



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
- 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

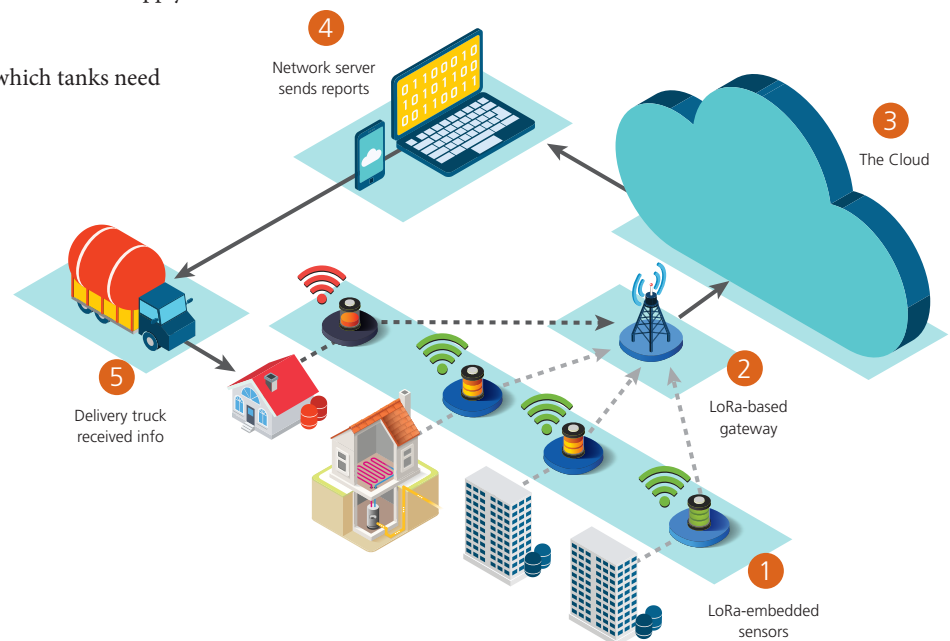
BENEFITS

- 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	Gateway
• SX1272/3	• SX1301
• SX1276/7/8/9	

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



FIND YOUR IoT SOLUTION FROM SEMTECH'S LoRa ECOSYSTEM

MODULES & MODEMS

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

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



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/IoT



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