Xerafy XS Series RFID Tags Case Study: Surgical Instrument Management

Hospitals face a significant and costly asset management challenge. AMR Research reports that between 10 percent and 20 percent of a typical hospital’s mobile assets are lost or stolen during their useful life at an average cost of nearly $3,000 per item. In the operating theater, where every surgery may require dozens or even hundreds of instruments, the challenge is even more daunting.

Surgical items are frequently lost or misplaced, and the smallest of these items – like surgical sponges or wires – are sometimes left behind inside a patient after surgery. In order to prevent these types of errors, all surgical items are recounted and inventoried after a procedure. If an item is unaccounted for after surgery, staff must locate it before the procedure can be completed, at a cost of approximately $150 to $500 per minute of clinical time.

The time to do the inventorying of assets and instruments both before and after a procedure can sometimes take as long as the procedure itself. Reducing time spent on inventorying can provide a significant cost reduction to the hospital.

The benefit to patients is self-evident. RFID help keep track of instruments that need to be maintained, calibrated, and sharpened after a specific number of use-case cycles and an instrument’s “state of sterilization.”

Greenville Hospital System University Medical Center in South Carolina has deployed UHF RFID to help track expensive surgical instruments and other equipment to reduce losses and the time spent locating equipment. The hospital has implemented EPC Gen 2 RFID tags to help identify surgical probes that are often accidentally thrown away after procedures. Because the probes are small, they are sometimes entangled in the linens after surgery. Most of these linens are either disposed of outright, or sent through harsh laundry and sterilization procedures. Since the probes can cost anywhere from $17,000 to upwards of $35,000 each, losses can quickly add up.

Overview
Greenville Hospital System University Medical Center, the largest health care system located in South Carolina with 1,268 licensed beds and 1,250 physicians and 10,500 employees.

Solution Overview
Surgical instrument tracking solution with passive XS RFID tags along with Integrated Business Systems and Services (IBSS), ThingMagic EPC Gen 2 Mercury5 and Astra RFID readers, and an RFID portal from Industrial Portals.

Benefits
- Efficient Inventory Management
- Loss Reduction of High Cost Equipment
- Improve asset utilization
- Higher efficiency for nursing
- Reduction in cost of care
Columbia, S.C.-based Integrated Business Systems and Services (IBSS) developed an RFID solution for the organization’s 750-bed tertiary hospital that leveraged Greenville’s existing Cisco wireless LAN, along with Xerafy passive RFID tags, ThingMagic EPC Gen 2 Mercury5 and Astra RFID readers, and an RFID portal from Industrial Portals – a division of Jamison Door.

IBSS installed a heavy-duty Mercury5 RFID portal for the OR linen cart exit to the laundry and decontamination rooms. All linens are moved through this hallway and placed in biomedical or standard trash bins, or to a holding area for cleaning. If a probe passes by the portal in one of the laundry carts, an audible alarm sounds. Information about the event is communicated via Wi-Fi network to the IBSS SynTrack for Healthcare application, which issues e-mail alerts to the appropriate personnel.

To tag the small surgical probes, IBSS selected Xerafy’s durable XS UHF tags. The world’s smallest ruggedized passive RFID tags have a read range of 5 to 6 feet and can be embedded easily in surgical tools without interfering with their use. The XS Series is designed to comply with the most stringent FDA requirements to CPG Sec. 400.210 for RFID use and ISO-10993 for Biocompatibility and FCC compliance to Part 15.231a. The tags are rugged and will withstand 1,000 repeated autoclave sterilization cycles.

The hospital reports that no devices have been lost since the RFID system went live, and return on investment was expected within one year. Following the successful deployment of the probe-tracking application, the hospital began deploying ThingMagic Astra UHF RFID readers throughout its main facility to track other mobile medical devices. Ultimately, the hospital plans to track up to 5,000 mobile medical assets.

In addition to providing instrument tracking, Xerafy’s RFID tags can track the progress of the decontamination, sterilization and staging processes. This can help staff ensure compliance to sterilization procedures, calibration, and certification. The benefits for risk mitigation to the hospital and efficiency in locating any piece of tagged equipment makes RFID tracking inevitable for the healthcare industry.