

Alstom takes another step towards Autonomous Train Operation in the Netherlands

- Alstom has tested Elta Systems Obstacle Detection System (ODS) with infrastructure manager ProRail and rail freight operator Lineas in the Netherlands
- The next steps, to be finalised this summer, will be to test ODS in combination with Automatic Train Operation (ATO) to pave the way for GoA₄ in freight

13 April 2022 – Alstom, global leader in smart mobility, and its partner Elta Systems and its smart mobility spin-off NIART have successfully performed ODS tests in Oosterhout, near the city of Breda in the Netherlands. These tests, which were conducted with Dutch infrastructure manager ProRail and rail freight operator Lineas have demonstrated that the ODS installed on-board the locomotive is able to detect obstacles up to 1,000 metres away in all-weather and visibility (day and night) conditions. It can be operated as a Driver-Assistance-System, as well as a fully automated system in conjunction with Alstom's AutoPilot component. These tests were performed during the ongoing ATO tests on shunting trains in GoA level 4 of automation.

"Thanks to ODS and NIART's expertise, the locomotive is able to detect both large obstacles such as a car and smaller ones such as a rabbit or human being, both during the day and at night," said Abel Poelaert, Customer Director Alstom Benelux. *"The tests we performed helped us to successfully resolve some small issues. The results are very encouraging and exciting."*

NIART's ODS is a perception system based on an innovative High Resolution Digital Radar fused with Multi-Spectral Electro-Optics backed by powerful Classical and Machine Learning algorithms to detect and classify obstacles on the train route at 1,000 metres distance, in all weather and visibility conditions. The system is a complete self-contained on-board solution able to provide the locomotive driver with an early alert and actionable insights to ensure safety and reliability of the route, especially in harsh weather conditions.

The game changer is the radar, that scans the path ahead as fast as 200 times a second and utilises high-resolution imaging technics to analyse the scene and detect obstacles further than one kilometre away, even when the visibility for driver and optic-based systems is degraded. Elta Systems' experience in imaging techniques used in Ground and Space-Borne systems is ported to the automotive world, to solve one of the major challenges of railway automation - reliable operation in all weather conditions.

Paving the way for smart and green mobility

The next phase of the pilot project in the Netherlands, which will be performed in the coming weeks, will be to test ODS in combination with ATO. The final goal is to have a shunting locomotive which will drive completely on its own, to fully integrate ODS with ATO systems and therefore, to enable GOA₃₋₄ operation for future autonomous trains. These next test phases will be carried out before the end of the summer.

These tests performed with NIART, ProRail and Lineas are fully in line with Alstom's strategy to evolve towards smart and green mobility. Alstom has demonstrated the advantages of ATO especially on metro systems around the world. Experience shows that automation leads to capacity increase, cost reduction, energy savings and flexibility of operations. Automation in rail is a way for operators to increase the capacity on their networks without making expensive changes to the infrastructure.

About Alstom Leading societies to a low carbon future, Alstom develops and markets mobility solutions that provide the sustainable foundations for the future of transportation. Alstom's product portfolio ranges from high-speed trains, metros, monorails and trams, to integrated systems, customised services, infrastructure, signalling, and digital mobility solutions. Alstom has 150,000 vehicles in commercial service worldwide. With Bombardier Transportation joining Alstom on January 29, 2021, the enlarged Group's combined proforma revenue amounts to €14 billion for the 12-month period ended March 31, 2021. Headquartered in France, Alstom is now present in 70 countries and employs more than 70,000 people. www.alstom.com

About Elta-Niart

Founded in 1967, ELTA Systems Ltd., a group and subsidiary of Israel Aerospace Industries, is one of Israel's leading innovative defense companies and a global leader in the field of Intelligence, Surveillance, Mission Aircraft, Target Acquisition and Reconnaissance, Early Warning and Control, Homeland Security (HLS), Autonomous Ground Vehicles, Cyber Defense and Intelligence applications. The railway automation market's growing needs for high-end technology solutions has led ELTA to establish NIART, a spin-off venture, to offer commercial solutions to this market. NIART is leveraging the technological backbone and the know-how of the multidisciplinary systems design to develop a cutting-edge Radar-Empowered Long Range Perception Systems for railway. <https://www.iai.co.il/about/groups/elta-systems>

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