SEMTECH

Industrial Temperature Monitoring

LoRa® APPLICATION BRIEF

DESCRIPTION

Temperature monitoring is a key element of industrial production processes. Alloy melting quality in the automotive industry, foil thermoforming in the plastic industry, or glass syringe production in the life science industry requires temperature measurement across the entire production line. An undetected anomaly in such production processes could cost millions of dollars.

By implementing an industrial temperature monitoring system comprised of sensors and gateways embedded with LoRa Technology and an intelligent low power wide area network based on the LoRaWAN™ protocol, manufacturers can better control the quality of their production process.

HOW A LoRaWAN-BASED INDUSTRIAL TEMPERATURE MONITORING SYSTEM WORKS

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

1. Sensors embedded with LoRa Technology are placed throughout a manufacturing plant to monitor the temperature of different processes

2. Sensors periodically measure the temperature and send the data to a LoRa-based gateway

3. Gateway sends information to the network where the data is analyzed by an application server

4. Application server generates an alert to plant workers or supervisors via computer or mobile device, so they can take necessary action

5. Data collected from the system is stored in a quality control database for future reference

BENEFITS

- Increase production yield and quality through the use of temperature sensors embedded with LoRa Technology

- Provide manufacturers with flexibility to use a public or private LoRaWAN-based network for greater control over quality and costs

- Support battery-powered and continuous-power environments to meet demands of various monitoring situations

- Reliable RF communication link between sensing infrastructure and LoRaWAN-based network provides excellent coverage

APPLICATIONS

Precise industrial temperature monitoring for a wide range of manufacturing processes and industries, including:

– Alloy melting (automotive)
– Foil thermoforming (plastics)
– Glass syringe production (life sciences)

3 The Cloud

4 Network server sends alerts

2 LoRa-based gateway

1 LoRa-embedded sensor

5 Data collected for necessary action

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.

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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

- 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

SEMTECH

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