

TarkBox - Smart Waste Monitoring System for Smarter Cities

ABSTRACT

The developed solution is an integrated system for monitoring the fill levels of underground and semi-underground waste containers and organizing their optimal emptying. Based on IoT technologies, the solution combines intelligent sensors and an internet platform to collect, process, and analyze data in real time. The system tracks container fill levels, location, temperature, and environmental parameters, enabling efficient, cost-saving, and environmentally friendly waste collection and transport.

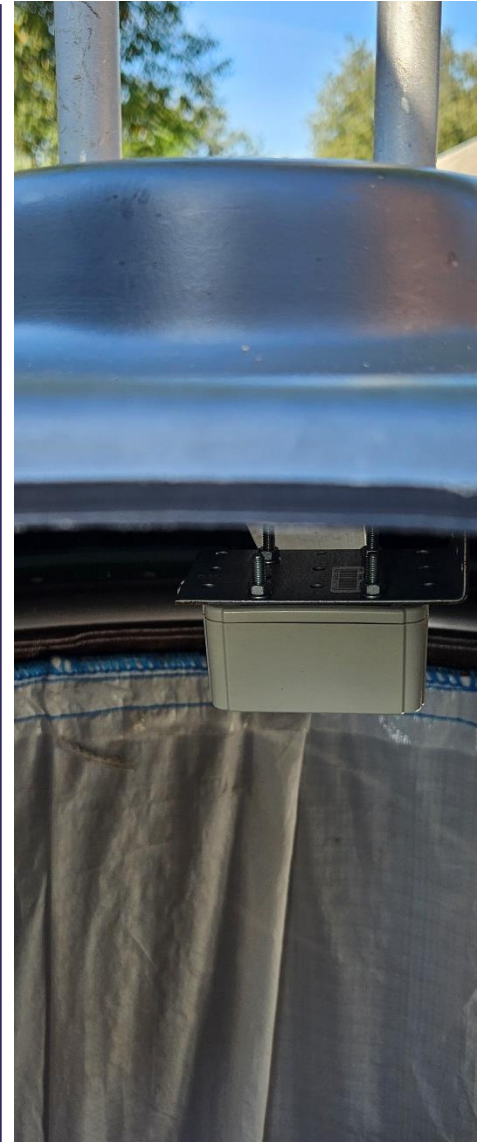
SUGGESTED USES

Municipal waste management for cities and local governments.
Private waste collection companies seeking route and cost optimization.
Industrial and commercial facilities with large-scale waste handling needs.
Residential areas using shared underground containers.
Integration into smart city and sustainability programs.
Other tanks and containers where it is necessary to monitor the fill level and environmental parameters such as temperature, humidity, air pressure, etc.

ADVANTAGES

STOP GUESSING AND START SAVING!

Efficiency & Cost Reduction: Enables demand-based waste collection, reducing unnecessary transport and operational costs.
Environmental Benefits: Minimizes CO₂ emissions and fuel consumption through optimized collection routes.
Improved Hygiene & Safety: Prevents container overflow, reduces litter, pests, and health risks.
Real-Time Monitoring: Immediate access to container status for better decision-making.
Scalability & Flexibility: Modular platform adaptable for different regions, waste types, and client needs.
Transparency & Control: Digital overview of containers for planning, maintenance,



ADDITIONAL INFORMATION

State of development

TRL 7 - Fully developed and tested in real-world conditions with partners. The solution has demonstrated clear value and is ready for commercial rollout.

Intellectual property info

The system has been co-developed by TalTech Virumaa College Innovation Centre (VIDRIK), AS Telia, and the Kohtla-Järve Municipality. Core components are protected through institutional IP frameworks, and a broader strategy is being aligned with commercialization plans.

Media/miscellaneous

The project has been covered in Estonian media (e.g. [TalTech News](#)). A demonstration platform is available at [tarkbox.ee](#).

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