

Are Reusable Containers Worth the Cost?



CONTAINER QUESTIONS IN THE AUTOMOTIVE INDUSTRY CENTER ON RETURNABILITY, NOT REUSABILITY.

by Clyde E. Witt, executive editor

The automotive industry has long been the standard-bearer for returnable container programs. All the car companies and their Tier 1 suppliers continue to see value in using, and reusing, containers. Most admit, although not always publicly, that returnable container programs are costly and difficult to manage. In spite of the hassle, returnable container programs bring great benefits to companies and to the industry in general. The experience of nearly 15 years has helped smooth the speed bumps for most container users and suppliers.

“Our industry spends millions of dollars for returnable and reusable containers to carry and protect billions of dollars worth of automotive parts and assemblies each year,” says Randy Stout, manager of containerization for General Motor’s North American Operations.

Stout is also chair of the Automobile Industry Action Group's (AIAG) Plastic Container Performance Work Group. He says, "Container selection is critical to the success of a project. Poor decisions can result in unnecessary rework or replacement costs and delays."

Stout's group has been working on a set of guidelines to establish a standard benchmark by which buyers can evaluate container products and ultimately make better decisions.

Containers and JIT

Although the focus on types of containers appears to be shifting somewhat within the automotive industry, the purpose of the containers remains consistent. In fact, it's hard to imagine Just-In-Time (JIT) as it exists today in auto plants, without reusable containers.

Dan Huhn, senior product manager, ORBIS, says the returnable container has been the enabler of JIT production techniques for many years. Now, smaller containers are emphasizing that point.

"Automotive manufacturers are looking to deliver the minimum amount of inventory to the right spot on the assembly line," says Huhn, "and hand held containers are the way to do it."

Size doesn't matter when it comes to reusable containers. Although there are more small containers showing up in returnable container programs, workhorse products like reusable steel racks will always be around. Matt Shuert of Shuert Industries says its mammoth Uni-Case, which weighs in at 175 pounds, empty, is finding a lot of new users.

"People still have to move heavy parts, like heating and air conditioning units," says Shuert, "and this clamshell-design case offers a secure,

Implementing Returnables at Saturn

Over the past decade, one of the most watched developments in the automotive industry has been the emergence and success of Saturn. With its homespun image, high-quality vehicles and sky-high customer enthusiasm, the small-car company of General Motors has made an indelible impression on the automotive industry.

Unlike the "clean-sheet-of-paper" approach of an all-new plant that drove the successful introduction of Saturn in 1990, this Year 2000 vehicle rollout had unique challenges.

Space and time

In August 1996, GM announced that Saturn would be building a new class of vehicles at the Wilmington, Delaware, facility. The plant was a 50-plus-year-old, three-million-square-foot GM assembly plant on 105 acres. The plant would require

an investment of more than \$550 million and a lot of planning and coordination to prepare for its new role.

By late 1997, the Wilmington team was ready to begin tackling the implementation of its material handling and delivery systems to support the June 1999 production target. A new role of Lead Packaging Provider (LPP) was created to coordinate the returnable packaging programs across all the sites. With production only 18 months away, the decision was made to partner with ORBIS, which already had experience at the Spring Hill, Tennessee, plant (and several GM plants in North America). As the LPP, ORBIS was responsible for expediting the packaging program and ensuring consistency across the suppliers and manufacturing plants.

The first notable challenge was space. The Wilmington facility did not have enough space to keep all its parts in

inventory. A delivery and storage system that minimizes the required warehouse and delivery space was created. A big part of this solution included the implementation of an electronic card pull system for all small lot items stored in an off-site warehouse.

The second major constraint was time. With less than 18 months to work, the small team of packaging and procurement professionals and ORBIS' two project managers faced the challenge of designing, purchasing and implementing a total returnable system for more than 1,800 parts. This tight timeline was further intensified with the changing requirements that are inherent in designing a new vehicle, last-minute part-sourcing decisions for suppliers,



Line side inventory management and replacement are enhanced with containers and racks designed for JIT operations such as the Saturn plant in Wilmington, Delaware.



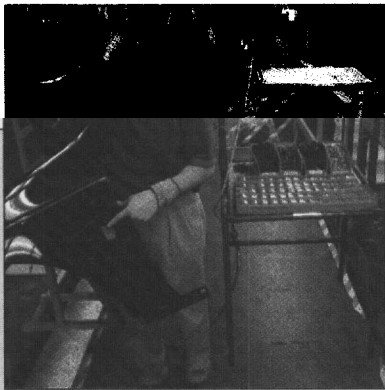
Returnable containers and dunnage can be made of plastic, corrugated or metal as seen at the Saturn plant in Wilmington, Delaware.

clean way of moving big, heavy things.”

