WERC Sheet

Information for Members of the
Warehousing Education and Research Council

OCTOBER 2006

Securing the Supply Chain

Improving supply chain security doesn't have to cost a lot and the benefits can be far reaching.

Investing in supply chain security, if done correctly, will garner your company substantial benefits, substantial enough to outweigh the cost of investment. So says a new report by Stanford University. The study, "Innovators in Supply Chain Security: Better Security Drives Business Value," was released by the research and education arm of the National Association of Manufacturers (NAM).

The study looked at the benefits received by 11 major manufacturers and three logistics providers considered "innovators" in supply chain security. The companies all reported receiving benefits from their investments in security that included reduced vulnerability to global acts of terrorism, natural disasters and energy shortages. They also documented significant "collateral" benefits.

The study identified five major areas of improvement that manufacturers and logistics providers could reap from security investments. These included inventory management and customer service, visibility, efficiency, resilience and customer relations.

The major findings of the study revealed that the participant companies collectively managed to:

- Reduce customs inspections by 48 percent
- Increase automated handling of imports by 43 percent
- Reduce transit times by 29 percent
- Improve asset visibility in the supply chain by 50 percent
- Improve on-time shipping to customers by 30 percent
- Reduce time taken to identify problems by 21 percent
- Reduce theft in inventory management by 38 percent
- Reduce excess inventory by 14 percent
- Reduce customer attrition by 26 percent.

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EQUIPMENT

Not Your Father's Lift Truck Fuel

Fuel cell technology makes a push into the lift-truck industry.

Alternative sources of fuel have been gaining the spotlight lately as many industries seek out cheaper, cleaner methods for powering a variety of vehicles and heating their buildings. Not to be left behind, the lift-truck industry has its own alternative source in the works—hydrogen.

Some of the drive for hydrogen-powered lift trucks can trace its roots to the automotive industry, says Bobby Hopkins, product specialist at the Hyster Company, Greenville, N.C. "Industrial applications for fuel cells gained more visibility over the last five years or so as the automotive industry has gotten serious about it," he says. "The automotive industry's attention raised the level of interest and rate of development to the point where it has become more affordable and reliable. Currently, fuel cell technology is becoming a viable consideration for the lift-truck industry."

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Clearly, the payoff is there. But many companies still have a long way to go. Investing in a combination of process changes, and in some cases, technology, improved security within the supply chain is within reach. And so are the benefits.

Within reach

According to Barry Brandman, president of Danbee Investigations, based in Midland Park, N.J., the supply chain has three main areas of vulnerability: theft, product contamination, and weapons smuggling. "The security arena now includes terrorism in addition to theft," he says. "Companies must take a multi-dimensional approach to their security."

Earl Agron, vice president of security for APL, Jacksonville, Fla., says that much of the challenge of security can be whittled down to what he calls "what's in the box." "The key challenge is knowing what's in a container when it goes onto a ship," he says. "You have to secure the container from packing on through its transfer to the terminal. If you can take care of that 'first mile' you are covering a major part of the security issue."

The government's role

In many cases, the government dictates how you handle your shipping to help protect against security threats in transit. The Customs-Trade Partnership Against Terrorism (C-TPAT) is one of the initiatives that play a big role in supply chain security. A voluntary government/business initiative, C-TPAT aims to build cooperative relationships that strengthen and improve overall international security. Although voluntary, most of the standards established by C-TPAT have a major impact on how companies help protect the supply chain.

"C-TPAT… has evolved quite a bit since it was first established and it now impacts the majority of the international supply chain."
Barry Brandman

"C-TPAT was a monumental undertaking," says Brandman. "The initiative has evolved quite a bit since it was first established and it now impacts the majority of the international supply chain."

The initiative requires that participating companies complete a supply chain security profile and conduct a comprehensive assessment of their supply chain security procedures. Companies that complete the process can then participate in the program. Benefits include:

- Reduced number of Customs and Border Patrol (CBP) inspections
- Priority processing for CBP inspections
- Assignment of a C-TPAT supply chain security specialist, who works with the company to validate and enhance security throughout the company's supply chain
- Potential eligibility for CBP importer self-assessment program
- Eligibility to attend C-TPAT supply chain security training seminars

Brandman points out that DCs that are involved in international shipments for companies involved in C-TPAT also must comply with the standards. "C-TPAT mandates that these DCs operate as specified in the guidelines," he says.

