

Autonomous Snow Removal Project

Safer and more sustainable airport maintenance – Valtra and Nokian Tyres join forces in autonomous snow removal project



Robotic vacuum cleaners and lawnmowers are already reality, but can the same idea be applied to a 7-ton machine clearing an airstrip from snow? To show it can, Valtra and Nokian Tyres partnered up with three other Finnish companies in March 2019 for a joint proof-of-concept project at the European Union's northernmost airport. Two Valtra T254 Versu equipped with Nokian Hakkapeliitta TRI tires and each pulling a 4.5 m wide sweeper blower autonomously cleared the runway at Ivalo airport in Finnish Lapland.

The background

Winters in Finland can be very long, with many parts of the country covered permanently in snow for 150 and up to 200 days a year. "As an airport operator we need to create summer conditions on Finnish runways even if it's the middle of the winter. To meet this challenge we are constantly searching for new solutions that support our world-class snow-how", says Henri Hansson, Technical Director of Finavia, the organisation responsible for maintaining the majority of Finnish airports.

This is how the idea for the project "Runway Snowbot" was born between a group of Finnish top experts, each specialists in their own field, and each with a deep understanding of Nordic climatic conditions: Valtra, Nokian Tyres, airport sweeper blower manufacturer Vammas (Fortbrand), the world's most sustainable energy company Neste and Finavia.

Towards more sustainable runway maintenance

"Runway Snowbot is a proof of concept, showing that by combining the know-how of five Finnish companies, airport runways can be cleared in a new way - more safely, more sustainably, more economically and more comfortably", says Matti Tiitinen, Senior Brand Business Manager, Valtra Scandinavia, Baltics & Western and Central Europe.

Tractor specialist Valtra has been working on auto-guided tractors for several years. Together with Nokian Tyres, both brands set the speed record for unmanned snow-ploughing in 2018 with an autonomous T254 Versu equipped with Nokian Hakkapeliitta TRI tires. For project "Runway Snowbot" Valtra SmartTouch features such as auto-guidance with centimetre-level precision, Isobus implement control provided the technology needed for the controlled clearing of pre-defined routes.

With Nokian Hakkapeliitta TRI tires, the world's first tractor winter tire, the autonomous snow-clearing project has got the grip and accuracy needed for safe driverless tractor operation - while also being gentle to the tarmac. "Without the driver carrying out instinctive corrections for steering and throttle, the tires must offer very predictable handling", says Toni Silfverberg, Head of Sales and Marketing, Nokian Heavy Tyres Ltd. "What's more, the operation without studs, the low rolling resistance of Nokian Hakkapeliitta TRI and our sustainable manufacturing process all add to the overall economy and sustainability."

Both the Valtra and the Vammas sweeper blower were fuelled with Neste MY Renewable Diesel which reduces greenhouse gas emissions approximately 90% compared to fossil diesel.

The results

The tests carried out in the winter 2018-2019 proved to be successful for all participating parties. Although not yet quite ready for commercial implementation, the project paves the way for new way of thinking.

"Tractors are an interesting alternative for airport fleets where working widths of 4.5 meters are sufficient. Tractors are considerably less expensive in total cost of ownership than trucks and much more versatile as they can be used for other tasks such as snow-blowing or mowing during the summertime", comments Tero Santamanner, Finavia Machine Equipment Specialist.

"Project Runway Snowbot was the second project on autonomous operation and seamless play between Valtra tractors and Nokian Tyres", comment Matti Tiitinen and Toni Silfverberg. "The future will bring more and more autonomous applications, and we are ready for the new demands they bring."

More information

Project website, photos and videos:

www.runwaysnowbot.com

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