



Case Study

Fuel Level Control System for Tanker Trucks

Real-Time Fuel Monitoring and Fuel Consumption Tracking

As heavy-duty vehicles such as bulldozers and excavators work at the site, to improve refueling efficiency, they rely on tanker trucks to bring the fuel to where they work. For fuel delivery companies, it is vital to implement a fuel tanker monitoring system to provide a high-precision measurement of the fuel level in real-time. Fuel tanker monitoring also prevents fraud of fuel and unauthorized use of fuel and gives detailed information about fuel fueling and draining. Moreover, it saves information about fuel in the tank for further analysis and provides an organized fuel usage history.

Challenges

The customer is a developer and manufacturer of fleet and fuel management solutions. It is devoted to helping fleet management service providers and fleet owners manage their commercial assets. The customer was looking for a fanless and rugged embedded PC that can be used as a fuel tanker monitoring system to comprehensively monitor fuel levels. In addition to a high-quality product at a very competitive price, short lead time is a must.

Main Requirements

- Prevents the ingress of moisture, dust, and dirt
- IP67-rated protection with fanless design for outdoor usage
- Wide operating temperature range for harsh environments
- Supports 8GB of system memory and 64GB of SSD for data storage
- Antenna openings for 3G/Wi-Fi usage

The eBOX800-511-FL Integrates the Data from Sensors on the Oil Tanker

Axiomtek recommended its eBOX800-511-FL as a fuel level controller to monitor and manage the fuel level the truck carries. The eBOX800-511-FL is powered by the Intel® Core™ i5-7300U processor. This rugged embedded platform comes with two PCI Express Mini Card slots for real-time data transmission of fuel levels and other parameters.

