

# Tank Level Monitoring

### LoRa® APPLICATION BRIEF

#### **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 LoRa® Technology and an intelligent low power wide area network based on the 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
- Gateway sends information to the network where the data is analyzed by an application server

tanks need refilling

Delivery truck drivers receive schedule of which tanks need

filling via computer or mobile device

Application server schedules deliveries based on which supply

### 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



All application elements (sensing modules, gateways, servers, software) are available through LoRa Alliance™ partners.

Semtech products used in this application:

Sensors
• SX1272/3

# Tank Level Monitoring



LoRa® APPLICATION BRIEF

#### FIND YOUR IOT SOLUTION FROM SEMTECH'S LORA ECOSYSTEM

**MODULES & MODEMS** 

**LOW COST** 

**SENSORS** 

**BASE STATIONS** 

**NETWORK SERVERS** 

**SYSTEM INTEGRATORS** 

For a full list of LoRa Ecosystem partners and services, visit our LoRa Community 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

Reduces upfront infrastructure investments, as well as operating and end-node costs

Semtech offers several training options to help you get started:

JUMP-START YOUR IOT DEVELOPMENT TODAY



Learn about Semtech's LoRa Technology platform: visit www.semtech.com/loT



Join the LoRa Community: www.semtech.com/LoRaCommunity



Become a member of the LoRa Alliance™: visit 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/loT



Follow Semtech on LinkedIn and our LoRa Showcase page



To contact one of our global offices in North America, Europe and Asia, visit www.semtech.com/contact



200 Flynn Road, Camarillo, California 93012 • phone: (805) 498-2111 • fax: (805) 498-3804 • www.semtech.com