ISPS and CSI

For the maritime industry, there's the International Ship and Port Facility Security Code (ISPS), set aside by the U.N. This comprehensive set of measures enhances the security of ships and port facilities. One part of the code is mandatory, while the other is voluntary. The code provides a standardized, consistent framework for evaluating risk and enables governments to offset changes in threat with changes in vulnerability for ships and port facilities.

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Another program set by the government is the Customs Security Initiative (CSI), run by the CBP. There are four key elements to the CSI program:

- Identify high-risk containers using automated targeting tools to identify cargo that poses a potential risk for terrorism
- Prescreen and evaluate containers before they are shipped
- Use technology to prescreen high-risk containers
- User smarter, more secure containers that allow CBP officers to identify containers that have been tampered with during transit

Photo courtesy of APL Logistics

The CBP hopes to have 50 operational CSI ports by the end of 2006, which would mean that approximately 90 percent of all transatlantic and transpacific cargo imported into the U.S. would be subjected to prescreening.

The United States has also established a 24-hour advanced manifest rule. "It used to be that when receiving goods shipped by container, the manifest information wasn't received until 48 hours prior to vessel arrival and often the information was vague," says Agron. "Now, the U.S. requires that a detailed manifest information must reach Customs 24 hours prior to vessel load. Then Customs can decide whether or not to issue 'do not load' orders."

Agron would like to see container targeting taken to an even higher level. "There are high-security seals that can be affixed by the importer," he says. "Ocean carriers can ensure that the seal is present before loading onto a vessel. This is an inexpensive step and we support it."

Another proposed step in the process, however, does not get the APL nod of approval. "There is talk of requiring that the seals get checked at every point along the supply chain," he says. "This would be an expensive measure and not add much to security."

Home-grown solutions

While the government has initiated many of the methods for securing the supply chain, there are many steps companies can take on their own to protect assets. Still, there are plenty of companies that are lacking in their security measures, according to Brandman. "Eight-five to 90 percent of the time, companies are relying on antiquated security measures," he says. "If they only cover five of seven areas of vulnerability, for instance, they are not well protected. Until they are victimized, they have an unjustified comfort level."

"You have to know your neighborhood and the value of your cargo, then take security precautions that fit your circumstances."
Earl Argon

Companies that have taken security seriously, however, have adopted a mindset of putting best practices in place. "These companies know that we live in a different world now and that the old methods leave them at risk," says Brandman. "They know that their old programs have to change."

For these companies, improved security might start with an audit of their security practices. "Many companies are taking the step of having an independent assessment of their security measures," says Brandman. "They want an unbiased assessment to see if their assets are protected and where weaknesses exist."

Some of these audits are performed to allow businesses to become or remain C-TPAT compliant, but a fair amount are not. Companies like Danbee often perform these assessments and then design customized programs for the client companies for beefing up security. Brandman says that there is growth in this market from both large and small companies looking for ways to improve security. "Companies are appropriating money in their budgets specifically for these audits and for following up on the recommended protection, such as upgraded technology," he explains.

Agron says that assessments are key to ensuring the right level of security is in place. "We perform many of our

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Not Your Father's Lift Truck Fuel

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Both lift truck manufacturers, like Hyster, and the makers of industrial gases and fuel cell power solutions are working hard to bring the technology into everyday use in the nation's DCs. Early adopters are already using fuel cell beta versions. Over the next 10 years, in fact, battery replacement packs will likely be available on a widespread basis.

Pros/cons

Hopkins says that fuel cell technology offers several benefits when compared to traditional sources of fuel:

- Ease of refueling—lift trucks can be refueled with hydrogen in about two minutes
- Eliminates the need to change batteries
- Provides the same benefits as fast/quick charging batteries without requiring the same effort
- Fuel cell prices are expected to go down as the technology advances and products are introduced
- Environmentally-friendly with no harmful emissions

Blair Lill, marketing manager for Cellex Power Products Inc., based in Richmond, British Columbia, Canada, a leader in fuel cell power solutions for industrial vehicles, says that fuel cell technology also runs longer than the average battery and doesn't ever "droop" and cause a slowdown in productivity, as batteries often do. In addition, space can be saved as most DCs must dedicate a room to batteries, and labor can be cut because no one will need to be dedicated to maintaining batteries. "You get all of the advantages of internal combustion engines but without any emissions," he says.

