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TEMPERATURE.

THE STATE THAT MATTERS MOST.

ThingTech IoT Solutions for Cold Chain Logistics

In the United States, food waste is estimated at between

20-40%

of the food supply.[1]

Refrigerated food, pharmaceuticals, and other temperature-sensitive cargo can change hands multiple times in a cold chain. Suppose your delivery isn't on time, the chain of custody is broken, or someone suspects poor climate control. Without real-time visibility into cargo location and conditions, it won't be long before the finger-pointing starts.

ThingTech IoT (Internet of Things) solutions for cold chain logistics delivers tremendous value for refrigerated trucking companies. We combine GPS tracking, enterprise asset management software, and a field service mobility application to help cold chain 3PLs (third-party logistics providers) reach new levels of operational efficiency. Perhaps most importantly, we give companies total remote control of their refrigeration units. By interacting with the programmable logic controller (PLC) remotely and in real-time, decision making can be immediate and automated when one or more faults occur.

Key Advantages

A complete IoT-enabled solution for refrigerated trucking

Monitor and manage temperature in real-time for optimal climate control

IoT Devices controlling your business at the Edge

Streamline chain of custody and audit processes

Create a connected customer experience

Gaining greater visibility is tablestakes nowadays. Beyond tracking shipments in real-time, managers need the ability to remotely monitor and control the temperature, pressure, and humidity of refrigerated truckloads. Our intelligent, scalable IoT platform will help you get the job done. It features a highly configurable user-defined data model, rules-based engine, advanced analytics, and best-in-class desktop and mobile applications. Of course, it's also mission critical to maintain the vehicles and assets transporting your cargo. So we've made it easier to optimize asset lifecycles, utilization, and maintenance.

1: https://www.usda.gov/oce/foodwaste/faqs.htm

ThingTech delivers these key benefits:

- ✓ Real-time visibility into asset location and movement.

- ✓ Remotely control the HVAC unit for efficiency, troubleshooting, and remediation.

- ✓ Lower operational expenses (e.g. fuel cost savings, on-time shipments, asset loss reduction).

- ✓ More safety, security, compliance, accountability, liability, and quality control across the chain of custody.

- ✓ Integration between GPS tracking, enterprise systems (e.g. CRM, EAM, ERP), and field service applications.

Pressure (PSI)

Battery Level (%)

Humidity (%)

Time Stamp (HH:MM)

GPS Tracking

Temperature (°C)

Vehicle Diagnostics

Figure 1: Capture data critical to protecting perishable products

Monitor and control in real-time:

- Box and ambient temperature
- Battery status
- Timestamp
- Pressure readings
- Humidity
- Operating mode
- Set Point and Dead Band
- PLC on/off status
- Defrost

| The Challenge:

While IoT adoption is growing within the cold chain industry, operations managers are looking for ways to achieve digital transformation by integrating real-time data from connected vehicles, assets, mobile workforces and customers. But that can be a challenge considering that most of their data is gathered and stored using disparate enterprise systems.

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The ThingTech IoT Solution Key Advantages

A COMPLETE IOT-ENABLED SOLUTION FOR REFRIGERATED TRUCKING

Maintaining a perfect cold chain means controlling time, temperature and transport. Promising the integrity of temperature-sensitive shipments without reliable vehicles, assets, or drivers is useless. To ensure that assets are where they're supposed to be and performing as they should, ThingTech offers an end-to-end IoT platform that empowers managers with the strategic ability to collect real-time data, contextualize it, and apply analytics to predict external climate variations by location or make 'repair vs. replace' decisions before an asset breaks down.

MONITOR AND MANAGE TEMPERATURE IN REAL-TIME FOR OPTIMAL CLIMATE CONTROL

Truly effective tracking of refrigerated truckloads requires remote monitoring tools and the ability to autonomously control the programmable logic controller (PLC) which regulate storage temperature, humidity, and pressure levels. When levels pass through the predetermined dead band, you can configure the system to automatically trigger an alert and/or adjust your settings.

IOT DEVICES CONTROLLING YOUR BUSINESS AT THE EDGE

Geography, climate, and manufacture recalls are examples of external variables that can significantly impact refrigerated trucking (e.g. vehicle wear and tear, ambient temperature readings). Our suite of Open APIs (application programming interface) enable you to connect your IoT data to weather, ESRI GIS, and NHTSA information. This will allow you to map and visualize conditions that could affect your operations.

