



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

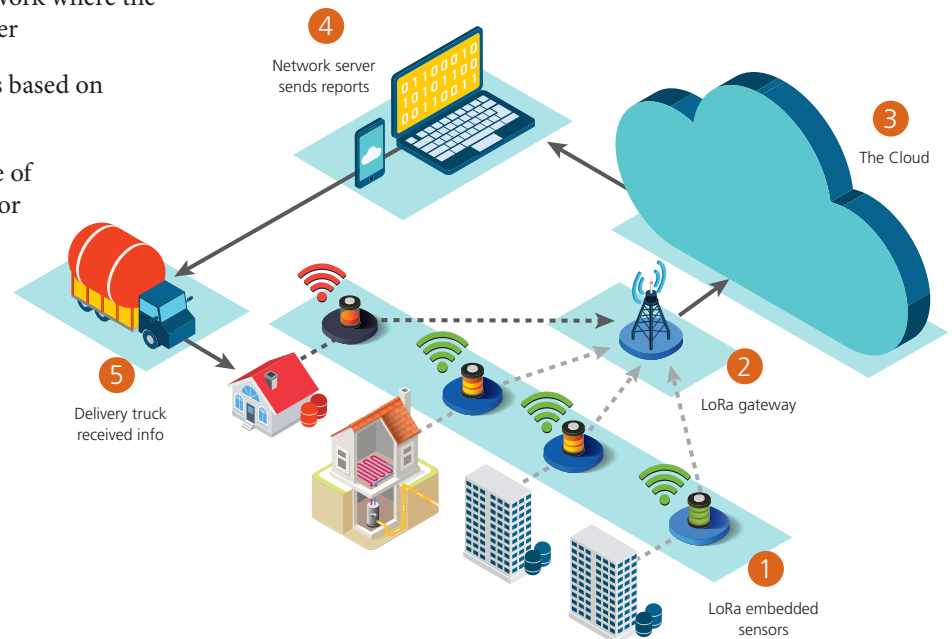
BENEFITS

- 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 <https://semtech.force.com/lora>

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/loT
-  Join the LoRa Community: <https://semtech.force.com/lora>
-  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