Along with the growth of JIT came the reduction in suppliers to the automotive plants. Dr. Diana Tweede, associate professor, School of Packaging, Michigan State University, says JIT, along with reduced suppliers and attempts to reduce the geographical distance between supplier and user, has favored returnable packaging.

“These factors favor the use of returnables because they increase control, reduce transport costs and reduce the required safety stocks,” says Tweede.

The other trend making an impact on packaging in the automotive industry has been called lean manufacturing — among other names. Basically it’s a tightening of the supply chain.



Small parts, including logos and fasteners, can be delivered to the assembly line in precise amounts with returnable containers.

contract issues with part vendors, and issues stemming from the merger of two very different systems (GM and Saturn).

All known supplier parts were evaluated early in the process so the team could focus on accommodating engineering changes as the launch date drew near.

Choosing the right returnable packaging products

The returnable packaging selected for the Wilmington plant was consistent with the products used at the Spring Hill facility. These products included standard plastic straight-wall hand held containers with custom-designed dunnage organized on 45 x 48-inch plastic pallets, thermoformed storage trays, metal baskets and plastic collapsible bulk containers.

Much like Spring Hill, the requirements for container selection and dunnage design included (but were not limited to):

- Selecting standardized (but optimal) container sizes when possible;
- Maintaining enough parts for a one-hour build quantity on the line;
- Limiting container loads to 35 pounds;
- Part protection level required;
- Part orientation (easy for assembly members to access and remove).

As the Wilmington plant was renovated, many standard plastic containers that previously handled Chevy Malibu parts were fitted with new interiors and reallocated to the L-Series production. This significantly reduced the up-front costs

You only do the things that will add value to your part of the supply chain, or what some call the value chain.

Optimizing the supply chain means taking the *big picture* point of view. For returnable containers this means planning an entire program, not purchasing a container and shipping parts.

Along with ergonomic and safety issues such as lighter loads and reduced chances for knife cuts, “soft” issues like cleanliness are playing a larger role in the auto plants and driving the implementation of returnable container programs.

Because there is less inventory at line side, assembly lines can be shortened, thus requiring less time to build cars. Reduced inventories, along with modularity of many automotive assemblies, have also led to reconfiguring workstations along the line.

associated with procuring a fleet of containers to fill the packaging system. While the practice at Spring Hill was for each supplier to purchase and manage its own container fleet, at Wilmington the decision was made for Saturn to own and pool returnable containers for all its suppliers.

To help keep production time low and maintain a competitive edge, the packaging team had several goals for the new L-Series returnable program, including:

- The implementation of returnable packaging for 75 percent of incoming parts by launch date;
- Enhanced worker productivity through decreased walk time and dunnage handling;
- Improved part orientation;
- Increased value-added time for operators.



Cleanliness and ergonomics are two factors driving the use of returnable containers at companies such as Saturn.

Justifying the expense

In the early days of returnable container systems, companies did extensive studies on return-on-investment, net-present-value and other justifications to convince management that returnables were the way to go. General Motors, for example, has a reported \$1.4 billion investment in returnable containers.

Today, some material handling managers still have to jump through the hoops held up by those on the financial side of the business. Other compa-

nies take a less structured view — a simple pay-back method that indicates they'll get money back in two years, for instance. The more enlightened companies are just doing it.

Managers are instituting returnable programs because they've seen that it's the right thing to do. Reducing the amount of corrugated (costly to get rid of) and the reduction in injuries show quick paybacks. Managers see the installation of returnable containers as a one-time investment rather than an on-going, fluctuating cost.

How DaimlerChrysler Delivers the Goods Rust Free

Shipping automobiles overseas is no easy task, particularly when they are sent in parts. With the globalization of the automotive industry, it has become increasingly critical to deliver parts, in pristine condition, worldwide. ACE Packaging meets this challenge daily in its work with DaimlerChrysler.

From its headquarters in Monroe, Michigan, ACE designs corrugated packaging for Daimler/Chrysler's pre-assembled stamped parts that are shipped to South America and Europe.

For shipments that must travel up to 40 days by ocean, humidity and climate fluctuations are constant adversaries. "Once cargo ships cross the equator, moisture can build up inside containers and damage metal parts," says Tim Bringard, president, ACE Packaging. "With a large volume of containers sent to Brazil and Argentina each month, it is an issue we need to take seriously."

