Tank Level Monitoring

**DESCRIPTION**

Fuel dealers use supply tanks to store a wide variety of compounds, including heating oil, gas, propane, and water. The supply tanks need to be refilled when they are low to allow un-interrupted operations.

By implementing a smart tank level monitoring system, comprised of sensors and gateways embedded with LoRaWAN™ protocol, fuel dealers can optimize their deliveries and decrease their discretionary spending on fuel delivery by up to 80%.

**HOW A LoRaWAN-BASED TANK LEVEL MONITORING SYSTEM WORKS**

Semtech LoRa Technology enables connectivity, real-time analytics, reporting, and additional functions such as geolocation.

1. Multiple sensors embedded with LoRa Technology are placed on supply tanks
2. Sensors monitor inventory levels periodically and send information to gateway
3. Gateway sends information to the network where the data is analyzed by an application server
4. Application server schedules deliveries based on which supply tanks need refilling
5. Delivery truck drivers receive schedule of which tanks need filling via computer or mobile device

**BENEFITS**

- Reduce discretionary spending on fuel delivery by up to 80% by using sensors and gateways embedded with LoRa Technology to remotely monitor supply levels in tanks
- Dramatically reduce battery replacement and installation costs as low-power operation ensures sensor batteries can last up to 20 years
- Reliable RF communication link between sensing infrastructure and LoRaWAN-based network provides excellent underground coverage and penetration through concrete and metal

**APPLICATIONS**

Remotely monitor levels for a wide range of supply tanks, including:
- Fuel tanks
- Heating oil tanks
- Water tanks

**Semtech products used in this application:**
- Sensors: SX1272/3, SX1276/7/8/9
- Gateway: SX1301

All application elements (sensing modules, gateways, servers, software) are available through LoRa Alliance™ partners.
For a full list of LoRa Ecosystem partners and services, visit our LoRa Community [www.semtech.com/LoRaCommunity](http://www.semtech.com/LoRaCommunity)

**KEY FEATURES OF SEMTECH’S LoRa WIRELESS RF TECHNOLOGY**

- **LONG RANGE**  
  Penetrates in dense urban and deep indoor environments, connecting to sensors 15-30 miles away in rural areas
- **LOW POWER**  
  Enables multi-year battery lifetime of up to 20 years or more
- **HIGH CAPACITY**  
  Supports millions of messages per base station
- **GEOLOCATION**  
  Enables tracking applications without GPS or additional power consumption
- **STANDARDIZED**  
  LoRaWAN specification ensures interoperability among applications, IoT solution providers and telecom operators
- **SECURE**  
  Embedded end-to-end AES-128 encryption of data ensuring optimal privacy and protection
- **LOW COST**  
  Reduces upfront infrastructure investments, as well as operating and end-node costs

**JUMP-START YOUR IoT DEVELOPMENT TODAY**

Semtech offers several training options to help you get started:

- Learn about Semtech’s LoRa Technology platform: visit [www.semtech.com/IoT](http://www.semtech.com/IoT)
- Join the LoRa Community: [www.semtech.com/LoRaCommunity](http://www.semtech.com/LoRaCommunity)
- Become a member of the LoRa Alliance*: visit [www.lora-alliance.org](http://www.lora-alliance.org)
- Attend a LoRa Boot Camp for a full-day of training featuring LoRa Technology and real world applications: [www.semtech.com/IoT](http://www.semtech.com/IoT)
- Follow Semtech on [LinkedIn](https://www.linkedin.com) and our [LoRa Showcase page](http://www.semtech.com/LoRaShowcase)
- To contact one of our global offices in North America, Europe and Asia, visit [www.semtech.com/contact](http://www.semtech.com/contact)