

# Driving Chemical Waste Management with IoT Solutions

Industry: Waste Management, Logistics, Manufacturing

Product: SRG-ADIO

## Introduction

Many industries and manufacturers produce chemical waste. Disposing of this waste safely is vitally important to helping protect the environment, which is where chemical waste management companies and facilities come in. They help to process, dispose, and sometimes even recycle chemical waste, helping reduce or eliminate the impact of industries on local habitats. However, transporting the chemical waste can create several key challenges.



For many industries, keeping track of each drop of chemical waste is important to ensure both proper disposal and prevent accidental spills or leaks. Additionally, chemical waste management facilities often contract transportation, so it is crucial to ensure drivers are completing their tasks and not illegally dumping chemical waste, damaging the environment and potentially leaving both the waste management company and their customers liable for large fines and the cost of cleanup.

One chemical waste management company is implementing an IoT based solution to help track vehicles and loads, ensuring chemical waste is being handled safely and delivered to the correct treatment facilities. Their goal is to not only catch leaks and illegal dumping, but also provide information to their customers so they know the chemical waste is being handled with proper care.

The company faced several key challenges in designing, building and implementing their IoT system. They turned to AAEON, who together worked closely with the company to identify these challenges and key pain points, and produce a solution to meet their requirements. The SRG-ADIO Edge IoT Gateway was selected as the solution for the task.

## Challenges

To address the needs of the project, AAEON worked closely with the waste management company to identify key challenges and obstacles. To be effective, the company needed a system with ADC functionality, built-in support for GPS and cellular communication, and a compact size to easily install onto vehicles. The SRG-ADIO helped meet and surpass each challenge.

### Built in Functionality

Connecting with the sensors on each truck requires an Analog-to-Digital Converter (ADC) in order to process the signal for the company's cloud service. Adding ADC converter modules adds complexity to the system, and possible additional failure points for maintenance. The SRG-ADIO features an on-board ADC module, allowing the system

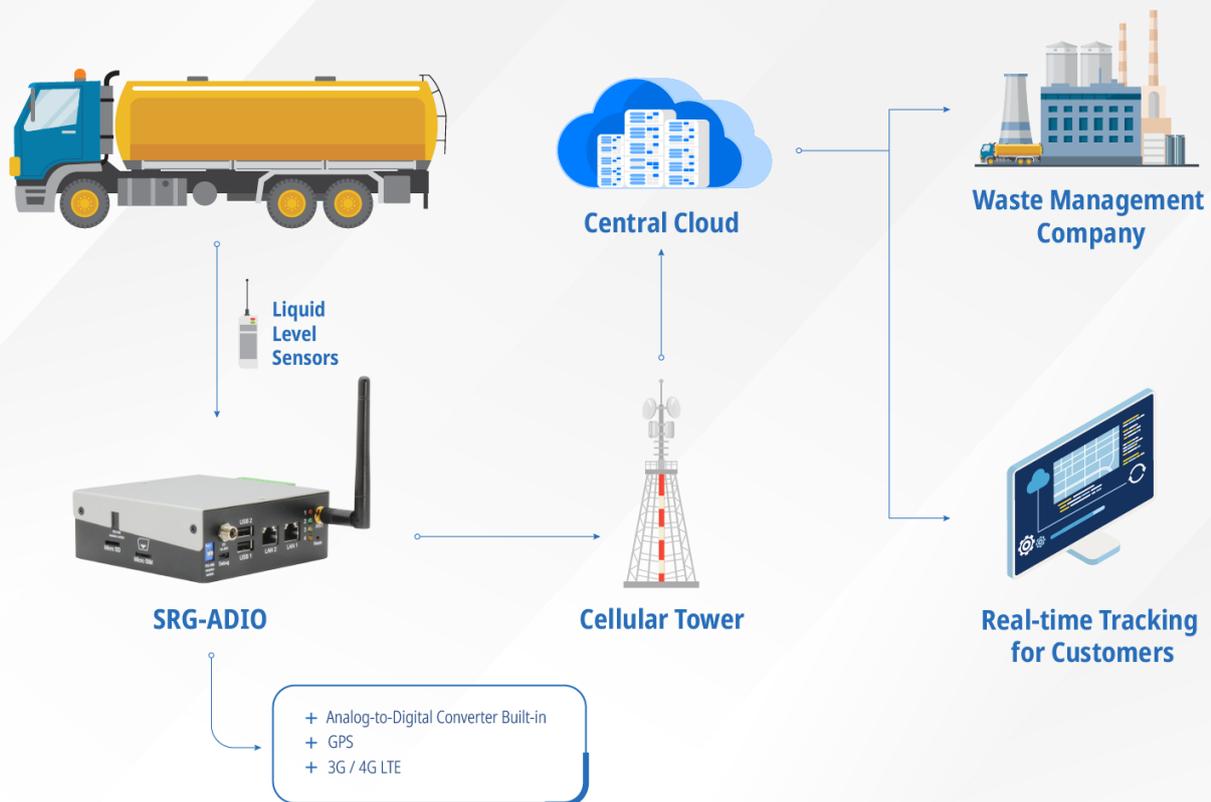
to handle converting the signals without additional external hardware.