ACE began testing products to prevent moisture damage. The most effective product proved to be a moisture-absorbing bag called Container Dri II, supplied by Süd-Chemie Performance Packaging.

Package design for such models as the Jeep Cherokee, Dodge Neon and Dodge Dakota is handled exclusively by

ACE. Automotive Logistics Services (ALS) and Coughlin Logistics manage packaging assembly and delivery.

Billy Williams, quality manager, Coughlin Logistics, says, "Each of about 28,000 containers we see every month is custom engineered for specific stamped parts."

Container Dri II was developed by Süd-Chemie Performance Packaging to protect cargo from moisture damage. Its proprietary formulation prevents the development of condensation by absorbing ambient moisture vapor, which in turn reduces the dew-point level within containers. Once moisture is trapped inside of the Tyvek enclosed bag, it is concentrated into a thick gel where it is prevented from leaking out onto cargo.

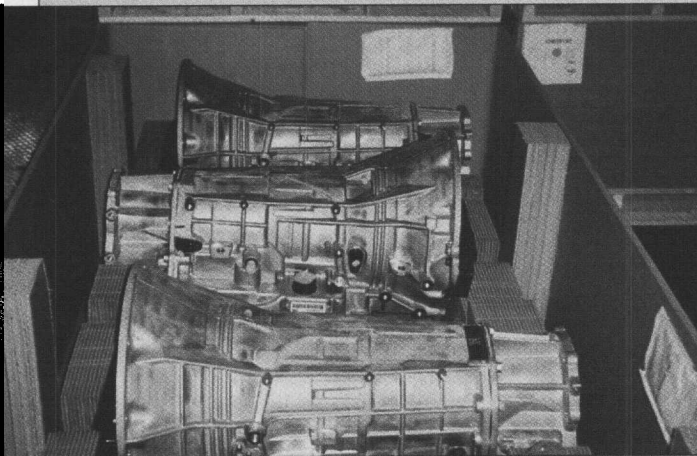
The packaging process begins well before stamped products are even manufactured. Up to a year prior to launching a new model, DaimlerChrysler provides part specs to ACE. Packaging engineers then set out to design cost-effective packaging that provides maximum protection for each part. Close attention must also be paid to the size of the box to ensure a secure fit within containers.

ALS process engineer Steve Stabnick says, "It's very much like a puzzle. Pre-assembled Jeep Cherokees are shipped in lots of 36 or 72. For one lot of 36 Cherokees we ship between 210 and 230 boxes of parts."

After parts are loaded into corrugated boxes, bags of Container Dri II are affixed to the inside walls. The bags are backed with a pressure-sensitive adhesive to facilitate easy and secure placement. "Four bags are currently placed within each box before it is sealed and prepared for transport," Stabnick says.

Corrugated tops are then placed onto the triple-wall corrugated boxes before being secured with staples. Both ALS and Coughlin then work quickly to load the corrugated boxes into sea-going containers and transport them to awaiting cargo ships. After arriving at port, the containers are unloaded at deconsolidation centers where parts are sent to final assembly plants.

After removing the parts, bags of Container Dri II are removed and disposed of as normal waste. Corrugated boxes are broken down and sent to recycling centers.



Transmissions and other parts are shipped overseas by DaimlerChrysler in corrugated containers with the use of special dessicants to prevent rust.

Managing returnable containers is a challenge since the containers are literally a moving target. It's not uncommon for one user of a container to pass it on down the supply chain, not to return it as was intended. Also, if an automaker decides to keep the parts in inventory longer than intended, it will require more containers in the system to meet demand requirements. Various companies have different re-supply programs, but most shoot for several hours of parts to be at line side. If production stalls for even one day, the number of containers in the "float" is drastically affected.

Tracking is not a new problem. In fact, the problem has been around since the first programs when containers started "disappearing" and many autoworkers started carrying strange-looking fishing tackle boxes and lunch boxes.

In 1991, AIAG wrote a standard for container tracking that still waits for implementation. The apparent pothole in the road to tracking is how to handle the reverse logistics part of the program. But that may be changing with new software and systems providers entering the automotive arena.

What's the solution to better container tracking? Some experts say when the price of radio frequency identification (RFID) chips drop, the

RFID chip will be the answer. Others say the answer lies with third-party service providers. Still, another camp says it will take both and the auto companies will have to get out of the packaging business and concentrate on what they do best — build cars.