"You get all of the advantages of internal combustion engines but without any emissions,"
Blair Lill

Still, fuel cell technology has its limitations. Hopkins lists these as:

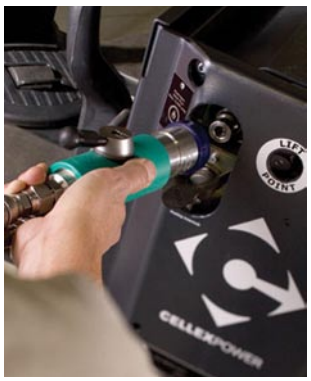
- Current cost of fuel cell product is prohibitive—greater than standard electric products
- Availability of fuel and fuel delivery may be an issue
- Much like fast/quick charge, at this point, difficult to justify for a single shift operation
- Requires new training for maintenance staff and will likely require new corporate practices and policies

Costs

As to the cost factor, Hopkins says that it was originally thought that the automotive industry would spur the viability of fuel cells and lift trucks because of the huge volumes the automotive industry uses, driving the costs down. "However, the automotive industry isn't going to be quite as fast to adopt the technology as was first thought," he says. "The automotive industry has an infrastructure problem that forklift manufacturers don't have—there aren't many places where someone can go to fill up a tank with hydrogen. Lift trucks, which typically remain in their facility near the central fueling location, are not bound by this constraint."

Those who choose to move forward with fuel cell technology, however, will be faced with certain costs, such as the cost of getting hydrogen to the plant. Lill says that while fuel cell technology is more costly on the front end, the cost compared to battery systems is offset within about 18 to 36 months due to operational savings and increased productivity. "That's why people are getting excited," he says.

… as the larger companies/DCs put more fuel-cell technology to use, they will drive costs down, opening the market for smaller DCs.



Cellex's CX-P150 fuel cell power unit in a rider pallet truck and being fueled. Photos courtesy of Cellex Power Products. Inc.

Photos courtesy of Cellex Power Products. Inc.

Future

Whatever the drawbacks may be to fuel cell technology, many companies are banking on its benefits to drive the technology forward in the lift-truck industry. Cellex is collaborating with BOC, one of the world's largest industrial gases companies, to develop complete hydrogen supply solutions to fuel lift trucks used in large DCs in North America. Cellex supplies the hydrogen power units that go into the trucks and BOC provides the indoor hydrogen refueling facilities.

Currently, the two companies are in the beta stage of development. "We have 12 units in a Wal-Mart DC and we're in the midst of a four-month trial," says Lill. "If we are successful—the trial is going well—we expect to be in the early commercial stage for pallet trucks in 2007. In 2008 or 2009, we should be extending the technology to reach trucks and some counterbalanced trucks."

That schedule will likely fit large throughput DCs. But Lill predicts that as the larger companies/DCs put more fuel-cell technology to use, they will drive costs down, opening the market for smaller DCs.

Hopkins says that the first phase for making fuel cell technology a reality is transparent replacement fuel cell units for incumbent batteries used in electric lift trucks, something already in the works. "The second phase is having the fuel cell incorporated into the design of the truck right from the beginning," he says. "For lift-truck manufacturers, there is balance between how much space can be dedicated to energy storage versus how much shift life and performance can be achieved."

The future looks promising for fuel cell technology, but there are still many issues to be sorted out. "There are still many tests to be done and unknowns to sort out," admits Hopkins. "Costs are coming down every year, but nobody really knows yet where the tipping point is."

Bobby Hopkins, Hyster Company, www.hyster.com
Blair Lill, Cellex Power Products Inc., www.cellexpower.com

own assessments, but some companies might find value in bringing in outside help," he says. "You have to know your neighborhood and the value of your cargo, then take security precautions that fit your circumstances."

Security also includes employee training. "We train all of our employees in security practices," says Agron. "Proper background checks are a part of the overall security picture as well."

Strike a balance

The key is to strike a balance between security and realistic expenditures. "True supply chain security requires a lot of collaboration between stakeholders and the government," says Agron. "It also requires collaboration with other companies. We have alliances with our competitors, for instance, on shipping space. That way, security measures are consistent across the board. If a carrier spent a lot on security measures for one company and not another, nothing would be gained."

Brandman says that the answer isn't to simply throw money at the security. "Less than 50 percent of the recommendations we make require money," he says. "Usually, our recommendations are for new procedures and practices where the costs are relatively small in relation to the risks they help companies avoid."

Agron also believes that governments need to harmonize their regulations. "We need an intelligent regulatory framework," he says. "Some protocols cannot be voluntary—it gets too costly without producing the desired results."

