Distribution Center MANAGEMENT

October 2010 Managing people, materials and costs in the warehouse or DC

From the Golden Zone

Trackers, sensors shed light on the black hole as cargo moves from place to place

By Bill Games

A Pennsylvania newspaper recently reported on an organized crime ring that steals tractor-trailers, sells the cargo, then discards the trailers on the roadside.

The thieves targeted electronics, food, and drink. In January, a tractor-trailer full of Coca-Cola products was stolen from a warehouse in Lemoyne, PA; the empty trailer was recovered the following day in Camden County, NJ.

With this and other types of risk on the rise, it will take several layers of technology to mitigate the threats you face in an ever-treacherous supply chain. Technologists are working directly with distribution center managers to create a pervasive, protective shield that provides deep visibility into the movements of cargo.

As supply chain complexities and risks increase, DC managers are employing risk management practices, tools, and techniques to mitigate exposure in transit. These range from tracking devices that help you locate stolen stereos to sensors that let you know when your lettuce is getting hot.

Historically, the time between shipment and arrival has been a black hole with little to no visibility into what happens to cargo between point A and point B.

Supply chains have evolved around lean process approaches to reduce waste, with concepts such as just-in-time, virtual inventory, supplier rationalization, and reductions in the number of distribution facilities. These changes have reduced total supply chain costs, but the result has been increased risk.

Today's sensor technologies signify a new age of supply chain visibility designed to alleviate risk. GPS technology with sensors is affecting real-world processes, giving DC managers the ability to connect their precious cargo to the Internet.

Today's sensor technologies signify a new age of supply chain visibility.

Web-based software and communications tools make the exchange of data and the running of the supply chain faster and allow supply chain tracking to reach its full potential. Perishable grocery products, for example, can be tracked precisely from farm to supermarket shelves. Sensors send an email or text notification when an item reaches a critical temperature level.

In this food-tracking example, GPS sensor technologies provide statistical data on deviation in optimal conditions throughout the supply chain, and where the decline in condition took place. A trillion dollar industry, it's profitable for all involved to employ better inventory tracking

for reduced loss, waste, spillage, spoilage, and so on.

In any industry, tracking the location of assets is essential. In some industries, such as produce, chemicals, pharmaceuticals, and other sensitive products, tracking location and condition is critical.

As more organizations insist on visibility across the supply chain, technologists are designing and developing tools and techniques for capturing real-time data and conducting assessments so DC managers can take action. While GPS tracking technology has become the choice for monitoring location, sensing technology is the optimum choice for ensuring desired transparency. Options in types of sensors are as diverse as the cargo they protect.

They include humidity and temperature sensors, which provide environmental monitoring; accelerometers that convert the effects of mechanical motion into an electrical signal that is proportional to the acceleration value of the motion; shock sensors that detect and record impact and mishandling of fragile, sensitive, or calibrated products during transit; radiation sensors that detect the presence of low levels of radiation; and light sensors that can provide information on distance, shape, speed, and dimensions.

Sensor devices can distinguish and compare how employees, sub-contractors, shippers, riggers, and customers handle precious cargo. This list also includes thieves.

As supply chains grow and become more complex, they also become more vulnerable to new threats — making the need for new technologies mandatory. Security is achieved throughout the entire supply chain when factored in at the earliest stages of planning, and should be part of the overall design as a fundamental feature. If that's not an option, successfully integrating security measures into the business model will require leveraging the information architecture in a strategic manner. Regardless, creating a true loss prevention program requires a strict evaluation of potential risks and then determining what controls and technologies should be engaged to mitigate them.

The business case for factoring in GPS sensor technology for a closed-loop control system is clear. Sensors are an enabling technology that has the potential to help DC managers deliver the right product at the right place at the right time. Data from the different types of sensors can mean the difference between a successful delivery and one that fails to meet standards.

Sensors are revolutionizing supply chains and ushering in a new era of cost savings, efficiency, and business intelligence, and are relevant to any organization engaged in the production, movement, or sale of physical goods. Numerous studies have confirmed that sensor-based technology is the way of the future. All companies with a keen interest in creating a competitive advantage should be interested in this technology.

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