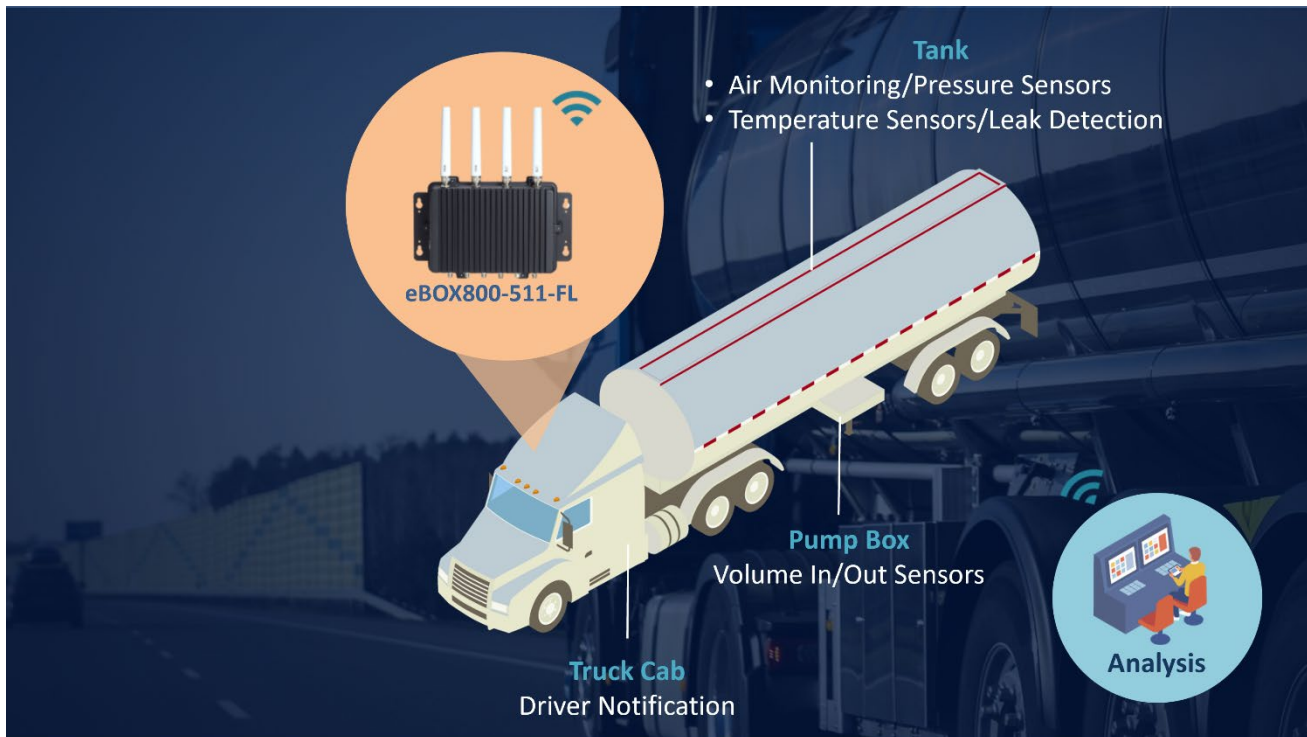


The eBOX800-511-FL has a full IP67-rated extruded aluminum and heavy-duty steel case for dust protection and water resistance. It offers operational stability with M12-type I/O connectors and four N-jack waterproof antenna openings for WLAN and WWAN usage. Moreover, it has a wide operating temperature range of -30°C to +60°C and a vibration endurance of up to 3 Grms, which allows it to be installed on any trucks roaming in harsh environments around the world. The fanless rugged system also supports a wide range of 9V to 36V DC power input with power protection.

Application

Enhancing Fleet Management Efficiency: The eBOX800-511-FL and Real-time Sensor Connectivity

The eBOX800-511-FL establishes a seamless connection with an array of sensors through a wireless connection. This connectivity not only empowers the control center but also places vital information at the fingertips of the driver, facilitating efficiency.



One of the key strengths of the eBOX800-511-FL is its ability to monitor a spectrum of critical parameters promptly. Through the wireless connectivity options of 3G/4G LTE, it ensures the real-time transmission of data from sensors, capturing essential metrics such as fuel level, temperature, pressure, and potential leaks. Real-time monitoring offers a proactive approach to safety and operational efficiency for refueling other working heavy-duty vehicles.

Benefits

First, the solution ensures safety while integrating an embedded system with pressure and temperature sensors that can detect any leak and offer the driver notification. Secondly, the volume sensors monitor fuel level not only for the driver but also transmit the data to the control center to facilitate more efficient truck dispatching for refueling tasks. With a clear history of fuel usage, the solution prevents steal or unauthorized use of fuel, enabling analysis and operation optimization and maximizing potential profits for the operators.

System Configurations of the eBOX800-511-FL

- IP67-rating for outdoor use
- High performance Intel® Core™ i5-7300U processor
- 4 N-jack antenna openings with a waterproof design
- 9 to 36 VDC wide-range power input
- -30°C to +60°C operating temperature range
- Features M12 lockable I/Os
- Trusted Platform Module 1.2 (TPM 1.2)

Why Axiomtek

The customer chose Axiomtek for the combination of high-quality products at competitive prices. The full-featured I/O interface design provides the versatility. The flexible lead time and rapid response showcased the commitment to customer satisfaction. Additionally, the strong technical support has been instrumental in ensuring the seamless integration of the embedded systems into the application.

About Axiomtek Co., Ltd.

Axiomtek has experienced extraordinary growth in the past 30 years because of our people, our years of learning which resulted in our tremendous industry experience, and our desire to deliver well-rounded, easy-to-integrate solutions to our customers. These factors have influenced us to invest in a growing team of engineers including software, hardware, firmware, and application engineers. For the next few decades, our success will be determined by our ability to lead with unique technologies for AIoT and serve our key markets with innovatively-designed solution packages of hardware and software – coupled with unmatched engineering and value-added services that will help lessen the challenges faced by our systems integrator, OEM and ODM customers and prospects alike. We will continue to enlist more technology partners and increase collaborations with our growing ecosystem who are leaders in their fields. With such alliances, we will create synergy and better deliver solutions, value, and the expertise our customers need.