.00 – 1.00
04.03.2026 19:30 – 21:00	0.00
05.03.2026 12:20 – 21:30	0.00

Data source: Latvijas vides, ģeoloģijas un meteoroloģisjas centrs, VSIA

Test Parameters

Total hydrogen consumption during the testing period due to time and refuelling time limits was 31,01 kg of hydrogen.

Mileage during tests - 179 km.

Average hydrogen consumption rate (kg per kilometre): 17,32 kg/100 km.

Total testing time – 40 h 40 minutes

Operational Performance description

General trucks functionality

As a result of testing, Hyzon truck showed good performance and results, and considering weather conditions and the specifics of equipment, low hydrogen consumption was detected, but at low temperatures (under -10C) it was reported that the battery is discharging faster than the hydrogen can charge it.

Mileage during testing:

179 kilometres during tests

Initial mileage: 9110 km

Final mileage: 9289 km

Observations & Findings

During the testing period, the hydrogen powered truck demonstrated stable and generally efficient performance under normal operating conditions. The vehicle showed relatively low hydrogen consumption considering the nature of operations and environmental factors.

However, several important observations were identified:

- Temperature sensitivity: At low temperatures (below -10C), the system performance decreased. It was observed that battery discharged faster than it could be replenished by the hydrogen fuel system, indicating reduced efficiency in cold weather conditions.
- Energy management balance: The imbalance between battery discharge and hydrogen energy generation suggests that the current system may require optimization for extreme climates, particularly in terms of thermal management and energy distribution.
- Operational efficiency: Despite the challenges in low temperatures, the truck maintained overall functional reliability and completed the test mileage of 179 km without critical failures.
- Hydrogen usage (31.01 kg over 179 km) indicates that consumption rates may vary depending on environmental conditions and operational load, highlighting the importance of adaptive energy management strategies.

Refueling Observations:

The refuelling was provided by contracted experts (SIA "AI Cooperation").

During the testing period, an issue related to hydrogen refuelling was observed. It was identified that the refuelling process duration increased as the hydrogen level in the

storage tank decreased. In the other words, the lower the remaining hydrogen in tank, the longer it took to complete the refuelling of the vehicle.

The behaviour may indicate limitations or inefficiencies in the refuelling system, potentially related to pressure differences, flow rates, or system configuration. Further investigation is recommended to determine the root cause and to optimize the refuelling process for consistent performance regardless of tank levels.

Conclusion & Recommendations

The conducted testing confirmed that the hydrogen powered truck can perform standard ground support operations with overall stable and reliable performance. The vehicle successfully completed the planned test mileage, demonstrating functional suitability under normal operating conditions and acceptable hydrogen consumption level.

However, several limitations were identified during the testing period. The system showed reduced efficiency at low temperatures (below -10C), where the battery discharged faster than it could be supported by hydrogen fuel system. This indicates a need for improved energy management and thermal control in cold climate conditions.

In addition, inconsistencies in the hydrogen refuelling process were observed. Specifically refuelling duration increased when the hydrogen level in the storage tank was lower, suggesting potential inefficiencies related to pressure management or refuelling system configuration.

Recommendations for future testing

Improve cold weather performance by optimizing battery efficiency, thermal management systems, and overall energy balance between the battery and overall energy balance between the battery fuel cells.

Enhance refuelling system performance to ensure consistent refuelling times regardless of tank fill level, potentially through pressure regulation or infrastructure adjustments.

Conduct additional testing under varied environmental conditions to further validate system reliability and identify operational limits.

Optimize energy management strategies to ensure stable performance across different workloads and temperatures.

Conclusion

While the hydrogen powered truck demonstrates strong potential for operational use, targeted improvements required to ensure reliability and efficiency in challenging environmental conditions and to streamline the refuelling process.

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