

CASE STUDY

Commercial Refrigeration Temperature Monitoring

The customer is a School District overseeing 11 schools, covering grades K through 12. Their mission is to prepare “21st century learners who are productive members of our global society,” and they are dedicated to serving all of their students meals in accordance with the United States Department of Agriculture and the National School Breakfast and Lunch Program.

The Customer realized the need for an automated monitoring solution after a refrigeration unit in one of their schools broke down over summer break. Staff didn’t identify the problem until summer break ended a couple of months later, when they noticed a foul smell seeping into classrooms. This issue cost the school:

- \$1,200 in spoiled inventory
- Labor costs to clean and repair the fridge, and deodorize classrooms
- Damage to reputation in the community

Costly Manual Monitoring

\$1200 of Inventory

The school had to throw out food inventory due to spoilage.

Labor Costs

To clean and repair the broken refrigerator, and deodorize classrooms

Reputational Damage

The community lost confidence in the school's commitment to delivering safe, quality foods to students.



Proposal :

We deployed a total of 100 wireless LoRaWAN sensors (about 10 per school) and 20 gateways (2 per school) to automatically monitor refrigeration temperatures 24/7. Unlike WiFi-based devices, our LoRaWAN-based devices offer unparalleled coverage range, enabling us to install sensors directly into the refrigeration units. Sensor data transmits in real-time to our easy-to-use web and mobile application, enabling staff to effortlessly monitor refrigeration temperatures from anywhere, at any time. Notification preferences were set to instantly alert key team members via SMS text message and email when temperatures fall out of range so they can resolve issues before they become costly problems. When alerts are sent, staff can use the Corrective Action feature in the mobile app to immediately document any required follow up and assign tasks. Compliance reports were also scheduled to ensure regulatory compliance and reduce the risk for costly violations. Our solution offers the highest standards of data protection, ensuring end-to-end embedded AES encryption.



FEATURES

- Wireless LoRaWAN Sensors
- Real-Time Remote Monitoring
- SMS Text and Email Alerts
- Corrective Action to Document Necessary Follow Up
- Compliance Reports
- Security & Privacy



The Thingstel web and mobile application enable the customer to remotely monitor their refrigeration units at any time, from anywhere so they can resolve issues immediately even during summer break.

Conclusion :

Thingstel is critical for the customers food service staff, who no longer have to worry about refrigeration units breaking down during school closures or even after hours. The solution automatically monitors refrigeration temperatures during school hours as well, which has helped them save upwards of 8 minutes per refrigerator per day in manual labor at a cost of about \$20 per hour. This translates to a savings of nearly \$8,000 per refrigerator per month.



Return On Investment :

SIGNIFICANT ROI

	Before	After
# of units monitored	100	100
# of readings each day (per unit)	4	72
# of readings per month (all units)	12,000	216,000
# of minutes to check one unit	2	N/A
Average employee hourly rate	\$20	N/A
Cost per sensor per month	N/A	\$9
Cost per reading	\$0.66	\$0.004
Total cost per month to monitor	\$8,000	\$900

TOTAL SAVINGS = \$85,200 PER YEAR!!!