

Waste Management Solution Enables Accurate Real-Time Data Reports in Lima, Peru

Improving service quality and reducing operating costs are the primary objectives of all waste management service providers. Nowadays, many products and solutions, such as vehicle-mounted computers, GPS, and vehicle diagnostics and monitoring, are used in the management of fleets. Before the emergence of fleet and waste management technology, administrators could not remotely determine the status of vehicles nor reassign tasks until vehicles were returned to the central depot.

By Martin Marshall with images provided by Advantech
Interview with Ricardo G S Aranha, Sales Manager of SGF

Founded in 1988, SGF is based in Peru and serves as a supplier of fleet management systems. At a time when the embedded electronics industry was embryonic, SGF developed the first on-board computer. SGF is now configured as a hardware manufacturer and develops motherboards for transportation and automation applications. A customer in the city of Lima was looking for an SI to implement a fleet management solution that would facilitate the city's garbage truck fleet monitoring and waste management operations. They needed an in-vehicle solution that could monitor vehicle movements, diagnostics, and, crucially, driver behavior. After consulting numerous vendors, they elected to partner with Advantech. This is because Advantech offers a comprehensive range of flexible solutions that can be rapidly customized according to specific needs with support from their team of expert engineers.

SGF adopted Advantech's TREK-723 mobile data terminal (MDT) for managing moving fleet assets and driver behavior. Equipped with built-in GPS and CDMA/GPRS/HSPA+, TREK-723 MDT enables drivers and dispatchers to maintain constant communication, and can be used to monitor data ranging from mileage, routing, speed, and acceleration, to braking, oil

pressure, and fuel consumption. An important additional function the customer required was the ability to log driver behavior and routes to ensure compliance with city safety regulations. Advantech's MDT was integrated with a reading device specifically developed by SGF to reduce tedious manual logging and tracking for more informed management that enhances waste management safety and efficiency.

To achieve real-time fleet management, a vehicle-mounted system with several specific features is required. In this case, the required features were WWAN communication, GPS, and a unique SGF-designed CAN bus-based reading module for reading vehicle data. Additionally, the system's power supply, shock resistance, and core temperature range should be suitable for operation in harsh environments. In-vehicle computers should conform to several special requirements. For example, older trucks tend to have an unstable power supply, excessive noise, and insufficient voltage, which hinder system activation. When connected to peripheral devices, a sudden voltage surge can damage the motherboard, and bumpy roads may cause power outages or computer failures. Moreover, systems without a wide operating temperature range cannot perform consistently in extremely



hot or cold weather. All these factors can lead to system fails, and, in worse-case scenarios, necessitate sending the system to the factory for repair.

Advantech systems not only eliminate these possibilities with advanced and rugged in-vehicle hardware technologies, but also transform the complex data collected by intelligent software into useful information. For example, all vehicle diagnostics and driver behavior data can be transmitted directly to dispatch headquarters for real-time monitoring and reporting. Furthermore, Advantech's in-vehicle mounted computers make the most of Wi-Fi bandwidth by selecting the cheapest means of transmitting data over long distances, significantly reducing network communication fees for waste management service providers.

With the TREK-723 MDT installed in every garbage collection truck, administrators can now track the location of multiple vehicles simultaneously. However, more importantly, administrators can now monitor driver behavior, such as speeding or over braking, which can increase costs for fuel, tire replacements, oil consumption, and vehicle damage. The inclusion of tire pressure detection technology means that vehicles can warn drivers before a breakdown occurs, thereby reducing vehicle maintenance costs. Furthermore, TREK-723 paired with the vehicle data reading module developed by SGF can be used to accurately calculate

fuel consumption and scheduled route activity. Drivers can upload all vehicle data to a centralized system immediately after completing their assigned tasks, enabling administrators to accurately control schedules and be accountable to city regulators.

TREK-723 features a 7" TFT LCD screen with a backlight and adjustable brightness. Equipped with a rugged aluminum enclosure, the system is tolerant to vibration, dust, and water, and supports a wide operating temperature range, making it ideal for extreme in-vehicle environments. The DC power input is designed to handle transient voltage and ignition cold cranking, and the power on/off delay functions allow voltage stabilization after the engine is activated. TREK-723 is equipped with many flexible communication technologies, such as IEEE 802.11 a/b/g/n, GPS, Glonass, HSDPA, CDMA, and LTE, enabling real-time voice and data transmissions. The carrier company was extremely satisfied with the implementation of TREK-723 in its fleet vehicles.

SGF Peru and Advantech's TREK-723 in-vehicle computing box satisfied the customer's requirements and provided an additional benefit. Specifically, the new system enabled instant reporting and confirmation, which allowed the sub-contractor for city waste management services to provide regular and accurate reports to the relevant governing authority. ■