Advancing All-Weather Autonomous Logistics: Insights and Future Prospects for Industrial Trucks

SIS41

Dr. Sami Koskinen
Senior Scientist
VTT, Finland

AWARD
Scaling autonomous logistics

AWARD : All Weather Autonomous Real logistics operations and Demonstrations
Project Coordinator : EasyMile **Partners :** 29 **Budget:** €26,4m
Timeline of the project : January 2021 – 2024

- Ambitions:
    - Develop a unique automated driving architecture with all-weather 24/7 capability
    - Deploy fully automated heavy-duty vehicles in scalable and replicable pilots
    - Integrate a new fleet management system for optimized logistics flows.
- Demonstrations:
    - Hub-to-hub shuttle service between BRP-Rotax engine factory and DB Schenker logistic hub, Austria. A related demonstration on automated loading/unloading with a forklift.
    - Automated baggage tractor at Oslo Gardermoen airport, Norway
    - Container transfer operations and automated boat loading in Rotterdam port terminal, the Netherlands

Automated Industrial Trucks - Lessons

- Several studies worldwide, where potential end-users are testing automated transfers of a couple of kilometres. Their questions: <u>price and reliability</u>

- Some infrastructure support needed; AI doesn't solve all

- Large truck automation issues: narrow roads, lack of safety zones

- Keep routes clear and coordinate with manual ops, otherwise there will be obstacles on route

- Moderate rain and night-time OK, but heavy rain stops AVs. Snow requires clearing the route. Protecting sensors is a research topic.

- If you can automate most days but not all, how does an industrial site prepare for days when many human drivers are suddenly needed?

Automated Industrial Trucks - Future Directions

- Airports, ports and sites with large fleets: Ideal candidates due to existing fleet management

  - Smaller sites could make contracts with 3rd parties about remote operation of a truck?

- Other automation is needed to get more benefits: automated hitching of trailers, automated loading/unloading cargo, deeper integration

- Currently, the most difficult routes remain manually driven. More versatile vehicles for complex tasks and environments within the next 5 years? For example, driving inside a ship to a second floor

- Addressing mathematical traffic laws and required safety margins, these cannot be personal opinions of a programmer