At the DC level, it pays to be proactive and not reactive, says Brandman. "There is no magic bullet," he says. "But if you combine best practices with the right technology, you can do a good job at helping keep the supply chain secure."

National Association of Manufacturers (NAM), www.nam.com
Barry Brandman, Danbee Investigations, www.danbeeinv.com
Earl Agron, APL, www.apllogistics.com

What's the Cost of Your Inventory?

Even when at rest, inventory continues to accumulate costs.

Determining inventory carrying cost is no longer an academic exercise. At many companies and in a growing number of warehousing operations, in fact, it is a primary decision-making tool for inventory management and control.

"The cost to carry inventory measures the overhead that an organization carries to support its inventory," says Mary Lu Harding, principal, Harding & Associates, Lincoln, Vt. "The longer the inventory is in your possession, the more it will cost in upkeep."

Inventory carrying cost is equal to the product of the average inventory and the inventory-carrying rate. For most companies, the stumbling block is how to determine the carrying rate.

Inventory carrying rate "influencers"

The inventory-carrying rate varies widely across industries and countries. When determining the inventory-carrying rate, the most common factors include the interest rate of money, storage and material handling, loss due to obsolescence, damage and/or pilferage, insurance and taxes. However, Harding believes that, "basing the cost of inventory on these factors alone misses other significant areas of cost."

For most companies, the stumbling block is how to determine the carrying rate.

In fact, she has developed a sound methodology to calculate a more "realistic" inventory-carrying rate. "The elements that go into the carrying cost of inventory can be divided into variable and fixed cost factors," Harding explains. "Variable cost factors change with the dollar level of the inventory in a direct manner. Fixed cost factors do not change directly. They can change, and often do when organizations make significant changes to their inventory levels, but the change occurs as a step function when certain inventory levels are reached."

Variable cost factors

The cost of money, taxes, insurance, and obsolescence reserve are the variable cost factors in Harding's methodology. Virtually all respondents to a Harding & Associates survey said they use the cost of money as one of the factors.

"Nobody argues about that one," she states. "The cost of money is the interest rate an organization pays for borrowed money. If there are no business loans, it's the interest rate that the money invested in inventory could be earning if it were invested elsewhere."

Some political jurisdictions tax inventory. At storage locations where this occurs that tax rate is included in the inventory carrying rate determination.

"Most organizations have some sort of loss insurance in case of fire or other catastrophic loss to replace the inventory," according to Harding. "Whether you're self-insured or you purchase a policy, there's a cost for insurance."

If a policy has been purchased, its cost should be amortized over the inventory and included in the carrying rate calculation. If self-insured, the organization usually has established a reserve to cover the loss. So, the value of the reserve, which is not available as circulating cash, is considered in determining the rate, she explains.

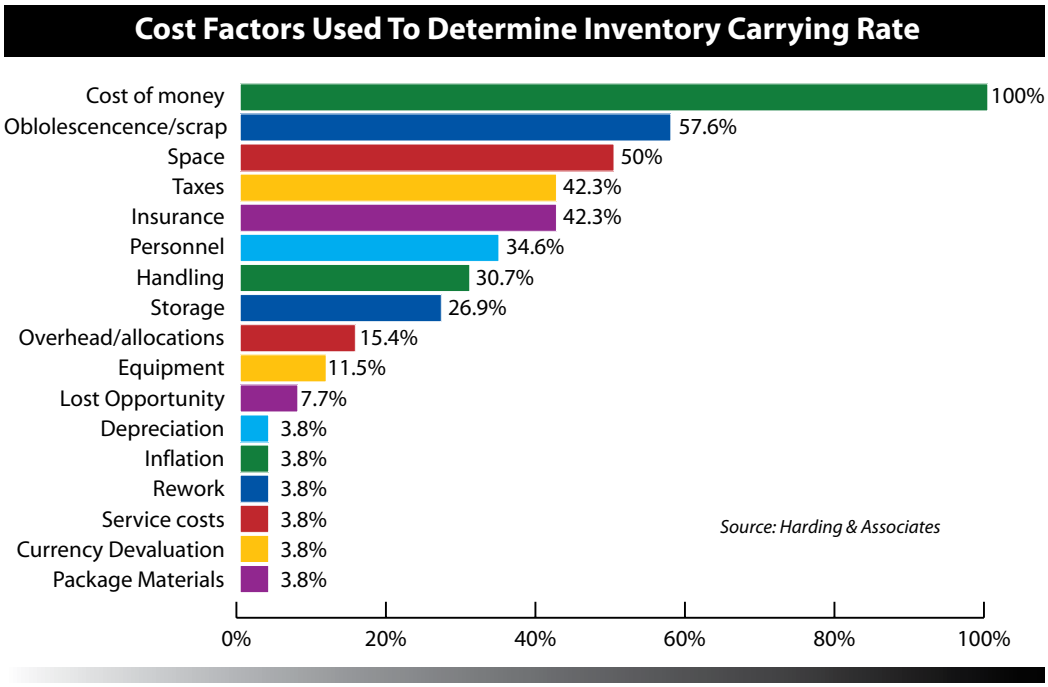
The last of the variable costs is the obsolescence reserve. It is the financial reserve set aside to cover forecasted inventory losses such as write-offs or shrinkage. "This is probably the most variable," Harding explains. "Companies that have frequent design changes, or deal in perishables, as an example, have a very high obsolescence reserve. Companies with stable designs and long shelf life products typically have a small reserve, if any."

