**WASTE DISPOSAL MANAGEMENT AND INTELLIGENT LOGISTICS**

*Application for waste disposal - Digital services for intelligent monitoring of container levels and logistics route optimization.*

**SUMMARY**

The maintenance-free Z-Node sensors from Zolitron collect vibration data from waste containers. These are analyzed with AI in the Z-Cloud Analytics platform. The levels can be reliably determined in this way. Working closely with codestryke, an interactive analysis platform was developed to visualize the levels for collection optimization.

**CURRENT SITUATION**

Recycling and waste collections used to follow fixed plans (routes) or were prompted by customer requests. This causes unnecessary traffic and high logistics costs. Cities suffer from container issues and pollution caused by the traffic. Both should be reduced by intelligent planning of collections and adapted routes for waste vehicles.

**PROJECT DESCRIPTION**

The aim of the joint project involving Zolitron and codestryke was to interactively analyze and visualize data about the levels in containers in order to improve efficiency in waste logistics.

**REFERENCES**

www.zolitron.com  
www.codestryke.com

**INDUSTRY 4.0 FEATURES**

- Intelligent sensor technology with AI  
- Wireless, self-managing communication  
- Digital route/logistics optimization  
- Analysis platform  
- Micro-energy harvesting  
- Retrofit hardware

**STANDARDIZATION APPROACHES**

Data is communicated from the field (the level sensors) to the cloud by means of radio connectivity and transport protocols (MQTT). A standardized decentralized ad-hoc connection using an administration shell and IDS connector could reduce infrastructure costs.

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**SOLUTION**

Zolitron Z-Node sensors indirectly determine the level by analyzing the vibration patterns that occur when items are added. AI algorithms use the vibration patterns to determine the level individually for each container. These indirect measurements are efficient and reliable enough to allow full roll-out. Asset management is carried out in the Z-Node Analytics platform – the levels in the containers are displayed and the ideal collection routes can be calculated.