autani
building controls

IoT Compliance Solutions

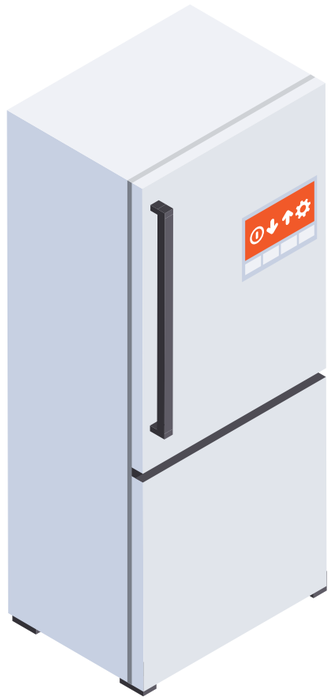
Executive Summary

The Internet of Things (IoT) is about connecting seamlessly digitally collected data and physical events. Lighting in commercial and industrial facilities provides a dense collection of endpoints that can be used to collect data about the physical use of space. The use of these endpoints mounted in lighting to control that lighting is only the beginning of the IoT journey. Clients find that the information available from the endpoints used in lighting and other controls provides endless insights into the operations of the business. Using data available from a software system designed originally to manage energy consumption by controlling the lighting systems throughout a building leads our creative clients to devise evidence-based improvements that simplify complex compliance needs.

Problems & Solutions

Problem Statement

A host of regulatory bodies have provided guidance concerning the storage of vaccines at health care providers, including the Food & Drug Administration, Pharmaceutical companies, The Centers for Disease Control, and The Joint Commission. In summary, these regulatory bodies require that vaccines are maintained within a ten-degree Fahrenheit temperature range—from 36˚ to 46˚ Fahrenheit. These guidelines have historically required manual monitoring, which diverts staff from other more productive work.



Compliance Solution Examples:

Refrigeration and Freezer requirements. The Centers for Disease Control (CDC) publishes an 81- page vaccine storage and handling toolkit containing, among other things, guidelines for monitoring refrigeration and freezer temperatures that health care providers must follow. This toolkit provides that:

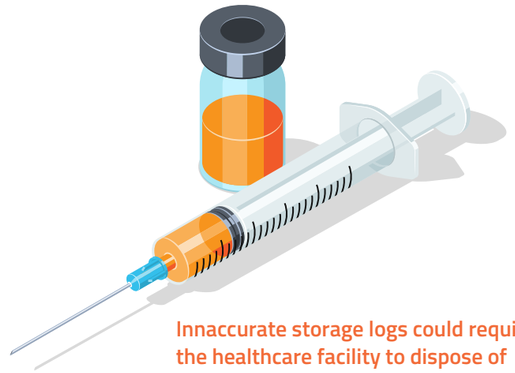
An accurate temperature history that reflects actual vaccine temperatures is critical for protecting your vaccines. Every vaccine storage unit must have a Temperature Monitoring Device (TMD) and investing in a reliable device is less expensive than replacing vaccines wasted due to inaccurate temperature readings. … CDC recommends the use of a specific type of TMD known as a digital data logger for continuous temperature monitoring and recording. The DDL should be set to measure and record temperatures no less frequently than every 30 minutes ….

CDC Guidelines

The toolkit goes so far as to provide detailed instructions about both how to take these required measurements and a detailed list of instructions explaining what to do if you learn of any exceedances on either the high or the low side.

These CDC guidelines have been adopted by the American Academy of Pediatrics

Pharmaceutical companies have also published product-specific information including the temperature at which the vaccine should be stored and how to store or use a diluent to reconstitute a vaccine and when to discard a vaccine. Similarly, the United States Pharmacopeial Convention (USP) also publishes standards for storage at Section 34 and requirements for monitoring devices at Section 1118. While not a governmental entity, USP works closely with governmental agencies, ministries, and regulatory agencies around the world to help provide standards of identity, strength, quality, and purity that safeguard medicines, dietary supplements, and food.



Innaccurate storage logs could require the healthcare facility to dispose of expensive vaccines

While historically, healthcare organizations have been able to use twice per day temperature measurements, 2018 has seen new guidelines published by these organizations requiring continuous monitoring devices (data loggers) to monitor vaccines—particularly those that will be administered to children in the State Vaccine for Children (VFC) program. In addition, the CDC now requires organizations to maintain primary and backOup thermometers that meet CDC data logger requirements including:

- A buffered probe as contrasted with a system that measures the ambient air temperature;
- An active temperature display;
- The capacity for continuous temperature monitoring and recording where the data can be downloaded easily.

It stood to reason that storage conditions, including temperature, could impact the longevity of vaccines. Historically, the requirements were based upon the understanding that a medicine has been stored at a marginally higher temperature or too low a temperature had a shorter lifespan, thus requiring hospitals to dispose of expensive vaccines based on the temperatures recorded for the refrigerators in which the medicines have been stored.

The historical standards assumed that the last of the two temperatures recorded during the day was consistent in the refrigerator for the entire period until the next temperature reading. Thus, if an urgent care facility stores vaccine in a refrigerator and had a policy of requiring readings twice daily—once at 9am and once at 6pm, whatever temperature is recorded at 9am is assumed to have been consistently maintained until 6pm—a period of 9 hours. If the facility was busy at 9am, such that the refrigerator was opened frequently, then the temperature reading at 9am could be abnormally high.

Notwithstanding the likely recovery by the refrigerator of its temperature setting shortly after this busy period, the JCO evaluation assumes that the temperature was high for the period until 6pm when the office staff makes and records the next reading. This suggests that the vaccine in the refrigerator was not maintained in a chilled environment for far longer than is actually the case, thus requiring the facility to dispose of the vaccines early.

In addition to this spoilage issue, the facility is also dedicating scarce resources to record a refrigerator temperature in the middle of what might prove to be a busy part of any particular day. One risk is a failure to make an appropriate record as the staff is busy delivering patient care. Another risk is that the staff would fail to record the temperature as people are distracted by the ongoing demands of care delivery.

Autani designed and mounted a buffered temperature gauge inside the refrigerator and fed the data wirelessly to the Autani EnergyCenter software in order to create automatically the record that JCO requires. By capturing temperature data continuously, Autani was also able to demonstrate more accurate readings on the actual temperature within the refrigeration devices, thus preserving the vaccines stored there for the appropriate period of time consistent with the 2018 CDC guidelines and providing a data record that was available for download at any time.

About Autani

Autani is transforming the way commercial and industrial buildings optimize energy management. With our expertise in IoT, IT and building automation, we design, engineer, manufacture and install advanced control platforms to create smart buildings that manage, monitor and reduce energy consumption and increase energy savings. And through our strategic partnerships with industry leaders, we provide a comprehensive range of energy solutions, from LED lighting to electrical design and implementation.

A simple Autani Sensor and EnergyCenter allows immediate compliance with JCO requirements

Cost Saving Summary

Compliance

It is impossible to assess a savings measure for compliance as that is truly the life-blood of a healthcare facility.

Staff time

Needless to say, as nursing staff has become in shorter and shorter supply, relieving your healthcare staff of nettlesome administrative tasks such that they can focus on the delivery of patient care is essential to creating the work quality environment that the most highly regarded facilities must have in order to recruit and retain the talent that is essential to improved patient outcomes.

Increased useful life for medications

Prescription drugs present increasingly significant costs for any healthcare provider. By capturing more accurate data routinely throughout the day, the useful life of these expensive items is extended.

autani
building controls

443.320.2233
information@autani.com
www.autani.com
7090 Columbia Gateway Drive
Suite 140, Columbia, MD 21046