### Cellular Communication

In order to effectively track and monitor the status of each vehicle and their payloads, the company needs a system that can connect with cellular networks. With support for 3G and 4G LTE, the SRG-ADIO can provide real-time tracking and monitoring, ensuring vehicles are on track and their cargo is safe.

### Compact Size

Installing a system onto a vehicle often requires careful consideration for location and size, especially when a vehicle wasn't originally designed to carry such a system. The SRG-ADIO utilizes a compact form factor, allowing it to easily fit in a wide range of places, including equipment cabinets or close to sensors to reduce installation complexity.



## Advantages

In addition to helping overcome the key challenges of the project, the SRG-ADIO also provided the waste management company with several key advantages, setting the product apart from competitors. The system is cloud ready and easy to setup and program; and is also a budget friendly platform, perfect for fleetwide deployments.

### Cloud Ready Platform

The SRG-ADIO is a cloud ready solution designed to support the most popular cloud services, such as AWS and Microsoft Azure, as well as a client's own cloud service. This flexibility means the SRG-ADIO delivers consistent, full service regardless of the cloud platform the company implements to power their management system.

### Easy to Program

The SRG-ADIO utilizes RISC based processing and an operating system that is lightweight, easy to program and deploy. From setting up to creating a custom image, the SRG-ADIO provides allows the company to maximize the performance and usability of the platform to meet their needs without delaying deployment time.

### Budget Friendly Solution

When deploying across a fleet of vehicles, costs can add up quickly. The SRG-ADIO offers a budget friendly solution which

delivers exactly the performance and capabilities needed without breaking the bank. This makes deploying a high number of systems to a large fleet more practical and economical.

## Impact

With the IoT system in place, the chemical waste management company can accurately track vehicles and their loads to ensure proper treatment and disposal of their customers' chemical waste. They can identify potential leaks before they become an environmental hazard, as well as address drivers who may be involved in illegal dumping. The lower cost and ease of installation and maintenance make it easier to convince contracted transportation companies to comply and cooperate with the system to ensure proper environmental stewardship.

With the real-time monitoring in place, the waste management company's customers can be sure the waste is being properly handled, helping to avoid costly fines from environmental regulators. Many of these customers also have commitments to environmental stewardship, so by having a clear picture of the disposal process, they have greater clarity to know they are meeting those goals. All in all, this results in a cleaner environment for everyone, with more responsible drivers and waste management procedures.

## SRG-ADIO

The SRG-ADIO expands on the proven capabilities of the lineup of IoT Gateway solutions from AAEON. Based around the compact and expandable SRG-3352C, the SRG-ADIO adds additional functionality thanks to its built-in Analog-to-Digital Converter module, allowing users to connect with an even wider range of sensors and devices without needed extra dongles or external hardware. Powered by the Arm® Cortex-A8 800 MHz RISC processor, the SRG-ADIO is a compact, energy efficient platform designed to be easily deployed to power a wide range of IoT and Edge Network applications.

The SRG-ADIO is cloud ready, supporting popular cloud services including AWS, Microsoft Azure, and Arm Pelion; and can support a client or end user's own preferred cloud platform. It offers a range of connection options including two COM ports, two USB 2.0 ports, two Gigabit Ethernet ports, and an RS-232/422/485 expansion slot for Digital I/O, Isolation RS-485, CANBus, Zigbee and IO-Link wireless support. It also provides support for a range of wireless communication protocols, including Wi-Fi, 3G/4G LTE, and NB-IoT, ensuring the system can connect from anywhere.



AAEON delivers experience and expertise designed to reduce development times, accelerate deployment and shorten time-to-market. From creating customized web-based user interfaces which provide monitoring and management of both system and devices, to providing software integration to ensure AAEON solutions are ready to work with existing or proprietary software systems from day one. AAEON can also work with local systems integrators and experts to ensure clients have every component, adapter, sensor and device they need to make their project a reality.

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