Fixed costs

These costs (space, capital equipment and personnel), Harding cautions, are open to debate in many companies whether they should be included in determining the inventory-carrying rate. She believes they should.

"If an organization operates a warehouse, there is significant cost involved in the establishment and maintenance of that facility," Harding explains. "It would not be there if the inventory were not there. Whether or not the cost changes due to changes in inventory, it is a part of the overhead required to support the inventory and should be included as an element of carrying cost."

As long as capital equipment (forklift trucks, scales, racks, automated material handling systems, etc.) has value on the books, that value should be included as an element of carrying cost. To determine that factor in percent, she instructs, divide the total capital investment in dollars by the average total inventory dollars.



Personnel typically include those people whose job descriptions are primarily managing and handling inventory. "The level of staffing varies with the level of inventory, but not in a direct ratio," Harding explains.

"Other" factors

"There are other costs that only apply in certain circumstances or in some industries, so they aren't placed in the general formula," Harding shares. One of these costs is computers and computerization. "If you have purchased specifically dedicated software, say, materials-handling software to track transactions, then it belongs in the equation," she explains. Typically, software costs are not considered capital expenditures (which they are, she states), so place these investments here.

Another cost is secondary inspections. "This usually applies to companies that have shelf life and design type issues, often those with high obsolescence reserves," Harding maintains. "This is not the initial inspection, but where product, after being in storage for a long period of time, must be re-inspected before it can be used. Secondary inspection is a direct result of storage and must be included in the carrying cost."

A cost that is starting to have an influence in some industries is social responsibility. Here, costs related to green purchasing and recycling are considered (what to do with obsolete materials, for example). Another is the protection of goods in storage. This would be apropos for those who store goods that are liquid, sensitive, perishable or hazardous. Actions such as tank inspections and the associated maintenance costs would be appropriate to include. "That maintenance cost belongs as a part of the cost of inventory," Harding insists. "It might be included in overhead, but it might be wise to call it out separately."

Benchmarking the carrying rate

Quite frankly, there are no "reliable" standards. "If you look at the factors that go into calculating the carrying cost, they're not the same from company-to-company, not even from division-to-division, which is why I expect to find a spread," Harding asserts. "Not every company supports the same overhead, not every company has the same cost of money, not every company pays taxes in their jurisdictions, and the obsolescence reserve is different company-to-company."

"Carrying cost is one of those parameters that will affect peoples' inventory decisions."
Mary Lu Harding

In fact, in the Harding survey, respondents reported a wide spread in their inventory carrying rate, from zero percent up to more than 50%, with the majority clustering between 10% and 29%. Harding mentions that when companies tell her that their carrying cost is in the area of 20% to 25%, "they are only considering their variable costs."

The advice from Harding: Review all cost factors, determine which are relevant for your organization, maintain them, and publish the inventory-carrying rate and cost widely throughout the organization.

"Carrying cost is one of those parameters that will affect peoples' inventory decisions," she maintains. "That's why it matters for everyone in the organization to know what inventory really costs to store and hold."

Mary Lu Harding, Harding & Associates, www.hardyandassociates.com

Room to Grow

After experiencing explosive growth, a skin-care company sought additional space.