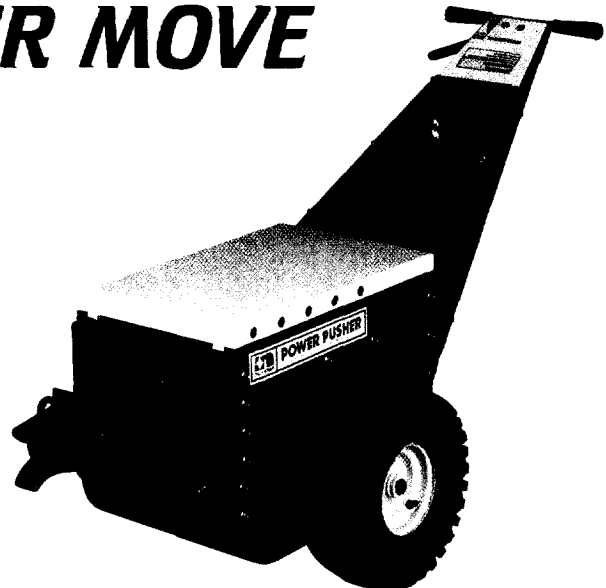
When to adopt a program

In the automotive industry, the most convenient time to begin a returnable container program is at the start of a new model build. Although lead-time on new car introduction has been halved in the past few years, it still takes a while for Tier 1 and Tier 2 suppliers to gear up. An interesting trend in the industry is for more consistency in the size of containers, using more specialized dunnage to adapt different parts to the inside.

All the container manufacturers have engineers who assist in developing a program and finding the right container/pallet combination. The importance of this assistance from the container manufacturer has grown as automotive companies have put more emphasis on core competencies — building cars — and less on packaging engineering.

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The level of assistance provided by the container manufacturers varies from consultation to actual hands-on applications where the container manufacturer stations employees at the customer's facility to implement the program. In the more extensive programs, the auto company will turn over the entire program to the container manufacturer or a third party. In that case, all the packaging material, regardless of manufacturer, is taken care of by people not employed by the auto company.

Some of these third-party services have become quite sophisticated. Container and Pallet Services (CAPS) is a container and pallet rental service that manages fleets of containers and tracks them through its proprietary, Internet-based tracking system, CAPS-TRAC.

Spencer Hoopes, founder and CEO, says CAPS helps companies that recognize the desirability of using returnable packaging systems but are hesitant to own and manage the assets themselves.

"For example," says Hoopes, "we're currently the only company in our industry able to offer a tracking service to companies assembling products in Mexico and shipping finished products back to the U.S. for final assembly."

The CAP's system offers container tracking

and management through a variety of productivity reports available to customers via the Internet.

Another full-service returnable packaging provider is Menasha Services. Kevin Shanley, marketing director, says it offers an enterprise solution to returnable packaging.

"We're working with Tier 2 to Tier 1 to final assembly supply chains," says Shanley, "any place supply chain management is needed."

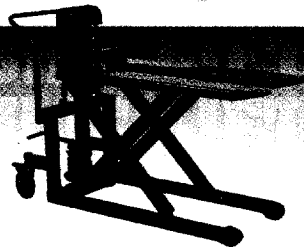
The company does everything: financing a returnable container program, transportation, crossdocking, line sequencing and more. Menasha Services has an Internet-based program that helps the customer know not only where containers are, but where parts are.

"The beauty of an Internet-based program," Shanley says, "is that when the manufacturer sends its broadcast down to the Tier 1 supplier, we receive a communication at our service center that tells us how many containers will be required, and when, by the Tier 1 company."

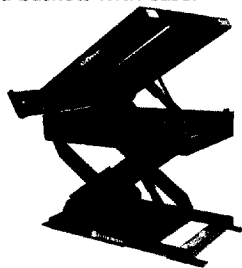
As Tweede says, "This is an interesting time for logistical packaging. As logistical systems evolve and become better organized, there are new opportunities for using packaging to add value and minimize cost." **MM**

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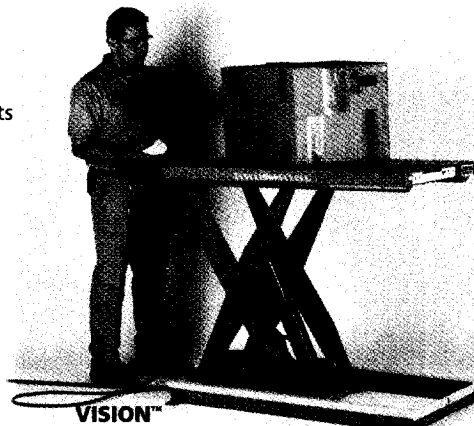
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