

# GsatTrack

## Remote Fuel-level Monitoring

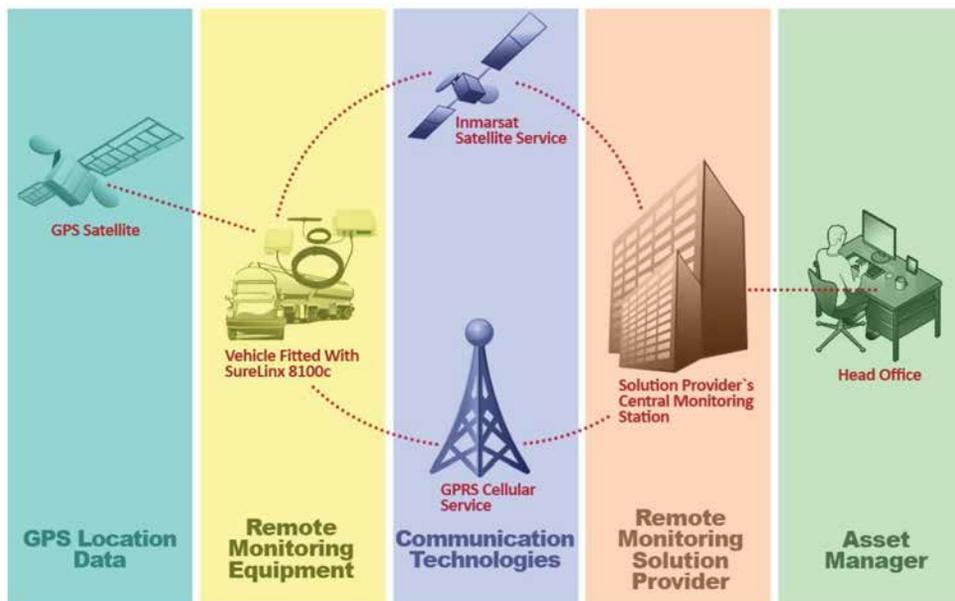


### INTRODUCTION TO REMOTE FUEL-LEVEL MONITORING

As a result of escalating demand and costs, theft of fuel from stationary tanks and transport tankers is on the rise. To help reduce losses, costs, delays and damage to reputation, more and more companies are looking for solutions to monitor fuel levels during both storage and transportation.

A real-time remote fuel-level monitoring solution is an option for managers who need to know exactly when and where fuel losses are occurring. In addition to notification of a sudden change in fuel level, a well-designed remote monitoring solution is able to provide other valuable information, such as how much fuel is lost as well as GPS location of incidents when the loss occurs during transportation.

**In general, a remote-fuel level monitoring solution consists of the following four components:**



- Fuel-Level Sensor - One or more sensors connected to one or more fuel tanks that indicate current fuel level(s) in the tank(s).
- Communication device – A GPS-enabled terminal that interfaces with each fuel level sensor and sends reports about fuel level. For remote fuel-level monitoring, the communication device typically uses satellite networks to send and receive location and fuel-level information.
- Configuration files – Files in the communication device that tell it when to send fuel-level reports, how to interpret information from fuel-level sensor(s) and how much change in fuel-level is indicative of a possible theft.
- Information server and user interface - A server application that receives reports from the communication devices and translates reported fuel level signal information into fuel quantities based on different tank profiles.

### SENDING FUEL-LEVEL INFORMATION

In addition to the ability to communicate using satellite and cellular networks, the SureLinX 8100c terminal has an on-board programmable microcontroller module with an RS-485 interface that allows it to connect to sensors like the Vepamon LLS20160 or SSI Acu-Trac™ Fuel Level Sensor.

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## Remote Fuel-level Monitoring

This on-board microcontroller gives providers of remote monitoring solutions and fleet managers the flexibility to customize the behavior of SureLinX 8100c terminals to meet different reporting requirements, including setting different thresholds for high and low fuel levels and monitoring different change conditions.

**An example of a fuel-monitoring application for fuel tankers that can be configured within the SureLinX 8100c is as follows:**

- Log a Tanker Stopped event when the GPS position is valid and the vehicle speed is less than 5 km/h. Also log this event if the GPS position is unknown.
- Log a Tanker Started Moving event when the GPS position is valid and speed of vehicle is greater than 5 km/h.
- When a Tanker Stopped event is logged and a Tanker Started Moving Event is not logged within 30 seconds, and the tanker is outside an approved destination (configured using geofences), send the fleet manager a Fuel Theft report with every 5% decrease in the fuel level.
- Send the fleet manager a Fuel-Level Sensor Disconnected report with acknowledgment whenever the fuel-level sensor is disconnected outside of approved destinations (configured using geofences).
- With every report or event send/log GPS latitude, longitude, speed, the number of active fuel-level sensors and last known fuel-level value.

### SAMPLE FUEL MONITORING APPLICATION

In order to reduce development time and increase value to customers, GsatTrack has created a sample fuel monitoring application that monitors the levels of up to eight fuel-level sensors and supports all the functions listed in the example fuel-monitoring application listed above.

**The application has provisions to store information like:**

- Communication status with fuel sensors
- Identification numbers for up to 8 fuel-level sensors
- Level readings for attached fuel sensors

Information from these parameters can be analysed and reported as required by the fleet manager. Additional functions can also be added to this application.

The sample application along with detailed documentation is available to GsatTrack customers at no charge. *Please ask your GsatTrack Account Manager for Application Note 27 – Fuel Theft Monitoring.*

### VALUE BEYOND FUEL-LEVEL MONITORING

With the SureLinX 8100c, customers can incorporate many more functions beyond fuel-level monitoring. Examples include:

- Monitoring door and temperature sensors using the input/output digital and analog ports. Sending warning messages when doors are opened or high/low temperature thresholds are met.
- Connecting the SureLinX 8100c to a Mobile Data Terminal (MDT) and send SMS-like text messages using GsatTrack Flex messaging satellite service.
- Configuring GsatTrack's route geofences to ensure that drivers follow specified roads and be notified when they enter/leave approved paths.
- Using GsatTrack's multi-point polygon geofences to be notified when vehicles enter/leave specific areas of interest such as fuel depots or maintenance areas.
- Storing detailed trip information in the data logger and using the GPRS capability of the SureLinX 8100c to send the historical data.

### Additional Uses

Connect the SureLinX 8100c to a Mobile Data Terminal (MDT) and SMS- like send text messages using GsatTrack Flex messaging satellite service.

In addition to the ability to communicate using satellite and cellular networks, the SureLinX 8100c dual-mode satellite/cellular communication terminal has an on-board programmable microcontroller module with an RS-485 interface

Messages from GsatTrack's SureLinX 8100c include GPS location and sensor information. The terminal sends messages to the Solution Provider using the most cost-effective network – Inmarsat satellite or cellular network. The Solution Provider's application interprets the messages and displays the information to the fleet manager for review and action.

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