Challenges

Pharmaceuticals, blood vaccines, tissues, food and other items require strict temperature ranges for quality patient care and safety. The humidity and temperature in Operating Rooms, IT closets, Pharmacies and some patient rooms must be monitored, recorded and controlled for safety and comfort. The Joint Commission and other regulatory agencies regulate the temperature and humidity management processes:

- Medications must be stored under stable conditions
- Temperature and humidity must be monitored and logged, often up to four times per day
- Logs must be available for a twelve-month period or more
- In case of deviations, corrective actions must be taken and documented
- Audits occur at least every three years plus random, unannounced audits

To ensure temperature levels remain within proper limits and comply with regulations, nursing, lab, pharmacy, IT and food service staff perform manual temperature monitoring and logging multiple times each day on hundreds of refrigeration units, which is inefficient. Logs are paper-based and unreliable (lost data and gaps in records), leading to poor compliance. Locating logs during an audit is often challenging. The time it takes to identify and correct a temperature problem may result in damaged goods – hospitals often report loss of valuable items when a refrigerator fails over night or over a weekend. Additional staff time is wasted with administrative costs associated with replacing materials. Some hospitals use automated solutions, but even those solutions tend to be expensive since they are based on either hard wired temperature logging devices or they require dedicated sensor networks.

Solution

Temperature & Humidity Monitoring is part of AeroScout’s industry leading Unified Asset Visibility Solutions for Healthcare, which uses a hospital’s Wi-Fi network to deliver a broad set of applications enterprise-wide. The solution automates the current manual processes that most hospitals have for monitoring temperature and humidity levels.

The solution is used for monitoring refrigerators and freezers, and can also be used in data centers and network closets, where sensitive electronic equipment is monitored, or in blanket Warmers and food delivery carts. In addition, it enables humidity monitoring of patient, storage and Operating Rooms. The AeroScout solution leverages the hospital’s Wi-Fi infrastructure, which enables rapid deployment with the lowest total cost of ownership, does not require a dedicated sensor network and includes the following components:

- AeroScout T5 Sensor Tags
- Hospital’s Wi-Fi Infrastructure
- AeroScout MobileView Software

An AeroScout T5 Tag with an integrated temperature or humidity sensor periodically (typically every five minutes) sends the measured condition over the Wi-Fi network. Tags can be placed directly in refrigerators, freezers, blanket Warmers, rooms and closets and require no hard wires. The battery powered tags and wireless communication link continue monitoring even in the event of power shortages. The tag’s battery is replaceable and lasts for several years. The tags feature onboard memory so that data is not lost in the event of a network or server outage. T5b and T5c tags are shipped with a complete mounting and potting kit and all T5 tags are available with optional NIST-traceable calibration certificates.
AeroScout is the market leader in Unified Asset Visibility solutions. Customers improve operational efficiency using AeroScout products that leverage standard Wi-Fi networks to track and manage the location, condition and status of mobile assets and people. AeroScout’s global customer base consists of leading hospital, manufacturing and logistics organizations, including many of the Fortune 500. The company invented the first Wi-Fi-based Active RFID tag, and today is widely recognized as leading the market in number of deployments and tags shipped. Headquartered in Redwood City, California, AeroScout has offices in Europe, the Middle East, Asia, Australia and Latin America. For more information, please visit http://www.aeroscout.com.

AeroScout MobileView is a web browser-based application that enables hospital staff to monitor the location, status and condition of assets. MobileView is the front-end application for temperature and humidity monitoring providing a graphical user interface, a rules/event engine to process incoming tag data, reporting tools and interface capabilities for alerting users via third party software or communication devices.

The rules/event engine in MobileView is used to determine if the temperature or humidity is over or under the required range. If out of range, alerts are sent to responsible personnel. A variety of notification methods are available, including e-mails, pages, VOIP phone or badge alerts, text messages, PC-based instant alerts or integration with third party systems (e.g., facilities management). The alerts can be set to trigger only after a specified amount of time out of range, eliminating false alarms which may be caused by temporary situations such as a door being opened. Alerts may be escalated after a configurable amount of time, or if the condition worsens.

MobileView’s temperature and humidity alert dashboards display all alerts that have been triggered and can be filtered for only those alerts relevant to a specific user or department. The dashboard also enables corrective action documentation for each alert. The corrective action that is taken to address the alert can easily be logged and updated to show all actions taken in response to the alert. This documentation is required by regulatory bodies. Additional alerts are also available to ensure the integrity of the data, such as low tag battery alerts.

MobileView records all historical data in an enterprise class database and includes on-demand and scheduled reporting tools. Standard reports include condition history, current condition, condition alerts and corrective actions. Reports feature graphical and tabular views which can be printed or exported to Excel, PDF or HTML formats. The solution provides the capability to electronically sign reports. During a network or server outage the tags continue to measure and record condition data and will upload this information to MobileView following the outage, where it is clearly delineated in reports.

MobileView also enables viewing all or a group of monitored units on a hospital floor plan. It provides an intuitive user interface representing units via icons and photos and displaying alert indications highlighted on the map.

Benefits

- Improved regulatory compliance - facilitates temperature and humidity data collection requirements
- Labor efficiency and productivity - frees up caregivers’ time and improves staff satisfaction
- Improved quality of care - constant monitoring of safe ranges and analysis of logged data to identify trends
- Spoilage reduction - reduces time it takes to identify and react to a problem