STREAMLINE CHAIN OF CUSTODY AND AUDIT PROCESSES

The transfer and storage of refrigerated products requires an accurate, reliable record of who had possession, what the shipment consisted of, at what temperature was the shipment kept, when the possession occurred, and where the transfer took place. ThingTech excels in providing robust reporting and dashboards so that customers can easily provide digital documentation of chain of custody.

CREATE A CONNECTED CUSTOMER EXPERIENCE

Nearly 67% of the world's population are mobile phone users, inferring that today's consumer desires, or is at least open to, a connected experience with companies they do business with. ThingTech's IoT solutions can help you connect your business to customers, internal stakeholders, and other supply chain members with a mobile application that allows you to configure and control what data users have access to.
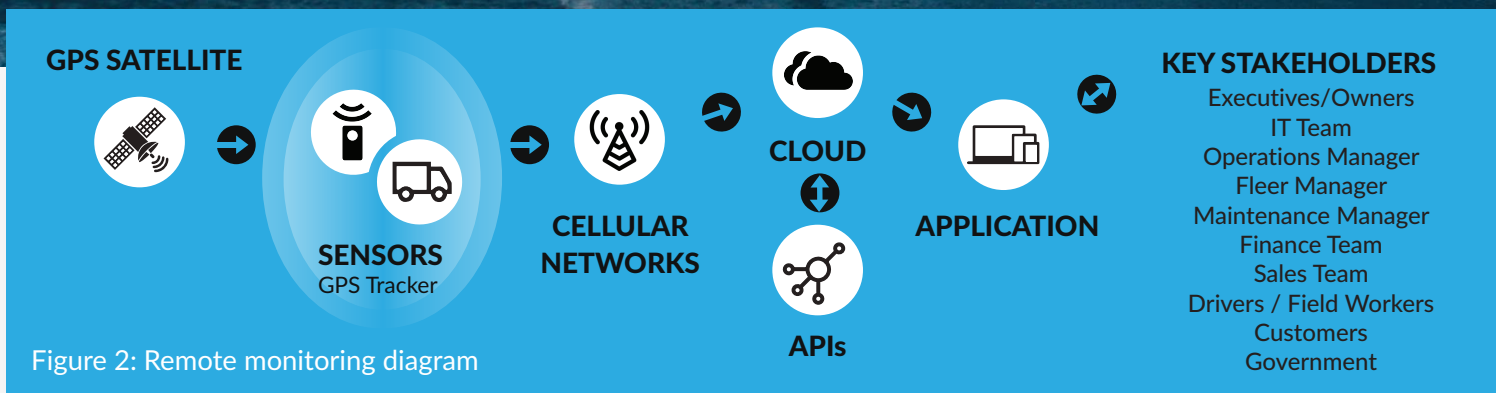
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Figure 2: Remote monitoring diagram

GPS SATELLITE

SENSORS
GPS Tracker

CELLULAR NETWORKS

CLOUD

APIs

APPLICATION

KEY STAKEHOLDERS
Executives/Owners
IT Team
Operations Manager
Fleer Manager
Maintenance Manager
Finance Team
Sales Team
Drivers / Field Workers
Customers
Government

Solution Features

1 Streaming data. Gain visibility into where your assets are and what they're doing in real-time by pinpointing the exact time and location of an asset's condition and movement.

2 Powerful, Rules-Based Engine. Process streaming data using a rules-based engine to trigger alerts, create workflows, and generate actionable data. Configure rules, meters, and frequency in a way that aligns with the best business outcomes. Automate events-driven decision making based on rules logic. Use alerts for fuel reduction, asset health monitoring, verification of service, or driver / fleet safety.

3 Highly configurable user-defined data model. Access vehicle and temperature-sensitive data quickly, comprehensively, and efficiently. Easily create user-defined data structures capable of handling large, complex data sets with accuracy.

4 Flexible reporting and dashboards. Gather real-time data and then access it in a way that's most meaningful to your company. Compile TEMS reports into dashboards to visually display key performance indicators (KPIs) and usage trends.

5 Advanced Analytics and Machine Learning. Predict failures before they occur. Predict trends in temperature variations to uncover previously unknown anomalies without you having to pre-configure a rule to look for something.

6 Rich, Stunning Visualizations. Map all your assets, field workers, and jobs on one screen.

7 Driver ID. Gain visibility into who is driving a specific vehicle, and match driver productivity with other vehicle-related data.

SERVICE INCLUDES
- Requirements Definition
- Implementation Support
- Systems Integration
- Data Conversion
- Onsite and Remote End-User Training
- Project Management
- Customer Support
  - Software Maintenance
    - Updates and Upgrades

Next Steps: Contact us and schedule a demo by visiting www.thingtech.com/request-a-demo

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