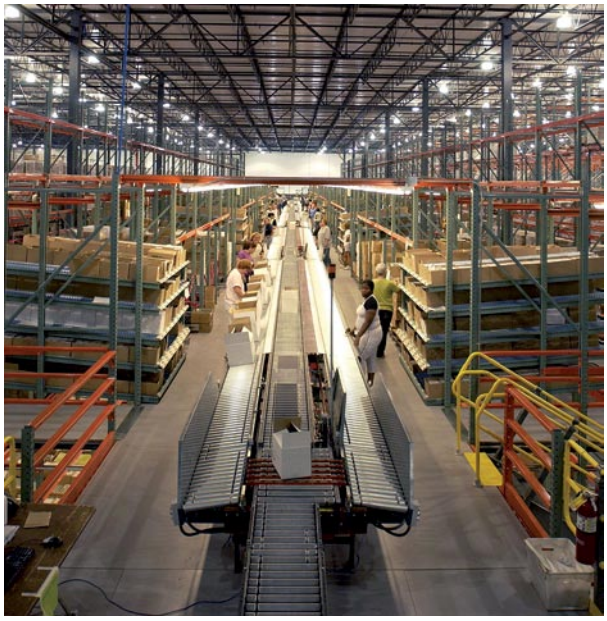


Photo courtesy of Arbonne International, LLC.

Arbonne International, LLC, began as a botanically-based skin care products distributor in 1980. But what began as a small company hit the big-time in the early '90s as word spread about the Swiss-formulated products and growth took off. By 2004, growth was exploding and today, Arbonne boasts more than one million independent consultants doing business in the United States and Canada, selling skin care products, aromatherapy, and nutrition and weight loss products.

With growth, however, came growing pains, and Arbonne began to realize that its manual pick/pack and ship operation in Irvine, Calif., where the company is based, wasn't going to be able to carry the company into the future. The company's 75,000-sq. ft. distribution center was not equipped to handle the incredible volume that needed to be processed.

> **"It became clear that growth was going to exceed our expectations and that we needed to make some changes,"**
>
> Carol Hukari

Ribbon-cutting at the Greenwood, Ind. DC.

Photo courtesy of Arbonne International, LLC.

"It became clear that growth was going to exceed our expectations and that we needed to make some changes," says Carol Hukari, senior vice president of operations. "Growth was reaching 165 percent, something we couldn't sustain in our current situation."

Immediate changes were required and the first step the company took was to contract with a third party to develop a long-term strategy for handling the exploding volume. "Our existing facility only had four dock doors and most of our products ship UPS, so we had quite a back up," says Hukari. "In addition, our newly installed pick-to-light unit had been placed against a wall. We had to use a cart system for replenishment, which required time and a lot of walking. We had 26 zones in our DC and one picker for each zone. Every worker touched every order. This created a back up and the potential for error and confusion."

Arbonne added a second pick-to-light system to the existing facility in hopes of keeping up with the growing volume. The Irvine facility was retrofitted with a completely automated system at the end of 2005. The technology helped, but it wasn't a cure-all.

It was clear that the move to a new DC or the addition of a second DC was in order. Working with a materials handling contractor and UPS, Arbonne recently added a new DC in Greenwood, Ind.

Breathing room

Arbonne studied its customer profile and discovered that 65 percent of its customers were located in the eastern half of the United States. Based on that information, UPS developed a short list of 10 cities for Arbonne to consider for its new DC location. Further work with a consultant helped Arbonne drill down to the Indianapolis market, which is where the company settled. While waiting for the new facility to go up, Arbonne located some 90,000-sq. ft. of local California DC space.

The new facility is a 208,000-sq. ft. automated operation. Some 300 employees work two shifts to process orders each day, filling 20 to 30 truckloads on a daily basis. The company anticipates that additional employees will need to be added by year's end.

The company added RF technology so that now all items are bar-coded. Pickers pick into barcode-labeled cartons from a pick-to-light module. An electric conveyor

Some 600-plus SKUs are handled and Arbonne pulls it all off with an accuracy rate of 99.8 percent and a retun rate of less than 1 percent.

system carries completed orders off to an automated packing system that determines what type and how much filler each package requires.

WCS

At the heart of operations is a warehouse control system (WCS), which is integrated with the company's overall ERP system. The WCS provides the DC with late entry/early exit flow and operates in a two-tier system. The WCS works in conjunction with a weigh-in-motion scale based on cartonizations algorithms set by the WCS to provide more efficient packing.

With things in full swing now, Arbonne averages processing about 10,000 to 12,000 orders each day in the new facility and a daily maximum of 35,000 orders at month end. If needed, the facility could accommodate as many as 45,000 to 50,000 orders per day. Some 600-plus SKUs are handled and Arbonne pulls it all off with an accuracy rate of 99.8 percent and a return rate of less than 1 percent.

One of Arbonne's goals with the new facility was to be able to deliver orders within three days. "Now we can reach 99 percent of the country in that turnaround time," says Hukari.

Room for the future

There's no doubt that Arbonne's popularity will continue to grow, and the Greenwood facility is equipped to handle that, says Hukari. "We have room to expand should we need it," she says. "The challenge will be monitoring volume to see if our West Coast DC can handle its volume or whether we'll need to expand there one day. In addition, we're leaving the door open to the possibility of adding another DC in the Northeast at some time in the future."

Arbonne is now poised for growth on an even larger scale, something probably few could have predicted almost 26 years ago when the company first appeared on the map. But success fits the company well, and its new Greenwood DC will be an integral part of that path.

Carol Hukari, Arbonne International, LLC, www.arbonne.com

WERCouncil UPCOMING EVENTS

Check the WERCouncil section of WERC Online for details.

ATLANTA October 25
Lunch presentation:
FEMA: Planning in an Uncertain World
Contact: Chris Barnes, 770-331-3908

ATLANTA November 16
Lunch presentation: Judy Suiter
"Using DiSC Profiling to Lead, Manage and Live"
Contact: Chris Barnes, 770-331-3908

BOSTON October 5 4:00 pm
Panel Discussion, "Constructing the DC from A to Z"
Burlington Marriott
Contact: Frank McCabe, 978-640-3900

CHICAGOLAND November 8 Noon
Tour of Mary Kay
Hoffman Estates, IL
Contact: Marceline Absil, 847-516-8255

PHILADELPHIA November 15
Tour of JOM Pharmaceutical Services
Distribution Center
Contacts: Lisa Natt, 570-654-2403
Erin Horvath, 610-280-0848

SOUTH FLORIDA October 12 6:30 pm
"Mobility in the Workplace" dinner and panel discussion
Contact: Greg Eifert, 305-627-0064

TENNESSEE October 3
Middle Tennessee DC Tour (Site TBD)
Contacts: Chris Slover, cslover@forta.com or
Larry Corrigan, lcorrigan@tractorsupply.com

TENNESSEE November 1
West Tennessee DC Tour (Site TBD)

WERC

American Logistics Aid Network
Mobilizing for Emergency Response

We are pleased to announce WERC's participation as a founding member in ALAN, the American Logistics Aid Network.

At the 2005 CSCMP Annual Conference, a discussion was held to determine the feasibility of launching an initiative to bring together supply chain professionals interested in contributing time, skills, and resources to assist with various humanitarian efforts. The response was fantastic and, as word has spread, this initiative has become a reality. **More information will be available on www.werc.org and in future issues of *WERCSheet*.**

RFID: Compliance vs. ROI

Compelling reasons beyond compliance.

Radio frequency identification (RFID) holds much promise for warehousing and distribution operations. However, while RFID prices (labels, equipment, etc.) continue to fall, the cost per unit is still high for many manufacturers and distributors, according to Chris Werling, president and founding partner, Cornerstone Solutions, Inc., Fort Wayne, Ind. In addition, he explains, "the technology is still unreliable in readability, especially with dense or liquid-based products."

"If a company can find ways that RFID will improve customer satisfaction or more effectively track high-dollar items, then RFID may make sense without a strong numbers-oriented ROI."

Chris Werling

As a result, most companies continue to implement RFID based on compliance, rather than based on ROI. "The position we see is that executives still view RFID technology as somewhat an emerging technology," says Roderick O'Keefe, vice president of sales and marketing, Identec Solutions Inc., Kelowna, British Columbia, Canada. "As a result, the executives are looking for a very aggressive ROI—18 months or less."

RFID compliance vs. ROI

Nevertheless, there are many uses for RFID inside the warehouse that can have a proven ROI. One example is auditing pallets/cases while loading a trailer. "This can ensure order accuracy, eliminate the need for scanning individual cases, and provide a verifiable audit trail in case customers attempt chargebacks for missed shipments," maintains Werling.

Another "extremely viable" application he cites is automated scanning of receipts while unloading trailers so that the systems can automatically receive the goods and often direct the product to its final destination. "This approach has the most return in a highly-automated or pass-through distribution environment," Werling explains.

SIDEBAR

Determining an ROI for RFID

As with any capital investment project, the RFID initiative will have to be approved by the financial team, a group that typically wants proof in the numbers only. Roderick O'Keefe, vice president of sales and marketing, Identec Solutions, Inc., Kelowna, British Columbia, Canada, states, "I always like to look at the numbers as it takes a lot of emotion out of the decision-making process."

On the cost side of the ROI equation, Chris Werling, president and founding partner, Cornerstone Solutions, Inc., Fort Wayne, Indiana, maintains the "essential elements that must be included are the upfront costs such as RFID scanner/readers, RFID printers/writers, software, and middleware." Other essential elements include the "ongoing costs such as the depreciation and maintenance on the hardware and software, and especially the cost of the labels/tags."

While the cost of labels has fallen, Werling explains, "This factor alone has the most impact on the cost/unit when dealing with a high-volume environment." Optional elements he also includes are interfaces to existing systems and equipment such as WMS, TMS, and material handling equipment. Those elements that should not be included are implementations of other systems like WMS, TMS and ERPs.

On the savings side, the main ROI element is labor savings. "Labor can be saved by moving product around the warehouse more quickly," Werling explains. "Depending on how RFID is deployed, the warehouse employee may no longer have to go through the motion of scanning a pallet or case, but simply allow the system to read the tags as they pass through readers during the journey through the warehouse or onto a trailer, as an example."

In many instances, however, the reading of tags is still done via RF gun fitted with an RFID reader. In these cases, he notes, labor savings still can be realized through the ability to read tags even though they might be buried among other cases on a pallet, for example, without having to dig through the cases.

"The profit margin that is accessible by continuing to ship to an existing customer or gaining a new customer must be factored into this equation as well," Werling explains.

RFID tags
photo courtesy of
Identec Solutions, Inc.

"Of course, ROI doesn't tell the whole story," he offers. "If a company can find ways that RFID will improve customer satisfaction or more effectively track high-dollar items, then RFID may make sense without a strong numbers-oriented ROI."

O'Keefe observes a growing number of executives, although skeptical, taking the first step of investing in a proof-of-concept. Typically, they'll invest between $20,000 and $100,000, to "see if the RFID technology works," he explains.

"Our advice is to begin with the end in mind, what are you trying to accomplish; understand the baseline process with appropriate metrics in place; and define and recognize the implications of not doing anything," says O'Keefe. "Understand both sides before forging ahead."

Meanwhile, Werling shares, "We often recommend that companies implement a 'compliance approach', a cost-effective 'slap-and-ship solution,' until a proven ROI can be shown throughout their supply chain."

Chris Werling, Cornerstone Solutions, Inc., www. cornerstonesolutions.com
Roderick O'Keefe, Identec Solutions Inc., www.identec.com

On the Docket

Port Security

To tighten security at the nation's ports, the U.S. Senate has unanimously approved the Port Security Improvement Act of 2006. The bill's main objectives are raising the security standards for all U.S.-bound cargo, creating a GreenLane to track and monitor cargo, creating a system to resume trade after an incident and fund port security grants.

The bill includes an amendment that would require a pilot project to test an integrated scanning system using non-intrusive inspection and radiation detection equipment in some foreign seaports. The system is geared to eventually scan all containers transiting the port, helping to ensure nuclear materials are detected before entering the U.S.

The legislation now heads to compromise meetings with the House, where a similar bill exists.

Source: Logistics Management online, September 2006; www.logisticsmgmt.com.

Propane-Fueled Lift Trucks Meet 2007 EPA Requirements

The Propane Education & Research Council (PERC) released the results of a three-year research effort to demonstrate that propane-fueled forklift engines can meet stricter environmental standards and deliver the work power that has made propane a leading fuel for forklifts over the years. The study was conducted largely to ensure that existing propane forklift fuel system technologies can meet 2007 U.S. Environmental Protection Agency (EPA) regulations. The 2007 standards require large spark-ignition non-road engines to reduce emissions and to demonstrate an increase in useful engine life by 40 percent.

Source: Material Handling Management online, September 2006; www.mhmonline.com.

Canada Upset with Border Fees

The U.S. Department of Agriculture (USDA) plans to collect fees on air travelers and commercial shipments from Canada, a plan that has not been well received by Canada. The U.S. government plans to tighten agricultural inspections at the border to guard against threats of pests, disease and bioterrorism. Commercial products and air travelers will be subject to user fees as a result.

Canadian trucking and airline representatives have voiced their concerns about the detrimental effects they foresee to their industries, including concerns about border slow-downs.

Source: Logistics Management online, September 2006; www.logisticsmgmt.com.

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